



Item 5.1.1: ERCOT Comments on NOGRR245

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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

Process – Post-8/1/24 SGIA or “Re-powered” IBR/Type 1/2 WGR

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	- Entity DUNS Number
- Site Name	- Unit Name(s)
- NOG Section(s)	- Grounds/basis for request
- Docs from OEM re: limitations	- Description of modifications
- Schedule for implementing	- 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

