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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 | May 17, 2023 |

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| Submitter’s Information |
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| Market Segment | Not applicable |

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| Comments |

The Texas Solar Power Association (TSPA) is an industry trade association that promotes the development of solar electric generation. Our member companies invest in the development of solar photovoltaic products and projects in Texas, serving customers in both wholesale and retail markets, with products ranging from utility-scale generation, community solar, and customer-sited solar and storage solutions. TSPA members participate in the ERCOT stakeholder process both individually and through TSPA.

TSPA appreciates the importance of the proposed frequency and voltage ride-through requirements for Inverter Based Resources (IBRs) and shares ERCOT’s objective to maintain and enhance reliability on the grid. TSPA submits these comments to address original equipment manufacturer (“OEM”) comments that technically feasible solutions are not currently available for some systems and to offer an alternative to ERCOT’s April 5, 2023, proposal.

TSPA understands that ERCOT is also considering a new framework that was discussed at the May 12, 2023 Inverter Based Resource Task Force (IBRTF) meeting in response to OEM and stakeholder feedback. We appreciate ERCOT’s willingness to address the concerns of OEMs and stakeholders regarding the proposed timeline and the technical concerns for existing IBRs. TSPA members are currently reviewing the new information and look forward to continuing the discussion at the next Operations Working Group (OWG) and Reliability Operations Subcommittee (ROS) meetings. If ERCOT formally proposes this new idea, TSPA may have additional comments to file.

However, because it is unknown whether ERCOT will formally submit a new proposal, TSPA respectfully submits comments and an alternative framework for consideration regarding the current NOGGR 245 as submitted by ERCOT on April 5, 2023:

* Extend the compliance date by 12 months, to be updated as ERCOT receives additional OEM information regarding timelines.
* Adopt a phased-in approach to implementation of the new ride-through requirements. NOGRR 245 will be applicable to new IBRs immediately upon the effective date of the requirements.
* Identify requirements for existing IBRs after ERCOT undertakes an analysis (in consultation with OEMs and IBRs) to determine the best technically and commercially feasible solutions and the appropriate timeline for any identified retrofits.
* Establish a good cause exemption process.

If a phased-in approach cannot be achieved, we recommend in the alternative:

* Exempt IBRs installed prior to September 1, 2020.
* Exempt projects at or below 10 MW.
* Establish a good cause exemption process.

TSPA recommends extending the compliance date for an additional 12 months (to be updated as ERCOT receives additional information from OEMs regarding timelines) in recognition that OEMs need more time to develop technical solutions and products that can comply with the new requirements. In addition, we recommend that ERCOT apply the proposed requirements to new systems interconnected after the effective date of the NOGRR while allowing additional time for OEMs to develop and test solutions for existing systems. This will allow ERCOT to move forward quickly for those Resources that can comply while taking a more measured approach for legacy systems that have unique technical challenges. If ERCOT is unable to implement a phased-in approach, TSPA alternatively recommends exemptions for units installed prior to September 1, 2020 and for smaller, existing projects of 10 MW or less, and the creation of a good cause exemption process for systems that cannot meet the requirements (or the timeline).

TSPA appreciates the efforts that ERCOT has made to work with stakeholders and OEMs to develop technically feasible requirements and the changes ERCOT has already made to the original proposed requirements based on this feedback. TSPA members have also actively engaged OEMs regarding the feasibility of implementing the proposed requirements and have not yet received assurances from OEMs that all existing units can be retrofitted, the timelines that may be required to do so, or the costs to implement any identified solutions. OEMs have indicated that they need more time to study these requirements to determine the technical feasibility of these requirements for legacy systems. TSPA believes that before ERCOT moves forward with this NOGRR, ERCOT should fully understand the impact to existing IBRs.

TSPA‘s concern regarding the retroactive application of the new requirements to existing units is also echoed by the OEMs that have publicly commented. For example, GE Renewable Energy (GE) stated that there are “significant barriers” to implementing these requirements under the proposed timelines.[[1]](#footnote-2) GE also commented that for some existing units, GE was “unable to begin a development program to analyze and design retrofit kits for these legacy turbine configurations at this time.”[[2]](#footnote-3) Furthermore, GE also stated that there is an extensive two year process of analysis, design, and testing associated with *each* major platform and that needed testing equipment is in short supply.[[3]](#footnote-4)

In addition to GE, other OEMs have expressed similar concerns regarding the retroactive application of the proposed requirements to some legacy systems. For example, at the April 14, 2023, IBRTF meeting, Nordex stated that for instantaneous voltage ride through performance criteria, “it will not be possible to secure the capability for all components” and that some requirements “are outside of current requirements and design and must be assessed anew.”[[4]](#footnote-5)

Similarly, Power Electronics noted that it is unknown at this time whether the proposed requirements are feasible for some existing units: “Until the Gen. 3 evaluation is complete, it is not known if P-E Gen. 2 inverters (i.e.FS3510M and FS3350M) will meet the new requirements” and the “cost impact is not yet determined.”[[5]](#footnote-6) In addition, regarding the proposed timeline, Power Electronics concurs with APA in regards to 2800-2022 - Institute of Electrical and Electronics Engineers (IEEE) Standard for Interconnection and Interoperability of Inverter-Based Resources (IBRs) Interconnecting with Associated Transmission Electric Power Systems (“IEEE 2800-2022 standard”), and commented that it does not know whether “existing Gen. 2 inverters already in operation will require hardware of firmware retrofits”[[6]](#footnote-7) and that the IEEE 2800-2022 standard test procedures which will not be available until 2024 results in “[u]ncertainty on how to test for compliance.”[[7]](#footnote-8)

Consistent with the significant feedback from OEMs on ERCOT’s proposed implementation, ERCOT’s policy should be to get as many Resources as possible compliant with these minimum standards, but defer the consideration of any obligations on this topic to the IEEE 2800-2022 standard testing and verification procedures process.

In addition to these OEM concerns, there are other issues that ERCOT should also consider before implementing NOGGR 245. For example, some older inverters are no longer supported or supplied by OEMs that are no longer in business. Even for units that can be retrofitted, there are labor and supply chain issues associated with identifying, testing, and installing any hardware and software solutions as all companies will be competing for the same limited supply of materials, engineers, installers, etc.

Given the uncertainty of whether it is technically feasible to apply the proposed requirements to both new and existing units and the time required to do so, TSPA suggests extending the compliance timeline by an additional 12 month period. This date can be updated as ERCOT and IBRs receive more information from OEMs. OEMs have publicly stated that compliance of all existing systems is not achievable within the existing proposed timeframe and the NOGRR should reflect these practical realities.

Additionally, given the heightened concerns by OEMs about the retroactive application of the new requirements to legacy systems, TSPA recommends that ERCOT should first conduct a deeper analysis before proceeding. ERCOT should undertake this analysis in consultation with OEMs and IBRs to determine whether, and to what extent, the requirements can be implemented for legacy systems and the appropriate timeline for accomplishing any identified retrofits. This analysis could also consider other technical solutions such as the implementation of grid forming inverters or transmission upgrades. Once this analysis is complete, ERCOT could then develop a process for implementing these requirements.

Absent such an analysis, TSPA recommends that ERCOT exempt inverters installed prior to September 1, 2020 and projects at or below 10 MW. An exemption of these older IBRs will still allow the majority of the solar fleet to meet the new requirements. According to ERCOT’s [Resource Capacity Trend Chart](https://www.ercot.com/gridinfo/resource), there were only 3,794 MW of installed solar capacity at the end of 2020, a fraction of the existing solar fleet. In addition, TSPA also recommends that smaller existing projects at or below 10 MW also be exempted. Exempting smaller systems will help ERCOT and stakeholders focus on the larger projects that will yield the most reliability benefits. It is important to note that not every older or smaller system will need an exemption. Some of the existing IBRs will have technical and commercially feasible solutions available and will be able to meet the new requirements.

Finally, TSPA recommends that ERCOT create a good cause exemption process for both new and existing Resources that have an inability to meet the new requirements. Some Resources may be unable to comply due to a lack of an OEM solution (or one that can be completed within the required timeframe), a supply chain issue, a labor shortage, a lack of testing equipment, or some other issue. The good cause exception process would allow consideration of these factors, the need for the Resource, and the impact to the grid.

TSPA looks forward to continuing to collaborate with ERCOT and other stakeholders to develop technically and commercially feasible solutions that will allow for the appropriate implementation ride through requirements where necessary.

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| **Revised Cover Page Language** |

None

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| **Revised Proposed Guide Language** |

None

1. *See*, NOGRR 245, GE Renewable Energy Comments (May 3, 2023) at page 1. [↑](#footnote-ref-2)
2. *Id*. at 2. [↑](#footnote-ref-3)
3. *Id*. [↑](#footnote-ref-4)
4. *See*, April 14, 2023 IBRTF Task Force Meeting Materials, Nordex Group IBRTF Feedback NOGRR245 Rev.00, Malte Laubrock, Head of Grid Integration, Presentation (April 14, 2023) at page 17. [↑](#footnote-ref-5)
5. *See*, April 14, 2023 IBRT Task Force Meeting Materials, P-E ERCOT presentation, S. Giguere, Director of Energy Storage U.S. (March 10, 2023) at page 14. [↑](#footnote-ref-6)
6. Id at 17. [↑](#footnote-ref-7)
7. *Id*. [↑](#footnote-ref-8)