



DWG Procedure Manual: ERCOT Response to Comments

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Introduction

❑ Background and Objectives

- The [NOGRR245](#) introduces new ride-through requirements. This draft DWG Procedure Manual update aligns the model quality test process, particularly the low voltage ride through and (LVRT) and high voltage ride through (HVRT)
- It will become effective only after NOGRR245 is approved by PUCT. If ROS approves, this DWG Manual will be posted on the DWG website as a placeholder, allowing stakeholders to familiarize themselves with the methodology for testing LVRT and HVRT before it becomes effective

❑ ERCOT presented the testing methods, soliciting feedback

- [March IBRWG](#),
- [April DWG and IBRWG Joint Workshop](#)
- [April DWG Meeting](#),
- [June DWG and IBRWG Joint Workshop](#)
- [June DWG Meeting](#),
- [July DWG and IBRWG Joint Workshop](#)

❑ DWG TSPs agreed on the updated draft DWG Procedure Manual

Comments from Southern Power and Luminant

- ❑ Comments from Southern Power Company and Luminant were received on July 24th, indicating
 1. Tabling the Procedure Manual at the August 1, 2024, ROS to allow additional time for technical review
 2. Making the effective date for new modeling elements at least concurrent with the ride-through capability maximization deadline for IBRs proposed in NOGRR245
 3. Suggestion that new facilities perform tests using the preferred curve, while existing facilities perform tests using the legacy curve with the option to test against the preferred curve depending on site maximization
 4. Consideration of future policy changes to accommodate models unable to meet all requirements due to irresolvable manufacturer limitations
 5. Concern about having the term “maximize” in the draft DWG Procedure Manual
 6. Question about the timing of implementation and applicable stage of the interconnection process

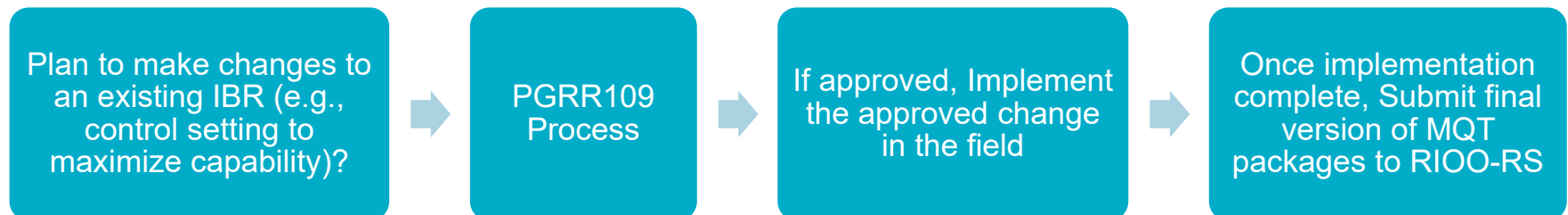
Summary of ERCOT Responses

- ❑ Comment #1: Tabling the Procedure Manual at the August 1, 2024, ROS to allow additional time for technical review, with the aim of bringing it back for approval at the September ROS meeting

- ❑ ERCOT Response:
 - ERCOT is in agreement with the feedback, with the aim of bringing it back for approval at the September ROS meeting
 - Timely ROS approval would be beneficial. ERCOT has observed that GOs are interested in testing the new LVRT and HVRT curves, given the Signed Generation Interconnection Agreement (SGIA) date of August 1, 2024 for meeting new ride through requirements, as specified by NOGRR245
 - Even if the updated manual is approved by ROS, the current manual will remain active until NOGRR245 is approved

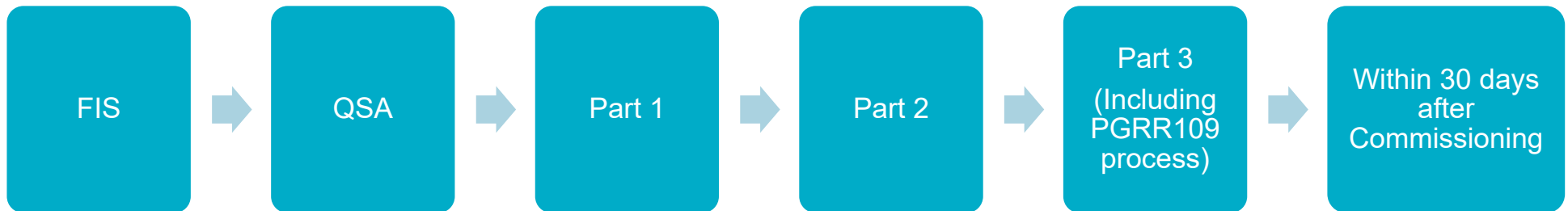
Summary of ERCOT Responses

- ❑ Comment #2: Making the effective date for new modeling elements at least concurrent with the ride-through capability maximization deadline for IBRs proposed in NOGRR245
- ❑ Comment #6: Question about the timing of implementation of these requirements and at what stage of the interconnection process
- ❑ ERCOT Response:
 - DWG manual is designed to provide technical description. The process and timing to submit model quality tests are already defined in the Planning Guide Sections 5 and 6. Deadlines or Extension process to meet the ride through requirements are defined in NOGRR245
 - For example, if an existing operational IBR plans to change control settings to maximize its capability, it must go through the [PGRR109](#) process (see [PG5.5 \(5\)](#)) prior to implementation in the field



Summary of ERCOT Responses

- A high-level generation interconnection process for a new IBR project



- For example, a new IBR project going through the generation interconnection process, IE/RE must submit model quality tests for FIS, QSA, prior to commissioning, and after commissioning. See [PG Sections 5 and 6](#)
- If new ride through test(s) are not conducted or found to be deficient, the IE/RE must provide an explanation, along with the execution date of the Standard Generation Interconnection Agreement (SGIA) and synchronization date
- Deadlines and extension processes for meeting the ride through requirements are already defined in [NOGRR245](#)
- It is IE/RE's responsibility to consider deadline and follow the rules in the ERCOT binding documents

Summary of ERCOT Responses

- ❑ Comment #3: Suggestion that new facilities perform tests using the preferred curve, while existing facilities perform tests using the legacy curve with the option to test against the preferred curve depending on site maximization

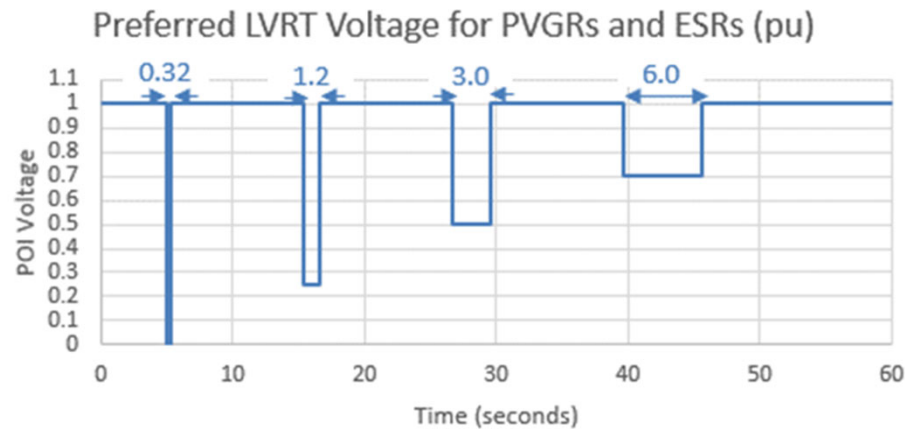
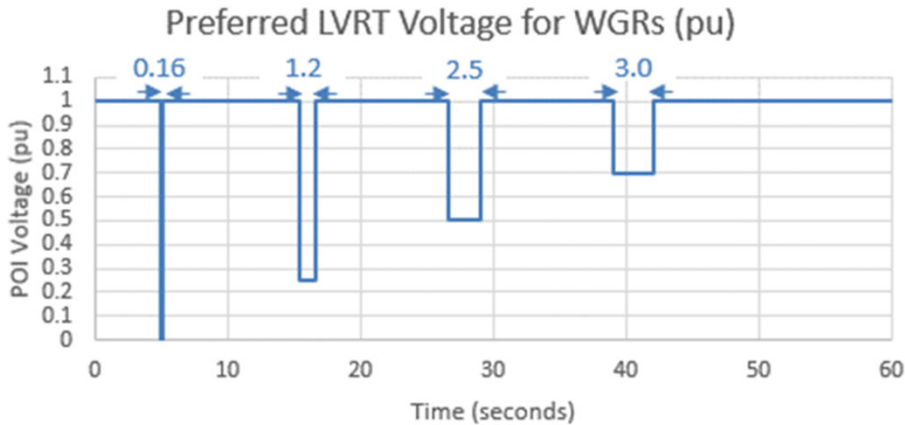
- ❑ ERCOT Response:
 - **HVRT:** If it passes the preferred HVRT curve test, testing the legacy curve is unnecessary because the legacy curve is subset of the preferred HVRT curve
 - **LVRT:** Testing both preferred and legacy LVRT curves are necessary.
 - For existing units (e.g., unit going through PGRR109 process), the legacy curve test helps verify compliance with legacy ride through requirements. The preferred curve test (a.k.a., voltage dip test) helps confirm functions like active power injection during voltage dips (e.g., 0.7pu) and possibly demonstrate their capability beyond legacy curve
 - For planned units, the legacy curve test helps demonstrate the performance of the voltage recovery ramp that lies within the preferred ride through requirements in NOGRR245 and confirm proper reactive control behavior during the voltage recovery ramp. The voltage dip test ensures compliance with the preferred ride through requirements

Summary of ERCOT Responses

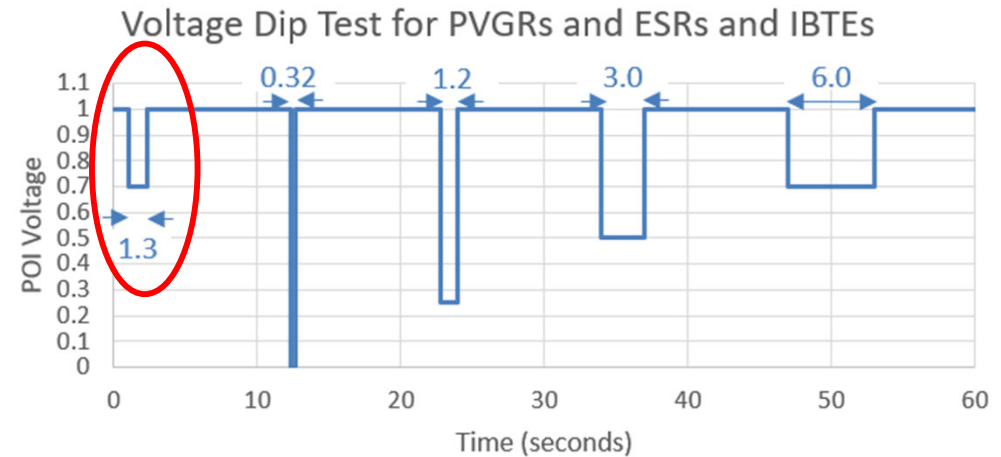
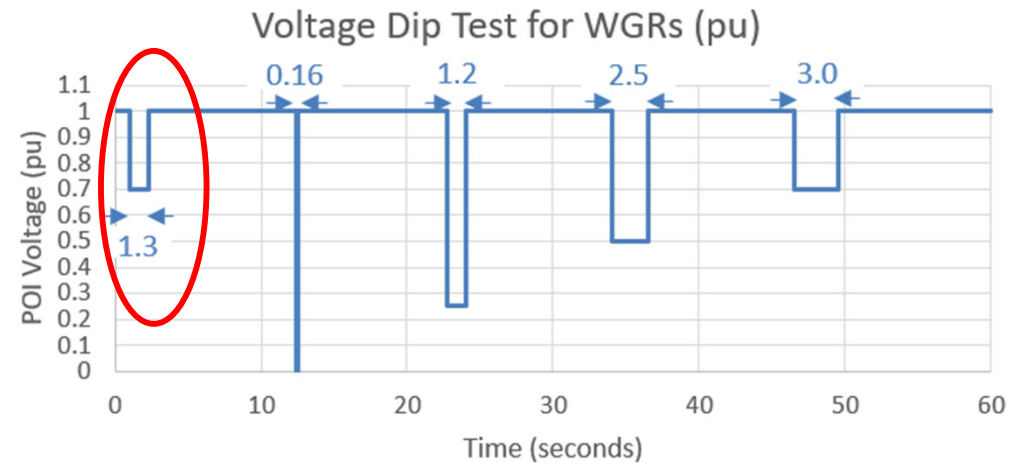
- Since the last IBRWG/DWG joint workshop, ERCOT has made a minor modification to the “voltage dip test” profile to enhance effectiveness of testing existing unit. This addition addresses feedback received based on operational experiences
 - Added voltage dip and duration → 0.7 p.u. for 1.3 second
 - The shorter duration (1.3s) is a value calculated to be within the legacy ride through curve (see Table A in NOGRR245 Section 2.9.1.2)
- ERCOT has updated the DWG manual to rename the preferred LVRT curve as the “**voltage dip test**” and updated the corresponding figure (see the next slide)

Summary of ERCOT Responses

Previous voltage dip test



Updated voltage dip test



Existing facilities only required to ride through the first dip

Summary of ERCOT Responses

- ❑ Comment #4: Consideration of future policy changes to accommodate models unable to meet all requirements due to irresolvable manufacturer limitations
- ❑ ERCOT Response:
 - Regarding concerns related to obtaining model updates when OEMs are unavailable or their equipment is discontinued, ERCOT would like to emphasize the importance of diligence and proactive exploration of alternative approaches to address these issues
 - ERCOT encourages the consideration of alternative approaches, such as engaging third-party experts and exploring all feasible options to ensure timely and accurate updates
 - These efforts are critical for GO to meet the requirements specified in the NERC Reliability Standard [MOD-032](#) and ERCOT [PG Sections 5 & 6](#)

Summary of ERCOT Responses

- ❑ Comment #5: Modeling should be based on the actual IBR settings, and the term 'maximize' should not be included in the DWG procedure

- ❑ ERCOT Response:
 - ERCOT agrees on the feedback and updated the DWG manual accordingly

Summary of ERCOT Responses

❑ Other comment:

- Modeling of IBR facilities' static switchable devices (3.1.2). Southern Power believes it needs more time to evaluate the feasibility of modeling these devices, some of which may be a decade old and/or lack product support from the vendor. Southern Power also requests additional guidance (e.g. sample initialization script or logic) from ERCOT on the proposed modeling requirements for static switchable devices
- Clarification for “leading and lagging power factor cases” which are to be submitted as part of the Model Quality Test (“MQT”) files (3.1.5)
- Piece-wise testing for preferred Low Voltage Ride-Through test, which is a new technical concept (3.1.5.4)

❑ ERCOT Response:

- Accurate modeling and representation of the site has always been required. Please also see ERCOT response to Comment #4
- Providing all MQT cases (including leading and lagging power factor cases) has always been required
- The piece-wise testing approach can be conducted by entering the voltage dip levels and corresponding time durations as inputs for the test

Next Steps

□ Next Steps

- Please review the updated DWG Procedure Manual posted on the IBRWG calendar website and send your comments by August 16
 - Email to Jonathan.Rose@ercot.com; John.Schmall@ercot.com; Sunwook.Kang@ercot.com
- ERCOT encourages stakeholders to recommend approval of the draft DWG Procedure Manual
- Approval of the draft DWG Procedure Manual at the September ROS
- Effective upon NOGRR245 approval

Questions?



Comments to
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John.Schmall@ercot.com,
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