

***OPERATING PROCEDURE***

***MANUAL***

**Real Time Desk**

1. [**Introduction**](#_1._Introduction)

**1.1** [Purpose](#_1.1_Purpose)

**1.2** [Scope](#_1.2_Scope)

**1.3** [Roles/Responsibilities](#_1.3_Roles/Responsibilities_1)

1. [**General**](#_2.__General)

**2.1** [System Operator Responsibility and Authority](#_2.1_System_Operator)

**2.2** [Communication](#_2.2_Three_Part)

* [Three-part Communication](#_Three-Part_Communication)
* [Hotline Call Communication](#_Hotline_Call_Communication)
* [Dispatch](#_Dispatch)
* [Verbal Dispatch Instruction](#_Verbal_Dispatch_Instruction)
* [Master QSE](#_VDIs_to_Master_1)

**2.3** [Responding to Weather and Load Forecast Errors](#_2.3_Responding_to)

**2.4** [Load Forecast Errors affecting the Resource Limit Calculator](#_2.4_Load_Forecast)

**2.5** [Alarm Processing and Acknowledgment](#_2.4_Alarm_Processing)

**2.6** [Site Failovers and Database Loads](#_2.5_Site_Failovers)

**2.7** [Switching Control Centers](#_2.6_Switching_Control)

**2.8** [Suspected Sabotage or Sabotage Events](#_2.8_Suspected_Sabotage)

1. [**Monitor and Manage System Security**](#_3.0_Monitor_and)

**3.1** [Frequency Control Operating Procedure](#_3.1_Frequency_Control)

* [Maintain System Frequency](#_Maintain_System_Frequency)
* [Response to High Frequency](#_Response_to_High)
* [Response to Low Frequency](#_Response_to_Low)
* [Monitor Frequency for the Loss of EMS or Site Failover](#_Monitor_Frequency_for)
* [Actions When Frequency Telemetry is Incorrect](#_Actions_When_Frequency)

**3.2** [**Hold for future**](#_3.2_Hold)

**3.3** [System Failures](#_3.3_System_Failures)

* [SCED Failure](#_SCED_Failure)
* [SCED Data Input Failure](#_SCED_Data_Input)
* [RLC Failure](#_RLC_Failure)
* [LFC (AGC) Failure](#_LFC_(AGC)_Failure)
* [EMS (LFC and RLC/SCED) Failure](#_EMS_(LFC_and)
* [ICCP, ERCOT Website, or Outage Scheduler Outages](#_ICCP,_ERCOT_WebsiteMIS,)
* [STATE ESTIMATOR (SE)/Real-Time Contingency Analysis (RTCA)](#_STATE_ESTIMATOR_(SE)/Real-Time)

**3.4** [Reportable Balancing Contingency Event](#_3.4_Potential_DCS)

**3.5** [Monitor Capacity and Reserves and Respond to Shortages or Surplus](#_3.4_Monitor_Capacity)

* [Insufficient Generation](#_Insufficient_Generation)
* [Surplus Generation](#_Surplus_Generation)
* [Valley Generation](#_Valley_Generation)

**3.6** [Monitor and Control Time Error Correction](#_3.5_Monitor_and)

**3.7** [Responding to IROL Interface Issues](#_3.6_Responding_to)

**3.8** [Monitor Real-Time A/S Shortages](#_3.8_Monitor_Real-Time)

* [Real-Time Responsive Reserve Shortage](#_Real-Time_Responsive_Reserve)
* [Real-Time Regulation Shortage](#_Real-Time_Regulation_Shortage)
* [Real-Time Non-Spin Shortage](#_Real-Time_Non-Spin_Shortage)
* [Resource not dispatchable to SCED](#_Resources_not_dispatchable)

**3.9** [Unannounced Constant Frequency Control Testing](#_3.9_Unannounced_Constant)

**3.10** [Geomagnetic Disturbance Notification](#_4.0_Geomagnetic_Disturbance)

1. [**Security Constrained Economic Dispatch**](#_4.0_Security_Constrained)

**4.1** [Managing SCED](#_4.1_Managing_SCED)

* [Workflow Controller Messages](#_Workflow_Controller_Messages)
* [SCED Solution Time Parameter](#_SCED_Solution_Time)
* [Quick Start Generation Resource](#_Quick_Start_Generation)
* [Generation Resource Shut-down/Start-up Process](#_Generation_Resource_Shut-down)
* [Combine Cycle Generation Resources](#_Combine_Cycle_Generation)
* [Telemetry Issues that could affect SCED and/or LMPs](#_Telemetry_Issues_that)
* [Real-Time Data Issues known by the QSE](#_Real-Time_Data_Issues)

1. [**Emergency Operation**](#_5.0_Emergency_Operation)

**5.1** [Market Notifications](#_5.1_Market_Notifications)

* [OCN](#_OCN)
* [Advisory](#_ADVISORY)
* [Watch](#_WATCH)
* [Emergency Notice](#_EMERGENCY_NOTICE)
* [Generic Script](#_Generic_Scripts)
* [Specific Scripts](#_Specific_Scripts)

**5.2** [Notifications for Diminishing Reserves](#_5.2_Responding_toNotifications)

* [Watch](#_Advisory_1)

**5.3** [Implement EEA Levels](#_5.3_Implement_EEA)

* [Implement EEA Level 1](#_Implement_EEA_Level)
* [Implement EEA Level 2](#_Implement_EEA_Level_1)
* [Implement EEA Level 3](#_Implement_EEA_Level_3)

**5.4** [Restore EEA Levels](#_5.3_Restore_EEA)

* [Restore Firm Load](#_Restore_Firm_Load)
* [Move from EEA Level 3 to EEA Level 2](#_Move_From_EEA)
* [Move from EEA Level 2 to EEA Level 1](#_Move_From_EEA_2)
* [Move from EEA Level 1 to EEA 0](#_Move_From_EEA_3)
* [Cancel Watch](#_Cancel_Watch)

**5.5** [Restoration of Primary Control Center Functionality](#_5.5__Restoration)

1. [**Weather Events**](#_6.0_Weather_Events)

**6.1** [Hurricane/Tropical Storm](#_6.1_Hurricane/Tropical_Storm)

**6.2** [Extreme Cold Weather](#_2.5__Monthly)

**6.3** [Extreme Hot Weather](#_6.3_Extreme_Hot)

**6.4** [Significant Weather Events](#_6.34_Other_Significant)

1. [**Communication Testing**](#_7.0_Communication_Testing)

**7.1** [Monthly Testing of Satellite Phone Conference Bridge](#_2.7.1_Monthly_Testing)

* [Primary Control Center](#_Primary_Control_Center)

1. [**Perform Miscellaneous**](#_8.0_Perform_Miscellaneous)

**8.1** [Responding toQSE Issues](#_8.2_Responding_to)

* [Backup/Alternate Control Center Transfer](#_Market_Participant_Backup/Alternate)
* [QSE Issues](#_Market_ParticipantQSE_Issues)
* [Missing Data from ERCOT Website Postings](#_Missing_Data_from)
* [Requests to Decommit Self-committed Resources in Operating Period](#_Requests_to_Decommit)
* [Power System Stabilizers (PSS) & Automatic Voltage Regulators (AVR)](#_Power_System_Stabilizers)

# 1. Introduction

## 

## 1.1 Purpose

These procedures provide the System Operator assigned to the Real Time Desk with detailed Procedures required for performing the duties of that position. The Real Time Desk ensures that Frequency within the ERCOT System remains within the tolerances specified by the Protocols and NERC, for the current Operating Day. The Real-Time Desk Operator will also respond to weather and load forecast errors.

The Real-Time Desk monitors the Security Constrained Economic Dispatch (SCED) application. This process involves ensuring that the SCED solution has solved and is reasonable. The Operator will also ensure Generation is dispatched to match system load in the event that the SCED system application has failed or SCED results are unable to maintain adequate Regulation or System Frequency.

The Real-Time Operator will also make Market Notifications regarding significant weather events.

## 1.2 Scope

The instructions contained in these procedures are limited to those required for the Real-Time Desk. Instructions for other ERCOT Control Room Positions are contained in separate procedures, one for each position. These Procedures do not imply that the duties contained herein are the only duties to be performed by this position. The individual assigned to this position will be required to follow any other instructions and perform any other duties required or requested by appropriate ERCOT Supervision.

Although the steps within the procedures are numbered, the numbering is for indexing purposes and are not sequential in nature.  The system operator will determine the sequence of steps, exclude steps, or take any additional actions required to ensure system security based on the information and situational awareness available during both normal and emergency conditions.

# 2. General

## 2.1 System Operator Responsibility and Authority

**Procedure Purpose:** To ensure the System Operators know their roles, responsibility, and authority.

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| --- | --- | --- | --- | --- |
| **Protocol Reference** | **6.5.1.1** | **6.5.1.2(3)** | **6.5.2** | **6.5.3(1)** |
| **Guide Reference** | **4.5.2(1)** |  |  |  |
| **NERC Standard** |  |  |  |  |

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| --- | --- | --- |
| **Version: 2** | **Revision: 0** | **Effective Date: December 5, 2025** |

ERCOT ISO as a Transmission Operator (TOP), the single Balancing Authority (BA), and only Reliability Coordinator (RC) registered within the ERCOT Interconnection shares all information between these roles simultaneously and acts concurrently as a single entity, satisfying coordination between the TOP, BA, and RC.

The System Operator (SO) shall, in accordance with NERC Reliability Standards and ERCOT Protocols, have clear decision-making authority to act to address the reliability of its Reliability Coordinator Area by direct actions or by issuing Operating Instructions during both normal and emergency conditions. These actions shall be taken without delay and may include the shedding of firm load without obtaining approval from higher-level personnel.

The SO on duty is, in accordance with the ERCOT Protocols, Operating Guides, and NERC Reliability Standards, and acting as the Balancing Authority, Transmission Operator, and Reliability Coordinator shall request and receive information required to continually monitor the operating conditions and request that individual TO or QSE make changes, which will assure the security and reliability of the ERCOT System.

The SO issues Dispatch Instructions / Operating Instructions for the Real-Time Operation of Transmission Facilities to a TO, and to a QSE for the Real-Time Operation of a Resource.

The SO shall, on an ERCOT-wide basis, coordinate the ERCOT System Restoration (Black Start) Plan. The SO shall implement the Black Start Plan and shall direct the reconnection efforts of the islands, established by restoration activities. The SO shall coordinate the mutual assistance activities of the ERCOT participants during system restoration activities.

The SO shall consider all equipment operating limits when issuing Dispatch Instructions except as stated in Protocol Section 6.5.9, Emergency Operations, if a Dispatch Instruction conflicts with a restriction that may be placed on equipment from time to time by a TO, or a Generation Resource’s QSE to protect the integrity of equipment, ERCOT shall honor the restriction.

The SO performs security analyses on a Day Ahead and Real-Time basis and ensure that all Forced Outages are entered into the Outage Scheduler. The SO shall obtain or arrange to provide Emergency Energy over the DC Tie(s) on behalf of ERCOT.

The SO shall issue appropriate OCN’s, AAN’s, Advisories, Watches, and Emergency Notices, and coordinate the reduction or cancellation of clearances, re-dispatch of generation, and request, order, or take other action(s) that the SO determines necessary to maintain safe and reliable operating conditions on the ERCOT System in accordance with ERCOT Protocols, Operating Guides, and NERC Reliability Standards. The SO will implement and terminate ERCOT Time Corrections and will determine the need for and implement the operation of a Qualified Scheduling Entity (QSE) on Constant Frequency Control for loss of ERCOT’s Load Frequency Control System.

## 2.2 Communication

**Procedure Purpose:** To ensure proper communication is used to reduce the possibility of miscommunication that could lead to action or inaction harmful to the reliability of the grid.

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| **Protocol Reference** | **6.5.7.8** |  |  |  |
| **Guide Reference** | **3.1.3** |  |  |  |
| **NERC Standard** | **COM-002-4**  **R5, R7** |  |  |  |

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| --- | --- | --- |
| **Version: 2** | **Revision: 0** | **Effective Date: December 5, 2025** |

| **Step** | **Action** |
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| Three-Part Communication | |
| **Note** | * Operating Instructions and Dispatch Instructions are synonymous, and both require ‘three-part communication’. * Refer to the Communications Protocols document for requirements. |
| **1** | When issuing Operating Instructions, use three-part communication:   * Issue the Operating Instruction * Receive a correct repeat back * Give an acknowledgement |
| **2** | Many scripts have been placed throughout these procedures as a reminder of three-part communication. However, a script cannot be provided for every scenario. Effective three-part communication skills are mandatory. |
| Hotline Call Communication | |
| **Note** | It is recommended to use the mute function in Consortium when making any Hotline call. See Desktop Desk Guide Common to Multiple Desks Section 2.9. |
| **1** | When making Hotline calls, ensure one QSE repeats back the message.  **IF:**   * Time and circumstances allow;   **THEN:**   * Review the Consortium Hotline attendance report to verify all QSEs were in attendance * Contact the QSE using their OPX line or LD line to provide them with the message * Inquire why they were not on the Hotline call * Open a Service ticket if ERCOT’s Telecommunications department is needed to investigate. |
| Master QSE | |
| **1** | Issue the VDI to the Master QSE of a Generation Resource that has been split to function as two or more Split Generation Resources as deemed necessary by ERCOT to effectuate actions for the total Generation Resource for instances when electronic Dispatch Instructions are not feasible. |
| **Log** | Log all actions. |

## 2.3 Responding to Weather and Load Forecast Errors

**Procedure Purpose:** Make corrections to errors in the weather forecast data (in EMS) and/or load forecast as needed to contribute to Reliable System Performance.

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| **Protocol Reference** |  |  |  |  |
| **Guide Reference** |  |  |  |  |
| **NERC Standard** |  |  |  |  |

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| **Version: 2** | **Revision: 0** | **Effective Date: December 5, 2025** |

| **Step** | **Action** |
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| **Weather**  **Forecast** | **IF:**   * The weather forecast seems invalid;   **THEN:**   * Notify the ERCOT Meteorologist, * E-mail the information to:   + 1 ERCOT EMMS Production   + Load Forecasting Department   + 1 ERCOT Shift Supervisors |
| **Load**  **Forecast** | **IF:**   * Adjustments need to be made to the load forecast or the forecast has not updated in 75 minutes or more;   **THEN:**   * Notify a Load Forecast Analyst for adjustments or GMS Support for forecast not updating * E-mail the information to:   + 1 ERCOT EMMS Production   + Load Forecasting Department   + 1 ERCOT Shift Supervisors   **Reference Display:**  **Load Forecast Study Results and History.** |

## 2.4 Load Forecast Errors affecting the Resource Limit Calculator

**Procedure Purpose:** Make changes between Short Term Load Forecast (STLF) and Mid Term Load Forecast (MTLF) for proper calculation and deployment of Generation To Be Dispatched (GTBD). The selection of a correct load forecast is needed to contribute to Reliable System Performance.

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| **Protocol Reference** |  |  |  |  |
| **Guide Reference** |  |  |  |  |
| **NERC Standard** |  |  |  |  |

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| **Version: 2** | **Revision: 0** | **Effective Date: December 5, 2025** |

| **Step** | **Action** |
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| **Note** | The Load Forecast factor from STLF internal, STLF external and MTLF is calculated every 3rd and 8th minute. This procedure outlines steps to select the STLF internal or MTLF from default STLF external in Resource Limit Calculator (RLC) for GTBD calculation in the event there may be an error. |
| **Review** | Periodically review the Short-Term Load Forecast (STLF) to verify its accuracy. |
| **STLF Issues** | **IF:**   * It is determined that the STLF external forecast error is too high or there has been a telemetry spike causing STLF external to spike up/down,   **THEN:**   * Evaluate STLF internal option for forecast errors.   **IF:**   * If forecast errors are reasonable,   **THEN:**   * Check the box “Internal: InUse” on the Short-Term Forecast display,   **IF:**   * STLF internal forecast error is too high or there has been a telemetry spike causing STLF internal to spike up/down,   **THEN:**   * Check the box “Using MTLF in GTBD Calculation” in the parameter text box in RLC display.   **REVIEW REFERENCE DISPLAY:**   * EMP Applications>Resource Limit Calculator>Parm |
| **Notify** | Call the Load Forecast Analyst supporting the LF application and notify them of the external and internal STLF errors causing the use of MTLF, REQUEST immediate support to resolve the issue. |
| **Send**  **E-mail** | When selecting STLF internal for forecast errors and reliability issues on the external STLF forecast, or when selecting MTLF forecast notify by e-mail the following distribution lists of the issue:   * 1 ERCOT EMMS Production * Load Forecasting Department * Operations Analysis * 1 ERCOT System Operators |
| **STLF Resolved** | **WHEN:**   * STLF is normal and telemetry spike issues have been resolved,   **THEN:**   * Ensure the correct STLF external or STLF internal “InUse” flag is checked. * Uncheck the box “Using MTLF in GTBD Calculation” in the parameter text box in RLC display. This will make STLF external or STLF internal the default forecast for calculating GTBD again, depending on which STLF “InUse” flag is set,   **VERIFY:**   * The duration of bad-telemetry or spike has been over-written with good data otherwise this will affect the STLF external or internal in the future.   **REVIEW REFERENCE DISPLAY:**   * EMP Applications>Load Forecast>Related Display>Short-Term Forecast (STLF)>Short-Term LF Forecast - Chart |
| **Send**  **E-mail** | **WHEN:**   * Issues have been resolved   **NOTIFY:**   * By e-mail to the above identified e-mail addresses when switching from STLF internal to STLF external or when unchecking the box “Using MTLF in GTBD Calculation” in the parameter text box in RLC display. |
| **Log** | Log all actions. |

## 2.5 Alarm Processing and Acknowledgment

**Procedure Purpose:** To monitor and acknowledge system alarms.

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| **Protocol Reference** | **3.10.7.5.1(5)** | **6.5.7.1.6** |  |  |
| **Guide Reference** |  |  |  |  |
| **NERC Standard** |  |  |  |  |

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| **Version: 2** | **Revision: 0** | **Effective Date: December 5, 2025** |

| **Step** | **Action** |
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| **Note** | The Alarm Displays for ERCOT are primarily used to show changes in equipment status.  The alarms are categorized based on alarm criticality and prioritization on the Alarm Summary Display: |
| **Categories** | Tab 1: 345 KV Transmission Equipment Status  Tab 2: 138 KV Transmission Equipment Status  Tab 3: Generator Breaker, AVR, CAPS, REACTOR and RAS Status  Tab 4: RLC alerts  Tab 5: Transmission Line Overloads - Voltage Violations - Critical Alarms  Tab 6: QKNET alarms  Tab 7: ICCP status  Tab 8: All other alarms |
| **1** | Monitor the Alarm Summary Display pages 3, 6 and 7 as necessary to confirm system reliability status. |
| **2** | Take appropriate action as System conditions warrant. |
| **3** | Coordinate with the Transmission Operator to clear the alarms approximately every 24 hours or as needed. |

## 2.6 Site Failovers and Database Loads

**Procedure Purpose:** To provide notice to the QSEs when ERCOT is performing updates to the Energy and Market Management Systems.

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| **Protocol Reference** |  |  |  |  |
| **Guide Reference** |  |  |  |  |
| **NERC Standard** | **TOP-001-5**  **R9** |  |  |  |

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| **Version: 2** | **Revision: 0** | **Effective Date: December 5, 2025** |

| **Step** | **Action** |
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| **EMS**  **Changes** | **Approximately 5 - 30 minutes before a database load, local failover, or EMS migration, make the following Hotline call to QSEs:**  **Q#18 - Typical Hotline Script for EMS changes** |
| **MMS**  **Changes** | **Approximately 5 - 30 minutes before an MMS migration, make the following Hotline call to QSEs:**  **Q#19 - Typical Hotline Script for MMS changes** |
| **Site Failover**  **Posting** | The site failover message is already built in Grid Conditions Communications (GCC) Notices under “EMMS Site Failover”. |
| **Site**  **Failover** | **Approximately 5 - 30 minutes before site failover, make the following Hotline call to QSEs:**  **Q#20 - Typical Hotline Script for Site Failover** |
| **Site**  **Failover**  **Complete** | **Q#21 - Typical Hotline Script for Site Failover complete** |
| **If EBPs are needed** | **IF:**   * Site Failover is taking longer than expected and EMS is functional, and MMS is not, or * SCED is not solving with a valid solution and EBPs are needed;   **THEN:**   * Enter the EBP increment/decrement as needed to control frequency, * Notify Resource Desk Operator to post a message on ERCOT Website, * Notify Transmission Desk Operator to make Hotline call to TOs, * Make the following Hotline call to QSEs:   **Q#22 - Typical Hotline Script for Watch and Emergency Basepoints until Site Failover complete** |
| **Site**  **Failover**  **Complete If EBPs were needed** | **WHEN:**   * SCED is solving with a valid solution;   **THEN:**   * Remove the Emergency Base Point flag, * Initiate Hotline call to cancel the Watch, * Notify Resource Desk Operator to cancel the ERCOT Website posting, * Notify Transmission Desk Operator to cancel the Watch with TOs.   **Q#23 - Typical Hotline Script Cancel Watch and Emergency Basepoints, Site Failover complete** |

## 2.7 Switching Control Center

**Procedure Purpose:** To provide notice to the QSEs when ERCOT is working from the Alternate Control Center.

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| **Protocol Reference** |  |  |  |  |
| **Guide Reference** |  |  |  |  |
| **NERC Standard** |  |  |  |  |

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| **Version: 2** | **Revision: 0** | **Effective Date: December 5, 2025** |

| **Step** | **Action** |
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| **Hotline**  **Call** | **When transferring operations from primary site to alternate site (and vice versa). Make the following Hotline call to QSEs:**  **Q#24 - Typical Hotline Script for working from Alternate site**  **Q#25 - Typical Hotline Script for working from Primary site** |
| **ERCOT Website**  **Posting** | **Typical ERCOT Website Posting for working from Alternate site:**  ERCOT is working from alternate control center.  **Typical ERCOT Website Posting for working from Primary site:**  ERCOT is working from primary control center. |
| **Log** | Log all actions. |

## 2.8 Suspected Sabotage or Sabotage Events

**Procedure Purpose:** To be aware of cyber intrusions and communicate concerning activity and any unusual occurrences.

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| **Protocol Reference** |  |  |  |  |
| **Guide Reference** |  |  |  |  |
| **NERC Standard** |  |  |  |  |

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| **Version: 2** | **Revision: 0** | **Effective Date: December 5, 2025** |

| **Step** | **Action** |
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| **ERCOT**  **Event** | **Refer to Cyber Intrusion Guide and Cyber Security Incident Response Plan located in procedure binder.**  **IF:**   * Unusual system behavior is observed;   **THEN:**   * Notify Shift Supervisor |
| **Entity**  **Event** | **IF:**   * A TO or QSE reports an act of suspected sabotage or a sabotage event, including cyber;   **THEN:**   * Notify Shift Supervisor |

## 3.0 Monitor and Manage System Security

## 3.1 Frequency Control Operating Procedure

**Procedure Purpose:** To control frequency within defined limits.

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| --- | --- | --- | --- | --- |
| **Protocol Reference** | **6.5.7.6.2.2(7),**  **(16)** | **6.5.9.1(1)(b)** |  |  |
| **Guide Reference** | **2.2.4** | **2.2.8** | **2.3.1.2** | **4.8.1** |
| **NERC Standard** | **BAL-001-2**  **R2** | **BAL-002-3**  **R1, R1.1, R1.3, R3** | **IRO-001-4**  **R1** | **NUC-001-4**  **R4, R4.1, R4.2, R9, R9.2, R9.2.1, R9.4, R9.4.1, R9.4.2** |
| **TOP-001-5 R2, R11** |  |  |  |

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| **Version: 2** | **Revision: 0** | **Effective Date: December 5, 2025** |

| **Step** | **Action** |
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| Maintain System Frequency | |
| **Objective** | * Frequency should be maintained within +/- 0.03 Hz of schedule * Attempt to maintain CPS1 scores over 100 * Operate within the BAAL * Frequency Bias Setting set to 895 MW/0.1Hz |
| **CPS1 less than 100** | **IF:**   * Performance drops below 100 for over three consecutive hours;   **THEN:**   * LOG the event and the possible cause of the poor performance. |
| **BAAL** | Corrective action shall be taken whenever the clock-minute average ACE is outside its clock-minute average Balancing Authority ACE Limit (BAAL). This is to ensure that the Balancing Authority ACE does not remain outside the BAAL for more than 30 consecutive clock-minutes. |
| **Caution** | NEVER (unless directed by GMS Support or Support Engineer):   * Change other tuning parameters (including QSE Ramp Rates, dead bands, thresholds, gains, time constraints) |
| **Base Point**  **Deviation** | **REVIEW REFERENCE DISPLAY:**  EMP Applications>Generation Area Status>Related Displays>Expected Generation and Load Details  Not-Tracking Units tab  **IF:**   * A QSE has a Resource with a large Base Point deviation (not tracking unit flag), AND * Their generation is not moving in the proper direction to correct their Base Point Deviation;   **THEN:**   * Notify the QSE of the issue. |
| **Frequency Deviations** | **IF:**   * Frequency deviations are equal to or greater than +/- 0.10 Hz, OR * Sudden loss of generation greater than 450 MW;   **THEN:**   * Ensure frequency recovers to pre-disturbance within 15 minutes   + Manually run SCED or use offset as needed.   **LOG:**   * Log the following information:   + Possible reasons, if known (Base Point deviation, large schedule change, unit trip, DC-Tie trip, etc.) * If unit trip:   + Time of unit trip or DC-Tie,   + Name of unit or DC-Tie,   + Approximate net MW,   + Approximate lowest TrueTime frequency (use 3 decimals), AND   + Approximate ERCOT load. |
| **Hydro**  **Generation Operating in Synchronous Condenser Fast Response Mode** | **IF:**   * Hydro Resources operating in synchronous condenser fast-response mode who provide MW to the System in response to a frequency event without ONSC deployment trigger;   **THEN:**   * QSE will request an electronic Dispatch Instruction confirmation   + Choose Resource tab   + Choose requesting QSE for Participant Name   + Choose Resource name   + Enter MW amount deployed in Current Operating Level   + Choose Other For Resource for Instruction Type   + State Hydro deployed in response to frequency in Other Information   + Initiation Time, and   + Completion Time   When issuing a VDI or the confirmation, ensure the use of three-part communication:   * + Issue the Operating Instruction   + Receive a correct repeat back   + Give an acknowledgement * An electronic Dispatch Instruction confirmation will be needed for each Resource.   **IF:**   * QSE contacts ERCOT to determine if it is allowed to recall and reset;   **THEN:**   * ERCOT grants approval to come off-line once the frequency recovers to pre-disturbance level or 60 Hz, whichever is lower, OR * Request QSE to remain On-line   + May not exceed 30 minutes per release for each frequency deviation or event   + Shall not exceed two hours per a 12-hour period in aggregate unless an EEA is declared |
| Response to High Frequency | |
| **BAAL**  **Sheet** | Located on the realtime drive in the \_Operations Official Spreadsheets folder. Open BAAL ERCOT Interconnection and select Control T simultaneously. |
| **Monitor** | **IF:**   * Frequency goes above 60.05 Hz and exceeds 60.05 Hz > 5 minutes AND * Regulation Down service remains and is deploying;   **THEN:**   * Manually run SCED * Call QSEs with Resources that have positive Base Point deviations and issue an Operating Instruction to bring their Base Point deviations to zero.   **IF:**   * Frequency goes above 60.05 Hz, AND * Out of Down Regulation;   **THEN:**   * CHECK the GEN-LDL or Cap to decrease BP on the EMS to ensure there is adequate down room, * Manually run SCED.   **IF:**   * There is no generation left for SCED to lower;   **THEN:**   * Coordinate with the Shift Supervisor and Transmission Operator to select a Resource to RUC decommit, * Request RUC Operator to issue an Operating Instruction to RUC decommit Resource. |
| **10**  **Minutes** | **REFERENCE DISPLAY:** EMP Applications>Generation Unit Status>Related Displays>Expected Generation and Load Details>Top Ten button AND Market Operation>Real-Time Market>SCED Displays>DSI Displays>DSI Data Processes>DSI Generation Requirement Manual Adjustment  **IF:**   * 10 consecutive minutes of ACE above BAALHigh(60.09 Hz);   **THEN:**   * Call QSEs with Resources that have positive Base Point deviations and issue an Operating Instruction to bring their Base Point deviations to zero, * Verify SCEDs capacity to decrease Base Points GEN-LDL, * Enter manual offset, * Manually run SCED (do not run SCED more than once between SCED runs). |
| **Notify** | If it is recognized that Frequency is or expected to be outside +/- 0.1 Hz for a non-transient event and will not recover within 15 minutes, notify the Nuclear Power Plants QSEs. |
| **15**  **Minutes** | **IF:**   * 15 consecutive minutes of ACE above BAALHigh(60.09 Hz);   **THEN:**   * Call QSEs with Resources that have positive Base Point deviations and issue an Operating Instruction to bring their Base Point deviations to zero, * Verify SCEDs capacity to decrease Base Points GEN-LDL, * Re-adjust manual offset, * Manually run SCED, * Log the event and notify Operations Support Engineer to send an event notification to OperationsAnalysis@ercot.com.   **IF:**   * There is no generation left for SCED to lower;   **THEN:**   * Coordinate with the Shift Supervisor and Transmission Operator to select a Resource to RUC decommit, * Request RUC Operator to issue Operating Instruction to RUC decommit Resource. |
| **20**  **Minutes** | **IF:**   * 20 consecutive minutes of ACE above BAALHigh(60.09 Hz) and Frequency is above 60.10 Hz;   **THEN:**   * Call QSEs with Resources that have positive Base Point deviations and issue an Operating Instruction to bring their Base Point deviations to zero * Curtail appropriate amount of DC-Tie imports (issue an Emergency), * Coordinate with Shift Supervisor, Transmission Operator to select an additional Resource to RUC decommit, * Request RUC Operator to issue Operating Instruction to RUC decommit Resource. |
| **25**  **Minutes** | **IF:**   * 25 consecutive minutes of ACE above BAALHigh(60.09 Hz) and Frequency is above 60.10 Hz;   **THEN:**   * Call QSEs with Resources with positive Base Point deviations and issue an Operating Instruction to take their Resource off-line. * Coordinate with Shift Supervisor, Transmission Operator to select an additional Resource to RUC decommit, * Request RUC Operator to issue Operating Instruction to RUC decommit Resource. |
| **Stable** | **IF:**   * A manual offset was used;   **THEN:**   * Ensure that it has been removed. |
| **Log** | Log all actions. |
| Response to Low Frequency | |
| **BAAL**  **Sheet** | Located on the realtime drive in the \_Operations Official Spreadsheets folder. Open BAAL ERCOT Interconnection and select Control T simultaneously. |
| **Note** | Responsive Reserve Service   * Primary Frequency Response (RRS-PFR) * Fast Frequency Response (RRS-FFR)   + Units   + Controllable Load Resource (CLR)   + Non-Controllable Load Resource (NCLR) * Under Frequency Response (RRS-UFR) |
| **Note** | The minimum capacity required from Gen Resources providing RRS using Primary Frequency Response shall not be less than 1,150 MW. |
| **Note** | UFRs will deploy as follows:   * Fast Frequency Response (FFR) – 59.85 Hz * Hydro Resources in Synchronous Condenser mode (ONSC) providing RRS and ECRS - 59.80 Hz * Load Resource providing RRS, Load Resources providing ECRS with relay armed – 59.70 Hz |
| **Note** | Manually deploy Load Resources other than Controllable Load Resources providing ECRS or RRS before entering an Energy Emergency Alert (EEA), to maintain a minimum 500 MWs of Physical Responsive Capability (PRC) reserves on dispatchable resources. Deployments will be made per Resource Desk Operating Procedure section 3.8 order starts with Group 0 Resources, and then next higher order group. |
| **Monitor/ Release** | **IF:**   * Frequency drops below 59.95 Hz, AND * Regulation Up service remains and is deploying;   **THEN:**   * Manually run SCED (do not run SCED more than once between SCED runs) * Call QSEs with Resources with negative Base Point deviations and issue an Operating Instruction to bring their Base Point deviations to zero.   **IF:**   * Frequency drops below 59.95 Hz, AND * Out of Up Regulation;   **THEN:**   * Check the HDL-Gen on the EMS and enter appropriate manual offset (the offset will continue until removed). Do not commit a manual offset while SCED is running.   + In EMS, do not enter an offset > than HDL-Gen   + Repeat as needed to recover the frequency |
| **10**  **Minutes** | **REFERENCE DISPLAY:**  EMP Applications>Generation Unit Status>Related Displays>Expected Generation and Load Details>Top Ten button AND  Market Operation>Real-Time Market>SCED Displays>DSI Displays>DSI Data Processes>DSI Generation Requirement Manual Adjustment  **IF:**   * 10 consecutive minutes of ACE is less than BAALLow (59.91 Hz);   **THEN:**   * Call QSEs with Resources with negative Base Point deviations and issue an Operating Instruction to bring their Base Point deviations to zero, * Verify SCEDs capacity to increase Base Points, * Enter manual offset   + If room is available * Manually run SCED   **IF:**   * There is no generation left for SCED to increase;   **THEN:**   * Coordinate with the Shift Supervisor and Resource Desk Operator to deploy any available Non-Spin, * Manually release ONSC ECRS and ONSC RRS from Hydro Resources operating in Synchronous Condenser Fast Response Mode using the ERCOT Nodal Summary display on the EMS   + Check the box labeled “Activate Manual ONSC-ECRS” to activate,   + Check the box labeled “Activate Manual ONSC-RRS” to activate * Remember to remove the manual ONSC-ECRS and ONSC-RRS amount when frequency has recovered.   + Notify the Shift Supervisor of the need to possibly RUC commit additional Resources. |
| **Note** | ERCOT may declare an EEA Level 2 when the clock-minute average system frequency falls below 59.91 Hz for 15 consecutive minutes. |
| **Notify** | If it is recognized that the Frequency is or expected to be outside +/- 0.1 Hz for a non-transient event and will not recover within 15 minutes, notify the Nuclear Power Plants QSEs. |
| **15**  **Minutes** | **IF:**   * 15 consecutive minutes of ACE less than BAALLow (59.91 Hz );   **THEN:**   * ERCOT **MAY** immediately implement EEA Level 2 when clock-minute average system frequency falls below 59.91 Hz for 15 consecutive minutes * Curtail appropriate amount of DC-Tie export (issue an Emergency) * Coordinate with the Resource Desk Operator to manually deploy Load Resources providing ECRS or RRS. * Coordinate with the Resource Desk Operator to manually deploy RRS-FFR (NCLR), if available * Call QSEs with Resources that have negative Base Point deviations and issue an Operating Instruction to bring their Base Point deviations to zero * Verify SCEDs capacity to increase Base Points (HDL-GEN), * Re-adjust manual offset   + If room is available * Manually run SCED * Monitor ECRS and RRS Load Resource deployments * Log the event and notify Operations Support Engineer to send notification of the event to OperationsAnalysis@ercot.com. |
| **Note:** | Coordinate with Resource desk to deploy ERS Resources. |
| **Load**  **Resources** | **Q#8 - Typical Hotline Script for EEA2** |
| **20**  **Minutes** | **IF:**   * 20 consecutive minutes of ACE less than BAALLow (59.91 Hz);   **THEN:**   * ERCOT **MAY** immediately implement EEA Level 3 any time the clock-minute average system frequency falls below 59.91 Hz for 20 consecutive minutes **OR** when steady-state frequency falls below 59.8 Hz for any duration of time. * Call QSEs with Resources that have negative Base Point deviations and issue an Operating Instruction to bring their Base Point deviations to zero, * Verify SCEDs capacity to increase Base Points (HDL-GEN), * If room is available, re-adjust manual offset, * Manually run SCED, * Monitor ECRS and RRS Load Resource deployments. * Consider manually releasing RRS-FFR, if available using the ERCOT Nodal Summary display on the EMS   + Check the box labeled “Activate Manual FFR” to activate, * Remember to remove the manual FFR amount when frequency has recovered. * Make Hotline call to QSE’s   RRS-FFR released MW to Resources is allocated based on the RRS-FFR Awards from both units and CLR’s. |
| **25**  **Minutes** | **IF:**   * 25 consecutive minutes of ACE less than BAALLow (59.91 Hz );   **THEN:**   * Implement EEA Level 3   + **EEA3 Unable to Maintain 59.91 Hz or PRC <1500 MW** * Verify SCEDs capacity to increase Base Points, * Re-adjusted manual offset,   + Do Not enter an offset > than (HDL-GEN) * Manually run SCED as needed, * Monitor ECRS and RRS Load Resource deployments, * Monitor DC-tie curtailments, * Coordinate with the Transmission and Security Operator to shed an appropriate amount of firm load. * Make Hotline call to QSE’s  Q#11 EEA3 With Firm Load Shed |
| **Stable** | **IF:**   * Firm load was shed;   **THEN:**   * Coordinate with the Transmission and Security Operator to restore firm load. * Make Hotline call to QSE’s  Q#13 Restoring Firm Load **IF:**   * ONSC-ECRS and ONSC-RRS was manually released;   **THEN:**   * Uncheck the Activate Manual ONSC-ECRS, * Uncheck the Activate Manual ONSC-RRS   **IF:**   * RRS-FFR was manually released;   **THEN:**   * Uncheck the Activate Manual FFR Responsive Reserve, * Notify the Resource Desk Operator to recall FFR NCLR, if deployed.   **IF:**   * Load Resources providing ECRS or RRS were manually deployed;   **THEN:**   * Recall Load Resources providing ECRS or RRS.   **IF:**   * A manual offset was used;   **THEN:**   * Ensure that it has been removed.   **IF:**   * Non-Spin was deployed;   **THEN:**   * Recall the Non-Spin. |
| **Log** | Log all actions. |
| Monitor Frequency for the Loss of EMS or Site Failover | |
|  | The ability to view an adequate Frequency source may be limited during a site-failover, database load, or if AGC is temporarily unavailable. To view the System Frequency during these conditions you may monitor the following sources.   * **ERCOT Control Room VORNE digital wall frequency displays** * **PI Process Book → ERCOT → TrueTime Frequency (Taylor) and/or** * **PI ProcessBook → ERCOT → TrueTime Frequency (Bastrop)**   It may be necessary to reload the PI ProcessBook “ERCOT Main Summary” display to show the historical data. |
| Actions When Frequency Telemetry is Incorrect | |
|  | **REVIEW REFERENCE DISPLAY:**  **EMP Applications>Generation Control>Generation Area Status>Current Frequency Deviation from Nominal**  **IF:**   * Frequency is believed to be incorrect;   **THEN:**   * Check the current Frequency and switch to a different source,   + Select Skip on the incorrect Frequency device, * Contact the Service Desk. |

## 3.2 Hold

**Procedure Purpose:**

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| **Protocol Reference** |  |  |  |  |
| **Guide Reference** |  |  |  |  |
| **NERC Standard** |  |  |  |  |

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| **Version: 2** | **Revision: 0** | **Effective Date: None** |

| **Step** | **Action** |
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## 3.3 System Failures

**Procedure Purpose:** To ensure frequency is maintained in the event of a SCED, RLC, or LFC failure. Also, to ensure proper notification is made for these failures along with notification for ICCP, ERCOT Website and Outage Scheduler outages.

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| **Protocol Reference** | **6.3.3** | **6.5.9.1(2)** | **6.5.9.2** | **6.5.9.3.3** |
| **Guide Reference** | **2.2.4.3 (1)** |  |  |  |
| **NERC Standard** | **BAL-005-1 R2** | **TOP-001-5**  **R9** |  |  |

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| **Version: 2** | **Revision: 0** | **Effective Date: December 5, 2025** |

| **Step** | | **Action** | |
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| SCED Failure | | | |
| **Note** | | When RLC sees that the SCED solution has not updated within the last 425 seconds, emergency base points (EBP) will automatically activate. Any time EBPs are activated, SCED solutions are being blocked from being communicated to MPs.  The RLC Control Parameters (SCED Failure Threshold) should be set to **125** seconds. This is due to a code that adds 300 seconds to the 125 seconds from SCED Failure Threshold Parameter in the display, so total number of seconds RLC waits for SCED solution is 425 before enabling the emergency base points. | |
| **Frequency Guidelines** | | During System Failures, Emergency Base Point (EBP) or instructing a QSE to go on Constant Frequency Control (CFC)   * Frequency within +/- 0.03 Hz of schedule – Normal with available regulation * Frequency within +/- 0.05 Hz of schedule – When returning to Normal Operations with available regulation * Frequency maintained within +/- 0.09 Hz of schedule – Balancing Authority ACE Limit (BAAL) | |
| **Note** | | If for some reason a manual EBP is required for a Resource, communicate the Resource name, MW output requested, start time and duration of the dispatch instruction to the QSE representing the Resource. | |
| **1** | | **IF:**   * Any module of the SCED Workflow Controller fails;   **THEN:**   * Manually run the SCED process. | |
| **2** | | **IF:**   * SCED still fails after manually running, AND * EBPs have automatically activated;   **THEN:**   * Contact the Service Desk, * Initiate the Watch Hotline call to QSEs, * Notify Resource Desk Operator to post a message on the ERCOT Website, * Notify Transmission Desk Operator to make Hotline call to TOs.   **Q#27 - Typical Hotline Script for Watch for SCED Failure** | |
| **3** | | EMP Applications>Generation Area Status>Related Displays>ERCOT Nodal Summary  **MONITOR:**   * Regulation Service (Up/Dn) margins to ensure frequency can be adequately maintained.   **IF:**   * It is determined that remaining Regulation Service (Up/Dn) is no longer sufficient to maintain system frequency;   **THEN:**   * Enter the EBP increment/decrement as needed to control frequency to recall deployed Regulation.   + Once the MW amount has been entered and committed, the EBP amount will return to zero | |
| **4** | | **WHEN:**   * SCED is solving with a valid solution;   **THEN:**   * Remove the Emergency Base Point flag, * Initiate Hotline call to cancel the Watch, * Notify Resource Desk Operator to cancel the ERCOT Website posting, * Notify Transmission Desk Operator to cancel the Watch with TOs.   **Q#28 - Typical Hotline Script for Cancel Watch for SCED is Solving** | |
| **Log** | | Log all actions. | |
| SCED Data Input Failure | | | |
| **1** | | **IF:**   * SCED receives data input failures and gives erroneous results;   **THEN:**   * Manually activate EBP, * Contact the Service Desk, * Initiate the Watch Hotline call * Notify Resource Desk Operator to post the message on the ERCOT Website, * Notify the Transmission Desk Operator to make Hotline call to TOs.   **Q#29 - Typical Hotline Script for Watch for SCED Data Input Failure** | |
| **2** | | **WHEN:**   * SCED is solving with a valid solution;   **THEN:**   * Remove the Emergency Base Point flag, * Initiate Hotline call to cancel the Watch, * Notify Resource Desk Operator to cancel the ERCOT Website posting, * Notify Transmission Desk Operator to cancel the Watch with TOs.   **Q#28 - Typical Hotline Script for Cancel Watch for SCED is Solving** | |
| RLC Failure | | | |
| **1** | | The Resource Limit Calculator (RLC) can fail independently of AGC. **If RLC fails, SCED will not function (invalid results), even though it shows available.** A RLC failure will be displayed to the Operator in the upper right corner of the RLC display as follows:   * Process Status: **RLC Up** (Normal Operation) * Process Status: **RLC Down** (will be displayed in RED when failed) * RLC (PI Alarm) will be flashing RED. | |
| **Note** | | Regulation is functioning. **EBP will have to be manually checked.** | |
| **2** | | **IF:**   * RLC has failed;   **THEN:**   * Verify the status of AGC   + IF AGC is also failed, proceed to the **EMS (LFC and RLC) Failure** procedure * Contact the Service Desk, * Initiate a Watch Hotline call to QSEs * Notify Resource Desk Operator to post the message on the ERCOT Website * Notify Transmission Desk Operator to make Hotline call to TOs.   **Q#30 - Typical Hotline Script for Watch for RLC Failure** | |
| **3** | | EMP Applications>Generation Area Status>Related Displays>ERCOT Nodal Summary  **MONITOR:**   * Regulation Service (Up/Dn) margins to ensure frequency can be adequately maintained.   **IF:**   * It is determined that remaining Regulation Service (Up/Dn) is no longer sufficient to maintain system frequency;   **THEN:**   * Enter the EBP increment/decrement as needed to control frequency to recall deployed Regulation.   + Once the MW amount has been entered and committed, the EBP amount will return to zero | |
| **4** | | **WHEN:**   * RLC is restored;   **THEN:**   * Remove the Emergency Base Point flag, * Initiate Hotline call to cancel the Watch, * Notify Resource Desk Operator to cancel the ERCOT Website posting, * Notify Transmission Desk Operator to cancel the Watch with TOs.   **Q#31 - Typical Hotline Script to Cancel Watch for RLC is Restored** | |
| **Log** | | Log all actions. | |
| LFC (AGC) Failure | | | |
| **Note** | | AGC will suspend when frequency falls to 59.5 Hz or below. AGC will require a manual reset from the operator and will not reset automatically once frequency recovers above 59.5.  **Reference: Desktop Guide Real-Time Desk 2.12** | |
| **Note** | | When LFC (AGC) is paused or suspended and RLC and SCED are functioning, UDSP are **not** going out to Resources and Regulation, and EBP are **not** functioning. | |
| **1** | | **IF:**   * LFC is not functioning as indicated by:   + AGC is **SUSPENDED** or **PAUSED** **OR**   + “Last AGC Cycle” time on Generation Area Status display is not updating;   **THEN:**   * Verify the status of RLC   + If RLC is also failed, proceed to the next procedure “EMMS Failure”   + If RLC is still functioning properly,   + Contact Service Desk,   + Continue with this procedure   **REFERENCE Displays:**  **EMP Applications>Generation Area Status>Ancillary Service Monitoring Summary>Capacity Reserve QSE Detail>QSE CFC tab**  **DETERMINE:**   * Which QSE has ample GEN-LSL from the QSE CFC tab when load is expected to be decreasing, to place on constant frequency control, * Which QSE has ample Spinning Reserve Capacity from the QSE CFC tab when load is expected to be increasing to place on constant frequency control. * Ample Available Ramp Rate (Up/Dn) from the QSE CFC tab   **THEN:**   * Issue an Operating Instruction to selected QSE to go on constant frequency, * Check box “On CFC” of selected QSE from QSE CFC tab. This action will toggle ERCOT AGC to “Monitor” mode. * As time permits, issue electronic Dispatch Instruction confirmation,   + Choose “OPERATE AT CONSTANT FREQUENCY” as the Instruction Type from QSE Level   When issuing a VDI or the confirmation, ensure the use of three-part communication:   * + Issue the Operating Instruction   + Receive a correct repeat back   + Give an acknowledgement   **Q#112 - Typical Script to Instruct a QSE on Constant Frequency for LFC Failure**  **All Operating Instructions shall be in a clear, concise, and definitive manner. Ensure the recipient of the Operating Instruction repeats the information back correctly. Acknowledge the response as correct or repeat the original statement to resolve any misunderstandings.** | |
| **2** | | **THEN:**   * Initiate the Emergency Notice Hotline call to QSEs * Notify Resource Desk Operator to post the message on the ERCOT Website, * Notify Transmission Desk Operator to make Hotline call to TOs.   **Q#32 - Typical Hotline Script for Emergency Notice a QSE is on Constant Frequency for LFC/EMS Failure** | |
| **3** | | **MONITOR:**   * Frequency, HSL-GEN, GEN-LSL and Available Ramp Rate (Up/Dn) availability for QSE on constant frequency, AND/OR * The QSE on constant frequency notifies ERCOT of capacity issue;   **THEN:**   * Determine which QSE has the most available Capacity, * Issue a Verbal Dispatch Instruction (VDI) to QSE to assist the QSE on Constant Frequency,   + Choose “Other For Resource” as the Instruction Type | |
| **4** | | **IF:**   * There is no longer any available HSL-GEN, GEN-LSL and Available Ramp Rate (Up/Dn) to issue unit specific instructions;   **THEN:**   * Request RUC Operator to RUC commit/decommit a Resource | |
| **5** | | **WHEN:**   * ERCOT AGC Control is functioning properly;   **THEN:**   * Issue an Operating Instruction to QSE to come off Constant Frequency, * Uncheck box “On CFC” of selected QSE from QSE CFC tab. This action will toggle ERCOT AGC to “ON” mode. , * Cancel VDI(s) for additional generation, if issued, * Initiate Hotline to cancel the Emergency Notice to QSEs, * Notify Resource Desk Operator to cancel the ERCOT Website posting, * Notify Transmission Operator to cancel the Emergency Notice with TOs.   **Q#113 - Typical Script to Instruct QSE to End Constant Frequency for LFC Functioning**  **Q#33 - Typical Hotline Script to Cancel Emergency Notice for QSE on Constant Frequency for LFC/EMS Functioning** | |
| **Log** | | Log all actions. | |
| EMMS (LFC and RLC/SCED) Failure | | | |
| **Note** | | AGC will suspend when frequency falls to 59.5 Hz or below. AGC will require a manual reset from the operator and will not reset automatically once frequency recovers above 59.5.  **Reference: Desktop Guide Real-Time Desk 2.12** | |
| **Note** | | Regulation, UDSP, BP, EBP, and manual offset **not** functioning. | |
| **1** | | **LFC (AGC):**   * AGC is **SUSPENDED** or **PAUSED,** * “Last ACE crossing zero” time on the Generation Area Status page is not updating, * AGC operation adversely impacts the reliability of the Interconnection, * SCED and EMS are not functioning,   + Problem cannot be resolved quickly   **RLC:**   * Process Status: RLC Down will be displayed in RED in the upper right-hand corner of the RLC display * RLC (PI Alarm) will be flashing RED.   **REFERENCE Display: EMP Applications>Generation Area Status>Ancillary Service Monitoring Summary>Capacity Reserve QSE Detail>QSE CFC tab**  **DETERMINE:**   * Which QSE has ample GEN-LSL from the QSE CFC tab when load is expected to be decreasing to place on constant frequency Control; * Which QSE has ample Spinning Reserve Capacity from the QSE CFC tab when load is expected to be increasing. * Ample Available Ramp Rate (Up/Dn) from the QSE CFC tab   **THEN:**   * Issue an Operating Instruction to selected QSE to go on constant frequency * Check box “On CFC” of selected QSE from QSE CFC tab. This action will toggle ERCOT AGC to “Monitor” mode. * As time permits, issue an electronic Dispatch confirmation   + Choose “OPERATE AT CONSTANT FREQUENCY” as the Instruction Type from QSE Level   When issuing a VDI or the confirmation, ensure the use of three-part communication:   * + Issue the Operating Instruction   + Receive a correct repeat back   + Give an acknowledgement   **Q#114 - Typical Script to Instruct a QSE on Constant Frequency for LFC/SCED Failure**  **All Operating Instructions shall be in a clear, concise, and definitive manner. Ensure the recipient of the Operating Instruction repeats the information back correctly. Acknowledge the response as correct or repeat the original statement to resolve any misunderstandings.** | |
| **2** | | **THEN:**   * Initiate the Emergency Notice Hotline call to QSEs, * Notify Resource Desk Operator to post the message on the ERCOT Website, * Notify Transmission Desk Operator to make Hotline call to TOs   **Q#34 - Typical Hotline Script for Emergency Notice a QSE is on Constant Frequency for LFC/EMS and SCED failure** | |
| **3** | | **MONITOR:**   * Frequency, HSL-GEN, GEN-LSL, Available Ramp Rate (Up/Dn) availability, and Spinning Reserve Capacity for QSE on constant frequency, AND/OR * The QSE on Constant Frequency notifies ERCOT that they are having control issues;   **THEN:**   * Determine which QSE has the most available Capacity, * Issue a Verbal Dispatch Instruction (VDI) to QSE to assist the QSE on Constant Frequency,   + Choose “Other For Resource” as the Instruction Type | |
| **4** | | **IF:**   * There is no longer any available HSL-GEN, GEN-LSL and Available Ramp Rate (Up/Dn) to issue unit specific instructions;   **THEN:**   * Request RUC Operator to RUC commit/decommit a Resource | |
| **5** | | **WHEN:**   * AGC and RLC is restored;   **THEN:**   * Instruct QSE to come off constant frequency by ending VDI, * Uncheck box “On CFC” of selected QSE from QSE CFC tab. This action will toggle ERCOT AGC to “ON” mode., * Cancel VDI(s) for additional generation, if issued, * Initiate Hotline to cancel Emergency Notice to QSEs, * Notify Resource Desk Operator to cancel the ERCOT Website posting, * Notify Transmission Desk Operator to cancel Emergency Notice with TOs.   **Q#115 - Typical Script to Instruct a QSE to end Constant Frequency for LFC/SCED Functioning**  **Q#35 - Typical Hotline Script to Cancel Emergency Notice with LFC/EMS Functioning, SCED valid** | |
| **Log** | | Log all actions. | |
| ICCP, ERCOT Website, and Outage Scheduler Outages | | | |
| **1** | | For any planned or unplanned outage of ERCOT’s ICCP, ERCOT Website (affecting COP submissions) or the Outage Scheduler lasting longer than 30 minutes, notifications to QSEs are required.  **IF:**   * ERCOT’s ICCP, ERCOT Website (affecting COP submissions) or the Outage Scheduler has a planned or unplanned outage that is expected to last 30 minutes or more;   **THEN:**   * Make a Hotline call to the QSEs:   **Q#108 - Typical Hotline Script for ERCOT’s ICCP, ERCOT Website, or the Outage Scheduler Planned or Unplanned Outage** | |
| **2** | | **Once operational:**  Make a Hotline call to notify QSEs:  **Q#109 - Typical Hotline Script for ERCOT’s ICCP, ERCOT Website or Outage Scheduler back to Normal** | |
| **LOG** | | Log all actions | |
| STATE ESTIMATOR (SE)/Real-Time Contingency Analysis (RTCA) | | |
| **1** | **IF:**   * Notified that the SE/RTCA has not solved;   **THEN:**   * Coordinate with the Transmission Desk Operator and the Operations Support Engineer for up to 15 minutes from last successful solution;   **IF:**   * The SE/RTCA remains unsolved;   **THEN:**   * Make notifications, * Continue to monitor the system as possible, * Coordinate with the Operations Support Engineer to ensure a Real-time Assessment (RTA) is performed within 30 minutes of the last SE/RTCA solution and within 30 minutes of each RTA conducted thereafter. | |
| **2** | **Within 30 minutes of the SE/RTCA tool outage:**  Confirm notification was completed by the Transmission Desk Operator to the two master QSEs that represent the Nuclear Plants that ERCOTs [State Estimator/RTCA] is not functioning and is expected to be functional within approximately [# minutes]. | |
| **3** | **If the State Estimator/RTCA has NOT solved within the last 30 minutes:**  Make a Hotline call to issue an Advisory to the QSEs:  **Q#48 - Typical Hotline Script for Advisory for State Estimator/RTCA Not Solved** | |
| **4** | **Once the State Estimator/RTCA is operational:**  Make a Hotline call to cancel the Advisory to the QSEs:  **Q#49 - Typical Hotline Script to Cancel Advisory for State Estimator/RTCA** | |
| **5** | Confirm notification was completed by the Transmission Desk Operator to the two master QSEs that represent the Nuclear Plants that the [State Estimator/RTCA] is now functional. | |
| **Log** | Log all actions. | |

## 

## 3.4 Reportable Balancing Contingency Event

**Procedure Purpose:** To meet the Contingency Event Recovery Period after a Balancing Contingency Event.

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| --- | --- | --- | --- | --- |
| **Protocol Reference** | **6.5.7.6.2.2 (2)** |  |  |  |
| **Guide Reference** | **2.2.4 (2)** |  |  |  |
| **NERC Standard** | **BAL-002-3 R1, R1.1, R1.3, R3** | **TOP-001-5**  **R11** |  |  |

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| **Version: 2** | **Revision: 0** | **Effective Date: December 5, 2025** |

| **Step** | **Action** |
| --- | --- |
| **Monitor** | Monitor PRC. |
| **Reportable Balancing Contingency Event (RBCE)** | Any RBCE occurring within a one-minute interval of an initial sudden decline in ACE that results in a loss of MW output less than or equal to its Most Severe Single Contingency (MSSC), **800 MW**. |
| **Contingency Event Recovery Period** | A period that begins at the time that the Resource output begins to decline within the first one-minute interval of a Reportable Balancing Contingency Event and extends for **fifteen minutes** thereafter. |
| **Contingency Reserve Restoration Period** | A period not exceeding **90 minutes** following the end of the Contingency Event Recovery Period. |
| **Note** | The steps below will need to happen quickly, let phones ring, or if available, another desk will take the calls. |
| **1** | **IF:**   * ERCOT experiences a low frequency disturbance;   **THEN:**   * Immediately check to ensure that SCED sees the units correct telemetry (HSL of zero or Resource Status of “off”), Contact the QSE(s) if telemetry needs to be changed, * If SCED does not automatically execute within 60 seconds of the event, manually execute a SCED run, * Enter a manual off-set as necessary. |
| **2** | **IF:**   * Frequency dropped below 59.7 Hz;   **THEN:**   * Load Resources have deployed on UFR. |
| **Note** | If Load Resources are deployed, it may become necessary to periodically execute SCED manually and/or use the manual offset to control frequency. |
| **BAAL or near the 10-minute recovery time** | **IF:**   * Unable to control frequency within defined limits;   **THEN:**   * Follow steps in *Respond to Low* *Frequency* Procedure in section 3.1 above. |
| **3** | **WHEN:**   * System frequency has been restored;   **THEN:**   * Make Hotline call to QSEs to recall Load Resources.   **Q#36 - Typical Hotline Script to Recall Load Resources After a Frequency Event** |
| **PRC**  **Below**  **2500** | **IF:**   * PRC < 2500 MW;   **THEN:**   * Implement EEA (see section 5.3). |
| **Log** | Log all actions. |

## 3.5 Monitor Capacity and Reserves and Respond to Shortages or Surplus

**Procedure Purpose:** Monitoring sufficient operating reserves and capacity surplus. Deploying/Recalling Non-Spin, manually Releasing/Recalling ECRS, and manually Releasing/Recalling RRS.

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| **Protocol Reference** | **6.5.7.6.2.2** | **6.5.7.6.2.3** |  |  |
| **Guide Reference** | **4.8** |  |  |  |
| **NERC Standard** | **IRO-001-4**  **R1** | **TOP-001-5**  **R2** |  |  |

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| **Version: 2** | **Revision: 0** | **Effective Date: December 5, 2025** |

| **Step** | **Action** |
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| **Note** | The Day-Ahead process, the Adjustment Period process, and the Real-Time process must be utilized before ordering Resources to specific output levels with Emergency Base Point instructions. |
| Insufficient Generation | |
| **RMR** | Prior to declaring EEA, start RMR Units available in the time frame of the emergency. RMR Units should be loaded to full capability. |
| **Note** | The Projected Ramp Available in 30min represents the calculation HSL – (Regulation-Up Award+ECRS Award + Non-Spin Award) – (GTBD + GTBD offset) – (IRR Curtailment) – (30-minute Net Load Ramp) |
| **Deploying**  **Non-Spin** | **Triggers to deploy Non-Spin**  **WHEN:**   * PRC < 3200 MW and not expected to recover within 30 minutes without deploying reserves,   **THEN:**   * Coordinate with the Resource Desk Operator to deploy Non-Spin per Resource Desk Operating Procedure section 3.3.   **MONITOR:**   * The Non-Spin Deployment Trigger Display   + Projected Ramp Available in 30min   **WHEN:**   * Projected Ramp Available in 30min < -300   **THEN:**   * Coordinate with the Resource Desk Operator to deploy available Non-Spin per Resource Desk Operating Procedure section 3.3.   **When:**   * Projected Ramp Available in 30min < -600, OR * PRC is < 3200 MW;   **THEN:**   * Coordinate with the Resource Desk Operator to deploy available Non-Spin, as needed, if not already deployed. |
| **Note** | If a condition indicates that additional capacity may need to be brought On-Line to manage reliability, operators will evaluate the system condition and deploy Non-Spin as needed if no other better options are available to resolve the system condition. Under emergency, the emergency process will govern the deployment of Non-Spin. |
| **Recalling**  **Non-Spin** | **WHEN:**   * Projected Ramp Available in 30min > 1000, AND * PRC is > 3200 MW;   **THEN:**   * Coordinate with the Resource Desk Operator to recall half of the deployed Non-Spin.   **WHEN:**   * Projected Ramp Available in 30min > 1000, AND * PRC is > 3400 MW;   **THEN:**   * Coordinate with the Resource Desk Operator to recall all deployed Non-Spin. |
|  |  |
|  |  |
| **Monitor 10-Min Ramp Capability** | **MONITOR:**   * The [Insert New Display Name]   **Trigger 1:**  **WHEN:**   * Current PRC - 3200 MW plus Remaining QSGR Capacity minus Projected Net Load Ramp < 300 MW and is not expected to recover,   **THEN:**   * Manually run SCED (do not run SCED more than once between SCED runs) * Call QSEs with Resources with negative Base Point deviations and issue an Operating Instruction to bring their Base Point deviations to zero. * If needed,check the HDL-Gen on the EMS and enter appropriate manual offset (the offset will continue until removed). Do not commit a manual offset while SCED is running.   + If using EMS, do not enter an offset > than HDL-Gen   **Trigger 2:**  **WHEN:**   * 10min Generation Ramp Capacity minus Projected Ramp in 10min < 0 and is not expected to recover   **THEN:**   * Manually run SCED (do not run SCED more than once between SCED runs) * Call QSEs with Resources with negative Base Point deviations and issue an Operating Instruction to bring their Base Point deviations to zero. * If needed,check the HDL-Gen on the EMS and enter appropriate manual offset (the offset will continue until removed). Do not commit a manual offset while SCED is running.   + If using EMS, do not enter an offset > than HDL-Gen |
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| **Note** | The existing measure of scarcity is Physical Responsive Capability (PRC) and spinning reserves. If PRC and spinning reserves drop below 3,000 MW, this process may be used. Scarcity conditions may occur during the Peak Load Season when ERCOT System Load is above 60,000 MW. For all other months, they could occur when ERCOT System Load is above 50,000 MW. |
| **Note** | Manually release Load Resources other than Controllable Load Resources providing ECRS and RRS before entering an Energy Emergency Alert (EEA), to maintain a minimum 500 MWs of Physical Responsive Capability (PRC) reserves on Generation Resources. |
| **Load Resource Deployment** | **IF:**   * HSL – Load Ramp < = 200 MW;   **THEN:**   * Manually release Load Resources other than Controllable Load Resources providing ECRS and RRS before entering an Energy Emergency Alert (EEA), to maintain a minimum 500 MWs of Physical Responsive Capability (PRC) reserves on Generation Resources.   **IF:**   * PRC < = 2000 MW * The amount of RRS-PFR awarded by SCED is below 500 MW, AND * Maintain a minimum 500 MWs of Physical Responsive Capability (PRC) reserves on dispatchable Resources.   **THEN:**   * Notify Shift Supervisor and Resource Desk Operator to manually deploy group(s) of Load Resources other than Controllable Load Resources providing RRS as needed.   **WHEN:**   * Notified by the Resource Desk Operator that group(s) of Load Resources have been deployed by XML,   **THEN:**   * Notify QSEs via a Hotline call of the deployment of Load Resources.   + Deploying Load Resources, **the Resource Desk Operator must complete the XML deployment of the Load Resources before the Hotline call is made.**   **Q#131 - Typical Hotline Script for Deployment of Load Resources to Maintain a Minimum 500 MW of Generation RRS** |
| **Load Resources Recall** | * PRC > = 3300 MW, AND * Frequency is 59.970 HZ or above;   **THEN:**   * Manually recall Load Resources |
| Surplus Generation | |
| **SCED**  **Surplus** | **MONITOR:**   * The Generation Area Status Page   **IF:**   * (GEN-LDL) < 200 MW;   **THEN:**   * Consult with RUC Operator to ensure HRUC is seeing the situation and is decommitting Resources, * If needed, request the RUC Operator to issue VDI to RUC decommit a Resource to help alleviate the surplus |
| **Log** | Log all actions. |
| Valley Generation | |
| **Monitor** | Market Operations>Reliability Unit Commitment>HRUC Displays>UC Displays>Output Display Menu>Generator Outputs>Generation Schedule OR  Market Operations>Reliability Unit Commitment>HRUC Displays>UC Displays>Input Display Menu>Generation Self-Commitment Status |
| **1** | **WHEN:**   * Two or more Generation plants (DUKE, NEDIN, FRONTERA, REDGATE and/or SILASRAY) are scheduled to go Off-Line at the same time or 345kV transmission outage(s) are impacting the RGV import;   **THEN:**   * Discuss with Transmission and Security Operator AND Shift Supervisor * Ensure AEP TO is notified with the shut down time and with at least an hours’ notice, they need to pre-posture reactive devices. |
| **Log** | Log all actions. |

## 3.6 Monitor and Control Time Error Correction

**Procedure Purpose:** This procedure will establish the standard for implementing Time Error correction. ERCOT ISO is the Reliability Coordinator and Balancing Authority that implements and terminates ERCOT Time Corrections in accordance with ERCOT Protocols and Operating Guides. ERCOT Reliability Coordinator is the Interconnection Time Monitor within the ERCOT Interconnection.

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| **Protocol Reference** |  |  |  |  |
| **Guide Reference** | **2.2.1(3)(c)(vi)** | **2.2.9.1** | **2.2.9.2** |  |
| **NERC Standard** |  |  |  |  |

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| **Version: 2** | **Revision: 0** | **Effective Date: December 5, 2025** |

| **Step** | **Action** |
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| **Requirements** | * When Time Error is equal to or greater than +/- 30 seconds, ERCOT may initiate a time correction. * Time Error Corrections normally start and end on the hour or half-hour. * The Time Error Correction will be ended when the error is less than +/- 27.0 seconds. * The time correction may be postponed if it is determined that load patterns in the immediate future will result in the desired time correction * Time Error Correction Notifications shall be labeled alphabetically on a monthly basis (A-Z). In the succeeding month, the first Time Error Correction will revert back to “A”. |
| **Log** | Log the start time, stop time, Time Error ID letter, Time Error, and Frequency Offset for each start and termination. |
| **Initiating**  **Time Error**  **Correction** | **IF:**   * Time Error is greater than +/- 30 seconds;   **THEN:**   * Start Time Error Correction Schedule, * Enter the appropriate Time Error ID letter, * Enter the frequency offset using – 0.02 for fast time correction (59.98 Hz) or +0.02 for slow time correction (60.02 Hz), * Enter a Start Time later than the current time AND enter a Stop Time later than the scheduled start time, * Before starting the Time Error, notify the QSEs via a Hotline call of the start time and frequency offset, * Log in the Operator’s Log start time, stop time, Time Error ID letter, Time Error, and frequency offset for each start and termination.   **Q#37 - Typical Hotline Script for Time Error Correction** |
| **Note** | If a Time Error Correction is prematurely terminated or a scheduled Time Error Correction is cancelled for reliability considerations, log all actions taken and wait at least one hour between sending the termination and re-initiation notices. |
| **Terminating**  **Time Error**  **Correction** | Monitor the Time Error until it reaches an acceptable value (+/- 27.0 seconds)   * + Time Error Correction may be terminated after five hours, or after any hour it has reached an acceptable value of +/- 27.0 seconds.   + Notify QSEs using the Hotline before ending the time correction.   **Q#38 - Typical Hotline Script to End Time Error Correction** |

## 3.7 Responding to IROL Interface Issues

**Procedure Purpose:**  Deployment/Termination of ECRS and Non-Spin Reserve Service for Congestion Management as requested by the Transmission Operator.

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| **Protocol Reference** |  |  |  |  |
| **Guide Reference** | **4.2.4(1)** | **4.5.2(2)(b)** |  |  |
| **NERC Standard** | **EOP-011-4 R1, R1.1, R1.2, R1.2.4** | **IRO-001-4**  **R1** | **TOP-001-5**  **R1** |  |

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| **Version: 2** | **Revision: 0** | **Effective Date: December 5, 2025** |

| **Step** | **Action** |
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| **North to Houston Interface**  **Issue**  **Watch &**  **Deploy ECRS and**  **Non-Spin** | **WHEN:**   * Notified by the Transmission Operator that ECRS and Non-Spin needs to be deployed in the Houston area for the North-Houston Interface;   **THEN:**   * Using the Hotline, issue a Watch, * Resource Desk Operator will deploy ECRS and Non-Spin   **Q#39 - Typical Hotline Script for Watch/Deploy Non-Spin for N-H Interface** |
| **Note** | Non-Spin from Generation Resources and Load Resources can be deployed by “Weather Zone” and deploy “Target MW”. Non-Spin can also be deployed by   * Selecting the transmission constraint(from active SCED constraints) * Entering the amount of Non-Spin to deploy * AS manager will select Resources and deploy Non-Spin based on the order of shift factor and meet the deployed Non-Spin.   To the extent possible start by deploying Load Resources that have ECRS Award only then deploy Load Resources that are have both UFR and ECRS Awards. ECRS from Load Resources can be deployed by   * Selecting “ECRS only” and AS manager will select Load Resources with ECRS awards only * Entering “Target MW” and AS manager will select the Resources which are awarded with UFR and ECRS in the following order   + Load Resources with ECRS Award only and relay disarmed   + Load Resources with ECRS Award only and relay armed   + Load Resources with ECRS and UFR awards and relay armed. * Selecting “Deploy All” and AS manager will deploy all ECRS and UFR. |
| **Issue**  **Emergency**  **Notice &**  **Deploy Load**  **Resources** | **WHEN:**   * Notified by the Transmission Operator to deploy Load Resources in the Houston area for the North-Houston Interface;   **THEN:**   * Using the Hotline, issue the Emergency Notice   **Q#40 - Typical Hotline Script for Emergency/ Deploy Load Resources for N-H Interface** |
| **Recall**  **Load**  **Resources** | **WHEN:**   * Notified by the Transmission Operator to recall Load Resources in the Houston area for the North-Houston Interface;   **THEN:**   * Using the Hotline, cancel the Emergency Notice**,**   **Q#41 - Typical Hotline Script to Cancel Emergency Notice for N-H Interface / Recall Load Resources** |
| **Recall**  **ECRS and Non-Spin** | **WHEN:**   * Notified by the Transmission Operator to recall ECRS and Non-Spin in the Houston area for the North-Houston Interface;   **THEN:**   * Using the Hotline, cancel the Watch,   **Q#42 - Typical Hotline Script to Cancel Watch for N-H Interface / Recall Non-Spin** |
| **Log** | Log all actions. |
| **South Texas Export Interface** | |
| **Step** | **Action** |
| **South Texas Export Interface,**  **Issue**  **Watch &**  **Deploy ECRS and**  **Non-Spin** | **WHEN:**   * Notified by the Transmission Operator or the Shift Supervisor   **THEN:**   * Using the Hotline, issue a Watch, * Coordinate with the Resource Desk Operator to deploy Non-Spin   **Q#134** **Transmission Watch for South Texas Export Interface / [Deploy Non-Spin]** |
| **Remove A/S** | **IF:**   * Notified by the Shift Supervisor or Transmission Operator;   **THEN:**   * Coordinate with Resource Desk Operator and Shift Supervisor to remove A/S impacting the South Texas Export using AS Capability Manual Override. |
| **DC Tie Imports** | **IF:**   * Notified by the Shift Supervisor or Transmission Desk Operator;   **THEN:**   * Coordinate with the DC-Tie Operator to curtail South Texas Imports. |
| **Deploy**  **Load**  **Resources** | **WHEN:**   * Notified by the Shift Supervisor or Transmission Desk Operator   **THEN:**   * Coordinate with the Resource Desk Operator to Deploy Load Resource’s * Issue a Transmission Emergency by making a Hotline call and posting on the ERCOT Website * Verify that 500MW of PRC on dispatchable Resources is maintained.   **Q#135 Transmission Emergency Notice for South Texas Export Interface / [Deploy Load Resources]** |
| **Note** | Continue to Monitor PRC and System Conditions. There is a Potential risk of EEA. |
| **South Texas Export, Load shed** | **WHEN:**   * Notified by the Shift Supervisor or Transmission Operator   **THEN:**   * Using the Hotline for Emergency Notice for South Texas Export Interface, Firm Load Shed,   **Q#136 Transmission Emergency Notice for South Texas Export Interface, Firm Load Shed** |
| **Restore Firm Load** | **WHEN:**   * Notified by the Shift Supervisor or Transmission Operator   **THEN:**   * Using the Hotline for Emergency Notice for South Texas Export Interface, Firm Load has been restored,   **Q#145 Emergency Notice for [insert IROL Interface] / [EEA], Firm Load Restoration** |
| **Recall**  **Load**  **Resources** | **WHEN:**   * Notified by the Transmission Operator to recall Load Resources for the South Texas Interface;   **THEN:**   * Using the Hotline, cancel the Emergency Notice**,**   **Q#137 Cancel Transmission Emergency Notice for South Texas Export Interface / [Recall Load Resources]** |
| **Restore A/S** | **IF:**   * Notified by the Shift Supervisor or Transmission Operator;   **THEN:**   * Coordinate with the Resource Desk and Shift Supervisor to restore A/S impacting the South Texas Export using the AS Capability Manual Override. |
| **Recall**  **Non-Spin** | **WHEN:**   * Notified by the Transmission Operator to recall Non-Spin for the South Texas Interface;   **THEN:**   * Using the Hotline, cancel the Watch,   **Q#138 Cancel Transmission Watch for South Texas Export Interface / [Recall Non-Spin]** |
| **Log** | Log all actions. |
| **South Texas Import Interface** | |
| **Step** | **Action** |
| **South Texas Import Interface,**  **Issue**  **Advisory** | **WHEN:**   * Notified by the Transmission Operator or the Shift Supervisor   **THEN:**   * Using the Hotline, issue a Advisory,   **Q#139 Transmission Advisory for South Texas Import Interface** |
| **South Texas Import Interface,**  **Issue**  **Watch** | **IF:**   * Notified by the Shift Supervisor or Transmission Operator;   **THEN:**   * Coordinate with the Resource Desk and Shift Supervisor to remove any A/S impacting the South Texas Import Interface using the AS Capability Manual Override, * Deploy any available Non-Spin in South Texas area,   **Q#140 Transmission Watch for South Texas Import Interface / [Deploy Non-Spin]** |
| **South Texas Import Interface, Issue Emergency at 95%** | **IF:**   * Notified by the Shift Supervisor or Transmission Operator:   **THEN:**   * Coordinate with the Resource Desk Operator to deploy Load Resources in South Texas area as needed and Make GCC posting.   **THEN:**   * Using the Hotline, issue a Transmission Emergency   **Q#141 Transmission Emergency Notice for South Texas Import Interface / [Deploy Load Resources]]** |
| **South Texas Import, Load shed** | **IF:**   * Notified by the Shift Supervisor or Transmission Desk Operator:   **THEN:**   * Make Hotline call to the QSE’s for firm load shed   **Q#142 Transmission Emergency Notice for South Texas Import Interface, Firm Load Shed** |
| **Restore Firm Load** | **WHEN:**   * Notified by the Shift Supervisor or Transmission Desk Operator   **THEN:**   * Using the Hotline for Emergency Notice for South Texas Import Interface, Firm Load has been restored,   **Q#145 Emergency Notice for [insert IROL Interface] / [EEA], Firm Load Restoration** |
| **Recall**  **Load**  **Resources** | **WHEN:**   * Notified by the Transmission Desk Operator to recall Load Resources for the South Texas Interface;   **THEN:**   * Using the Hotline, cancel the Emergency Notice**,**   **Q#143 Cancel Transmission Emergency Notice for South Texas Import Interface / [Recall Load Resources]** |
| **Restore A/S and Recall Non-Spin** | **IF:**   * Notified by the Shift Supervisor or Transmission Desk Operator;   **THEN:**   * Coordinate with Resource Desk Operator and Shift Supervisor to restore A/S impacting the South Texas Export using the AS Capability Manual Override.   **WHEN:**   * Notified by the Transmission Desk Operator to recall Non-Spin for the South Texas Interface;   **THEN:**   * Using the Hotline, cancel the Watch,   **Q#144 Cancel Transmission Watch for South Texas Import Interface / [Recall Non-Spin]** |
| **Log** | Log all actions. |

## 3.8 Monitor Real-Time Shortages

**Procedure Purpose:**  To monitor for shortages, in addition to the automatic notifications sent to QSEs via the MIS Certified Area.

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| **Protocol Reference** | **6.4.9.1(1)** |  |  |  |
| **Guide Reference** |  |  |  |  |
| **NERC Standard** |  |  |  |  |

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| --- | --- | --- |
| **Version: 2** | **Revision: 0** | **Effective Date: December 5, 2025** |

| **Step** | **Action** |
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| **Control Block Up/Down** | **REVIEW REFERENCE DISPLAY:**  EMP Applications>Generation Area Status>Related Displays>Expected Generation and Load Details>Unit tab  Control Block Current UP/DN are telemetry points that a QSE can use in emergency situations to communicate to SCED that a resources ability to adjust its output has been unexpectedly impaired. Cannot filter, will have to scroll down.  **IF:**   * A QSE has a Control Block set for greater than 5 minutes; the system will set the corresponding (UP/DN) Too Long flag to indicate this;   **THEN:**   * Notify the QSE to inquire why the unit is blocked from SCED and to make corrections as appropriate |
| **Log** | Log all actions. |

## 3.9 Unannounced Constant Frequency Control Testing

**Procedure Purpose:** This procedure provides direction and guidelines for conducting unannounced testing to verify a QSE’s capability to operate in CFC mode. Only QSEs with at least 350 MW of spinning reserve room will be tested. QSEs shall be tested at least every three years.

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| **Protocol Reference** | **6.6.9** |  |  |  |
| **Guide Reference** | **2.2.4.3** |  |  |  |
| **NERC Standard** |  |  |  |  |

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| **Version: 2** | **Revision: 0** | **Effective Date: December 5, 2025** |

| **Step** | **Action** |
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| **Note** | **REFERENCE Displays:**  **EMP Applications>Generation Area Status>Ancillary Service Monitoring Summary>Capacity Reserve QSE Detail>QSE CFC tab**   * Testing will be coordinated with multiple ERCOT departments to minimize market impacts:   + Operations Analysis as they will help select the QSE to test   + GMS Support as they will help personnel in the Control Room to take the EMS off AGC   + Market Operations as needed   + Settlements as needed   + Other departments as needed * The Frequency Bias Setting can be found on the Generation Area Status display * The Constant Frequency Control Testing Document can be found in Section 2.11 of the Desktop Guide Real Time Desk. |
| **Start**  **CFC**  **Test** | **Q#116 Typical Script to Start Constant Frequency Control Test** |
| **End**  **CFC**  **Test** | **Q#117 Typical Script to End Constant Frequency Control Test** |
| **Hotline Call to All QSEs for Unannounced CFC Test** | **Q#118 Typical Hotline Script for a QSE on Constant Frequency Control for Unannounced Constant Frequency Control Test**  **Q#119 Typical Hotline Script to Cancel QSE on Constant Frequency Control for Unannounced Constant Frequency Control Test** |
| **ERCOT Website**  **Posting** | **Typical ERCOT Website Posting for Unannounced Constant Frequency Control Test**  At [xx:xx], ERCOT  is conducting an unannounced Constant Frequency Control test and has placed a QSE on Constant Frequency. |
| **Issue**  **Electronic**  **Dispatch**  **Instruction** | Issue electronic Dispatch Instruction confirmation:   * QSE Level   + Instruction Type: Operate at Constant Frequency   When issuing a VDI or when confirming the receipt of the confirmation, ensure the use of three-part communication:   * Issue the Operating Instruction * Receive a correct repeat back * Give an acknowledgement |
| **Log** | Log all actions. |

## 3.10 Geomagnetic Disturbance Notification

**Procedure Purpose:** To disseminate forecasted and current space weather information when a K-7 and greater or G3 and greater GMD storm has entered a Warning and / or Alert.

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| **Protocol Reference** |  |  |  |  |
| **Guide Reference** | **4.7** |  |  |  |
| **NERC Standard** | **EOP-010-1**  **R2** |  |  |  |

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| **Version: 2** | **Revision: 0** | **Effective Date: December 5, 2025** |

| **Step** | **Action** |
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| **NOTE** | * The Geomagnetic Disturbance Reference Document can be found in Section 2.13 of the Common to Multiple Desks Desktop Reference Guide. * An Advisory is issued when a GMD Alert of K-7 or higher is issued, however the Advisory will not be canceled until the GMD Warning is canceled. |
| **1** | **WHEN:**   * Notified by the Shift Supervisor that an Alert from the Space Weather Prediction Center has been issued for a K-7 and greater or G3 and greater;   **THEN:**   * Issue an Advisory by making a Hotline call to QSEs   **Q#43 - Typical Hotline Script for Advisory for GMD Alert** |
| **K Level**  **Increases / Decreases** | **IF:**   * Notified by the Shift Supervisor that an Alert from the Space Weather Prediction Center has been increased or decreased for a K-7 and greater or G3 and greater;   **THEN:**   * Making a Hotline call to QSEs   **Q#44 - Typical Hotline Script for GMD K-Index Level Increase / Decrease** |
| **Issues** | **IF:**   * Any QSE report any issues that could be related to the GMD event;   **THEN:**   * Coordinate an action plan, if necessary, * Report issues to Shift Supervisor |
| **Cancel** | **WHEN:**   * Notified by the Shift Supervisor that the GMD Warning has expired;   **THEN:**   * Cancel the Advisory by making a Hotline call to QSEs   **Q#45 - Typical Hotline Script to Cancel Advisory for GMD** |
| **Log** | Log all actions. |

## 4.0 Security Constrained Economic Dispatch

## 4.1 Managing SCED

**Procedure Purpose:** To ensure that a SCED solution has solved, and that the solution is reasonable.

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| **Protocol Reference** | **3.8.3** | **3.9.1(10)** | **3.10.7.5.1(5)** | **8.1.1.2(16)** |
| **Guide Reference** | **7.3.3** |  |  |  |
| **NERC Standard** | **TOP-003-5**  **R5, R5.2** | **TOP-010-1(i)**  **R1, R1.3, R2, R2.3** |  |  |

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| **Version: 2** | **Revision: 0** | **Effective Date: December 5, 2025** |

| **Step** | **Action** |
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| Workflow Controller Messages | |
| **Note** | The SCED Workflow Controller provides three color coded messages as indicated in the following:   * GREEN – Informational (i) and Success (s) * BLUE – Warning (w) * RED – Error (e) and Fatal Error (f) |
| **1** | **REVIEW REFERENCE DISPLAY:**  Market Operation>Real-Time Market>SCED Displays>Workflow>SCED Workflow Messages  Monitor SCED Workflow Controller logs for “Warning” and “Error” messages. |
| **2** | **IF:**   * The log indicates an “Error” or “Fatal Error”;   **THEN:**   * Contact the Service Desk and notify the Control Room staff, * Attempt to resolve the issue, refer to Desktop Guide Real Time Desk Section 2.5, * Refer to Section 3.3 “Managing SCED Failures” in this procedure. |
| SCED Solution Time Parameter | |
| **Note** | Typically, SCED should produce a solution within 20 seconds. It is highly desirable to have at least 3 executions of SCED in any 15-minute period. |
| **Automatic**  **Trigger** | Verify that SCED is automatically triggered:   * Periodically every 5 minutes * About 60 seconds after frequency declined below 59.91 Hz * About 60 seconds after Fast Responding Synchronous Condenser Resources providing ONSC-ECRS or ONSC-RRS and SCED dispatchable resources providing RRS-FFR have been deployed automatically or manually * Frequency is < 59.95 Hz for > two consecutive minutes   **IF:**   * SCED is not automatically executed (but has not failed);   **THEN:**   * Manually execute SCED, * Immediately notify the Shift Supervisor and Operations Support Engineer, * Continue to manually execute SCED approximately every 5 minutes until the condition is corrected. |
| **Manual**  **Trigger** | SCED may be manually triggered when the following is identified:   * Frequency deviates +/-0.05 Hz for more than 5 minutes * Generation Resource trips and Frequency is > 59.91 Hz * When approximately 50% of Regulation has been deployed * Approximately 60 seconds after Fast Responding Resources providing ONSC-ECRS or ONSC-RRS and SCE dispatchable resources providing RRS-FFR have been deployed. * After Load Resources providing ECRS or RRS have been deployed. * As needed to recover frequency |
| **Log** | Log all actions. |
| Quick Start Generation Resource | |
| **QSGR** | A Generation Resource that in its cold-temperature state can come On-Line within ten minutes of receiving ERCOT notice and has passed an ERCOT Quick Start Generation Resource test that establishes an amount of capacity that can be deployed within a ten-minute period.   * These Resources can be viewed at ERCOT SharePoint > System Operations – Control Center > Quick Links > Approved Quick Start (QSGR) Resources |
| **COP** | The QSE for a QSGR that is available for deployment by SCED and awarding of ECRS and Non-Spin, if qualified and capable, shall set the COP Resource Status OFFQS, the COP LSL and HSL values to the expected sustainable LSL and HSL for the QSGR for the hour. |
| **Telemeter** | The QSGR that is available to be released by SCED and awarded ECRS and Non-Spin, if qualified and capable, shall telemeter a Resource Status of OFFQS and an LSL of zero prior to receiving a release instruction from SCED. This status is necessary for SCED to recognize that the Resource can be Dispatched and/or awarded ECRS and Non-Spin. The status of the breaker shall be open, and the output of the Resource shall be zero in order for the State Estimator to correctly assess the state of the system. After being released for energy by SCED, the Resource shall telemeter an LSL equal to or less than the Resource’s actual output until the Resource has Ramped to its physical LSL. A QSGR with a telemeter breaker status of open and a telemeter Resource Status of OFFQS shall not provide Regulation or Responsive Reserve Service. |
| **QSGR**  **Decommitment** | Please refer to Desktop Guide Common to Multiple Desks for the QSGR decommitment process. |
| **QSGR**  **Qualification**  **Test** | **WHEN:**   * Conducting a QSGR qualification test for Operations Analysis;   **THEN:**   * Issue a VDI confirmation * Choose “OTHER\_RES” as the Instruction Type from Resource level * Enter MW amount that the QSE is requesting to qualify its QSGR to provide. * Enter “QSGR Qualification Test” in “Other Information” * .   When issuing a VDI or the confirmation ensure the use of three-part communication:   * Issue the Operating Instruction * Receive a correct repeat back * Give an acknowledgement |
| Generation Resource Shut-down/Start-up Process | |
| **Shutdown/**  **Startup** | Shut-down:   * A QSE representing a Generation Resource that is not actively providing A/S (except for Off-line Non-Spin) may only use a Resource Status of SHUTDOWN through telemetry that the Resource is operating in a shutdown sequence requiring manual control and is not available for Dispatch.   Start-up:   * A QSE representing a Generation Resource that is not actively providing A/S may only use a Resource Status of STARTUP through telemetry that the Resource is operating in a start-up sequence requiring manual control and is not available for Dispatch. |
| **Note** | QSEs can manage basepoint deviations by adjusting their telemetered Ramp Rate. |
| **Note** | When a Resource is carrying “Off-Line” Non-spin and that Non-Spin is being recalled, the QSE would continue to show the Non-Spin responsibility on the Resource that is shutting down. |
| Combine Cycle Generation Resources | |
| **Note** | **WHEN:**   * Combine Cycle Generation Resources are changing configuration creating basepoint deviations   **THEN:**   * QSEs will need to manage their telemetered HSL for proper basepoints. |
| Real-Time Data Issues known by the QSE | |
| **Note** | Manually replaced telemetry data is data entered by a QSE on their systems that is transmitted to ERCOT via ICCP in place of the normal points experiencing an issue. If Reliability issues can’t be resolved in a timely manner, ERCOT reserves the right to order the Resource off-line until the problem is resolved. |
| **Notification of Telemetry**  **Data**  **Issue** | **IF:**   * Notified of a telemetry data issue (telemetry data will not be available or is unreliable for operational purposes;   **THEN:**   * The QSE should correct of the telemetry data as soon as practicable, or, * Manually replace the data, if available. |
| **Cannot**  **Resolve** | **IF:**   * The QSE cannot resolve the telemetry data issue within two Business Day, fix the issue in a timely manner;   **THEN:**   * The QSE shall provide an estimated time of resolution. |

## 5.0 Emergency Operation

## 5.1 Market Notifications

**Procedure Purpose:** Guidelines for issuing Emergency Conditions and the four possible levels: Operating Condition Notices (OCN), Advisories, Watches, and Emergency Notices.

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| **Protocol Reference** | **3.1.4.6** | **6.5.9.3** | **6.5.9.3.1** | **6.5.9.3.2** |
| **6.5.9.3.3** | **6.5.9.3.4** |  |  |
| **Guide Reference** | **4.2.1** | **4.2.2** | **4.2.3** | **4.2.4** |
| **NERC Standard** |  |  |  |  |

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| **Version: 2** | **Revision: 0** | **Effective Date: December 5, 2025** |

| **Step** | **Action** |
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| **Note** | * Consider the severity of the potential Emergency Condition prior to the issuance of a notification. The severity of the Emergency Condition could be limited to an isolated local area, or the condition might cover large areas affecting several entities, or the condition might be an ERCOT-wide condition potentially affecting the entire ERCOT System. * The sequence of notifications issued may vary due to changing system conditions or other operational issues and it may be necessary to skip certain notifications due to the severity of the situation. |
| Operating Condition Notice (OCN) | |
| **Note** | OCN’s are used to inform Market Participants of a possible future need for more Resources due to conditions that could affect ERCOT System reliability. OCNs are for informational purposes only and may solicit additional information to determine whether the issuance of an Advisory, Watch, or Emergency Notice is warranted. OCNs serve as a reminder to QSEs and TSPs that some attention to the changing conditions may be warranted. |
| **1** | As instructed by the Shift Supervisor or when appropriate, issue an OCN. The OCN can be issued for any of the following reasons:   * Insufficient Resources to meet forecasted conditions * There is a projected reserve capacity shortage in DRUC that could affect reliability and may require more Resources * When extreme cold weather is developing and forecasted to impact the ERCOT Region * When extreme hot weather is forecasted to impact the ERCOT Region * When a Hurricane or Tropical Storm is developing and forecasted to impact the ERCOT Region * Unplanned transmission Outages that may impact reliability   When anticipated adverse weather conditions are forecasted, ERCOT may confer with TOs and QSEs regarding the potential for adverse reliability impacts and contingency preparedness |
| Advance Action Notice (AAN) | |
| **Note** | Outage Adjustment Evaluation (OAE)  Outage Schedule Adjustment (OSA)  An AAN is a type of OCN, ERCOT may issue an AAN in anticipation of a possible Emergency Condition. An AAN will identify actions ERCOT expects to take to address the condition unless the need for ERCOT action is alleviated by QSE and/or TSP actions or by other system developments. |
| **1** | As instructed by the Shift Supervisor and in coordination with Outage Coordination and Operations Support, issue an AAN. The AAN can be issued for any of the following reasons:   * Insufficient Resources to meet forecasted conditions * There is a projected reserve capacity shortage in DRUC that could affect reliability and may require more Resources * When extreme cold weather is developing and forecasted to impact the ERCOT Region * When extreme hot weather is forecasted to impact the ERCOT Region * When a Hurricane or Tropical Storm is developing and forecasted to impact the ERCOT Region * Unplanned transmission Outages that may impact reliability   When anticipated adverse weather conditions are forecasted, ERCOT may confer with TOs and QSEs regarding the potential for adverse reliability impacts and contingency preparedness |
| Advisory | |
| **1** | As instructed by the Shift Supervisor or when appropriate, issue an Advisory. The Advisory can be issued for any of the following reasons:   * When the probability of an approaching Hurricane or Tropical Storm impacting the ERCOT Region increases, and concerns exist to escalate awareness * When the probability of extreme cold weather impacting the ERCOT Region increases, and concerns exist to escalate awareness * When the probability of extreme hot weather impacting the ERCOT Region increases, and concerns exist to escalate awareness * When conditions are developing or have changed and more Ancillary Services will be needed to maintain current or near-term reliability * ERCOT exercises its authority to increase Ancillary Service requirements above the quantities originally specified in the Day-Ahead Market in accordance with ERCOT Procedures * When extreme weather or ERCOT System conditions require more lead-time than the normal Day-Ahead Market allows * Transmission system conditions are such that operations within security criteria are not likely or possible due to Forced Outages or other conditions unless a CMP exists * Loss of communications or a control condition is anticipated or significantly limited * ERCOT may require information from QSEs representing Resources regarding the Resources’ fuel capabilities. Requests for this type of information shall be for a time period of no more than seven days from the date of the request |
| Watch | |
| **1** | As instructed by the Shift Supervisor or when appropriate, issue a Watch. The Watch can be issued for any of the following reasons:   * A reserve capacity shortage is projected with no market solution available that could affect reliability * When an approaching Hurricane or Tropical Storm is imminent and anticipated to have an adverse impact on the ERCOT Region * When impacts from extreme cold weather is imminent and anticipated to have an adverse impact on the ERCOT Region * When impacts from extreme hot weather is imminent and anticipated to have an adverse impact on the ERCOT Region * Conditions have developed that require additional Ancillary Services in the Operating Period * Insufficient Ancillary Services or Energy Offers in the DAM or in SASM * Market-based congestion management techniques embedded in SCED will not be adequate to resolve transmission security violations * Forced Outages or other abnormal operating conditions have occurred, or may occur that would require ERCOT to operate with active violations of security criteria as defined in the Operating Guides unless a CMP exists * ERCOT varies from timing requirements or omits one or more Day-Ahead or Adjustment Period and Real-Time procedures. * ERCOT varies from timing requirements or omits one or more scheduling procedures in the Real-Time process. * The SCED process fails to reach a solution, whether or not ERCOT is using one of the measures in Failure of the SCED Process. * The need to immediately procure Ancillary Services from existing offers * ERCOT may instruct TOs to reconfigure transmission elements as necessary to improve the reliability of the system * ERCOT may require information from QSEs representing Resources regarding the Resources’ fuel capabilities. Requests for this type of information shall be for a time period of no more than seven days from the date of the request |
| Emergency Notice | |
| **1** | As instructed by the Shift Supervisor or when appropriate, issue an Emergency Notice. The Emergency Notice can be issued for any of the following reasons:   * Loss of Primary Control Center functionality * Load Resource deployment for North-Houston voltage stability * ERCOT cannot maintain minimum reliability standards (for reasons including fuel shortages) during the Operating Period utilizing every Resource practically obtainable from the market * Immediate action cannot be taken to avoid or relieve a Transmission Element operating above its Emergency Rating * ERCOT forecasts an inability to meet applicable Reliability Standards and has exercised all other reasonable options * A transmission condition has been identified that requires emergency energy from any of the DC-Ties or curtailment of schedules * The Transmission Grid is such that a violation of security criteria as defined in the Operating Guides presents the threat of uncontrolled separation or cascading outages, large-scale service disruption to Load (other than Load being served from a radial transmission line) and/or overload of Transmission Elements, and no timely solution is obtainable through SCED or CMPs * When extreme cold weather is beginning to have an adverse impact on the ERCOT System * When extreme hot weather is beginning to have an adverse impact on the ERCOT System * When a Hurricane or Tropical Storm is beginning to have an adverse impact on the System |
| Operating Condition Script | |
| **Hotline** | Communications must specify the severity of the situation, the area affected, the areas potentially affected, and the anticipated duration of the Emergency Condition.  Notify QSEs:  **Q#46 - Typical Hotline Script for Operating Condition [OCN/Advisory/Watch/Emergency]** |
| **Post** | * All notices must be posted on the ERCOT Website. * For “free form” messages, the “Notice Priority” will be specified as follows:   + Operational Information/OCN type messages – low priority   + Advisory/Watch type messages – medium priority   + Emergency type messages – high priority |
| **Hotline Cancellation** | **Q#47 - Typical Hotline Script to Cancel Operating Condition [OCN/Advisory/Watch/Emergency]** |
| **Log** | Log all actions. |
| Specific Scripts for Transmission Operator [State Estimator/RTCA/VSAT/TSAT] | |
| **Note** | At times, the Transmission operator takes the lead on the issuance of Hotline calls for specific procedures they have. The following scripts are to help guide you when specific procedures don’t exist for the Real-Time operator. |
| **State**  **Estimator/**  **RTCA**  **Not Solved**  **In 30 MIN** | **Q#48 - Typical Hotline Script for Advisory for State Estimator / RTCA not solved in 30 Min**  **Q#49 - Typical Hotline Script to Cancel Advisory for State Estimator / RTCA now solving** |
| **VSAT/TSAT**  **Not Slved**  **In 30 MIN** | **Q#50 - Typical Hotline Script for Advisory for VSAT and/or TSAT not solved in 30 Min**  **Q#51 - Typical Hotline Script Cancel Advisory for VSAT and/or TSAT now solving** |
| **Qualifying**  **Facility**  **Instructed to**  **Operate below LSL** | **Q#52 - Typical Hotline Script for Emergency Notice for instructing Qualifying Facility to operate offline/below LSL**  **Q#53 - Typical Hotline Script to Cancel Emergency Notice for Qualifying Facility to operate offline/below LSL** |
| **New**  **GTC** | **Q#54 - Typical Hotline Script for OCN for a new Generic Transmission Constraint** |
| **Transmission**  **Watch** | **Q#55 - Typical Hotline Script for Transmission Watch for Post-Contingency Overload**  **Q#56 - Typical Hotline Script Cancel Transmission Watch for Post-Contingency Overload**  **Q#104 - Typical Hotline Script for Transmission Watch for the Rio Grande Valley Import**  **Q#105 - Typical Hotline Script Cancel Transmission Watch for the Rio Grande Valley Import** |
| **Transmission Emergency** | **Q#71 Transmission Emergency for the Rio Grande Valley or Laredo Area** |

## 5.2 Notifications for Diminishing Reserves

**Procedure Purpose:** Monitor the Physical Responsive Capability (PRC) for the purpose of providing advance notice of diminishing Responsive Reserve. Steps within this procedure are intended to keep ERCOT from progressing into EEA.

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| **Protocol Reference** | **3.17.3(2)** | **6.5.7.6.2.3** | **6.5.9.4.1** |  |
| **Guide Reference** | **4.5.3.1(d)** | **4.5.3.1(e)** |  |  |
| **NERC Standard** | **EOP-011-4**  **R2, R2.1, R2.2, R2.2.3, R2.2.3.1** |  |  |  |

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| --- | --- | --- |
| **Version: 2** | **Revision: 0** | **Effective Date: December 5, 2025** |

| **Step** | **Action** |
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| **Media**  **Appeal** | An appeal through the public news media for voluntary energy conservation may be issued any time at ERCOT’s discretion. Make Hotline call and coordinate with Resource Desk Operator for posting message.  **Q#10 Typical Hotline Script for Media Appeal** |
| **TCEQ** | The Texas Commission on Environmental Quality (TCEQ) may exercise enforcement discretion for exceedances of emission limits and operational limits for Resources that exceed air permit limits in order to maximize generation when entering a capacity shortage. A Market Notice will be sent to Market Participants. Make Hotline call.  **Q#5 Typical Hotline Script for TCEQ Notice of Enforcement Discretion** |
| **PRC < 3200 MW** | **IF:**   * PRC < 3200 MW and is not expected to recover;   **THEN:**   * Coordinate with the Resource desk operator to deploy partial or all the available Non-Spin capacity.   All Non-Spin must be deployed before requesting Large Load Curtailment participants to curtail consumption and deploying ERS. |
| **Request Large Load Curtailment Program** | **WHEN:**   * Notified by the ERCOT Shift Supervisor that the Large Load Voluntary Curtailment Program Participants were requested to curtail consumption;   **THEN:**   * Make Hotline call to notify QSE’s that the Large Load Voluntary Curtailment Program Participants were requested to curtail consumption. * Coordinate with Resource Desk Operator for posting message.   **Q#110 Typical Hotline Script for ERCOT Large Load Voluntary Curtailment Program** |
| **Large Load Curtailment Program Ended** | **WHEN:**   * Notified by the ERCOT Shift Supervisor that the Large Load Voluntary Curtailment Program Participants requested to curtail consumption ended;   **THEN:**   * Make Hotline call to notify QSE’s that the Large Load Voluntary Curtailment Program Participants requested to curtail consumption ended. * Coordinate with Resource Desk Operator for posting message.   **Q#111 Typical Hotline Script for ERCOT Large Load Voluntary Curtailment Program Ended** |
| **Log** | Log all actions. |
| Watch | |
| **Note** | **XML messages are required for all deployments of Load Resources and ERS Resources.** |
| **ERS-30** | ERS with a thirty-minute Ramp period. |
| **ERS-10** | ERS with a ten-minute Ramp period. |
| **WS-ERS** | Each Standard Contract Term (SCT) Request for Proposal (RFP) will state what time periods in that SCT weather sensitive can provide offers for. |
| **Issue**  **Watch, ERS Deployments & DVR** | **IF:**   * PRC < 3000 MW and is not projected to be recovered above 3000 MW within 30 minutes, AND all Non-Spin has been deployed;   **THEN:**   * Using the Hotline, issue an Watch, AND * Determine whether system conditions warrant the deployment of ERS-30 / ERS-10 / both ERS-30 and ERS-10 / Weather Sensitive / Distribution Voltage Reduction. Refer to the ERS tab on the Real-Time Values Spreadsheet for amounts in each time period and number of times deployed:   + Consider the peak hour, deploy all ERS-30 / ERS-10 / both ERS-30 and ERS-10 / Weather Sensitive / Distribution Voltage Reduction if available to prevent PRC from falling < 2500 MW,   + When deploying the ERS, always deploy the weather-sensitive ERS if available for the current time period. * Coordinate with the transmission desk to request Transmission Operators to reduce distribution voltage where available. * Coordinate with the Resource Desk Operator to post an Watch, ERS deployed, and Distribution Voltage Reduction messages on the ERCOT Website. * QSEs shall suspend any ongoing ERCOT-required Resource performance testing. * Post a message on the ERCOT Website.   **Q#1 - Typical Hotline Script for Watch/EEA for PRC and Distribution Voltage Reduction** |
| **Cancel**  **Watch Recall ERS & DVR** | **WHEN:**   * PRC > 3000 MW;   **THEN:**   * Coordinate with Resource Desk Operator to send XML message to recall ERS, including Weather Sensitive, * Coordinate with Transmission desk to ensure Transmission Operators have been requested to return Distribution Voltage Reduction to normal operation. * Using the Hotline, cancel the Watch, AND; * Coordinate with the Resource Desk Operator to cancel the ERCOT Website message(s).   **Q#2 - Typical Hotline Script to Cancel Watch for PRC <3000 MW and** **Distribution Voltage Reduction** |
| **Log** | Log all actions. |

## 5.3 Implement EEA Levels

**Procedure Purpose:** To provide for maximum possible continuity of service while maintaining the integrity of the ERCOT System to reduce the chance of Cascading Outages.

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| **Protocol Reference** | **6.5.7.6.2.2(16)** | **6.5.9.3.4(6)** | **6.5.9.4** | **6.5.9.4.2** |
| **6.5.9.4.3** |  |  |  |
| **Guide Reference** | **4.5.3** | **4.5.3.1** | **4.5.3.2** | **4.5.3.3** |
| **4.5.3.4** |  |  |  |
| **NERC Standard** | **EOP-011-4**  **R2, R2.1, R2.2, R2.2.2, R2.2.3, R2.2.3.1, R2.2.3.4, R2.2.4, R2.2.7** | **IRO-001-4**  **R1** | **TOP-001-5 R2** |  |

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| --- | --- | --- |
| Version: 2 | **Revision: 0** | **Effective Date: December 5, 2025** |

| **Step** | **Action** |
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| **Note** | ERCOT **MAY** immediately implement EEA Level 2 when clock-minute average system frequency falls below 59.91 Hz for 15 consecutive minutes.  ERCOT **MAY** immediately implement EEA Level 3 any time the clock-minute average system frequency falls below 59.91 Hz for 20 consecutive minutes **OR** when steady-state frequency falls below 59.8 Hz for any duration of time.  ERCOT **SHALL** immediately implement EEA Level 3 any time the steady-state frequency is below 59.5 Hz for any duration. |
| **Note** | ERCOT will declare an EEA Level 1 when PRC falls below 2,500 MW and is not projected to be recovered above 2,500 MW within 30 minutes without the use of the following actions that are prescribed for EEA Level 1 |
| **Note** | Confidentiality requirements regarding Transmission Operations and System Capacity information will be lifted, as needed to restore reliability. |
| **Note** | The minimum capacity required from Gen Resources providing RRS using Primary Frequency Response shall not be less than 1,150 MW. |
| **Note** | Manually deploy Load Resources other than Controllable Load Resources providing ECRS and RRS before entering an Energy Emergency Alert (EEA), to maintain a minimum 500 MWs of Physical Responsive Capability (PRC) reserves on Generation Resources. |
| **Note** | **XML messages are required for all deployments of Load Resources and ERS Resources** |
| **ERS-30** | ERS with a thirty-minute Ramp period. |
| **ERS-10** | ERS with a ten-minute Ramp period. |
| **TCEQ** | The Texas Commission on Environmental Quality (TCEQ) will exercise enforcement discretion for exceedances of emission limits and operational limits for Resources that exceed air permit limits in order to maximize generation for the duration of the EEA event.  A Market Notice will be sent to Market Participants. Make Hotline call.  **Q#5 Typical Hotline Script for TCEQ Notice of Enforcement Discretion** |
| **Media**  **Appeal** | When an ERCOT-wide appeal through the public news media for voluntary energy conservation is made. Make Hotline call and coordinate with Resource Desk Operator for posting message.  **Q#10 Typical Hotline Script for Media Appeal** |
| **ESR** | Energy Storage Resources (ESR) are instructed to suspend charging. For ESRs, ERCOT shall issue the suspension instruction via a SCED Base Point instruction, or, if otherwise necessary, via a manual Dispatch Instruction. An ESR shall suspend charging unless it is providing Primary Frequency Response, has received a charging instruction via SCED Base Point, or is carrying Reg-Down and has received a charging instruction from LFC. However, an ESR co-located behind a POI with onsite generation that is incapable of exporting additional power to the ERCOT System may continue to charge as long as maximum output to the ERCOT System is maintained. |
| Implement EEA Level 1 | |
| **EEA 1**  **PRC<2500** | **IF:**   * PRC < 2500 MW and is not projected to be recovered above 2500 MW within 30 minutes without the use of EEA Level 1;   **THEN:**   * Select the activate EEA flag in EMS, * Maintain steady state system frequency near 60 Hz and maintain PRC above 2000 MW, * Determine whether system conditions warrant the deployment of ERS if not already deployed. Refer to the ERS tab on the Real-Time Values Spreadsheet for amounts in each time period and number of times deployed:   + Consider the peak hour, deploy all ERS if needed and available to prevent PRC from falling < 2000 MW,   + When deploying the ERS, also deploy the weather-sensitive ERS if available for the current time period. * Using the Hotline, notify the QSEs to implement **EEA 1**.   **Q#6 - Typical Hotline Script for EEA1**  If not already complete or If needed to:  **Q#1 - Typical Hotline Script for Watch/EEA for PRC and Distribution Voltage Reduction** |
| **ONSC-ECRS and ONSC-RRS**  **Release** | **REVIEW REFERENCE DISPLAYS:**  EMP Applications>Generation Area Status>Nodal Operations Status  **IF:**   * PRC < 2500 MW;   **THEN:**   * Manually run SCED as needed * If necessary and available, deploy the Resources providing ECRS and RRS using ONSC Resource Status |
| **Log** | Log all actions. |
| Implement EEA Level 2 | |
| **Note** | ERCOT may immediately implement EEA Level 2 when the clock-minute average system frequency falls below 59.91 Hz for 15 consecutive minutes. ERCOT will declare an EEA Level 2 when PRC falls below 2,000 MW and is not projected to be recovered above 2,000 MW within 30 minutes without the use of the following actions that are prescribed for EEA Level 2: |
| **EEA 2**  **PRC<2000** | **IF:**   * PRC < 2000 MW or unable to maintain system frequency at a minimum of 59.91 Hz and is not projected to be recovered above 2000 MW within 30 minutes without the use of EEA Level 2;   **THEN:**   * Verify with Shift Supervisor a public appeal has been issued * Maintain steady state system frequency at a minimum of 59.91 Hz and maintain PRC above 1500 MW, * Determine when system conditions require the deployment of undeployed ERS, and/or deploy ECRS or RRS supplied from Load Resources that are not controllable (Do Not forget the WS ERS if available):   + Deploy ERS if not already deployed   + Deploy Load Resources Group 0/Group 0+1a+1b+1c/Group 0+1a+1b+1c+2/ Group 0+1a+1b+1c+2+3/All.   + From UFR/ECRS display by entering “Target MW”, which will select resources in the following order     1. Load Resources with ECRS Awards and relay disarmed     2. Load Resources with ECRS Awards and relay armed     3. Load Resources with ECRS and RRS Awards and relay armed     4. Load Resources with RRS Awards and relay armed   + If needed, selecting “Deploy All” from UFR/ECRS and FFR displays will deploy all Load Resources with ECRS and UFR Awards.   + PRC < 1500 MW, deploy all ECRS and RRS from Load Resources simultaneously * Using the Hotline, notify the QSEs to implement EEA 2 and any measures associated with EEA 1, if not already implemented.   **Q#8 - Typical Hotline Script for EEA2** |
| **Note** | * All Load Resources, 10 MIN ERS, and 30 MIN ERS must be deployed before firm load |
| **Media Appeal** | * Unless already in effect, verify with the Shift Supervisor that the communications group has issued an appeal through the public news media for voluntary energy conservation, * Notify QSEs, via Hotline, that a media appeal for conservation is in effect.   **Q#10 - Typical Hotline Script for Media Appeal** |
| **Log** | Log all actions. |
| Implement EEA Level 3 | |
| **Note** | ERCOT may declare an EEA Level 3 when the clock-minute average system frequency falls below 59.91 Hz for 20 consecutive minutes or when steady-state frequency falls below 59.8 Hz. ERCOT will declare an EEA Level 3 when PRC cannot be maintained above 1,500 MW or when the clock-minute average system frequency falls below 59.91 Hz for 25 consecutive minutes. Upon declaration of an EEA Level 3, ERCOT shall take any of the following measures as necessary to recover frequency or PRC to the minimum required levels: |
| **EEA3**  **Unable to**  **Maintain**  **59.91 Hz or PRC <1500 MW** | **IF:**   * PRC < 1,500 MW and is not projected to be recovered above 1,500 MW within 30 minutes or unable to maintain minimum system frequency requirements from above;   **THEN:**   * Instruct ESRs to suspend charging by checking the Override Economic Dispatch for ESR CLR’s in RLC. (Section 2.15 Realtime desk Desktop Guides), * Using the Hotline, notify the QSEs to implement EEA 3Firm Load Shedand any measures associated with EEA 1 and 2, if not already implemented.   **Q#11 - Typical Hotline Script for EEA3 With Firm Load Shed** |
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| **Log** | Log all actions. |

## 5.4 Restore EEA Levels

**Procedure Purpose:** To restore the ERCOT grid to normal state as system conditions warrant while recovering from an EEA event.

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| **Protocol Reference** | **6.5.9.4** | **6.5.9.4.1** | **6.5.9.4.3** |  |
| **Guide Reference** | **4.5.3.5** |  |  |  |
| **NERC Standard** |  |  |  |  |

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| --- | --- | --- |
| **Version: 2** | **Revision: 0** | **Effective Date: December 5, 2025** |

| **Step** | **Action** | |
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| **Note** | **XML messages are required for all recalls of Load Resources and ERS Resources** | |
| Restore Firm Load | | |
| **Reserves** | 1500 MW of PRC must be restored within 90 minutes. | |
| **1** | **IF:**   * Sufficient Regulation Service exists to control to 60 Hz, **AND** * PRC – Regulation Up Award is ≥ 1500 MW for the last 15 minutes;   **THEN:**   * + Using the Hotline, notify the QSEs of firm load restoration.   **Q#13 - Typical Hotline Script for Restoring Firm Load** | |
| Move From EEA Level 3 to EEA Level 2 | | |
| **1** | **IF:**   * Sufficient Regulation Service exists to control to 60 Hz, **AND** * PRC is ≥ 2000 MW, **AND** * All firm load has been instructed to be restored;   **THEN:**   * Using the Hotline, notify the QSEs of the reduction from **EEA 3 to EEA 2**   + Coordinate with the Resource Desk and recall Load Resources   + Cancel ESRs to suspend charging by unchecking the Override Economic Dispatch for ESR CLR’s in RLC. (Section 2.15 Realtime desk Desktop Guides),   **Q#14 - Typical Hotline Script for EEA3 to EEA2** | |
| **Log** | Log all actions. | |
| **Note** | Once Load Resources are recalled, they have 3 hours to return to service. | |
| Move From EEA Level 2 to EEA Level 1 | | |
| **1** | **IF:**   * The system can maintain PRC ≥ 2500 MW, **AND** * All Load Resources have been instructed to be restored;   **THEN:**   * Using the Hotline, notify the QSEs of the reduction from EEA 2 to EEA 1   **Q#15 - Typical Hotline Script for EEA2 to EEA1** | |
| Move From EEA Level 1 to EEA 0 | | |
| **1** | **IF:**   * The system can maintain PRC ≥ 3000 MW, **AND** * All RUC committed units secured in EEA 1 can be released, **AND** * Emergency energy from the DC Ties is no longer needed;   **THEN:**   * Uncheck the EEA flag in EMS and make inactive, * Using the Hotline, notify the QSEs of the termination of **EEA**.   **Q#16 - Typical Hotline Script for Terminate EEA** | |
| Cancel Watch | | |
| **1** | **WHEN:**   * PRC is ≥ 3000 MW, AND * All ERS has been recalled, AND * All ONSC-ECRS and ONSC-RRS capacity has been recalled, AND * Coordinate with the Transmission Operator to return Distribution Voltage Reduction back to normal operation, AND * Using the Hotline, cancel the Advisory, AND; * Coordinate with the Resource Desk Operator to cancel the ERCOT Website message(s).   **THEN:**   * Cancel Watch   **Q#2 Cancel Watch for PRC <3,000 MW and** Distribution Voltage Reduction**:** | |
| **Log** | | Log all actions. |

## 5.5 Restoration of Primary Control Center Functionality

**Procedure Purpose:** To be performed once the Real-Time Operator has arrived at ACC.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Protocol Reference** |  |  |  |  |
| **Guide Reference** |  |  |  |  |
| **NERC Standard** |  |  |  |  |

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| Version: 2 | **Revision: 0** | **Effective Date: December 5, 2025** |

| **Step** | **Action** |
| --- | --- |
| **Note** | Before normal operation can be restored, be sure to communicate with the other desks to determine the current state of the grid and any communications that may have taken place with QSEs. |
| **Restoring**  **Frequency**  **Control** | **WHEN:**   * SCED is functional;   **THEN:**   * Remove the QSE that was instructed on constant frequency by ending the VDI. * Put ERCOT AGC into “ON” mode. |
| **Return to**  **Normal**  **QSE**  **Notification** | When ready to resume normal operations:   * Check with RUC Operator on desk status to include in Hotline call if appropriate * Place the following Hotline call to the QSEs:   **Q#57 - Typical Hotline Script to Cancel Emergency Notice and Restore primary control center** |
| **Log** | Log all actions. |

## 6.0 Weather Events

## 6.1 Hurricane or Tropical Storm

**Procedure Purpose:** To ensure QSEs are prepared for an approaching Hurricane or Tropical Storm that could impact system reliability.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Protocol Reference** | **3.1.4.6** | **6.3.2(3)(a)(ii)** | **6.5.9.3.1** | **6.5.9.3.2(4)** |
| **6.5.9.3.3** | **6.5.9.3.4** |  |  |
| **Guide Reference** | **4.2.1** | **4.2.2** | **4.2.3** | **4.2.4** |
| **NERC Standard** | **EOP-011-4**  **R1, R1.2, R1.2.6, R1.2.6.2, R2, R2.1, R2.2, R2.2.3, R2.2.3.2, R2.2.3.3, R2.2.10, R2.2.10.2** |  |  |  |

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| **Version: 2** | **Revision: 0** | **Effective Date: December 5, 2025** |

| **Step** | **Action** |
| --- | --- |
| **Note** | * Hurricane or Tropical Storm notifications can be called when there is a probability of landfall in the ERCOT Region. (<http://www.nhc.noaa.gov>) * The ERCOT Meteorologist may provide forecasts to supplement other Weather Service data information * The sequence of actions taken, or notifications issued may vary due to system conditions or other operational issues and it may be necessary to skip actions due to the severity of the situation. To the extent possible, and when prudent, actions that were skipped may be implemented later * Operations Support and Outage Coordination will analyze the situation and make recommendations as to Resource requirements and transmission topology |
| **OCN** | When a Hurricane or Tropical Storm is developing and forecasted to impact the ERCOT Region, using the Hotline, issue an OCN to the QSEs:  **Q#58 - Typical Hotline Script for OCN for Hurricane/Tropical Storm**  Coordinate with Outage Coordination for the review of existing, planned, and future outages to be withdrawn/rejected and/or restored.  Coordinate with Operations Support as they may make recommendations on the situation based on the Resource requirements and transmission topology. |
| **Advisory** | When the probability of an approaching Hurricane or Tropical Storm impacting the ERCOT Region increases and concerns exist to escalate awareness, using the Hotline, issue an Advisory to the QSEs:  **Q#59 - Typical Hotline Script for Advisory for Hurricane/Tropical Storm** |
| **Watch** | When impacts from an approaching Hurricane or Tropical Storm is imminent and anticipated to have an adverse impact on the ERCOT Region, using the Hotline, issue a Watch to the QSEs:  **Q#60 - Typical Hotline Script for Watch for Hurricane/Tropical Storm** |
| **Emergency**  **Notice** | When a Hurricane or Tropical Storm is beginning to have an adverse impact on the ERCOT Region, using the Hotline, issue an Emergency Notice to the QSEs:  **Q#61 - Typical Hotline Script for Emergency Notice for Hurricane/Tropical Storm** |
| **Post** | Coordinate with the Transmission & Security and Resource Desk Operator for the posting of the notices on the ERCOT Website. |
| **Cancel**  **Posting** | Coordinate with the Transmission & Security and Resource Desk Operator for the cancelation of the postings on the ERCOT Website. |
| **Log** | Log all actions. |

## 6.2 Extreme Cold Weather

**Procedure Purpose:** To ensure ERCOT and QSEs are prepared for extreme cold weather operations.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Protocol Reference** | **3.1.4.6** | **6.3.2(3)(a)(ii)** | **6.5.9.3.1** | **6.5.9.3.2(4)** |
| **6.5.9.3.3** | **6.5.9.3.4** |  |  |
| **Guide Reference** | **4.2.1** | **4.2.2** | **4.2.3** | **4.2.4** |
| **NERC Standard** | **EOP-011-4**  **R1, R1.2, R1.2.6, R1.2.6.1, R1.2.6.2, R2, R2.1, R2.2, R2.2.3, R2.2.3.2, R2.2.3.3, R2.2.10. R2.2.10.1, R2.2.10.2** |  |  |  |

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| **Version: 2** | **Revision: 0** | **Effective Date: December 5, 2025** |

| **Step** | **Action** |
| --- | --- |
| **Note** | * Extreme cold weather notifications can be issued when temperatures are forecasted to be 25°F or below in the North Central and in the South Central weather zones. Wind chill also has an impact on how the temperature feels due to the flow of lower temperature air. When the wind chill is forecasted to be 20°F or below in the North Central and in the South Central weather zones, consider a notification. This criterion has been developed for guidance when the temperature or wind chill are expected to be below freezing for several continuous hours which may abnormally impact load levels or generation availability * For such events, additional reserves may be necessary * The ERCOT Meteorologist may provide forecasts to supplement other Weather Service data information * The sequence of actions taken, or notifications issued may vary due to system conditions or other operational issues and it may be necessary to skip actions due to the severity of the situation. To the extent possible, and when prudent, actions that were skipped may be implemented at a later time or date |
| **OCN** | When extreme cold weather is developing and forecasted to impact the ERCOT Region, using the Hotline issue an OCN to the QSEs:  **Q#62 - Typical Hotline Script for OCN for Extreme Cold Weather**  Coordinate with Outage Coordination for the review of existing, planned, and future outages to be withdrawn/rejected and/or restored.  Coordinate with Operations Support as they may make recommendations on the situation based on the Resource requirements and transmission topology. |
| **Advisory** | When the probability of extreme cold weather impacting the ERCOT Region increases and concerns exist to escalate awareness, using the Hotline issue an Advisory to the QSEs:  **Q#63 - Typical Hotline Script for Advisory for Extreme Cold Weather** |
| **Watch** | When impacts from extreme cold weather is imminent and anticipated to have an adverse impact on the ERCOT Region, using the Hotline issue a Watch to the QSEs:  **Q#64 - Typical Hotline Script for Watch for Extreme Cold Weather** |
| **Emergency**  **Notice** | When extreme cold weather is beginning to have an adverse impact on the ERCOT Region, using the Hotline issue an Emergency Notice to the QSEs:  **Q#65 - Typical Hotline Script for Emergency Notice for Extreme Cold Weather** |
| **Post** | Coordinate with the Transmission Desk Operator and Resource Desk Operator for the posting of the notices on the ERCOT Website. |
| **Cancel**  **Posting** | Coordinate with the Transmission Desk Operator and Resource Desk Operator for the cancelation of the postings on the ERCOT Website. |
| **Log** | Log all actions. |

## 6.3 Extreme Hot Weather

**Procedure Purpose:** To ensure QSEs are prepared for extreme hot weather operations that could impact system reliability.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Protocol Reference** | **3.1.4.6** | **6.3.2(3)(a)(ii)** | **6.5.9.3.1** | **6.5.9.3.2(4)** |
| **6.5.9.3.3** | **6.5.9.3.4** |  |  |
| **Guide Reference** | **4.2.1** | **4.2.2** | **4.2.3** | **4.2.4** |
| **NERC Standard** | **EOP-011-4**  **R1, R1.1, R1.2, R1.2.6, R1.2.6.2, R2, R2.1, R2.2, R2.2.3, R2.2.3.2, R2.2.3.3, R2.2.10, R2.2.10.2** |  |  |  |

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| --- | --- | --- |
| **Version: 2** | **Revision: 0** | **Effective Date: December 5, 2025** |

| **Step** | | **Action** |
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| **Note** | | * Extreme hot weather notifications can be issued when temperatures are forecasted to be 103°F or above in the North Central and South Central weather zones.   – OR –   * When temperatures are forecasted to be 94°F or above in the North Central and South Central weather zones during the following months (October – May). * For such events, additional reserves may be necessary * The ERCOT Meteorologist may provide forecasts to supplement other Weather Service data information. * The sequence of actions taken, or notifications issued may vary due to system conditions or other operational issues and it may be necessary to skip actions due to the severity of the situation. To the extent possible, and when prudent, actions that were skipped may be implemented at a later time or date. |
| **OCN** | | When extreme hot weather is forecasted to impact the ERCOT Region, using the Hotline issue an OCN to the QSEs:  **Q#66 - Typical Hotline Script for OCN for Extreme Hot Weather**  Coordinate with Outage Coordination for the review of existing, planned, and future outages to be withdrawn/rejected and/or restored.  Coordinate with Operations Support as they may make recommendations on the situation based on the Resource requirements and transmission topology. |
| **Advisory** | | When the probability of extreme hot weather impacting the ERCOT Region increases and concerns exist to escalate awareness, using the Hotline issue an Advisory to the QSEs:  **Q#67 - Typical Hotline Script for Advisory for Extreme Hot Weather** |
| **Watch** | | When impacts from extreme hot weather are imminent and anticipated to have an adverse impact on the ERCOT Region, using the Hotline issue a Watch to the QSEs:  **Q#68 - Typical Hotline Script for Watch for Extreme Hot Weather** |
| **Emergency**  **Notice** | | When extreme hot weather is beginning to have an adverse impact on the ERCOT Region, using the Hotline issue an Emergency Notice to the QSEs:  **Q#69 - Typical Hotline Script for Emergency Notice for Extreme Hot Weather** |
| **Post** | Coordinate with the Transmission Desk Operator and Resource Desk Operator for the posting of the notices on the ERCOT Website. | |
| **Cancel**  **Posting** | Coordinate with the Transmission Desk Operator and Resource Desk Operator for the cancelation of the postings on the ERCOT Website. | |
| **Log** | Log all actions. | |

## 6.4 Significant Weather Events

**Procedure Purpose**: Monitor severe weather conditions for the ERCOT Region and regions outside of ERCOT which can arise with little or no warning that could potentially impact system reliability.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Protocol Reference** | **3.1.4.6** | **6.3.2(3)(a)(ii)** | **6.5.9.3.1** | **6.5.9.3.2** |
| **6.5.9.3.3** | **6.5.9.3.4** |  |  |
| **Guide Reference** | **4.2.1** | **4.2.2** | **4.2.3** | **4.2.4** |
| **NERC Standard** | **EOP-011-4**  **R1, R1.2, R1.2.2, R1.2.6, R1.2.6.2, R2, R2.1, R2.2, R2.2.10, R2.2.10.1, R2.2.10.2** |  |  |  |

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| **Version: 2** | **Revision: 0** | **Effective Date: December 5, 2025** |

| **Step** | **Action** |
| --- | --- |
| **Note** | * Significant weather events are those that do not meet the criteria of the extreme hot, extreme cold, hurricane, or tropical storm procedures * Significant weather events can consist of, but are not limited to the following:   + Tornados   + Strong straight-line winds   + Flooding   + Freezing precipitation   + Wild Fires * The ERCOT Meteorologist may provide forecasts to supplement other Weather Service data information. * The sequence of actions taken, or notifications issued may vary due to system conditions or other operational issues and it may be necessary to skip actions due to the severity of the situation. To the extent possible, and when prudent, actions that were skipped may be implemented at a later time or date. * Firm Fuel Supply Service Resources (FFSSR) is awarded and available for wintry weather conditions beginning November 15 – March 15. |
| **OCN/**  **Advisory/**  **Watch** | When a significant weather event arises that could or does impact the ERCOT Region, using the Hotline, issue a notification to the QSEs:  **Q#70 - Typical Hotline Script for OCN/Advisory/Watch for other Weather Events** |
| **Post** | Coordinate with the Transmission Desk Operator and Resource Desk Operator for the posting of the notices on the ERCOT Website. |
| **Cancel**  **Posting** | Coordinate with the Transmission Desk Operator and Resource Desk Operator for the cancelation of the postings on the ERCOT Website. |
| **Log** | Log all actions. |

## 7.0 Communication Testing

## 7.1 Monthly Testing of Satellite Phone Conference Bridge

**Procedure Purpose:** To ensure ERCOT maintains communication capability via the Satellite Phone System.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Protocol Reference** |  |  |  |  |
| **Guide Reference** |  |  |  |  |
| **NERC Standard** |  |  |  |  |

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| **Version: 2** | **Revision: 0** | **Effective Date: December 5, 2025** |

| **Step** | **Action** |
| --- | --- |
| Primary Control Center | |
| **Note** | When a participant dials into the conference bridge before the moderator dials in, they will hear music and be placed on hold. |
| **Note** | On the first weekend of each month, between the hours of 0000 Saturday and 0500 Monday, the **Satellite Phone System Conference Bridge** will be tested with the TOs. As the Shift Supervisor makes the call to the individual TO, they will set a time that the ERCOT Operator will call the **Satellite Phone System Conference Bridge** and establish communication with the appropriate TO. |
| **Note** | Use the ERCOT Satellite Phone User Guide **(See Desktop Guide Common to Multiple Desks Section 2.7)** for a list of the TOs that will be contacted by the ERCOT Operator and instructions on how to place a Satellite Phone System Conference Bridge call. |
| **Note** | The numbers for the ERCOT Operator to call into the Conference Bridge are Desk specific.  **Select:**  SATELLITE directory or go to page 41 to view the programmed numbers on the Turret Phone for each Bridge:   * BLACKSTRT RUC – RUC Desk * BLACKSTRT RRD – Reliability Risk Desk * BLACKSTRT RES – Resource Desk * BLACKSTRT REAL – Real-Time Desk * BLACKSTRT TS#1 – Transmission Desk (Island Coordination) * BLACKSTRT TS#2 – Transmission Desk |
| **1** | **IF:**   * Open a helpdesk ticket and cc “shiftsupv” * The pre-programmed number does not function correctly,   **THEN:**   * Refer to the ERCOT Satellite Phone User Guide **(See Desktop Guide Common to Multiple Desks Section 2.7.2)** for the appropriate conference number and continue with this procedure. |
| **2** | **When prompted:**   * Enter the Moderator Pass Code * If necessary, allow five minutes for Participants to dial in * As each Participant connects, record the following:   + Name of Participant   + Company Name   + Any problems identified with the connection process |
| **3** | **IF:**   * One or more of the TOs fail to connect to the Bridge call,   **THEN:**   * Follow up with the TO determine the cause:   + Reason for inability to connect   + Establish a time for a retest of the TOs that were unable to connect in the initial test. |
| **4** | Inform the Shift Supervisor when test is complete indicating any issues identified. |
| **Log** | Log all actions. |

## 8.0 Perform Miscellaneous

## 8.1 Responding to QSE Issues

**Procedure Purpose:** Responding to QSE issues regarding website questions, SCED Deployments, LMPs, etc.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Protocol Reference** |  |  |  |  |
| **Guide Reference** |  |  |  |  |
| **NERC Standard** |  |  |  |  |

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| **Version: 2** | | **Revision: 0** | **Effective Date: December 5, 2025** |
| **Step** | **Action** | | | |
| Backup/Alternate Control Center Transfer | | | | |
| **1** | When notified by a QSE that they will be transferring to or from their backup/alternate control center,   * Identify the [QSE] in the email notification * Send e-mail to “1 ERCOT System Operators” | | | |
| **Log** | Log all actions. | | | |
| QSE Issues | | | | |
| **1** | If a QSE is not satisfied with ERCOT Operations responses to their issues, refer them to their Wholesale Client Representative for clarification/resolution. | | | |
| **2** | If the issue is with ERCOT systems applications (ICCP down, etc.), notify the ERCOT Service Desk. | | | |
| **3** | If a QSE is having an issue with ERCOT system applications (unable to access the portal, outage scheduler, etc.), instruct them to call the ERCOT Service Desk. | | | |
|  | Notify the Shift Supervisor of any actions taken and unresolved issues. | | | |
| **Log** | Log all actions. | | | |
| Missing Data from ERCOT Website Postings | | | | |
| **1** | **IF:**   * A call is received about data missing or data being incorrect,   **THEN:**   * Transfer the call to the Service Desk, and * Notify the Shift Supervisor and Operations Support Engineer. | | | |
| **Log** | Log all actions. | | | |
| Requests to Decommit Self-committed Resource in Operating Period | | | | |
| **1** | **IF:**   * A request is made by a QSE to decommit a self-committed Resource in the Operating Period;   **THEN:**   * Transfer the call to the Resource Desk Operator to issue the QSE requested decommit. | | | |
| Power System Stabilizers (PSS) & Automatic Voltage Regulators (AVR) | | | | |
| **1** | **WHEN:**   * Notified by a QSE of a change in status with any PSS or AVR;   **THEN:**   * Transfer call to the ERCOT Transmission Operator. | | | |

Document Control

## Preparation

| **Prepared by** | **Role** | **Date Completed** |
| --- | --- | --- |
| Hartmann, Cyphers, Luker and Smith | Procedure writers and editors | December 1, 2025 |

## Manual Change History

|  |  |  |  |
| --- | --- | --- | --- |
| **Procedure** | **Ver/Rev** | **Reason for Issue** | **Effective Date** |
| All Sections | 2.0 / 0 | RTC+B | December 5, 2025 |