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ELECTRIC RELIABILITY COUNCIL OF TEXAS, INC.'S 2023 Q1 RELIABILITY MONITOR QUARTERLY REPORT

On November 3, 2022, the Public Utility Commission of Texas (PUC/Commission) issued an order directing Electric Reliability Council of Texas, Inc. (ERCOT) to assume the duties and responsibilities of the reliability monitor for the ERCOT power region, known as the ERCOT Reliability Monitor (ERM). Among other things, the PUC order directs ERCOT to file a report summarizing its ERM activities of the previous quarter no later than April 15, 2023. ERM hereby provides the following 2023 Q1 ERM Quarterly Report to the Commission.

I. Executive Summary

In the first quarter of 2023, the ERM focused on improving the activities it began in November by developing and refining procedures, creating tracking tools and setting up other “back office” activities. Additionally, the ERM opened fifty-five new Incident Reviews in 2023’s first quarter. As of the end of the quarter, the ERM’s performance metrics are as follows:

<table>
<thead>
<tr>
<th>Priority</th>
<th># of Cases</th>
<th>Average Days Open</th>
</tr>
</thead>
<tbody>
<tr>
<td>Critical</td>
<td>2</td>
<td>112</td>
</tr>
<tr>
<td>High</td>
<td>15</td>
<td>34</td>
</tr>
<tr>
<td>Medium</td>
<td>36</td>
<td>50</td>
</tr>
<tr>
<td>Low</td>
<td>9</td>
<td>93</td>
</tr>
<tr>
<td>Total</td>
<td>62</td>
<td>72</td>
</tr>
</tbody>
</table>

1 The ERM considers each investigation an “Incident Review.”
2 The ERM opened seven Incident Reviews in the time between November 3, 2022, and the end of the year, for a total of sixty-two Incident Reviews.
3 To prioritize investigations, ERM staff assess an event’s impact on ERCOT System reliability and categorize significant events (such as those involving the loss of generation, frequency or voltage excursions, etc.) as “Critical.” The ERM categorizes other events as “High,” “Medium,” or “Low” depending on such factors as: number and size of the facility(ies) involved, if the event is local versus widespread, whether an issue relates to only an administrative matter, etc.
4 The ERM expects these times to decrease as additional staff is hired to work on ERM matters.
The bulk of Incident Reviews involve:

- Ancillary Service (A/S) and Energy Deployment (18 Incident Reviews or 20%)
- Entering Forced Outages in Outage Scheduler (13 Incident Reviews or 15%)
- Compliance with Dispatch Instructions (12 Incident Reviews or 13%)
- Performance Disturbance Compliance (8 Incident Reviews or 9%)
- Event Performance Criteria for Emergency Response Service (ERS) Resources (8 Incident Reviews or 9%)
- ERS Testing (7 Incident Reviews or 8%)
- QSEs Representing Non-Weather Sensitive (NWS) ERS Resources (5 Incident Reviews or 6%)
- A/S Capacity (4 Incident Reviews or 4%)
- Non-Spin Reserve Service (NSRS) Deployment (4 Incident Reviews or 4%)

The most significant events on which the ERM is focused involve significant losses of inverter-based resources in connection with system disturbances.

II. Changes to Reliability Requirements to Promote Improved Reliability

The ERM is tracking the following revision requests that could impact ERCOT System reliability:

NPRR1132 Provides that, during cold weather conditions, QSEs must update Generation Resources' and ESRs' Current Operating Plan, Real-Time telemetry, and Outage and derate reporting to reflect cold-weather limitations. It also requires Resource Entities to provide Resource-specific cold weather minimum temperature limits, hot weather maximum temperature limits, and alternate fuel capability information and update the information as necessary.
NPRR1138 Requires Resource Entities to ensure the reactive capability curve submitted for Intermittent Renewable Resources accurately reflects the IRR’s reactive capability when not providing real power and at lower levels of real power output.

NPRR1143 Allows ERCOT to decide when Energy Storage Resources may charge during an Energy Emergency Alert Level 3.

NPRR1154 Updates language to allow a qualified alternate Resource to be considered in calculating the availability reduction factor for Firm Fuel Supply Service Resource (FFSSR).

NPRR1164 Requires Resource Entities to identify whether a physical Resource can (even if unverified) be used during a black start emergency or if it has isochronous control capability. It requires Resource Entities and Transmission Service Providers to identify whether a breaker or switch has a Synchroscope or Synchronism Check Relay.

NPRR1167 Implements improvements to Firm Fuel Supply Service (FFSS) based on Lessons Learned, including testing, qualification, procurement, and communication during and following deployment, and reporting by ERCOT.

NOGRR243 Modifies the NOG Load Shed Table to include separate Load shed obligations for winter and summer seasons and removes transmission connected industrial Load from the TO’s Load shed obligation calculations.

NOGRR245 Replaces the current voltage ride-through requirements for Intermittent Renewable Resources with voltage ride-through requirements for Inverter-Based Resources and provides new frequency ride-through requirements for IBRs consistent with or beyond requirements in the new 2800-2022 - Institute of Electrical and Electronics Engineers (IEEE) Standard for Interconnection and Interoperability of IBRs Interconnecting with Associated Transmission Electric Power Systems (IEEE 2800-2022 standard).

NOGRR247 Modifies the automatic Under-Frequency Load Shed (UFLS) program by increasing the number of Load shed stages from three to five and changing the Transmission Operator (TO) Load relief amounts to increment by 5% for each stage. It also adds a UFLS minimum time delay of six cycles (0.1
seconds) and revises the grey-box language from NOGRR226 in Section 2.6.1 to provide the TO Load value used to determine the TO Load at each frequency threshold will be the value of TO Load at the time frequency reaches 59.5 Hz, rather than the value of TO Load at the time of reaching each successive frequency threshold.

NOGRR215 Would allow new Remedial Action Schemes (RASs) only to address an actual or anticipated violation of transmission security criteria when market tools cannot address those violations (also clarifies procedures for retiring RASs).

PGRR102 Adds a requirement for Resource Entities and Interconnecting Entities to provide operations dynamic model quality test results demonstrating appropriate performance for submitted operations dynamic models and makes non-substantive clarifying changes.

In addition to the foregoing, the following initiatives are underway to improve ERCOT System reliability:

1. ERM is working with Subject Matter Experts (SMEs) on issues associated with:
   a. telemetry accuracy;
   b. model data accuracy and timeliness; and
   c. voltage support.

III. Overall State of ERCOT System Reliability

The overall state of ERCOT System reliability is good. The ERM has, however, identified the following areas of concern based on discussions with ERCOT SMEs:

- Voltage control
- Telemetry quality
- Frequency ride-through
- Voltage ride-through
- Fault recording and sequence of events recording data requirements
- Installation of phasor measurement recording equipment
- Data recording, redundancy, retention, and reporting requirements
- Updates to the resource dynamic planning models
- Dynamics data requirements for Generation Resources and Settlement Only Generators
• Dynamic data for equipment owned by Resource Entities

IV. Areas for Future Audit

ERM staff anticipates conducting at least one audit later this year and has identified the following areas for potential audit:

1. Reactive testing
2. Installation of phasor measurement recording equipment
3. Data recording, redundancy, retention, and reporting requirements

ERM stands ready to provide any additional information requested by the Commission.

Dated: April 14, 2023

Respectfully submitted,

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