**ERCOT Nodal Operating Guides**

**Section 1: Overview**

**February 1, 2026**

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# 1 Overview

1.1 Document Purpose

(1) These ERCOT Operating Guides supplement the Protocols. The Operating Guides provide more detail and establish additional operating requirements for those organizations and Entities operating in, or potentially impacting the reliability of the ERCOT Transmission Grid in the ERCOT Region.

(2) The title “Operating Guide” is not to be construed as presenting merely a recommendation. Organizations and Entities are obligated to comply with the Operating Guides. Specific practices described in the Operating Guides for the ERCOT Region are consistent with North American Electric Reliability Corporation (NERC) Reliability Standards and the Protocols.

1.2 Document Relationship

(1) These Operating Guides are written to be consistent with the Protocols and to implement the North American Electric Reliability Corporation (NERC) Reliability Standards. The Protocols supersede these Operating Guides. The Public Utility Commission of Texas (PUCT) rules contain additional requirements for ERCOT and connected Entities.

(2) For application in the ERCOT Region, some NERC Reliability Standards must be adapted to fit the unique characteristics of ERCOT. Defined terminology for NERC Regional Variances, if any, is detailed in the NERC Reliability Standards.

1.3 Process for Nodal Operating Guide Revision

1.3.1 Introduction

(1) A request to make additions, edits, deletions, revisions, or clarifications to these Operating Guides, including any attachments and exhibits to these Operating Guides, is called a Nodal Operating Guide Revision Request (NOGRR). Except as specifically provided in other sections of these Operating Guides, Section 1.3, Process for Nodal Operating Guide Revision, shall be followed for all NOGRRs. ERCOT Members, Market Participants, Public Utility Commission of Texas (PUCT) Staff, the Reliability Monitor, the North American Electric Reliability Corporation (NERC) Regional Entity, the Independent Market Monitor (IMM), ERCOT, and any other Entities are required to utilize the process described herein prior to requesting, through the PUCT or other Governmental Authority, that ERCOT make a change to these Operating Guides, except for good cause shown to the PUCT or other Governmental Authority.

(2) The “next regularly scheduled meeting” of the Reliability and Operations Subcommittee (ROS), the Technical Advisory Committee (TAC), the ERCOT Board, or the PUCT, shall mean the next regularly scheduled meeting for which required Notice can be timely given regarding the item(s) to be addressed, as specified in the appropriate PUCT, ERCOT Board, or committee procedures.

(3) The ROS shall ensure that the Operating Guides are compliant with the ERCOT Protocols. As such, the ROS will monitor all changes to the ERCOT Protocols and initiate any NOGRRs necessary to bring the Operating Guides in conformance with the ERCOT Protocols. The ROS will also initiate a Nodal Protocol Revision Request (NPRR) if such a change is necessary to accommodate a proposed NOGRR prior to proceeding with that NOGRR.

(4) Throughout the Operating Guides, references are made to the ERCOT Protocols. ERCOT Protocols supersede the Operating Guides and any NOGRR must be compliant with the Protocols. The ERCOT Protocols are subject to the revision process outlined in Protocol Section 21, Revision Request Process.

(5) ERCOT may make non-substantive corrections at any time during the processing of a particular NOGRR. Under certain circumstances, however, the Operating Guides can also be revised by ERCOT rather than using the NOGRR process outlined in Section 1.3.

(a) This type of revision is referred to as an “Administrative NOGRR” or “Administrative Changes” and shall consist of non-substantive corrections, such as typos (excluding grammatical changes), internal references (including table of contents), improper use of acronyms, references to ERCOT Protocols, PUCT Substantive Rules, the Public Utility Regulatory Act (PURA), NERC regulations, Federal Energy Regulatory Commission (FERC) rules, etc., and revisions for the purpose of maintaining consistency between Section 1.3 and Protocol Section 21.

(b) ERCOT shall post such Administrative NOGRRs to the ERCOT website and distribute the NOGRR to ROS. If no Entity submits comments to the Administrative NOGRR within ten Business Days in accordance with paragraph (1) of Section 1.3.3.3, ROS Review and Action, the Administrative NOGRR shall be subject to PUCT approval. Following PUCT approval, ERCOT shall implement the Administrative NOGRR according to paragraph (3) of Section 1.3.5, Nodal Operating Guide Revision Implementation. If any Entity submits comments to the Administrative NOGRR, then it shall be processed in accordance with the NOGRR process outlined in Section 1.3.

(6) ERCOT may make modifications to the Operating Guides for the purpose of maintaining duplicate language between the Protocols and the related sections of the Operating Guides.

(a) This type of revision is referred to as an “Alignment NOGRR” and shall consist of changes to align language in the Protocols with related language in the Operating Guides. The following Operating Guide sections may only be modified by an Alignment NOGRR:

(i) Section 4.5.3.3, EEA Levels.

(b) ERCOT shall post an Alignment NOGRR to the ERCOT website and distribute the Alignment NOGRR to ROS within five Business Days of the ERCOT Board recommending approval of the related NPRR. The Alignment NOGRR shall be subject to PUCT approval. Alignment NOGRRs shall be implemented according to paragraph (5) of Section 1.3.5, rather than using the NOGRR process outlined in Section 1.3, and are exempt from the NOGRR comment process described in paragraph (2) of Section 1.3.3.3.

1.3.2 Submission of a Nodal Operating Guide Revision Request

(1) The following Entities may submit a NOGRR:

(a) Any Market Participant;

(b) Any ERCOT Member;

(c) PUCT Staff;

(d) The Reliability Monitor;

(e) The NERC Regional Entity;

(f) The IMM;

(g) ERCOT; and

(h) Any other Entity that meets the following qualifications:

(i) Resides (or represent residents) in Texas or operates in the Texas electricity market; and

(ii) Demonstrates that Entity (or those it represents) is affected by the Customer Registration or Renewable Energy Credit (REC) Trading Program sections of the ERCOT Protocols.

1.3.3 Nodal Operating Guide Revision Procedure

1.3.3.1 Review and Posting of Nodal Operating Guide Revision Requests

(1) NOGRRs shall be submitted electronically to ERCOT by completing the designated form provided on the ERCOT website. Excluding ERCOT-sponsored NOGRRs, ERCOT shall provide an electronic return receipt response to the submitter upon receipt of the NOGRR.

(2) The NOGRR shall include the following information:

(a) Description of requested revision and reason for suggested change;

(b) Impacts and benefits of the suggested change on ERCOT market structure, ERCOT operations, and Market Participants, to the extent that the submitter may know this information;

(c) List of affected Operating Guide sections and subsections;

(d) General administrative information (organization, contact name, etc.); and

(e) Suggested language for requested revision.

(3) ERCOT shall evaluate the NOGRR for completeness and shall notify the submitter, within five Business Days of receipt, if the NOGRR is incomplete, including the reasons for such status. ERCOT may provide information to the submitter that will correct the NOGRR and render it complete. An incomplete NOGRR shall not receive further consideration until it is completed. In order to pursue the NOGRR, a submitter must submit a completed version of the NOGRR.

(4) If a submitted NOGRR is complete or upon completion of a NOGRR, ERCOT shall post the NOGRR on the ERCOT website and distribute to the ROS within three Business Days.

(5) For any ERCOT-sponsored NOGRR, ERCOT shall also post an initial Impact Analysis on the ERCOT website, and distribute it to ROS. The initial Impact Analysis will provide ROS with guidance as to potential ERCOT computer systems, operations, or business functions that could be affected by the submitted NOGRR.

1.3.3.2 Withdrawal of a Nodal Operating Guide Revision Request

(1) A submitter may withdraw or request to withdraw a NOGRR by submitting a completed Request for Withdrawal form provided on the ERCOT website. ERCOT shall post the submitter’s Request for Withdrawal on the ERCOT website within three Business Days of submittal.

(2) The submitter of a NOGRR may withdraw the NOGRR at any time before ROS recommends approval of the NOGRR.

(3) If ROS has recommended approval of the NOGRR, the Request for Withdrawal must be approved by TAC if the NOGRR has not yet been recommended for approval by TAC.

(4) If TAC has recommended approval of a NOGRR, the Request for Withdrawal must be approved by the ERCOT Board if the NOGRR has not yet been recommended for approval by the ERCOT Board.

(5) Once recommended for approval by the ERCOT Board, a NOGRR cannot be withdrawn.

1.3.3.3 ROS Review and Action

(1) Any ERCOT Member, Market Participant, PUCT Staff, the Reliability Monitor, the NERC Regional Entity, the IMM, or ERCOT may comment on the NOGRR.

(2) To receive consideration, comments must be delivered electronically to ERCOT in the designated format provided on the ERCOT website within 14 days from the posting date of the NOGRR. Comments posted after the 14-day comment period may be considered at the discretion of ROS. Comments submitted in accordance with the instructions on the ERCOT website, regardless of date of submission, shall be posted on the ERCOT website and distributed to the ROS within three Business Days of submittal.

(3) ROS shall consider the NOGRR at its next regularly scheduled meeting after the end of the 14-day comment period. The quorum and voting requirements for ROS action are set forth in the Technical Advisory Committee Procedures. At such meeting, the ROS shall take action on the NOGRR. In considering action on a NOGRR, ROS shall:

(a) Recommend approval of the NOGRR as submitted or as modified;

(b) Reject the NOGRR;

(c) Table the NOGRR; or

(d) Refer the NOGRR to another ROS working group or task force, or another TAC subcommittee with instructions.

(4) If a motion is made to recommend approval of a NOGRR and that motion fails, the NOGRR shall be deemed rejected by ROS unless at the same meeting ROS later votes to recommend approval of, table, or refer the NOGRR. If a motion to recommend approval of an NOGRR fails via e-mail vote according to the Technical Advisory Committee Procedures, the NOGRR shall be deemed rejected by the ROS unless at the next regularly scheduled ROS meeting or in a subsequent e-mail vote prior to such meeting, ROS votes to recommend approval of, table, or refer the NOGRR. The rejected NOGRR shall be subject to appeal pursuant to Section 1.3.3.12, Appeal of Action.

(5) Within three Business Days after ROS takes action, ERCOT shall post an ROS Report reflecting the ROS action on the ERCOT website. The ROS Report shall contain the following items:

(a) Identification of submitter of the NOGRR;

(b) Operating Guide language recommended by ROS, if applicable;

(c) Identification of authorship of comments;

(d) Proposed effective date(s) of the NOGRR;

(e) Recommended priority and rank for any NOGRRs requiring an ERCOT project for implementation; and

(f) ROS action.

(6) The ROS chair shall notify TAC of Revision Requests rejected by ROS.

1.3.3.4 Comments to the ROS Report

(1) Any ERCOT Member, Market Participant, PUCT Staff, the Reliability Monitor, the NERC Regional Entity, the IMM, or ERCOT may comment on the ROS Report. Comments submitted in accordance with the instructions on the ERCOT website, regardless of date of submission, shall be posted on the ERCOT website and distributed to the committee (i.e., ROS and/or TAC) considering the NOGRR within three Business Days of submittal.

(2) The comments to the ROS Report will be considered at the next regularly scheduled ROS meeting that is at least six days from the posting date. Comments posted less than six days prior to the next regularly scheduled ROS meeting may be considered at the discretion of the ROS.

(3) For TAC, the comments to the ROS Report will be considered at the next regularly scheduled TAC meeting where the Revision Request is being considered.

1.3.3.5 Nodal Operating Guide Revision Request Impact Analysis

(1) If ROS recommends approval of a NOGRR, ERCOT shall prepare an Impact Analysis based on the proposed language in the ROS Report. If ERCOT has already prepared an Impact Analysis, ERCOT shall update the existing Impact Analysis, if necessary, to accommodate the language recommended for approval in the ROS Report.

(2) The Impact Analysis shall assess the impact of the proposed NOGRR on ERCOT staffing, computer systems, operations, or business functions and shall contain the following information:

(a) An estimate of any cost and budgetary impacts to ERCOT for both implementation and ongoing operations;

(b) The estimated amount of time required to implement the NOGRR;

(c) The identification of alternatives to the NOGRR that may result in more efficient implementation; and

(d) The identification of any manual workarounds that may be used as an interim solution and estimated costs of the workaround.

(3) Unless a longer review period is warranted due to the complexity of the proposed ROS Report, ERCOT shall post an Impact Analysis on the ERCOT website for a NOGRR for which ROS has recommended approval of, prior to the next regularly scheduled ROS meeting, and distribute to ROS. If a longer review period is required by ERCOT to complete an Impact Analysis, ERCOT shall submit comments with a schedule for completion of the Impact Analysis.

1.3.3.6 ROS Review of Impact Analysis

(1) After ERCOT posts the results of the Impact Analysis, ROS shall review the Impact Analysis at its next regularly scheduled meeting. ROS may revise its ROS Report after considering the information included in the Impact Analysis or additional comments received on the ROS Report.

(2) Within three Business Days of ROS consideration of the Impact Analysis and ROS Report, ERCOT shall post the ROS Report on the ERCOT website. If ROS revises the ROS Report, ERCOT shall update the Impact Analysis, if necessary, post the updated Impact Analysis on the ERCOT website, and distribute it to the committee (i.e. ROS and/or TAC) considering the Impact Analysis. If a longer review period is required for ERCOT to update the Impact Analysis, ERCOT shall submit comments with a schedule for completion of the Impact Analysis.

(3) If the NOGRR requires an ERCOT project for implementation, at the same meeting, ROS shall assign a recommended priority and rank for the associated project.

1.3.3.7 ERCOT Impact Analysis Based on ROS Report

(1) ERCOT shall review the ROS Report and, if necessary, update the Impact Analysis as soon as practicable. ERCOT shall distribute the updated Impact Analysis, if applicable, to TAC and post it on the ERCOT website. If a longer review period is required for ERCOT to update the Impact Analysis, ERCOT shall submit comments with a schedule for completion of the Impact Analysis.

1.3.3.8 PRS Review of Project Prioritization

(1) At the next regularly scheduled Protocol Revision Subcommittee (PRS) meeting after ROS recommends approval of a NOGRR that requires an ERCOT project for implementation, the PRS shall assign a recommended priority and rank for the associated project.

1.3.3.9 Technical Advisory Committee Vote

(1) TAC shall consider any NOGRR that ROS has submitted to TAC for consideration for which both a ROS Report and an Impact Analysis (as updated if modified by ROS under Section 1.3.3.7, ERCOT Impact Analysis Based on ROS Report) have been posted on the ERCOT website. The following information must be included for each NOGRR considered by TAC:

(a) The ROS Report and Impact Analysis;

(b) The ROS-recommended priority and rank, if an ERCOT project is required; and

(c) Any comments timely received in response to the ROS Report.

(2) The quorum and voting requirements for TAC action are set forth in the Technical Advisory Committee Procedures. In considering action on a ROS Report, TAC shall:

(a) Recommend approval of the NOGRR as recommended in the ROS Report or as modified by TAC;

(b) Reject the NOGRR;

(c) Table the NOGRR;

(d) Remand the NOGRR to ROS with instructions; or

(e) Refer the NOGRR to another TAC subcommittee or a TAC working group or task force with instructions.

(3) If a motion is made to recommend approval of a NOGRR and that motion fails, the NOGRR shall be deemed rejected by TAC unless at the same meeting TAC later votes to recommend approval of, table, remand, or refer the NOGRR. If a motion to recommend approval of an NOGRR fails via email vote according to the Technical Advisory Committee Procedures, the NOGRR shall be deemed rejected by TAC unless at the next regularly scheduled TAC meeting or in a subsequent email vote prior to such meeting, TAC votes to recommend approval of, table, remand, or refer the NOGRR. The rejected NOGRR shall be subject to appeal pursuant to Section 1.3.3.12, Appeal of Action

(4) Within three Business Days after TAC takes action on a NOGRR, ERCOT shall post a TAC Report reflecting the TAC action on the ERCOT website. The TAC Report shall contain the following items:

(a) Identification of the submitter of the NOGRR;

(b) Modified Nodal Operating Guide language proposed by TAC, if applicable;

(c) Identification of the authorship of comments, if applicable;

(d) Proposed effective date(s) of the NOGRR;

(e) Priority and rank for any NOGRR requiring an ERCOT project for implementation;

(f) ROS action;

(g) TAC action;

(h) IMM Opinion;

(i) ERCOT Opinion; and

(j) ERCOT Market Impact Statement.

(5) If TAC recommends approval of a NOGRR, ERCOT shall forward the TAC Report to the ERCOT Board for consideration pursuant to Section 1.3.3.10, ERCOT Board Vote.

(6) The TAC chair shall report the results of all votes by TAC related to NOGRRs to the ERCOT Board at its next regularly scheduled meeting.

1.3.3.10 ERCOT Board Vote

(1) Upon issuance of a TAC Report and Impact Analysis to the ERCOT Board, the ERCOT Board shall review the TAC Report and the Impact Analysis at the next regularly scheduled meeting. For Urgent NOGRRs, the ERCOT Board shall review the TAC Report and Impact Analysis at the next regularly scheduled meeting, unless a special meeting is required due to the urgency of the NOGRR.

(2) The quorum and voting requirements for ERCOT Board action are set forth in the ERCOT Bylaws. In considering action on a TAC Report, the ERCOT Board shall:

(a) Recommend approval of the NOGRR as recommended in the TAC Report or as modified by the ERCOT Board;

(b) Reject the NOGRR;

(c) Table the NOGRR; or

(d) Remand the NOGRR to TAC with instructions.

(3) If a motion is made to recommend approval of a NOGRR and that motion fails, the NOGRR shall be deemed rejected by the ERCOT Board unless at the same meeting the ERCOT Board later votes to recommend approval of, table, or remand the NOGRR. The rejected NOGRR shall be subject to appeal pursuant to Section 1.3.3.12, Appeal of Action.

(4) Within three Business Days after the ERCOT Board takes action on a NOGRR, ERCOT shall post a Board Report reflecting the ERCOT Board action on the ERCOT website.

1.3.3.11 PUCT Approval of Revision Requests

(1) All NOGRRs require approval by the PUCT prior to implementation.

(2) Within three Business Days after the PUCT takes action on a NOGRR, ERCOT shall post a PUCT Report reflecting the PUCT action on the ERCOT website.

1.3.3.12 Appeal of Action

(1) Any ERCOT Member, Market Participant, PUCT Staff, the Reliability Monitor, the IMM, the NERC Regional Entity or ERCOT may appeal a ROS action to reject, table, or refer a NOGRR directly to TAC. Such appeal to the TAC must be submitted electronically to ERCOT by completing the designated form provided on the ERCOT website within seven days after the date of the relevant ROS appealable event. ERCOT shall reject appeals made after that time. ERCOT shall post appeals on the ERCOT website within three Business Days of receiving the appeal. Appeals shall be heard at the next regularly scheduled TAC meeting that is at least seven days after the date of the requested appeal. An appeal of a NOGRR to TAC suspends consideration of the NOGRR until the appeal has been decided by TAC.

(2) Any ERCOT Member, Market Participant, PUCT Staff, the Reliability Monitor, the IMM, the NERC Regional Entity or ERCOT may appeal a TAC action to reject, table, remand, or refer a NOGRR directly to the ERCOT Board. Appeals to the ERCOT Board shall be processed in accordance with the ERCOT Board Policies and Procedures. An appeal of a NOGRR to the ERCOT Board suspends consideration of the NOGRR until the appeal has been decided by the ERCOT Board.

(3) Any ERCOT Member, Market Participant, PUCT Staff, the Reliability Monitor, the IMM, or the NERC Regional Entity may appeal any decision of the ERCOT Board regarding a NOGRR to the PUCT or other Governmental Authority. Such appeal to the PUCT or other Governmental Authority must be made within any deadline prescribed by the PUCT or other Governmental Authority, but in any event no later than 35 days of the date of the relevant ERCOT Board appealable event. Notice of any appeal to the PUCT or other Governmental Authority must be provided, at the time of the appeal, to ERCOT’s General Counsel. If the PUCT or other Governmental Authority rules on the NOGRR, ERCOT shall post the ruling on the ERCOT website.

1.3.4 Urgent Requests

(1) The party submitting a NOGRR may request that the NOGRR be considered on an urgent timeline (“Urgent”) only when the submitter can reasonably show that an existing Nodal Operating Guide provision is impairing or could imminently impair ERCOT System reliability or wholesale or retail market operations, or is causing or could imminently cause a discrepancy between a Settlement formula and a provision of the ERCOT Protocols.

(2) ROS may designate the NOGRR for Urgent consideration if a submitter requests Urgent status or upon valid motion in a regularly scheduled meeting of the ROS. Criteria for designating a NOGRR as Urgent are that the NOGRR requires immediate attention due to:

(a) Serious concerns about ERCOT System reliability or market operations under the unmodified language; or

(b) The crucial nature of a Settlement activity conducted pursuant to any Settlement formula.

(3) ERCOT shall prepare an Impact Analysis for Urgent NOGRRs as soon as practicable.

(4) ROS shall consider the Urgent NOGRR and Impact Analysis, if available, at the next regularly scheduled ROS meeting, or at a special meeting called by the ROS leadership to consider the Urgent NOGRR.

(5) If the submitter desires to further expedite processing of the NOGRR, a request for voting via email may be submitted to the ROS chair. The ROS chair may grant the request for voting via email. Such voting shall be conducted pursuant to the Technical Advisory Committee Procedures.

(6) If recommended for approval by ROS, ERCOT shall post a ROS Report on the ERCOT website within three Business Days after ROS takes action. The TAC chair may request action from TAC to accelerate or alter the procedures described herein, as needed, to address the urgency of the situation.

(7) Any Urgent NOGRRs shall be subject to an Impact Analysis pursuant to Section 1.3.3.7, ERCOT Impact Analysis Based on ROS Report, and TAC consideration pursuant to Section 1.3.3.9, Technical Advisory Committee Vote.

1.3.5 Nodal Operating Guide Revision Implementation

(1) Following PUCT approval, ERCOT shall implement NOGRRs on the first day of the month following PUCT approval, unless otherwise provided in the PUCT Report for the approved NOGRR.

(2) For such other NOGRRs, the Impact Analysis shall provide an estimated amount of time required to implement the NOGRR and ERCOT shall issue a Market Notice as soon as practicable, but no later than ten days prior to the actual implementation, unless a different notice period is required in the PUCT Report for the approved NOGRR.

(3) ERCOT shall implement an Administrative NOGRR on the first day of the month following PUCT approval.

(4) ERCOT shall implement an Alignment NOGRR as provided in the PUCT Report for the related NPRR.

1.4 Definitions

A primary list of definitions is contained within Protocol Section 2, Definitions and Acronyms. Additional definitions that apply specifically to these Operating Guides are listed below. It is essential to the reliability of the ERCOT Transmission Grid that all appropriate personnel use and understand the same terms in their daily operations. The definitions in this Section are intended to enable ERCOT, Qualified Scheduling Entities (QSEs), and Transmission Operators (TOs) to effectively communicate on an ongoing basis.

**Links to Definitions:**

[**A**](#A)**, [B](#B),** [**C**](#C)**, [D](#D),** [**E**](#E)**, [F](#F),** [**G**](#G)**, [H](#H),** [**I**](#I)**, [J](#J),** [**K**](#K)**, [L](#L),** [**M**](#top)**, [N](#N),** [**O**](#O)**, [P](#P),** [**Q**](#Q)**, [R](#R),** [**S**](#S)**, [T](#T),** [**U**](#U)**, [V](#V),** [**W**](#W)**, [X](#X),** [**Y**](#Y)**, [Z](#Z);**

A

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Automatic Generation Control (AGC)

Application that receives signals from ERCOT for Regulation deployment and causes Resources providing these Ancillary Services to respond in accordance with their ramp rate to meet the received deployments.

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Capacitor

Static device which produces reactive power (VAr source) for voltage control when energized (tends to raise voltage).

Cranking Path

A set of elements in the ERCOT System that establishes an electrical path from a contracted Black Start Resource to a designated next start Resource.

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Designated Agent

Any Entity that is authorized to perform actions or functions on behalf of another Entity.

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Generator Reactive Power Sign/Direction Terminology

(1) Lagging power factor operating condition is when MVAr flow is out of the Generation Resource (overexcited generator) or Energy Storage Resource (ESR). The generator is producing MVArs.

(2) Leading power factor operating condition is when MVAr flow is into the Generation Resource (underexcited generator) or ESR. The generator is absorbing MVArs.

Geomagnetic Disturbance (GMD)

A disturbance of the earth’s magnetic field caused by the interaction of that field with the effects of solar storms.  These GMDs may result in induced currents that may negatively affect power system equipment.

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Inadvertent Energy

The difference between the ERCOT System actual metered value and the ERCOT System scheduled energy.

Intercompany Connections

The connection between two or more independent transmission companies.

**Inter-Control Center Communication Protocol (ICCP) Data**

Data that is transmitted or exchanged over the ICCP link and the subject of any provisions of the Nodal ICCP Communication Handbook.

Intra-Company

Occurring within or between the branches of a single company.

Island

An electrically separated portion of the ERCOT System with independent frequency, generation and Load.

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**Resource-Specific Extensible Markup Language (XML) Data**

XML Data gathered, transmitted, or exchanged pursuant to the ERCOT Protocols that identifies a specific Resource and/or relates to the deployment or recall of an Emergency Response Service (ERS) Resource. This definition does not include reports and extracts retrieved via the Market Information System (MIS).

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Synchronization Corridors

A predetermined section of the ERCOT Transmission Grid that may be utilized to synchronize Islands after a Partial Blackout or Blackout.

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Telemetry

The measured quantity or quality (e.g., open/closed, amps, volts, MW, MVAr, MVA) and transmitting the result to a remote location for indication or recording.

Time Error

An accumulated time difference between ERCOT System time and the time standard. Time error is caused by a deviation in ERCOT average frequency from 60.0 Hz.

Transmission Line Terminal Sign/Direction Terminology

(1) MW or MVAr flow out of the bus is considered to be positive (+) flow.

(2) MW or MVAr flow into the bus is considered to be negative (-) flow.

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1.5 Operational Training

1.5.1 System Operator Training Objectives

(1) Each operating Entity within the ERCOT System shall train its operators such that they will possess the necessary knowledge, skills and abilities to perform their assigned tasks in directing the operation of the bulk power system. Instruction provided shall be in accordance with North American Electric Reliability Corporation (NERC) Reliability Standards, the Protocols, these Operating Guides, and ERCOT Procedures, as well as individual Entity operating goals, plans and procedures.

(2) Training will prepare operators to:

(a) Maintain the safety of personnel, even during emergency situations involving complex switching and manipulation of control elements;

(b) Protect system components, particularly major power system elements from serious life degradation or harm;

(c) Operate the system in a secure manner to minimize violations of operating limits, avoiding customer Outages where reasonably possible, and avoiding unstable situations that might result in widespread Outages, Partial Blackouts or Blackouts;

(d) Operate the system using Good Utility Practices whenever possible within continually changing operating environment; and

(e) Restore the system to its normal operating state as rapidly as practical after a disturbance.

1.5.2 System Operator Training Requirements

(1) The System Operator Training Program applies to all operators who are responsible for the Day-Ahead and Real-Time operation of the ERCOT Transmission Grid. Transmission Operators (TOs) and Qualified Scheduling Entity (QSE) operators who represent Generation Resources, Energy Storage Resources (ESRs), and Load Resources shall participate in 32 hours per year of training and drills on system emergencies. QSE operators who do not represent Generation Resources, ESRs, or Load Resources must participate in at least eight hours per year of training and drills in system emergencies.

(2) For those operators required to obtain 32 hours annually at least eight hours must be from simulations or realistic drills.

(3) Training should use simulations appropriate to each class of operator and all such training shall meet or exceed established NERC Reliability Standards.

(4) Participation in emergency simulations, severe weather drills, ERCOT Black Start training, and portions of the ERCOT Operations Training Seminar that relate to NERC recommended topics may be used to satisfy this requirement.

(5) ERCOT Black Start training attendance is mandatory for all TOs, QSEs identified in a Black Start restoration plan, Resource Entities that represent Black Start Resources, and other Entities who are notified by ERCOT that their participation is required.

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| ***[NOGRR194: Replace paragraph (5) above with the following upon system implementation of NPRR857:]***  (5) ERCOT Black Start training attendance is required for all TOs, Direct Current Tie Operators (DCTOs), QSEs identified in a Black Start restoration plan, Resource Entities that represent Black Start Resources, and other Entities who are notified by ERCOT that their participation is required. |

(6) Attendance at Black Start training is limited to those Entities identified in paragraph (5) above, ERCOT staff, Public Utility Commission of Texas (PUCT), Reliability Monitor, or other Entities deemed by ERCOT to have a legitimate reliability reason to attend.

(7) Task specific training carried out internally within an Entity will be considered in full compliance with this requirement. Training documentation, including curriculum, training methods, and individual training records, shall be immediately available during any audit.

1.5.3 ERCOT Operations Training Seminar

(1) ERCOT will, at a minimum, annually host a training seminar. The purpose of the training seminar is to provide a forum for system wide problems to be effectively addressed, analyze common topics and issues, and participate in formal training sessions. The training seminar should present information to maintain the consistency of operators across all of the ERCOT Region.

(2) The seminar shall include a minimum of one topic on system restoration.

1.5.4 ERCOT Severe Weather Drill

(1) An annual severe weather drill will be held to test the scheduling and communication functions of the primary and/or backup control centers and to train operators in emergency procedures. On an annual basis, ERCOT shall:

(a) Develop and coordinate, with assistance from the Operations Working Group (OWG), the severe weather drill;

(b) Conduct a severe weather drill; and

(c) Verify and report Entity participation in the severe weather drill to the OWG, the Reliability Monitor, and the NERC Regional Entity.

(2) TOs and QSEs that represent Generation Resources and/or ESRs are required to participate in the severe weather drill.

(3) On an annual basis, OWG shall:

(a) Review and critique the results of completed severe weather drills to ensure effectiveness and recommend changes as necessary to ERCOT; and

(b) Report results of the severe weather drill to the Reliability and Operations Subcommittee (ROS).

1.5.5 Training Practices

(1) Each operating Entity should establish a clear requirement, define and develop a systematic approach in administering the training, and provide the necessary feedback as a measurement of curriculum suitability and trainee progress. Each operating Entity should recognize the importance of training and provide sufficient operator participation through adequate staffing and work-hour scheduling.

1.5.6 ERCOT Operator Certification Program

(1) ERCOT shall maintain and administer the ERCOT operator certification program, which includes the ERCOT Fundamentals Training Manual and certification exam. The purpose of the program is to prepare operators within the ERCOT Region to reliably operate the ERCOT System. ERCOT shall maintain the ERCOT Fundamentals Training Manual to serve as a reference for persons preparing for the ERCOT operator certification exam. ERCOT shall post the ERCOT Fundamentals Training Manual to the ERCOT website.