



Item 5.1.1: ERCOT Comments on NOGRR245

Chad V. Seely

Senior Vice President, General Counsel and
Corporate Secretary

Woody Rickerson

Senior Vice President and Chief Operating Officer

Reliability and Markets Committee Meeting

ERCOT Public

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NOGRR 245 Background

- ERCOT filed original NOGRR on 1/11/23 based on:
 - NERC recommendations related to ERCOT Region events where IBRs failed to ride-through system disturbances
 - NERC recommendations to industry
 - IBRTF recommendations
 - IEEE 2800 approval
- On 9/14/23, ROS granted NOGRR urgent status and recommended approval as amended by NextEra comments as revised by ROS
- On 9/26/23, TAC tabled NOGRR
- On 3/27/24, TAC recommended approval as recommended by ROS as amended by Joint Commenter (JC) comments as revised by TAC
- On 4/23/24, ERCOT Board remanded to TAC
- On 6/7/24, TAC recommended approval as amended by ERCOT and revised by TAC
- Prior to 6/17/24 R&M Committee Meeting, JCs opposed TAC-recommended version and informed ERCOT of their intent to appeal if ERCOT Board sent NOGRR to PUC
 - Appeal would delay the benefits to system reliability of NOGRR245
- On 6/18/24, ERCOT Board tabled NOGRR 245 at ERCOT's request

NOGRR 245 Current Status

- ERCOT worked with JCs on revisions to:
 - Retain some near-term benefits of TAC-recommended NOGRR 245
 - Remove details/criteria of exemption process to subsequent NOGRR
 - Provide clarifications, remove redundancy and correct errors
- From discussions:
 - Exemption process/criteria removed (NOGRR “bifurcated”) for subsequent NOGRR
 - New IBRs (after 8/1/24) must meet IEEE 2800 requirements
 - Legacy IBRs/Type 1/Type 2 WGRs (before 8/1/24) must *maximize* software, firmware, settings and parameterization (but not hardware – exc. memory) to fullest extent equipment allows by 12/31/25
 - By 4/1/25, Resource Entities (REs) must:
 - Submit a notice of intent to request an exemption if cannot meet new requirements
 - Provide ERCOT initial Frequency Ride-Through (FRT) and Voltage Ride-Through (VRT) capability reports
 - Provide accurate models

NOGRR 245 Current Status (cont'd)

- If Resource can meet the new requirements, but not by 12/31/25, it must request an extension
 - For pre-8/1/24 Resources, extension cannot go past 12/31/27
 - For post-8/1/24 Resources, extension cannot go past 12/31/28*
 - ERCOT comments identify specific reason for each change to TAC-recommended version:
 1. Clarification/address Joint Commenter concerns
 2. Bifurcation of exemption criteria
 3. Correction
 4. Duplication/Redundancy
- * Synopsis of NOGRR 245 process based on most recent ERCOT comments appears in Appendix B

Recap of Change Types*

Category 1 – Clarification/JC concern			
2.6.2.1(4)	2.9.1.1(4)	2.9.1.2(9)	2.12.1(10)
2.6.2.1(5)	2.9.1.1(5)	2.11	2.12.1(11)
2.6.2.1(6)	2.9.1.1(7)	2.11.1(1)	2.12.1(12)
2.6.2.1(7)	2.9.1.2(4)	2.11.2(1)	2.12.1.1(2)
2.9.1(5)	2.9.1.2(5)	2.12.1(6)	2.12.1.2(1)
2.9.1(8)	2.9.1.2(7)	2.12.1(7)	2.12.1.3(2)
Category 2 – Bifurcation of exemption criteria			
2.6.2.1(7)	2.12.1(2)	2.12.1.3(3), (4), (5)	2.12.1.4(6), (7)
2.12.1(1)	2.12.1.3		
Category 3 – Corrections			
2.9.1.1(1)	2.12.1(1)	2.12.1(8), (9)	2.12.1.4
2.9.1.1(8)			
Category 4 – Duplication/Redundancy			
2.9.1.1(1)	2.9.1.1(8)	2.9.1.2(7)	2.12.1.2(5)
2.9.1.1(7)	2.9.1.1(9)	2.12.1(3), (4)	

* Details of post-TAC revisions in Appendix A

Next Steps

- Joint Commenters have represented to ERCOT they do not oppose the August 16, 2024 ERCOT Comments
- ERCOT asks the R&M Committee to recommend the Board approve NOGRR 245 as revised by ERCOT's 8/16/24 comments and designate a subsequent NOGRR as *Board Priority Revision Request* to become effective by 4/1/25 to coincide with deadline for submitting notices of intent to request an exemption
- After/if PUCT approves NOGRR 245, ERCOT will file Phase 2 NOGRR to develop exemption process and criteria as soon as possible (work already begun)

Appendix A – Changes from TAC version

Changes to TAC-Recommended NOGRR 245

1. Clarification/JC Concern

- § 2.6.2.1(4); § 2.9.1.1(4); § 2.9.1.2(4) Based on JC request to make it clear requirement does not apply when output reductions result from wind speed or solar irradiance changes (taken from NERC PRC-030)
- § 2.6.2.1(5); § 2.9.1.1(5); § 2.9.1.2(5) JC concern about phrase “power output”
- § 2.6.2.1(6) (i) provide ERCOT the date Resource maximized ride-through capability (for modelling); (ii) defines how to determine if Resource “maximized” ride-through capability to equipment limits; and (iii) adds element of “Good Utility Practice” per JC request
- § 2.6.2.1(7) Resource must submit IFRTCR and notice re: exemption by 4/1/25
- § 2.9.1(5) Date by which RE must complete maximization activities
- § 2.9.1(8) Provide date Resource maximized ride-through capability (for modelling)
- § 2.9.1.1(7) (renumbered) and § 2.9.1.2(7) Adds fault *and recovery period*
- § 2.9.1.2(9) For when Resource cannot meet 12/31/25 deadline to maximize
- § 2.11 Adds 3 sub-sections: (i) RE must tell ERCOT if it considers Resource "already maximized," (ii) RE must tell ERCOT when it completes maximization, and Resource must comply w/ ride-through requirements from 5/1/24 until maximized
- § 2.11.1(1) (i) Describes info RE must include in IFRTCR; (ii) removes language JCs found objectionable; (iii) allows RE to explain why it could not get OEM/consultant to verify limitations; (iv) RE cannot get exemption/extension if it does not timely file IFRTCR

Changes to TAC-Recommended NOGRR 245

- § 2.11.2(1) Same as § 2.11.1(1) but for IVRTCR
- § 2.12.1(2) Limits Resources to requesting exemptions only on the equipment limitations included in the IVRTCR/IFRTCR
- § 2.12.1(6) Clarifies when exemptions end
- § 2.12.1(7) Changed from sub-section of 2.12.1(6) to a sub-section of § 2.12.1 and add language making it clear it applies only to newly-available SFSP modifications
- § 2.12.1(10) (renumbered) Until exemption/extension/appeal is final, Resource must meet greater of maximized ride-through capability or ride-through requirements from 5/1/24
- § 2.12.1(11) (renumbered) ERCOT will not report Resource to ERM based on IFRTCR/IVRTCR or notice of intent to request an exemption so long as Resource meets certain requirements
- § 2.12.1(12) (renumbered) Info submitted is Protected Information
- § 2.12.1.1(2) RE needing an exemption must timely submit IFRTCR/IVRTCR and removes data requirements moved to IFRTCR/IVRTCR sections
- § 2.12.1.2(1) RE must submit extension requests by 4/1/25
- § 2.12.1.3(2) Clarified language

Changes to TAC-Recommended NOGRR 245

2. Bifurcation

- § 2.6.2.1(7) Resources will submit IFRTCR and notice of intent to request exemption by 4/1/25 but exemption criteria to be established in new NOGRR
- § 2.12.1(1) Confirms existing facilities not meeting ride-through requirements must request extension or submit notice of intent to request exemption by 4/1/25 and criteria for exemption will be determined in subsequent NOGRR
- § 2.12.1(2) Notices of intent to request exemption may only be supplemented with additional info under process established in subsequent NOGRR and no new notices of intent to request exemption after 4/1/25
- § 2.12.1.3 Removed “exemption” from title because it now applies to only extension requests
- § 2.12.1.3(3), (4) and (5) Removed references to exemptions (to be addressed by subsequent NOGRR)
- § 2.12.1.4(6), (7) Removed references to exemptions (to be addressed in subsequent NOGRR)

Changes to TAC-Recommended NOGRR 245

3. Corrections

- § 2.9.1.1(1) Typographical errors in formulae in Tables A & B
- § 2.9.1.1(8) (renumbered) Corrects paragraph numbers due to deletion of original section 2.9.1.1(7) and REs must complete maximization by 12/31/25
- § 2.9.1.2(7) Number changed to (7)
- § 2.12.1(1) Corrects section references
- § 2.12.1(8), (9) Corrected references due to other modifications
- § 2.12.1.4 Title removed and sub-sections renumbered as part of § 2.12.1.3
- § 2.12.1(9) (renumbered) Corrects section due to modification

Changes to TAC-Recommended NOGRR 245

4. Redundancy

- § 2.9.1.1(1) Removed Table C (same requirements as IEEE 2800-2022 § 7.2.3)
- § 2.9.1.1(7) Requirement already covered in § 7.2.2.4 of IEEE 2800-2022
- § 2.9.1.1(8); § 2.9.1.2(7) Remove sentence because paragraph (1) already requires ride-through during disturbances regardless of phase angle or rate-of-change-of-frequency
- § 2.9.1.1(9) and 2.12.1.2(5) (renumbered) Due to removal of Table C (described above)
- § 2.12.1(3), (4); § 2.12.1.2(5) Deleted because requirements are captured in revised language for IFRTCRs/IVRTCRs and to address language JCs found objectionable
- § 2.12.1.2(5) Removed because data submission requirements moved to IFRTCR/IVRTCR sections and Table C removed

Appendix B – Process Synopsis

Process – Pre-8/1/24 SGIA IBR/Type 1/Type 2 WGR

Frequency Ride-Through

- By 12/31/25 (or original sync date), Resource must maximize software, firmware, settings, parameterization (SFSP) (incl. memory) to meet or exceed § 2.6.2.1(1)-(5) *and* IEEE 2800 per § 2.9.1(8) and inform ERCOT when maximized [§ 2.6.2.1(6); § 2.9.1(8)]
 - If cannot by 12/31/25, submit Initial Frequency Ride-Through Capability Report (IFRTR) by 4/1/25, submit request for extension and/or notice of intent to request an exemption and comply with current requirements in effect on 5/1/24 until maximized [§ 2.6.2.1(7)]
- Resources that have not implemented modifications to meet § 2.6.2.1(1)-(5) must *temporarily* meet § 2.6.2.1.1(2) [§ 2.6.2.1.1(1)]
 - If Resource cannot remain reliably connected as required in (2), it must provide ERCOT the information required in § 2.11 [§ 2.6.2.1.1(3)]
- On performance failure: Resource Entity (RE) must take actions in §2.13

Process – Pre-8/1/24 SGIA IBR/Type 1/Type 2 WGR

Frequency Ride-Through (cont'd)

IFRTCR must contain: [§2.11.1(1)]

RE DUNS #	SFSP modifications done to maximize
Site Name	Changes beyond SFSP (if any)
Unit Name(s)	Expected post-modification limitation(s)
NOG Section(s) Resource cannot meet	Implementation schedule
Current FRT capability	Model of expected performance with limitations identified
Known FRT limitations compared to requirements in § 2.6.2.1(1) - (5)	Description of limitation that cannot be modeled
Detailed description of limitation(s) preventing Resource from meeting ride-through requirement(s)	

NOTE: ERCOT will not use IFRTCR for referral to ERM so long as Resource meets greater of: (i) maximized capability or (ii) requirements in effect 5/1/24 [§2.12.1(11)]

Process – Pre-8/1/24 SGIA IBR/Type 1/Type 2 WGR

Voltage Ride-Through

- Meet or exceed § 2.9.1.2(1)-(7) by 12/31/25 or sync date (whichever is later) [§ 2.9(1)(b); § 2.9.1.2(8)]
- If cannot:
 - By 4/1/25, submit IVRTCR* and request extension [§ 2.9.1.2(9)]
 - If cannot meet § 2.9.1.2(1)-(7) even with extension, submit IVRTCR and notice of intent to request an exemption and comply with requirements in effect 5/1/24 until VRT maximized [§ 2.9.1.2(9)]
 - **NOTE:** IBR/Type 1/2 WGR that modifies to meet § 2.9.1.2 before 1/1/28 need not meet IEEE 2800 [§ 2.9.1(4)]
 - **NOTE:** Type 1/2 WGR not required to meet IEEE 2800 but must meet § 2.9.1.2 [§ 2.9.1(7)]
 - Comply w/ requirements in effect on 5/1/24 during pendency of extension/exemption/ appeal

* Same data as IFRTCR and ERCOT will not use report for referral to ERM so long as Resource meets greater of: (i) maximized capability or (ii) requirements in effect on 5/1/24 [§2.12.1(11)]

Process – Pre-8/1/24 SGIA IBR/Type 1/Type 2 WGR

Frequency or Voltage

- During exemption/extension/appeal process, Resource must meet greater of:
(i) maximized capability or (ii) requirements in effect 5/1/24 [§2.12.1(10)]
- If Exemption/Extension granted:
 - Maximized capability becomes performance criteria until exemption/extension ends [§2.12.1(4)]
- If new SFSP modifications become available, within 90 days, RE must submit plan to implement and implement within 180 days of plan approval [§2.12.1(7)]
- If RE believes Resource has already maximized ride-through capabilities or will maximize w/ SFSP changes before 12/31/25, ER must provide ERCOT an accurate model showing field settings [§ 2.11(1)]
- Until Resource completes maximization, it must meet requirements in effect on 5/1/24 [§ 2.11(2)]
- When maximization work complete, RE notifies ERCOT [§ 2.11(3)]
- On performance failure, follow § 2.13

Frequency Ride-Through

- Meet/exceed § 2.6.2.1(1)-(5) and IEEE 2800 [§ 2.6.2.1(1) and § 2.9.1(8)]
- New IBRs synchronized after 12/31/25 must inform ERCOT of date of maximization [§ 2.6.2.1(6)]
- On Performance Failure, follow § 2.13

Voltage Ride-Through

1. Maximize to meet/exceed §2.9.1.1(1)-(8) (Preferred Requirements) [§ 2.9.1(1)(a)] *and* IEEE 2800-2022, Sec. 5, 7, 9 at POIB [§2.9.1(2), (3), (8)]
 - If cannot do so by synchronization date:
 - Request extension (cannot go past 12/31/28) [§ 2.9.1(6)]
 - Extension request must include:
 - Entity Name
 - Site Name
 - NOG Section(s)
 - Docs from OEM re: limitations
 - Schedule for implementing
 - Entity DUNS Number
 - Unit Name(s)
 - Grounds/basis for request
 - Description of modifications
 - Other info in Section [§2.12.1.2(2)]
 - Extension ends per its terms or as approved by ERCOT [§2.12.1.2(5)]

Performance Failures – All IBRs/Type 1/Type 2 WGRs

- Required Criteria appear in: § 2.6.2.1; § 2.9.1; § 2.9.1.1; § 2.9.1.2 [§ 2.13(1)]
 - If exemption/extension granted, documented maximum ride-through capability is performance requirement [§ 2.13(2)]
- On performance failure:
 - Investigate, report cause to ERCOT, validate model, and report results to ERCOT [§ 2.13(3)]
 - Develop mitigation plan, submit to ERCOT, and implement approved plan w/n 180 days [§ 2.13(5)]
- For performance failure where system conditions at POIB exceeded Required Criteria (above) but remained below *maximized* capabilities that *exceeded Required Criteria*, ERCOT will report to ERM only if RE does not meet §2.13(3) and (5) (above)

Exemption/Extension Process - § 2.12.1

- Apply if Resource cannot meet applicable requirements [§ 2.12.1(1)]
- Resource must request extension or submit notice of intent to request exemption by 4/1/25 [§ 2.12.1(1)]
- For pre-8/1/24 SGIA Resource, IFRTCR/IVRTCR must accompany request [§2.12.1(2)]
- No requests for newly-identified technical limitations after 4/1/25 [§ 2.12.1(2)]
- Notice of intent to request an exemption may be supplemented only with additional info per Phase 2 NOGRR and RE cannot request an exemption based on equipment limitations not described in IFRTCR/IVRTCR [§ 2.12.1(2)]
- ERCOT will grant *extension* if all are met: [§ 2.12.1(4)]
 - Circumstances beyond entity's control prevented meeting deadline
 - Request demonstrates entity's good faith efforts to minimize duration
 - Entity provided accurate models with description of all limitations and limitations it cannot model and represents model is accurate
 - Extension for Resource before 8/1/24 does not exceed 12/31/27
 - Extension for Resource post 8/1/24 does not exceed 12/31/28

Exemption/Extension Process - § 2.12.1

- For Resource with approved exemption/extension, maximized capabilities become performance criteria [§ 2.12.1(4)]
- Exemption/Extension becomes effective on ERCOT approval and only to extent approved [§ 2.12.1(5)]
- Exemptions continue until Resource fully implements modification per Planning Guide § 5.2.1(1)(c) or fully implements a modification eliminating the need for exemption [§ 2.12.1(6)]
- If ERCOT or Resource Entity (RE) learns of new SFSP modification, RE must: (i) submit implementation plan w/n 90 days, and (ii) if ERCOT approves it, implement w/n 180 days [§ 2.12.1(7)]
- Extensions end per § 2.12.1.2 [§ 2.12.1(8)]
- Until exemption/extension/appeal is final, pre-8/1/24 SGIA Resource must meet greater of: (i) maximized capability, or (ii) requirements in effect on 5/1/24 [§ 2.12.1(10)]

Extension Timeline - § 2.12.1.3

- ASAP after receiving request, ERCOT will provide written confirmation of receipt and notify that either: (a) submission was complete; or (b) submission was incomplete and identify missing information and provide instructions to submit missing information [§ 2.12.1.3(1)]
- Within 10 Business Days of notice of incomplete submission, entity will provide missing info or request additional time w/ explanation for delay
- Within 7 days of receiving complete request, ERCOT will designate a Sr. rep to participate in discussions
- Requesting entity will cooperate in providing additional info, as needed
- ERCOT will try to complete process within 180 days or provide estimate of time needed

Extension Timeline - § 2.12.1.3

- ERCOT will provide notification it completed review and the determination: approved; approved in part (with detailed explanation for denied part); or denied (with details of reason for denial)
- Aggrieved entity may appeal decision to PUCT per P.U.C. PROC. R. 22.251
- If no appeal, entity deemed to have accepted decision

NOTE: No *exemption* timeline described because it will be developed in Phase 2 NOGRR

Appendix C – RFI Results

RFI Results

- ERCOT issued Market Notices (M-C050124-01 & M-C050124-02) to encourage IBRs to maximize ride-through capabilities based on NERC recommendations without waiting on NOGRR 245
- Of 682 RFIs, 85% (624) responded by due date and 15% (58) did not
- Of 85% [59 GW] who responded:
 - Q1 (Will unit implement SFSP improvements to maximize FRT capabilities to equipment capability?)

Response	#	%	GW	GW %
Yes	306	49	28.9	49
No	318	51	30.1	51

RFI Results (cont'd)

- Q1a (date to be implemented)

Year	# of Units
2024	73
2025	158
2026	57
2027	18

- Q2 (Will unit implement SFSP improvements to maximize VRT capabilities to equipment capability?)

Response	#	%	GW	GW %
Yes	325	52	31.3	53
No	299	48	27.7	47

RFI Results (cont'd)

- Q2a (date to be implemented)

Year	# of Units
2024	78
2025	170
2026	58
2027	18
No Date Provided	4

RFI Results (cont'd)

– Q2b (If no to Q2, why will changes not be implemented?)

Response	#	%	GW	GW %
Still investigating	98	32.8	9.4	33.9
Already maximized	83	27.8	8	28.9
Waiting for NOGRR245 approval	36	13	3	10.8
Other	21	7	1.7	6.1
No improvement available	20	6.7	2	7.2
Negative/no rationale	17	5.7	2.1	7.6
Compliant w/ current rules	13	4.3	1	3.6
Not in service yet	10	3.3	.5	1.8

