



TEXAS RE

Cold Weather Standards

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Cold Weather Focus Requirements

EOP-011-2 R1 R2 R7 R8

IRO-010-4 R1

TOP-003-5 R1 R2

EOP-011 Establishes:

- Need for TOP/BA to determine reliability impacts
- Need for GO to have preparedness plan with specific data and training

IRO-010/TOP-003 Establishes:

- Need for RC/TOP/BA to have data specifications that include provisions for notifications of GO preparedness plan information



EOP-011-2 R1 (Cold Weather Focus)

R1. Each Transmission Operator shall develop, maintain, and implement one or more Reliability Coordinator-reviewed Operating Plan(s) to mitigate operating Emergencies in its Transmission Operator Area. The Operating Plan(s) shall include the following, as applicable:

- 1.2.6. Provisions to determine reliability impacts of:
 - 1.2.6.1. cold weather conditions; and
 - 1.2.6.2. extreme weather conditions.

Key interest items for auditing:

- **1. Develop, maintain, and implement**
- **2. Reliability Coordinator-reviewed**
- **3. Emergencies**
- **4. Reliability impacts of cold AND extreme**

Includes ERCOT and TOPs—See CFR!!!



Develop, Maintain, and Implement (for all Parts of Requirement)

- Method/timeline/controls around development and maintenance
- Most entities will have a PUCT related plan
- Verify implementation steps as needed
 - Evidence- Plan(s), checklists, meetings/emails, approvals, work orders, pictures, reports, operator logs, voice recordings

Reliability Coordinator-Reviewed

- Timeline/controls/updates approved
 - Evidence- Plan(s), checklists, meetings/emails, approvals





Emergencies

- Definition, authority, notification process, controls
- Evidence-Definition documented with clear authority for TOP to call an Emergency (refer to CFR language as needed)



Reliability Impacts of Cold AND Extreme

- Process for determination, criteria for reliability impacts, definition of cold/extreme, NOTE- extreme should cover more than simply cold weather
- Evidence-Process/Criteria within plan, results from an emergency (voice logs, operator logs, work orders, etc.)



Each Balancing Authority shall develop, maintain, and implement one or more Reliability Coordinator-reviewed Operating Plan(s) to mitigate Capacity Emergencies and Energy Emergencies within its Balancing Authority Area. The Operating Plan(s) shall include the following, as applicable:

- 2.2.9. Provisions to determine reliability impacts of:
 - 2.2.9.1. cold weather conditions; and
 - 2.2.9.2. extreme weather conditions
- SAME AS TOP Except—
 - Develop, Maintain, Implement
 - Type of Emergencies (definition/criteria/timeline)
 - ERCOT only



EOP-011-2 R7 (NEW Cold Weather Focus)

- **R7. Each Generator Owner shall implement and maintain one or more cold weather preparedness plan(s) for its generating units. The cold weather preparedness plan(s) shall include the following, at a minimum:**
 - 7.1. Generating unit(s) freeze protection measures based on geographical location and plant configuration;
 - 7.2. Annual inspection and maintenance of generating unit(s) freeze protection measures;
 - 7.3. Generating unit(s) cold weather data, to include:
 - 7.3.1. Generating unit(s) operating limitations in cold weather to include:
 - ◆ 7.3.1.1. capability and availability;
 - ◆ 7.3.1.2. fuel supply and inventory concerns;
 - ◆ 7.3.1.3. fuel switching capabilities; and
 - ◆ 7.3.1.4. environmental constraints.
 - 7.3.2. Generating unit(s) minimum:
 - ◆ 7.3.2.1. design temperature; or
 - ◆ 7.3.2.2. historical operating temperature; or
 - ◆ **7.3.1.3.** current cold weather performance temperature determined by an engineering analysis.



Implement and Maintain Plan (for all Parts of Requirement) (Note - No “Development” Aspect)

- Method/timeline/controls around implementation and maintenance
- Most entities will have a PUCT-related plan
- Verify implementation steps as needed
 - Evidence - Plan(s), checklists, meetings/emails, approvals, work orders, pictures, reports, operator logs, voice recordings

7.1-Freeze Protection Measures (Site Specific)

- Definition/materials/timeline/controls/updates
 - Evidence - Plan(s), checklists, meetings/emails, work orders, geographical locations of sites, pictures-heat tracing, enclosures, wind breaks, heater, etc.



7.2- Annual Inspection and Maintenance (by Site)

- Method/timeline/controls around inspection and maintenance
- Most entities will have a PUCT-related plan
- Verify inspection/maintenance steps as needed
 - Evidence - Plan(s), checklists, meetings/emails, approvals, work orders, pictures, reports, operator logs

7.3- Cold Weather Data (by Site)

- 7.3.1- Limitations
 - Explanation of limitations
 - Clear narrative on sub-parts
 - Evidence - Specific data points, reports, controls, design documents, TCEQ contacts/reports



7.3- Cold Weather Data (by Site)

- **7.3.2- Minimums (Note - “or”)**
 - **Clear narrative on design temp**
 - **Clear narrative and data on historical operating temps**
 - **Clearly documented engineering analysis to determine performance**
 - **Evidence - Specific design documents with OEM supported materials, reports, controls (what is “historical”?), analysis documents**

Do they have a history of tripping?
What did they do to mitigate the issues?



R8. Each Generator Owner in conjunction with its Generator Operator shall identify the entity responsible for providing the generating unit-specific training, and that identified entity shall provide the training to its maintenance or operations personnel responsible for implementing cold weather preparedness plan(s) developed pursuant to Requirement R7.

- **In conjunction identify Responsible Entity**
- **Identified entity shall provide training to maintenance or operations personnel**
 - **Evidence - Clear documentation/coordination of GO/GOP identification, Method/timeline/controls around training per R7 activities, list of personnel and roles—(note the “or”), training materials, check-in sheets for personnel, checklists, meetings/emails, approvals, reports, operator logs, voice recordings**
 - **Know relationship between GO and GOPs!!!!**



R1. The Reliability Coordinator shall maintain a documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. The data specification shall include but not be limited to:

- **1.3 Provisions for notification of BES generating unit(s) during local forecasted cold weather to include:**
 - 1.3.1 Operating limitations based on:
 - 1.3.1.1. capability and availability;
 - 1.3.1.2. fuel supply and inventory concerns;
 - 1.3.1.3. fuel switching capabilities; and
 - 1.3.1.4. environmental constraints
 - **1.3.2. Generating unit(s) minimum:**
 - 1.3.2.1. design temperature; or
 - 1.3.2.2. historical operating temperature; or
 - 1.3.2.3. current cold weather performance temperature determined by an engineering analysis.



Key Interest Items for Auditing:

- **Maintain specification for necessary data for OPA, RTM, RTA**
 - **Note - ERCOT responsible for RTA, RTM, OPA from RC perspective**
 - **How is the specification(s) maintained? (internal controls) What defines “cold”?**
- **Provisions for notification of EOP-011-2 R7 GO determined information**
 - **Where are the provisions within the specification for all items listed?**
 - **NOTE- RIOOS/RARF submissions or other activities, ICCP, XML, voice, etc. may be used**

Resources

- **Be familiar with documents at <https://www.ercot.com/mktrules/compliance> and [Resource Registration Glossary](#)**
- **Evidence- [ICCP Handbook](#), Resource Registration Glossary, NERC IRO-010 and TOP-003 Mapping Document, RIOSS/RARF information**



R1. The Transmission Operator shall maintain a documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. The data specification shall include but not be limited to:

- 1.3 Provisions for notification of BES generating unit(s) during local forecasted cold weather to include:
 - 1.3.1 Operating limitations based on:
 - 1.3.1.1. capability and availability;
 - 1.3.1.2. fuel supply and inventory concerns;
 - 1.3.1.3. fuel switching capabilities; and
 - 1.3.1.4. environmental constraints
 - 1.3.2. Generating unit(s) minimum:
 - 1.3.2.1. design temperature; or
 - 1.3.2.2. historical operating temperature; or
 - 1.3.2.3. current cold weather performance temperature determined by an engineering analysis.



Key Interest Items for Auditing:

- **Maintain specification for necessary data for OPA, RTM, RTA**
 - ERCOT responsible for RTA and OPA from TOP/RC perspective
 - TOP LCC Responsible for RTM (**see CFR**)
 - How is the specification(s) maintained? (internal controls) What defines “cold?”
 - What data is necessary? For TOP LCC- Request that list and Request a list of all data points from a substation received by System Operator (**may be different**)
 - What information for Real-time monitoring is needed for BES generating units?
- **Provisions of notification for EOP-011-2 R7 GO determined information**
 - Where are the provisions within the specification for all items listed?
 - ERCOT has full responsibility for 1.3 per the CFR (**Including RTM**)
 - Could be general RIOOS/RARF submissions or other activities, ICCP, XML, voice, etc.
- **Be familiar with documents at <https://www.ercot.com/mktrules/compliance> and [Resource Registration Glossary](#)**



R2. The Balancing Authority shall maintain a documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring. The data specification shall include but not be limited to:

- 1.3 Provisions for notification of BES generating unit(s) during local forecasted cold weather to include:
 - 1.3.1 Operating limitations based on:
 - 1.3.1.1. capability and availability;
 - 1.3.1.2. fuel supply and inventory concerns;
 - 1.3.1.3. fuel switching capabilities; and
 - 1.3.1.4. environmental constraints
 - 1.3.2. Generating unit(s) minimum:
 - 1.3.2.1. design temperature; or
 - 1.3.2.2. historical operating temperature; or
 - 1.3.2.3. current cold weather performance temperature determined by an engineering analysis.



Key Interest Items for Auditing:

- **1. Maintain specification for necessary data for “analysis functions” and RTM**
 - ERCOT responsible for RTM here
 - How is the specification(s) maintained? (internal controls) What defines “cold?”
 - What data is necessary? Ask specifically what information for Real-time monitoring is needed for BES generating units during local forecasted cold weather
- **2. Provisions of notification for EOP-011-2 R7 GO determined information**
 - Where are the provisions within the specification for all items listed?
 - Could be general RIOOS/RARF submissions or other activities, ICCP, XML, voice, etc.
- **Be familiar with documents at <https://www.ercot.com/mktrules/compliance> and [Resource Registration Glossary](#)**



Develop and implement corrective action plan (CAP) for identified equipment of outages, failures to start, or derate

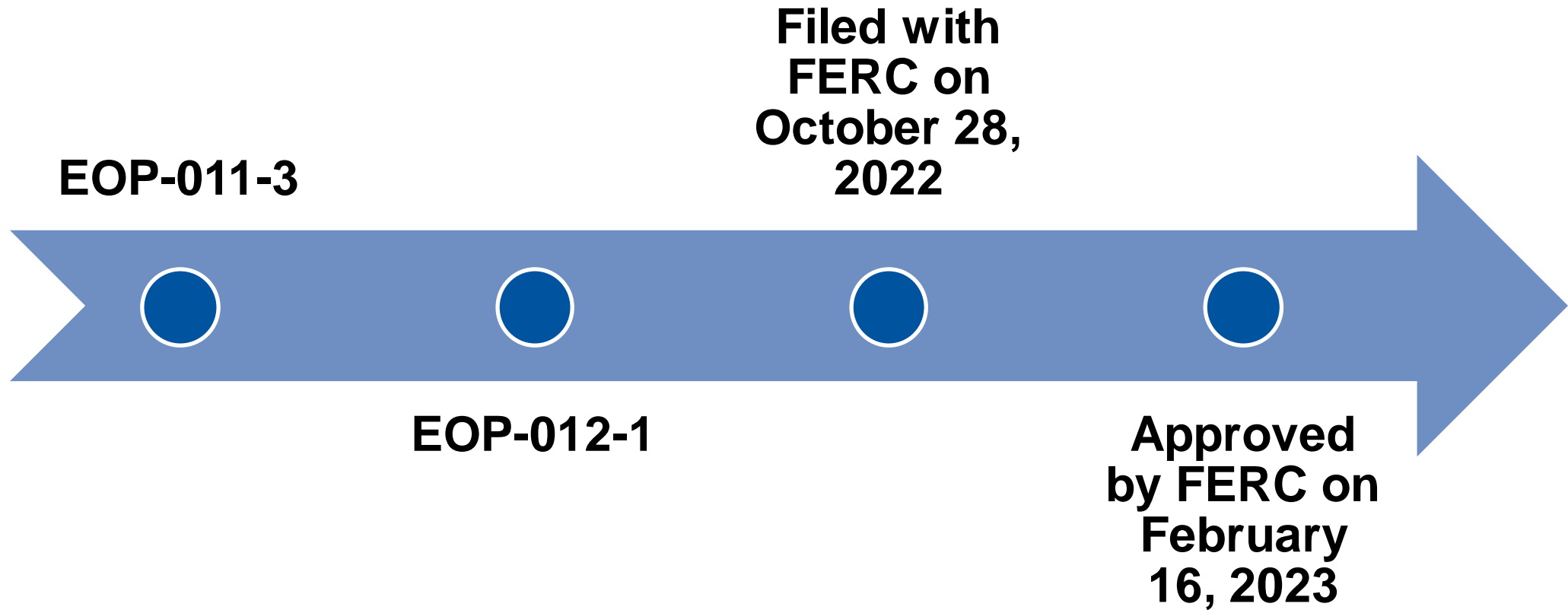
Conduct annual unit-specific cold weather preparedness training

Retrofit existing generating units and design new units to operate to specified ambient temperature and weather conditions

Load shed procedures should only be used for manual load shed as a last resort and should start with the final stage



Project 2021-07 Phase 1



Project 2021-07 SAR Phase 2 Due Winter 2023/2024

Identify cold weather critical components and systems for each generating unit

Identify and implement freeze protection measures for the cold weather critical components and systems

Account for effects of precipitation and accelerated cooling effect of wind when providing temperature data

Determine the generating unit capacity that can be relied upon during “local forecasted cold weather”

Operating plans should prohibit use for demand response of critical natural gas infrastructure loads

Protect critical natural gas infrastructure loads from manual and automatic load shedding



- [Reliability Guideline](#)
- [NERC Cold Weather Reports](#)
- [CMEP Practice Guide](#)
- [FERC, NERC and Regional Entity Staff Report](#)
- [Extreme Events Resiliency Workshop](#)
- [Texas RE Resource Hub – Extreme Weather](#)
- [Lessons Learned from February 2011](#)



The background of the slide features a blurred Texas state flag on the left and a target with several darts on the right. The darts are all clustered in the center of the target, suggesting a focus on a specific point.

Questions?



TEXAS RE

Ensuring electric reliability for Texans