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| NOGRR Number | [245](https://www.ercot.com/mktrules/issues/NOGRR245) | NOGRR Title | Inverter-Based Resource (IBR) Ride-Through Requirements |

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| Date | October 30, 2023 |

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| Submitter’s Information | |
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| Company | Siemens Gamesa Renewable Energy (SGRE) |
| Phone Number |  |
| Cell Number |  |
| Market Segment | Not Applicable |

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| Comments |

SGRE appreciates ERCOT’s effort to gather OEM feedback to the latest NOGRR August 18, 2023 (<https://www.ercot.com/files/docs/2023/08/18/245NOGRR-35%20ERCOT%20Comments%20081823_1.docx>).

The next paragraphs summarize the analysis of SGRE WGRs (Wind-powered Generation Resources) that are present in ERCOT. These same comments are included in the official *RFI for OEM’s* but are also included in this format for ease of reading. Given the outcome of the analysis the comments are divided into two groups.

SGRE Type 2 WGR analysis:

* Per SGRE records, SGRE unique type 2 model that is present in ERCOT was commissioned around 2001. SGRE has minimal documentation to reproduce a general statement. The actual design may date back to the late 90’s while Fault-Ride-Through standards seem to initiate around 2004, therefore the absence of documentation is expected.
* Type 2 technology is very limited in comparison to Type 3 or 4 turbines, compliance to the latest NOGRR245 does not seem possible by the WGR.

SGRE Type 3 and 4 WGR Inverter-Based Resources’ (IBRs’) analysis:

* The present high-level analysis is preliminary. Documentation for closely related model variants has been considered valid by analogy (same or similar control system, similar component characteristics, etc.). Analysis “Yes/No” responses contemplate all available upgrades, HW (Hardware) / SW (Software) / parametrization optimizations, are implemented.
* Provided dates are only estimates assuming that sites haven’t incorporated relevant HW or SW updates (where available). Note that multiple IBRs may already have the latest HW, SW, etc. Presently, it is assumed that at least a parametrization optimization will be needed for all IBRs.
* IBR’s FRT (Frequency-Ride-Through) and VRT (Voltage-Ride-Through) curves are expected to meet and/or exceed NOGRR245 8-18-23. Analysis is considered at IBR Low Voltage terminals (IBR POIB). SGRE cannot speculate on plant POIB voltage.
* SGRE does not have present certainty about meeting requirements that have been answered as “No”. SGRE cannot speculate about non-existent developments, nor non-existent studies (RoCof at 5Hz/s, Phase angle jump of 25 deg, IEEE 2800-2022 MVRT), nor can SGRE speculate that they will be feasible in the future. Some platforms may meet some of these requirements to some extent; Exceptions that could allow platforms to be compliant by maximizing such capabilities, would remove the items of largest uncertainty of the present NOGRR245 8-18-23. Therefore “Yes” has been answered for (columns K and S): Would additional targeted exceptions beyond those specified ...?
* Given the present absence of IEEE P2800.2 testing specifications. Platforms that have been tested to existing Multiple VRT standards (such as German code, Australian code, etc.) have been answered as “Yes” under the assumption that such references are admissible. Note that platforms that have been tailored to specific markets without multiple VRT requirements do not have such references. No additional testing is contemplated for any legacy IBR.
* Defined requirement deliverables will be necessary for SGRE to supply the necessary inputs for the compliance process of the different wind plants. SGRE anticipates that a site- specific gap analysis and modelling support will be necessary for all wind plants.
* For platforms that are marked as available for shipping with capabilities expected to meet IEEE-2800-2022 Section 5, Section 7, and Section 9 at turbine terminals. SGRE have designed to IEEE2800-2022 to all possible extent and are in position to incorporate new required studies that are pending P2800.2 approval.
* Given that there is a large amount of work that hasn’t yet happened, and that both NOGRR245 and IEEE P2800.2 are still evolving, the responses to the present RFI are only indicative and cannot be considered as absolute.

Analysis embedded in the document:

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