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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 23, 2023 |

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| Comments |

**Comments of the Advanced Power Alliance related to ERCOT’s September 29, 2023 Request for Information to Inverter Based Resource (IBR) owners and Original Equipment Manufacturers (“OEMs”).**

The Advanced Power Alliance (APA) and its member companies support efforts to maintain reliability in the Electric Reliability Council of Texas (ERCOT) power region, enhance the ability of generation resources to ride-through grid disturbances, and create transparency around the impacts of Nodal Operating Guide Revision Request (NOGRR) 245 on these objectives. APA believes ERCOT’s September 29, 2023 Request for Information (RFI) described in NOGRR245 related to ride-through improvements is an important step in making the incremental ride-through benefits and impacts of NOGRR245 transparent. However, APA has concerns and questions regarding the RFI that ERCOT staff should acknowledge and address to ensure the RFI produces meaningful insights that can be incorporated into ongoing efforts to improve the implementation of Institute of Electrical and Electronics Engineers (IEEE) 2800 in the ERCOT region.

1. **OEM RFI responses should be obtained and published prior to requiring an RFI response from IBR owners.**

In order to ensure accurate and uniform information is available to IBR owners and other market participants, APA filed comments more than two months ago requesting ERCOT obtain and post responses from OEMs related to the ability of each vintage/model to comply with ERCOT’s NOGRR245 or, to a similar performance standard that would be acceptable to ERCOT. In the alternative, APA recommended ERCOT collaborate with OEMs to create a compliance table for all models.[[1]](#footnote-1)

On September 29, 2023, ERCOT staff filed comments in NOGRR245 indicating that they would be sending RFIs to all Resource Entities and OEMs. ERCOT provided an RFI deadline to IBRs, however ERCOT’s comments are silent in regard to the RFI deadline for OEMs. While APA appreciates ERCOT’s follow through on our request, it is important to note that Resource Entities do not have the ability to meaningfully respond to ERCOT’s RFI until OEMs file responses to their RFIs from ERCOT. Given that OEM responses are the starting point for determining IBR capability, ERCOT should not proceed with concurrent requests to IBR owners and OEMs because OEM responses are the starting point for determining IBR capability and what elements of NOGRR245 are feasible.

Further complicating the situation, and as a practical matter, hundreds of ERCOT IBR owners are in need of OEM information as an input into their own evaluations. IBR owners are all simultaneously competing for attention from a much smaller set of OEMs, while these same limited OEM resources are also busy responding to ERCOT’s RFI.

Moreover, it will be much more efficient for ERCOT to review baseline responses from a small set of OEMs, rather than responses from hundreds of IBR owners. After the OEM responses are received and published, a resource-by-resource RFI to identify instances where the individual resource capability differs from the OEM’s indicated capability would be more efficient and is likely to yield more accurate responses than the current proposed sequencing.

APA urges ERCOT to temporarily abate the deadline for Resource Entity RFIs until such time that OEMs have filed responses and can allocate the time needed to assist with the Resource Entity responses for reasons described more fully in these comments.

1. **The response timeline is too short for IBR owners to fully evaluate commercially reasonable improvements in ride-through capability as required by the RFI.**

One of APA’s primary concerns is that ERCOT is requiring IBR owners to perform complex analyses that cannot reasonably be performed within the deadline ERCOT has imposed in the Resource Entity RFIs. ERCOT’s request requires responses by November 6, 2023, even though the current drafts of NOGRR245 allow IBR owners until either June 1, 2024 or December 31, 2024 to compile reports that require substantially the same analysis. Due to the technical complexities of NOGRR245 as applied to existing resources, it is unclear at this time when the technical analysis can be performed by Resource Entities because the analysis will require the assistance of OEMs. Further, the analysis and associated reports entail communicating complex information on a number of technical design variables that are not suited to the binary “Yes/No” format required by ERCOT’s RFI, thus making it difficult, if not impossible, to provide accurate and meaningful responses.

Reducing the timeline in which IBR owners are required to respond to the RFI by more than two hundred days from what is currently permitted in NOGRR245 leaves IBR owners with insufficient time to collect the required inputs from OEMs, determine equipment availability, perform the complex studies that are required to calculate the impact on ride-through performance at the Point of Interconnection Bus (“POIB”), and to determine the time required to install the equipment. In order to provide accurate responses, IBR owners must have a clear understanding of all of this information before they respond to the RFI.

Also, each of the steps previously described requires extensive interaction and coordination with OEMs and, in many cases, needs to be performed at the individual resource level. Given the time and resource intensive nature of this process, in many cases this work is still ongoing and the requested analyses are unlikely to be completed by the November 6, 2023 deadline.

In addition to needing to work closely with OEMs to complete the ERCOT RFI, APA members and their OEMs have expressed in prior comments to ERCOT that many IBR owners require additional time to determine whether their generation resources can comply with NOGRR245. There are numerous instances where the requested data and information is not yet available, as a result, Resource Entities will not be able to provide a reliable analysis by the November 6, 2023 deadline.

Additionally, APA is concerned that incomplete or partial responses may be interpreted in a way that either unfairly paints the commitment of IBR owners to improving ride-through capability in a negative light, or results in the responses being misinterpreted and erroneously leading to conclusions that understate the improvements in ride-through capabilities that can be achieved under the commercial reasonability standard.

For all of these reasons, the deadline for responses to the RFIs should be extended to June 1, 2024.

1. **The Resource Entity RFI requests information on ride-through capability at the POIB, which adds complexity and contributes to the need for additional time.**

The RFI asks IBR owners to comment on performance capabilities at the POIB, which means that input from OEMs is a necessary first step but will not always be sufficient to generate a complete response. Once information is available from OEMs, IBR owners still need time to extend the analysis to include the existing balance of plant, which entails additional evaluation and may include complex studies that cannot be completed on ERCOT’s stated timeline.

Additionally, ERCOT’s RFI goes beyond the existing balance of the plant and defines “technical feasibility” to include the “installation of supplemental dynamic reactive devices (e.g., STATCOM or Synchronous Condenser) or co-located Energy Storage Resources (ESRs) that can replace the active/reactive current during a fault.” Evaluation of the addition of dynamic reactive devices is a fundamentally different evaluation from what IBR owners have contemplated to date, requiring an entirely different workstream that requires new technical performance information from OEMs. While IBR owners appreciate ERCOT’s interest in evaluating additional options to improve ride-through capability, determining the NOGRR245 compliance implications of adding supplemental dynamic reactive devices is not something IBR owners are likely to complete by November 6, 2023 .

IBR owners have previously asked ERCOT to analyze the potential for supplemental dynamic reactive devices, grid-forming inverters, and other equipment to be installed on the transmission system, rather than at each IBR site. Before IBR owners are asked to consider adding this equipment at resource sites, APA recommends that ERCOT engage transmission owners and other interested stakeholders to determine an appropriate, transparent way to evaluate a system-wide solution based on the addition of dynamic reactive devices. APA suggests ERCOT consider developing a holistic solution that improves weak grid conditions as part of their effort to address ride-through concerns. Using a combination of stakeholder workshops and proposals from interested parties to identify solutions to weak grid conditions that currently exacerbate ride-through performance challenges could provide better long-term improvements in reliability in a more cost-effective manner than ERCOT’s current approach is likely to achieve.

1. **APA believes IBR owners do not have access to all the information that is necessary to evaluate whether specific projects that improve IBR ride-through capability are commercially reasonable.**

APA is concerned that ERCOT seems to be unaware that essential information required to answer portions of the RFI are likely not yet available from OEMs. Where there is no product available yet, no price information for products in development, or both, IBR owners are unable to determine whether a compliance solution is commercially reasonable.

Evaluating commercially reasonable ride-through improvements as contemplated in the September 14, 2023 ROS-approved version of NOGRR245 requires OEM solutions to be in a sufficiently advanced state of design and production, enabling OEMs to provide reliable cost information to IBR owners. In many cases OEMs do not have specific solutions far enough along in development to provide the detailed cost information IBR owners need to determine whether ride-through improvements are commercially reasonable.

The absence of necessary information, such as prices for equipment modifications that enhance ride-through performance and other factors beyond the IBR owner’s control that result in incomplete RFI responses should not be misinterpreted as either unresponsiveness on the part of the IBR owner, nor should it lead to erroneous conclusions that the ROS-endorsed version of NOGRR245 will not result in improved ride-through capability and reliability outcomes. The absence of information required to fully respond to the RFI needs to be acknowledged as an issue with the scope and framing of the RFI.

Because the RFI requires IBR owners to respond based on the limited information that is currently available and implicitly assumes the technology available to IBR owners is static, RFI responses will inherently understate the ride-through performance improvements provided by the ROS-endorsed version of NOGRR245. This is particularly true when one considers that the commercial reasonableness assessment included in the ROS-approved version of NOGRR245 is performed annually, not just once. In short, the RFI responses will be misleading because the RFI uses a static evaluation of what is commercially reasonable at a single point in time, whereas ride-through improvements from the ROS-approved version of NOGRR245 will evolve and increase over time as more commercially reasonable options become available.

1. **In its current form, the RFI is unlikely to provide valid insights into the relative reliability improvements that result from either the August 18, 2023 ERCOT draft of NOGRR245 or the September 14, 2023 ROS-endorsed version of NOGRR245.**

The RFI asks IBR owners to answer whether frequency ride-through (FRT) and voltage ride-through (VRT) improvements are technically feasible under the ERCOT August 18, 2023 version of NOGRR245. The RFI further requests whether FRT and VRT improvements are commercially reasonable under the September 14, 2023 ROS-endorsed version of NOGRR245. However, it is important to recognize that the two versions of NOGRR245 include different performance standards, and the RFI asks IBR owners to assess the commercially reasonable improvements against a more stringent set of performance requirements.

Several of the RFI questions regarding the technical feasibility of VRT improvements in the August 18, 2023 version of NOGRR245 are posed relative to meeting the less stringent VRT performance requirements under Section 2.9.1.2,“Legacy Voltage Ride-Through Requirements for Transmission-Connected Inverter-Based Resources (IBRs) and Type 1 and Type 2 Wind-Powered Generation Resources (WGRs),”whereas RFI questions about commercially reasonable VRT improvements under the September 14, 2023 ROS-endorsed version of NOGRR245 relate to the more stringent VRT performance requirements under Section 2.9.1.1, “Voltage Ride-Through Requirements for Transmission-Connected Inverter-Based Resources (IBRs).”

Furthermore, the RFI’s binary “yes/no” response framework is not conducive to providing clear information that is useful and transparent for the comparative evaluation of ride-through performance impacts ERCOT is attempting to perform. An example of an important consideration that would be masked by the “yes/no” response framework is the fact that the VRT compliance standards differ between the August 18, 2023 and the September 14, 2023 versions of NOGRR245. In addition, the criteria for determining IBR owner investment in VRT improvements also changes between the two NOGRR245 versions IBR owners are asked to report on (the “technically feasible” standard applies in the August 18, 2023 version, while the “commercially reasonable” standard applies in the September 14, 2023 ROS-endorsed version).

Because both the ride-through performance standards and the criteria for implementing ride-through performance enhancements vary between the two versions of NOGRR245, it will not be possible to distinguish whether responses indicating different VRT outcomes between the August 18, 2023 and September 14, 2023 versions of NOGRR245 are attributable to differences in the compliance standards, or the differences are attributable to the application of different standards for investing in VRT improvements.

1. **The RFI may overstate the reliability improvements achieved by the August 18, 2023 “technically feasible” standard because it incorrectly assumes that dynamic reactive devices are simultaneously available to all IBR owners who need them to comply with NOGRR 245.**

In addition to the concerns about introducing supplemental reactive devices into the analysis that were discussed above, supplemental reactive devices have long delivery lead times, and OEM production capacity is limited. Because the RFI instructions state that “technical feasibility includes installation of dynamic reactive devices or co-located Energy Storage Resources (ESRs) that can replace the active/reactive current during a fault,” the RFI effectively requires IBR owners to assume dynamic reactive devices are simultaneously available in unlimited quantities for all IBR owners to install under the “technically feasible” for the August 18, 2023 version of NOGRR245.

To assess the availability of supplemental reactive equipment, APA member companies contacted major OEMs of synchronous condensers and STATCOMS and asked whether there is spare manufacturing capacity to meet new demand from IBR owners and what current lead-times are for equipment orders. OEM’s indicated lead times are currently running 36-48 months due to transformer shortages, and they stated that they do not have spare production capacity to meet new orders from IBR owners.

While APA believes IBR owners currently do not have the information necessary to accurately assess the performance impacts of adding supplemental dynamic reactive devices to an IBR, APA also believes the preceding information on the unavailability of these dynamic reactive devices means that any RFI responses saying near-term compliance improvements can be achieved by installing these devices to meet the “technically feasible” standard are incorrect because the equipment is unavailable.

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| Revised Cover Page Language |

None

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| Revised Proposed Guide Language |

None

1. Comments of the Advanced Power Alliance, NOGRR245, August 11, 2023. [↑](#footnote-ref-1)