

## NOGRR Comments

<b>NOGRR Number</b>	245	<b>NOGRR Title</b>	Inverter-Based Resource (IBR) Ride-Through Requirements
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<b>Date</b>	April 15, 2024
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<b>Market Segment</b>	Independent Generators

<b>Comments</b>
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### INTRODUCTION

Joint Commenters<sup>1</sup> appreciate the opportunity to provide the ERCOT Board of Directors (ERCOT Board) these Comments regarding Nodal Operating Guide Revision Request (NOGRR) 245, and respectfully request an opportunity to comment on NOGRR245 during its discussion at the April 22, 2024, ERCOT Board Reliability and Markets (R&M) meeting, and the April 23, 2024, ERCOT Board General Session meeting.<sup>2</sup>

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<sup>1</sup> These Comments are jointly authored and represents the collaboration and compromise of a diverse set of Market Participants registered with ERCOT. Statements made herein should not be used to represent the position of an individual company in any proceeding unrelated to NOGRR245.

<sup>2</sup> Section 8.3.3 of the [ERCOT Board Policies & Procedures](#) provides that an interested entity may provide a position statement for consideration by the ERCOT Board “at least six (6) Business Days before the Board Meeting.” Notably, Joint Commenters are not opposing an action by TAC. Rather, these Comments are in support of TAC’s approval of NOGRR245 at its March 27, 2024 meeting. Texas law requires

For over a year, Joint Commenters have worked with each other, original equipment manufacturers (OEMs), and extensively over the past two months with ERCOT Staff, to develop new frequency and voltage ride-through standards in NOGRR245. Throughout this endeavor, Joint Commenters have sought to reduce the reliability risk associated with the proliferation of IBRs in the ERCOT Region, while protecting long-term investments and contractual obligations of existing IBRs, and providing regulatory certainty to Market Participants, OEMs, and investors to encourage continued energy investment and development in Texas. Accordingly, Joint Commenters drafted the language in NOGRR245—i.e., the version of NOGRR245 that is currently before the ERCOT Board, as approved by the ERCOT Technical Advisory Committee (TAC) on March 27, 2024 (i.e., TAC-approved NOGRR245 or JC Proposal)—to promptly implement effective reliability standards under an economic framework to prevent grid instability associated with the inability of some IBRs to ride-through frequency and voltage disturbances on the Transmission System. These Comments identify how TAC-approved NOGRR245: (i) contains the most rigorous ride-through requirements on IBRs in the country to date; (ii) provides Market Participants, investors, OEMs, and regulators with clearly defined rules; (iii) safeguards private property and due process rights of Resource owners; and (iv) bolsters the reliability and stability of the ERCOT System.

## DEFINING THE RISK

There is no dispute that ride-through failures can result in system instability. TAC-approved NOGRR245 addresses problems faced in real-world events on the ERCOT grid based on verifiable data evaluated by federal regulators, ERCOT, OEMs and IBR owners. As highlighted by the TAC vote, it is inappropriate to impose onerous, prohibitive and potentially infeasible requirements on Market Participants when practical and reasonable methods exist for achieving necessary reliability improvements.<sup>3</sup> TAC-approved NOGRR245 will mitigate risks associated with IBR ride-through capabilities during system disturbances. Joint Commenters have spent hundreds of hours discussing and negotiating ways to enhance IBR capabilities to ride through system disturbances without requiring uneconomic physical modifications that would disrupt the ability of the IBR to operate prior to reaching the end of its expected useful life. Not all of the the Joint Commenters are similarly situated; not all are aligned with every aspect of TAC-approved NOGRR245. However, each of the Joint Commenters worked respectfully with each other

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ERCOT's Bylaws to "ensure that a person interested in the activities of [ERCOT] has ... an opportunity to comment on matters under discussion at the meetings" (Public Utility Regulatory Act (PURA), [Tex. Util. Code Ann. § 39.1511\(b\)](#)). Paragraph (d) of ERCOT Bylaws' Section 4.6 requires the ERCOT Board to adopt procedures allowing for "comment on the matters under discussion at public portions of meetings of the Board and subcommittees" ([Amended and Restated Bylaws of ERCOT \(eff. 12.20.2022\)](#)). However, ERCOT's governing documents, including the [ERCOT Board Policies & Procedures](#), do not currently provide procedures for comment. Therefore, Joint Commenters filed these Comments for Board consideration under the timeline for position statements and include a request to comment on these Comments at the April 22 and 23, 2024 Board meetings.

<sup>3</sup> It is similarly inappropriate for ERCOT to suggest that TAC members who vote for such proposal would jeopardize reliability. See e.g., ERCOT TAC meeting, ERCOT Staff comments (Mar. 27, 2024) at <https://ercot.new.swagit.com/videos/301040> ("So, ERCOT, with [Joint Commenters'] language... can't protect reliability and we're trying to be very transparent about that, that if you vote this forward with the Joint Commenters' language, [ERCOT] cannot ensure reliability.") (Timestamp 04:08:15 – 04:08:32)

and with ERCOT to achieve a result that: (i) **improves grid reliability**; (ii) **avoids unreasonable, uneconomic outcomes**; and (iii) **provides clearly defined rules for greater regulatory certainty**.

TAC-approved NOGRR245 will help ERCOT meet its statutory duties with regard to reliability while safeguarding Resource owner and investor confidence in the ERCOT market.<sup>4</sup> TAC-approved NOGRR245 support's ERCOT's charge of maintaining reliability of the ERCOT System with the requirement that reliability standards “**shall not adversely affect or impede manufacturing or other internal process operations associated with ... generating facilities [that use the ERCOT transmission network], except to the minimum extent necessary to assure reliability** of the ERCOT transmission network” (emphasis added).<sup>5</sup> **Reliability standards must be “both practical and limited** so as to impose the least impact on competition.”<sup>6</sup> For reasons described herein, TAC-approved NOGRR245 provides the necessary guardrails to help assure reliability, while also complying with the mandate to consider the value of, and impact to the very Resources that provide the necessary capacity to support grid reliability.

In November 2023, the North American Electric Reliability Corporation (NERC) issued a report on deficiencies in the performance of IBRs during grid disturbance events in the United States between 2003 and 2023<sup>7</sup>—including the Texas Odessa events (Odessa 1<sup>8</sup> and Odessa 2<sup>9</sup>), and the Texas Panhandle event.<sup>10</sup> The NERC Report also highlights that although all IBR types were evaluated, “the performance deficiencies appear to be of greatest risk in BPS-connected solar PV resources.”<sup>11</sup>

Throughout the development of NOGRR245, ERCOT has identified those Texas disturbances as the impetus for the need for enhanced ride-through requirements. TAC-

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<sup>4</sup> Contrary to ERCOT claims that TAC-approved NOGRR245 threatens reliability and ERCOT will not be able to meet its statutory obligations unless ERCOT's March 20, 2024, version of NOGRR245 is implemented, it will not. See ERCOT Comments (Mar. 20, 2024) at <https://www.ercot.com/files/docs/2024/03/20/245NOGRR-68%20ERCOT%20Comments%20032024.docx>; see e.g., ERCOT TAC meeting, ERCOT Staff comments (Mar. 27, 2024) at <https://ercot.new.swagit.com/videos/301040> (Timestamp: 00:25:01 – 00:25:14).

<sup>5</sup> 16 TAC 25.361(f).

<sup>6</sup> PURA 39.001(d).

<sup>7</sup> See NERC Inverter-Based Resource Performance Issues Report (NERC IBR Report) (Nov. 2023) at [https://www.nerc.com/comm/RSTC\\_Reliability\\_Guidelines/NERC\\_Inverter-Based\\_Resource\\_Performance\\_Issues\\_Public\\_Report\\_2023.pdf](https://www.nerc.com/comm/RSTC_Reliability_Guidelines/NERC_Inverter-Based_Resource_Performance_Issues_Public_Report_2023.pdf). The NERC Report included analyses of Odessa 1 (2021), Odessa 2 (2022), the Panhandle wind event (2022), along with many others.

<sup>8</sup> See 2021 Odessa Disturbance Report (Sep. 2021) at [https://www.nerc.com/pa/rrm/ea/Documents/Odessa\\_Disturbance\\_Report.pdf](https://www.nerc.com/pa/rrm/ea/Documents/Odessa_Disturbance_Report.pdf).

<sup>9</sup> See 2022 Odessa Disturbance Report (Dec. 2022) at [https://www.nerc.com/comm/RSTC\\_Reliability\\_Guidelines/NERC\\_2022\\_Odessa\\_Disturbance\\_Report%20\(1\).pdf](https://www.nerc.com/comm/RSTC_Reliability_Guidelines/NERC_2022_Odessa_Disturbance_Report%20(1).pdf).

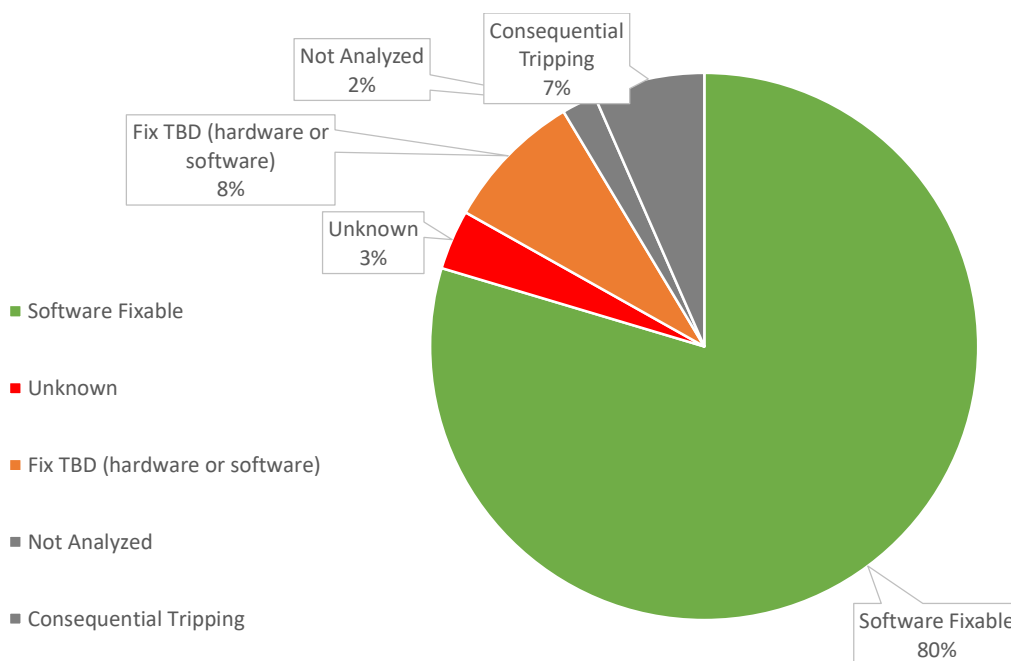
<sup>10</sup> See 2022 Panhandle Wind Disturbance Report (Aug. 2022) at [https://www.nerc.com/pa/rrm/ea/Documents/Panhandle\\_Wind\\_Disturbance\\_Report.pdf](https://www.nerc.com/pa/rrm/ea/Documents/Panhandle_Wind_Disturbance_Report.pdf).

<sup>11</sup> *Id.* at p. iv, Statement of Purpose.

approved NOGRR245, with its presumption that software and parameter upgrades will be required of all existing IBRs, substantially mitigates the problems that led to these disturbances. Comments filed by Joint Commenters on March 22, 2024 include a summary of the issues and solutions for the Odessa events.<sup>12</sup> See also Exhibit A. As Exhibit A shows, to date, most of the software modifications following the Odessa events have either been implemented or are planned for implementation for the PVGRs impacted by the disturbances, as well other PVGRs throughout ERCOT with the same equipment. Under TAC-approved NOGRR245, new IBR projects for which the software upgrades are available will also have a duty to implement the upgrades. This represents a significant improvement to ride-through capabilities since the January 2023 inception of NOGRR245.

The Odessa analysis, along with the NERC IBR Reports (including Odessa 1, Odessa 2, and Panhandle),<sup>13</sup> provides uncontroverted, data-driven assessments of various reliability benefits that would be achieved by TAC-approved NOGRR245. These assessments further show that **the enhanced ride-through requirements in TAC-approved NOGRR245 would have indisputably resolved the vast majority of performance deficiencies of the IBRs with “the greatest risk” in both Odessa events.** Figure 1 below provides a breakdown of solutions available to IBRs in four ERCOT disturbance events (Odessa 1, Odessa 2, Panhandle, and a 540 MW wind event).

Figure 1.



<sup>12</sup> See NOGRR245, Joint Commenters 2 Comments (Mar. 22, 2024), pp 2-3, at <https://www.ercot.com/files/docs/2024/03/22/245NOGRR-69%20Joint%20Commenters%20%20Comments%20032224.docx>.

<sup>13</sup> See NERC Major Event Reports at <https://www.nerc.com/pa/rrm/ea/Pages/Major-Event-Reports.aspx>.

For this analysis, four large-scale IBR-related events were evaluated cumulatively in terms of the IBR-related performance issues in each event. Joint Commenters then assessed, at a high level, the types of corrective actions that have been (or are in the process of being) implemented to address these known issues. Importantly, 9% of the IBRs involved in the events were either (a) consequentially tripped (*i.e.*, not a ride-through deficiency), or (b) not analyzed by ERCOT, Texas RE, or NERC. The vast majority (80% of the total, which is 88% of abnormal performance issues) can be corrected with software-based corrective actions. Only 11% (12% of abnormal performance issues) have corrective actions that (a) may involve hardware issues, or (b) were unable to be determined at the time of the events. ERCOT, Texas RE, NERC, and the affected Resource Entities also conducted detailed forensic event analyses involving the OEMs in each event. While some issues and potential corrective actions have not yet been determined by OEMs, these issues involved highly complex and non-systemic protection and controls involving subsynchronous control interactions protection and pitch converter controls. Under TAC-approved NOGRR245, these available software fixes will be deployed.

In aggregate, for IBR projects with executed Interconnection Agreements before June 1, 2023, performance improvements and resulting reliability improvements under ERCOT's March 20, 2024 proposal and TAC-approved NOGRR245 (*i.e.*, the JC Proposal) would be similar. Both proposals require software modifications that address the **vast majority** of the issues (IBRs with "the greatest risk"), as evidenced by the lessons learned from the Odessa and wind-related events. In fact, if such software upgrades had been available at the time of the Odessa events, they would have significantly prevented the loss of capacity. In addition, both NOGRR245 proposals require commercially reasonable physical modifications to be made. And to the extent minor retrofit kits exist, as ERCOT suggests, they would likely be commercially reasonable and required.

ERCOT has acknowledged that "the benefits [ERCOT] get[s] by the software changes and those things that [Joint Commenters] consider commercially reasonable **will be good enough to hold off the severe... catastrophic type event**" (emphasis added)<sup>14</sup> and "[ERCOT] agree[s] that the fact that the Joint Commenters agreed to software and parameterization changes as being deemed commercially reasonable by default, that was part of the main reason why we, [ERCOT] went down that route to allow that language because that **gives us the most benefit in the short term for reliability**" (emphasis added).<sup>15</sup>

Moreover, according to ERCOT's recent statements at TAC, out of 66 GW of operational IBRs, "probably about 2/3 of those will have software updates that can improve their performance. Out of the other 1/3, there's probably, let's just say that there's 20 GW left. Out of the 20 GW that are left, there's 15 GW that don't even need to do anything. They're good; they don't need to make any changes. There's about 5 GW where they would have

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<sup>14</sup> See ERCOT TAC Meeting, ERCOT Comments (Mar. 27, 2024) at <https://ercot.new.swagit.com/videos/301040> (Timestamp: 00:39:31 - 00:39:51).

<sup>15</sup> *Id.* at Timestamp: 01:24:17 – 01:24:43.

to have more significant hardware upgrades.”<sup>16</sup> Therefore, according to ERCOT, out of 66 GW of IBRs, 15 GW do not need improvements, 46 GW have commercially reasonable upgrades today, leaving 5 GW of IBRs potentially at risk to the ERCOT System—*i.e.*, **under TAC-approved NOGRR245, 92.5% of the IBR capacity on the ERCOT System should not pose unacceptable risks to reliability.**

Again, there is no data to support a claim that the subset of IBRs that may require an exemption under NOGRR245 due to the unavailability of modifications that are technically feasible or physical upgrades that are not commercially reasonable, create a significant risk to grid reliability. Furthermore, ERCOT has not provided any quantitative evidence based on reliability studies that justify its position of the grave reliability risks posed. TAC-approved NOGRR245 also provides a clear opportunity for a subset of existing IBRs to seek limited exemptions if necessary and includes clear language to provide IBR owners with reasonable assurance that their long-term investments will be reasonably preserved for those cases where no software upgrades or commercially reasonable hardware modifications exist.

ERCOT Staff argues that “moving that [applicability] date to NOGRR approval date [from June 1, 2023, to June 1, 2024, as contemplated in TAC-approved NOGRR245] likely exempts 20-30 GWs of IBRs (currently in the in the ERCOT interconnection queue with signed Interconnection Agreements and credit support) from new [ride-through] requirements.”<sup>17</sup> As of March 31, 2024, the ERCOT interconnection queue included 19.2 GW of IBRs for which a Full Interconnection Study has been requested, as shown in Figure 2, below. Joint Commenters surmise that ERCOT’s estimate of an additional 10 GW of IBRs reflects the IBRs expected to execute an Interconnection Agreement between April 1 – May 31, 2024. Of the 19.2 GW identified, approximately more than 97% are either PVGRs (12 GW; 62%) or ESRs (6.7 GW; 35%); WGRs make up less than 3% (0.5 GW).

**Figure 2.**

Sum of Capacity (MW)	Column Labels				
Row Labels	SS Completed, FIS Completed, IA	SS Completed, FIS Not Started, IA	SS Completed, FIS Started, IA	Grand Total	
BA	3,054	103	3,576	6,732	
PV	5,323		6,562	11,885	
WT	315		225	540	
<b>Grand Total</b>	<b>8,692</b>	<b>103</b>	<b>10,363</b>	<b>19,157</b>	

There are two critical points to highlight here:

1. ERCOT has not produced any technical basis for its claims of widespread reliability risks or grid instability risks posed by 20-30 GW of IBRs that would meet the “legacy” requirements; such a claim is subjective, not fact-based, and

<sup>16</sup> *Id.* at Timestamp: 00:48:05 – 00:48:53.

<sup>17</sup> See ERCOT TAC Meeting, *ERCOT Presentation*, Slide 6 (Mar. 27, 2024) at <https://www.ercot.com/files/docs/2024/03/27/NOGRR%20245%20032724%20TAC.pptx>.

exaggerated. Moreover, the GW values identified cannot and should never be conflated with a level of widespread tripping risk.

2. Although TAC-approved NOGRR245 requires this set of IBRs to meet the “legacy” voltage ride-through requirements because they were procured prior to approval of NOGRR245 (*i.e.*, defined regulatory certainty and direction are necessary for procuring equipment that meets defined requirements), this set of 97% PVGRs and ESRs have robust ride-through capabilities compared to legacy IBRs, and are more likely to exceed the legacy requirements to approach or meet the new ride-through requirements.

ERCOT appears to oppose TAC-approved NOGRR245 because ERCOT assumes that it will result in a materially higher number of exemptions than those that would be granted under ERCOT’s proposal and a presumption of wrongdoing by IBR owners.<sup>18</sup> However, as explained above, this assumption is not supported by available facts. To the contrary, TAC-approved NOGRR245 addresses the identified risks, and it does so without exposing what is expected to be a small subset of IBRs to the risk of substantial economic harm if they cannot meet the requirements through software upgrades or commercially reasonable physical modifications.

## DEFINING THE SOLUTION

### *Consideration of Economic Factors*

It has long been established that economic factors must be considered in the development of ERCOT rules. As the Control Area Operator (CAO) of the ERCOT Region, ERCOT is required to develop operating standards and operate the ERCOT System with Good Utility Practice. Specifically, the Operating Standards section of the ERCOT Protocols states that “**ERCOT... shall operate the ERCOT Transmission Grid pursuant to NERC Reliability Standards, these Protocols, and Good Utility Practice.**”<sup>19</sup> Good Utility Practice is defined by the ERCOT Protocols and Commission Rules as:

Any of the practices, methods, and acts engaged in or approved by a significant portion of the electric industry during the relevant time period, or any of the practices, methods, and acts that, in **the exercise of reasonable judgment** in light of the **facts known** at the time the decision was made, could have been expected **to accomplish the desired result at a reasonable cost** consistent with good business practices, reliability, safety, and expedition. Good utility practice is **not intended to be limited to the optimum practice, method, or act, to the exclusion of all others**, but

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<sup>18</sup> *E.g.*, ERCOT TAC Meeting (Mar. 27, 2024), ERCOT Staff statements: “And what really really concerns me... is because of how [ERCOT] suggested the language that [Joint Commenters] continue to want to push, it really makes [ERCOT] uneasy that there's something that hasn't been forthcoming to us, that there's some risk that's out there that we haven't been told that they're aware of and they're trying to protect themselves against” (emphasis added). (Timestamp: 01:02:40 – 01:03:05).

<sup>19</sup> ERCOT Protocol Section 6.5.2(1).

rather is intended to include acceptable practices, methods, and acts generally accepted in the region (emphasis added).<sup>20</sup>

Good Utility Practice requires ERCOT to exercise **reasonable judgment** in developing reliability standards **based on facts known**. It also requires ERCOT to use those facts known, and its reasonable judgment to accomplish reliability standards at a **reasonable cost**, and not to be limited the exclusion of all other factors. ERCOT has also recognized the need to consider the financial impacts on existing Resources associated with new reliability standards and environmental regulations.

- ERCOT COO, Woody Rickerson, acknowledged the importance of economic considerations in the development of reliability standards—specifically ride-through standards for large loads. In response to a question regarding ERCOT’s intent for including an exemption to proposed ride-through requirements for existing large loads (NPRR1191), Mr. Rickerson stated, “Well, I think it’s the fact that the established loads have already made an investment and those loads don’t necessarily need to be changed. I mean **we’re not trying to impose changes on those that have already made an investment**, but we are trying to establish a standard” (emphasis added).<sup>21</sup>
- ERCOT CEO, Pablo Vegas, at the February 27, 2024, ERCOT Board meeting, when he told you that “it’s important that we find that right balance. **[NOGRR245] has to work for the generators** that are supporting and operating these resources and it **has to work for driving the reliability** and the **resiliency** that’s needed through the changes in these new standards” (emphasis added).<sup>22</sup>
- In a filed response to the Environmental Protection Agency’s emissions limits on certain Resources, ERCOT noted, “ERCOT is concerned with the EPA’s proposed reliance on these relatively untested technologies, which are not currently in commercial use and have not been proven to be **operationally or economically feasible**.” And, “[i]f [low greenhouse-gas hydrogen or carbon capture and sequestration] technologies do not materialize **in a way that allows economic operation of these generating assets** in a highly dependable manner, or if they do not materialize on the timeline anticipated by the EPA, the supply of electric power could be inadequate to meet demand in future years” (emphasis added).<sup>23</sup>

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<sup>20</sup> 16 TAC 25.2(7); ERCOT Protocol Section 2.1.

<sup>21</sup> NPRR1191 and Related Revision Requests Workshop (Aug. 16, 2023).

<sup>22</sup> See ERCOT Board of Directors Meeting (Feb. 27, 2024) at <https://ercot.new.swagit.com/videos/298506> (Timestamp: 00:22:47 – 00:23:10).

<sup>23</sup> See EPA Docket No. EPA-HQ-OAR-2023-0072; FRL-8536-02-OAR; New Source Performance Standards for Greenhouse Gas Emissions From New, Modified, and Reconstructed Fossil Fuel-Fired Electric Generating Units; Emission Guidelines for Greenhouse Gas Emissions From Existing Fossil Fuel-Fired Electric Generating Units; and Repeal of the Affordable Clean Energy Rule, *ERCOT Comments*, at [EPA-HQ-OAR-2023-0072-0635\\_attachment\\_1.pdf](#)



In describing TAC's efforts on NOGRR245, Mr. Vegas also told you that "**TAC is to try to find the right balance between risk mitigation and the economic cost and impact of achieving that risk mitigation**" (emphasis added).<sup>24</sup> On March 27, 2024, that is exactly what the TAC did. Following a three-hour discussion by TAC members, and offline meetings between ERCOT, Joint Commenters and TAC members, TAC voted to approve the comments filed by Joint Commenters on March 22, 2024, with an added clarification paragraph (taken verbatim from ERCOT's proposed language) to prohibit an IBR from making modifications that would lower its ride-through capability prior to a replacement/modification.<sup>25</sup>

Nonetheless, ERCOT Staff has stated that ERCOT "does not support a commercially reasonable concept"<sup>26</sup> in NOGRR245 because reliability concerns "should outweigh commercial considerations."<sup>27</sup> This is not the first time ERCOT has refused to consider the cost borne by Resources in developing reliability standards. In Protocol Revision Request (PRR) 833, Primary Frequency Response Requirement from Existing Wind Generation Resources (WGRs), ERCOT maintained:

Any wind turbine that is not capable of pitching its blades will be considered "technically infeasible" of retrofitting with Primary Frequency Response capability. However, in order for ERCOT to consider a permanent exemption, ERCOT will require the WGR to provide documentation, with the attestation, from the turbine manufacture that specifically states the reason why these wind turbines are incapable of receiving control signals to the blade pitch mechanism and therefore immediately changing the pitch of the blade. **ERCOT will not consider cost of retrofitting wind turbines in making its determination** (emphasis added).<sup>28</sup>

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<sup>24</sup> *Id.*

<sup>25</sup> See ERCOT TAC Meeting (Mar. 27, 2024) at <https://ercot.new.swagit.com/videos/301040> (Timestamps: 00:13:22 – 02:49:06 and 04:05:10 – 04:24:28). See also TAC Report (Mar. 27, 2024), incorporating new paragraph (5) of Nodal Operating Guide Section 2.14 ("Unless approved by ERCOT, no existing IBR, Type 1 WGR, or Type 2 WGR with a documented exemption shall reduce the ride-through capability of the unit below its capability prior to the replacement or modification. Unless approved by ERCOT, no existing IBR, Type 1 WGR, or Type 2 WGR without a documented limited technical exemption to applicable requirements shall reduce the ride-through capability of the unit below the required ride-through capability."), at [https://www.ercot.com/files/docs/2024/04/01/245NOGRR-72%20TAC%20Report%20032724\\_1.docx](https://www.ercot.com/files/docs/2024/04/01/245NOGRR-72%20TAC%20Report%20032724_1.docx).

<sup>26</sup> See ERCOT TAC Meeting, *ERCOT Presentation*, Slide 6 (Mar. 27, 2024).

<sup>27</sup> *Id.*; See also ERCOT TAC Meeting at <https://ercot.new.swagit.com/videos/301040> (Timestamp: 00:36:00 – 00:36:20).

<sup>28</sup> See PRR 833, Primary Frequency Response Requirement from Existing WGRs, ERCOT Comments (Apr. 1, 2010) at [https://www.ercot.com/files/docs/2010/04/01/833pr\\_24\\_ercot\\_comments\\_040110.doc](https://www.ercot.com/files/docs/2010/04/01/833pr_24_ercot_comments_040110.doc).

Several WGRs ultimately challenged ERCOT's denial of exemptions following the passage of PRR833 at the Commission, which resulted in settlements between ERCOT and the WGRs.<sup>29</sup>

In short, the commercial reasonability concept in TAC-approved NOGRR245 helps mitigate the reliability concerns associated with IBR ride-through capabilities. TAC-approved NOGRR245 finds the right balance—it aligns with what CEO Vegas told you was necessary, and it protects investments in generation—*i.e.*, TAC-approved NOGRR245 considers economic impacts, works for the Generation Resources, and improves grid reliability and resiliency.<sup>30</sup>

### ***Vested Interest in Grid Stability***

ERCOT maintains that while Joint Commenters “desired to find the ‘right balance’ between reliability and cost... Joint Commenters’ proposal does not strike a ‘balance;’ it prioritizes their financial desires over ERCOT System reliability.”<sup>31</sup> ERCOT is not the sole entity vested with an obligation to promote and maintain system reliability. Generation Resources are also required to meet Commission<sup>32</sup> and NERC<sup>33</sup> reliability-related requirements, and have strong economic interests to promote the reliability and stability of the ERCOT System. No IBR owner wants its Resources to not perform during a system disturbance or grid event. Not only does non-performance/failure potentially subject the Resources to enforcement actions and significant administrative penalties, but it can impact contractual obligations and the Resource’s ability to sell energy to the grid. TAC-approved NOGRR245 reasonably achieves reliability improvements to help prevent negative outcomes associated with IBR ride-through capabilities.

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<sup>29</sup> See Appellants Appeal and Complaint Concerning ERCOT’s Denial of Exemption Requests Under Protocol 5.9.1.3 and Requirements for Related Relief, PUC Docket No. 39034, at <https://interchange.puc.texas.gov/search/filings/?UtilityType=A&ControlNumber=39034&ItemMatch=Equal&DocumentType=ALL&SortOrder=Ascending>.

<sup>30</sup> Statement by ERCOT CEO, Pablo Vegas, to the ERCOT Board (“It’s important that we find that right balance, it has to work for the generators that are supporting and operating these resources and it has to work for driving the reliability and the resiliency that’s needed through the changes in these new standards.”). See ERCOT Board of Directors Meeting (Feb. 27, 2024) at <https://ercot.new.swagit.com/videos/298506> (Timestamp: 00:22:47 – 00:23:10).

<sup>31</sup> See NOGRR245, ERCOT Comments (Mar. 26, 2024) at <https://www.ercot.com/files/docs/2024/03/26/245NOGRR-70%20ERCOT%20Comments%20032624.docx>.

Accusations by ERCOT Staff aimed at the very parties subject to investigation and referral by the ERCOT Reliability Monitor for enforcement only serves to stymie progress and promote fear and distrust.

<sup>32</sup> See *e.g.*, 16 TAC § 25.109 (PGC registration requirements).

<sup>33</sup> See *e.g.*, BAL-001-TRE-2 — Primary Frequency Response in the ERCOT Region.

## **Federal Recommendations & ISO Considerations**

TAC-approved NOGRR245 aligns with Federal Energy Regulatory Commission's (FERC) Order 901, NERC goals and recommendations in Institute of Electrical and Electronics Engineers (IEEE) Standard 2800-2022, and standards proposed by other Independent System Operators (ISOs). FERC Order No. 901 directs NERC to develop or revise Reliability Standards to address IBR-related ride-through concerns.<sup>34</sup> However, where FERC Order 901 recommends the adoption of a generalized exemption from implementing hardware upgrades, TAC-approved NOGRR245 requires commercially reasonable physical modifications. Other Independent System Operators are also considering the adoption of enhanced ride-through standards for IBRs. Midcontinent Independent System Operator, Inc. (MISO) recently requested FERC approval of tariff provisions based on the "need to address the most immediate reliability concerns while also balancing technological limitations."<sup>35</sup> Similarly, ISO New England, Inc. (ISO-NE) has developed a proposal for implementation of similar performance standards under a three-stage, phased adoption plan.<sup>36</sup> And the New York State Reliability Council (NYSRC) has suggested a process for ride-through changes that will apply to new IBRs going through the Interconnection Studies process.<sup>37</sup>

If the ERCOT Board, and ultimately the Commission, approves TAC-approved NOGRR245, ERCOT will implement the nation's most aggressive ride-through performance requirements to date, particularly for existing IBRs.

## **Software Upgrades**

TAC-approved NOGRR245 considers software, firmware, and settings or parameterization modifications to be commercially reasonable and **requires all IBRs (existing and new) to implement all such changes** to improve ride-through performance unless the Resource Entity and ERCOT mutually agree that the cost of such modifications is unreasonable. Studies of recent system disturbances in ERCOT have found that software and parameter solutions would have prevented the large majority of IBR ride-through failures.

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<sup>34</sup> See FERC Order 901 (Oct. 30, 2023) at <https://www.federalregister.gov/documents/2023/10/30/2023-23581/reliability-standards-to-address-inverter-based-resources>; The Institute of Electrical and Electronics Engineers Standard 2800-2022 - IEEE Standard for Interconnection and Interoperability of Inverter-Based Resources (IBRs) Interconnecting with Associated Transmission Electric Power Systems at <https://ieeexplore.ieee.org/document/9762253>.

<sup>35</sup> Midcontinent Independent System Operator, Inc., *Inverter-Based Resource Performance Standard*, FERC Docket No. ER24-1179-000 (Feb. 1, 2024).

<sup>36</sup> ISO New England, Inc., PP5-6 Updates Presentation, Slide 20 (Sept. 19, 2023), available at [https://www.iso-ne.com/static-assets/documents/2023/09/a09\\_2\\_pp\\_5\\_6.pdf](https://www.iso-ne.com/static-assets/documents/2023/09/a09_2_pp_5_6.pdf).

<sup>37</sup> New York State Reliability Council RR #151- Reliability Rule B.5: Establishing New York Control Area (NYCA) Interconnection Standards for Large IBR Generating Facilities.

## **Hardware Upgrades**

### **False Assertion: Voluntary Compliance & Resource Entity Discretion**

ERCOT claims that the JC Proposal “**proposes only voluntary compliance**” and “any reliability improvements [other than software upgrades and parameter modifications] would take place **solely at the Resource Entity’s discretion**” (emphasis added).<sup>38</sup> This is not true.

Under TAC-approved NOGRR245:

- **ERCOT (not the Resource Entity)** has the ultimate **decision-making authority** to approve or reject a request for an exemption or extension if an IBR is unable to meet ride-through requirements under NOGRR245:

**ERCOT may deny** a request for an exemption or extension if the Requesting Entity fails to demonstrate, to **ERCOT’s reasonable satisfaction**” that the Resource Entity: (i) failed to maximize the IBR’s ride-through capability with all commercially reasonable modifications (exemptions); (ii) failed to represent the IBR’s limitations (exemptions); (iii) failed to make best efforts to meet required timelines (extensions); (iv) failed to maximize the IBR’s ride-through capability during the extension (extensions); or (v) failed to accurately represent the IBR’s ride-through capabilities in ERCOT models (extensions).<sup>39</sup>

- **Every Resource Entity** (IBR owner/operator):
  - Has an **ongoing obligation** to “evaluate its [IBR] facilities and available modifications it can make to its equipment... to maximize its [ride-through] capability up to the [ride-through] requirements set forth in Section 2.6.2.1... and Section 2.9.1.2.”<sup>40</sup>
  - **Shall use best efforts** to determine if any technically feasible equipment upgrades or improvements that require physical modification are commercially reasonable for the subject equipment.”<sup>41</sup>
  - Has a **duty to implement** any commercially reasonable hardware changes “as soon as practicable but no later than 24 months after the modification

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<sup>38</sup> NOGRR245, ERCOT Comments (Mar. 26, 2024) at <https://www.ercot.com/files/docs/2024/03/26/245NOGRR-70%20ERCOT%20Comments%20032624.docx>.

<sup>39</sup> TAC-approved NOGRR245, Section 2.13.1(2) at [https://www.ercot.com/files/docs/2024/04/01/245NOGRR-72%20TAC%20Report%20032724\\_1.docx](https://www.ercot.com/files/docs/2024/04/01/245NOGRR-72%20TAC%20Report%20032724_1.docx).

<sup>40</sup> *Id.* at Section 2.11(1).

<sup>41</sup> *Id.*

becomes ... available ... unless a longer timeline is mutually agreed upon by the Resource Entity and ERCOT.”<sup>42</sup>

### **False Assertion: Distant Implementation for Upgrades**

ERCOT argues that under TAC-approved NOGRR245, hardware “improvements would occur far in the future.”<sup>43</sup> This is not true.

TAC-approved NOGRR245 proposes specific deadlines for implementing available ride-through improvements. Software improvements must be implemented “as soon as practicable but **no longer than 12 months** from the date on which the modification becomes ... available ... unless a longer timeline is required by an impacted [TSP] or as mutually agreed upon by the Resource Entity and ERCOT.”<sup>44</sup> Commercially-reasonable hardware improvements must be implemented “as soon as practicable but **no later than 24 months** after the modification becomes ... available ... unless a longer timeline is mutually agreed upon by the Resource Entity and ERCOT. The Requesting Entity may request extensions beyond 24 months for circumstances beyond [its] reasonable control and shall provide ERCOT with an updated schedule for when the applicable changes are expected to be completed.”<sup>45</sup>

Despite the deadlines listed above, all IBRs unable to meet their respective ride-through requirements under NOGRR245 are required to report known ride-through limitations to ERCOT. In fact, TAC-approved NOGRR245 creates a specific section of the Operating Guide dedicated to such reporting—*i.e.*, “2.12, Ride-Through Reporting Requirements”—which, will provide ERCOT with better modeling and transparency into IBR capabilities, and provide Resource Entities with clear standards for reporting technical limitations as well as available modifications and implementation thereof.<sup>46</sup>

### ***Commercial Reasonability***

### **False Assertion: Commercial Reasonability is “Solely in the Hands of Resource Entities”**

While ERCOT ultimately adopted the concept of commercial reasonability in its March 20, 2024, comments, ERCOT continues to maintain that it does not support the concept.<sup>47</sup> When asked at TAC to reconcile its position on commercial reasonability because

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<sup>42</sup> *Id.*

<sup>43</sup> NOGRR245, ERCOT Comments (Mar. 26, 2024).

<sup>44</sup> TAC-approved NOGRR245, Section 2.11(1)(a).

<sup>45</sup> *Id.* at Section 2.11(1)(b).

<sup>46</sup> *Id.* at Sections 2.12, 2.12.1, 2.12.2 and 2.12.3.

<sup>47</sup> See ERCOT TAC Meeting, *ERCOT Presentation*, Slide 6 (Mar. 27, 2024) (“ERCOT included “Commercially Reasonable Efforts” because Joint Commenters insisted on it and to incentivize REs to quickly implement easier, less costly changes. However, ERCOT does not support “commercially reasonable” concept...”).

ERCOT included it in its proposed draft, but publicly stated that ERCOT did not support the concept and viewed it as a risk to reliability.<sup>48</sup> However, the lack of ERCOT support on this concept may result from a misunderstanding of ERCOT's authority for determining whether an upgrade is "commercially reasonable" and therefore whether an exemption or extension should be granted.

- "The most significant concession is the "commercially reasonable" concept. ERCOT agreed to allow a Resource Entity to consider the commercial impact on its facility in connection with upgrades to meet the improved ride-through requirements. Nonetheless, ERCOT could not – for reliability reasons – **leave this issue solely in the hands of Resource Entities**. Thus, ERCOT created the exemption/extension processes and leaves itself the authority to implement operational restrictions if needed to ensure reliability" (emphasis added).<sup>49</sup>
- "[I]f you were to approve the Joint Commenters' language, it would not address the reliability risk. In fact, it would negatively go from where the current requirements are and it would make the requirements less because [Joint Commenters] put in language that effectually if [an IBR has] a performance failure even to today's standards would not have to rectify it except for what the **[Resource Entity] determine[s] is commercially reasonable**. We view that as negative to reliability and not addressing the risk that we're trying to address" (emphasis added).<sup>50</sup>

As mentioned above, **ERCOT** (not the Resource Entity) **has the ultimate decision-making authority to approve or reject a request for an exemption** if an IBR is unable to meet ride-through requirements under NOGRR245. The Resource Entity has the burden of proving that an available upgrade is not commercially reasonable.

Under TAC-approved NOGRR245, "In determining whether any equipment upgrades or improvements that require physical modification are commercially reasonable, the Resource Entity may consider factors such as: (i) availability and/or cost of hardware; (ii) whether the improvements are technically feasible; (iii) facility's depreciated value; (iv) cost of capital; (v) facility's expected profitability for the remainder of its expected operational life; (vi) whether the improvement would materially enhance its ride through capabilities; and (vii) any other relevant factor."<sup>51</sup> If a Resource Entity concludes that the upgrades/improvements are not commercially reasonable, it may request an exemption

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<sup>48</sup> TAC Meeting (Mar. 27, 2024) at <https://ercot.new.swagit.com/videos/301040> ("internal to ERCOT, there's a lot of inconsistencies" and ERCOT did not want to "open the door" for use of "commercial reasonability" for other reasons (i.e., "And what [ERCOT] want[s] to be very clear is [commercial reasonability] should not be expanded upon. So, that all these other things in the protocols and operating guides... we've opened the door. If it's commercially reasonable here, it should be commercially reasonable for everything else") (Timestamp 00:38:14 - 00:40:23).

<sup>49</sup> See NOGRR245, ERCOT Comments (Mar. 26, 2024).

<sup>50</sup> TAC Meeting (Mar. 27, 2024) at <https://ercot.new.swagit.com/videos/301040> (Timestamp 00:25:20 - 00:25:57).

<sup>51</sup> See TAC-approved NOGRR245, Section 2.11(2).

from ERCOT.<sup>52</sup> In so doing, the Resource Entity is required to provide ERCOT with “a detailed description of the grounds for the exemption” and “the basis for such conclusion” that upgrades/improvements are not commercially reasonable.<sup>53</sup> **ERCOT then has the authority to deny** the exemption request if the **Resource Entity “fails to demonstrate, to ERCOT’s reasonable satisfaction...** [that it] maximized the ride-through capability of the IBR... with all available commercially reasonable modifications” (emphasis added).<sup>54</sup> Said another way, if ERCOT is not reasonably satisfied that an available solution is commercially unreasonable, **ERCOT can deny the exemption** request. Should a Resource Entity disagree with ERCOT’s determination/decision, it can use the new appeal process (ADR-lite process) to try to resolve the issue, wherein **ERCOT can again deny the exemption** request. If the Resource Entity disagrees with ERCOT’s final determination, it can then use the formal complaint process to appeal ERCOT’s determination with the Commission. (The importance of the appeal process under TAC-approved NOGRR245 is discussed in further detail below.)

Under TAC-approved NOGRR245, if ERCOT determines that a solution is commercially reasonable, then ERCOT does not have to approve a Resource Entity’s exemption request. **This issue of commercial reasonability is not “left solely in the hands of the Resource Entity”—it is in ERCOT’s hands.**

## THE IMPORTANCE OF CLEARLY DEFINED RULES

The US Chamber of Commerce said it best:

Fairness and transparency are essential in regulatory policy to enable businesses to invest and grow.

Fair enforcement policies and smart regulatory policy are essential. The Chamber recognizes the need for important protections...but we oppose policies that are not appropriately justified...

Poorly designed government policies may cause more harm than good and squash innovation and job creation.

While these approaches are often distilled into either “regulatory” and “deregulatory,” in reality we simply want to regulate smarter, by basing rulemakings on thoughtful and transparent technical foundations.

Poorly designed and overly burdensome regulations not only layer on onerous requirements, paperwork, and legal liability to large and

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<sup>52</sup> *Id.* at Section 2.13.1(1).

<sup>53</sup> *Id.* at Sections 2.12.1(1)(c) and 2.13.1.1(2)(g), (h).

<sup>54</sup> *Id.* at Section 2.13.1(2)(a)(i).

small businesses, but they dampen needed investments in areas such as infrastructure...

Excessive regulations coupled with unfair adjudication processes will only serve to... make it harder... to navigate the complex maze of rules and their associated compliance requirements.<sup>55</sup>

ERCOT claims that TAC-approved NOGRR245 “doesn't encapsulate a lot of what the work that [ERCOT and Joint Commenters] did to come to compromise because [Joint Commenters] starting not on top of ERCOT's [March 20, 2024] comments, but on top of [ERCOT's January 8, 2024] comments and the way [Joint Commenters] have worded things in a particular way that offers them a lot more latitude to get out of compliance obligations.” The TAC meeting was on March 27, 2024. TAC requested that ERCOT and Joint Commenters file comments with sufficient time for review. ERCOT filed its proposal on March 20; Joint Commenters filed its proposal on March 22. It was simply impossible to comment atop ERCOT's proposal in two days (over a weekend) on such technical revisions. Rather, Joint Commenters used the same version of comments that ERCOT used to file its proposal—*i.e.*, ERCOT's January 8, 2024 comments (not the ROS-approved comments that reflected an early version by some of the Joint Commenters). Nonetheless, TAC-approved NOGRR245 encapsulates all of the work ERCOT and Joint Commenters did to reach as much compromise as possible.

Rules, laws, and ERCOT reliability standards must be clearly drafted such that all impacted parties understand their rights and obligations—regulators, Market Participants, engineers, economists, lawyers, etc. And while the reliability outcomes of TAC-approved NOGRR245 and ERCOT's March 20, 2024, proposal are expected to be fundamentally similar, TAC-approved NOGRR245 provides additional clarity around processes around the exemption, extension and appeals processes that ERCOT's proposal lacks.

For example, if a Resource Entity seeks to request an exemption from an ride-through requirement, under ERCOT's proposal, the Resource Entity submits the request, and “as soon as practicable” ERCOT will inform the Resource Entity that either: (i) the information is not acceptable, and why, and deny the request; or (ii) approve the request. “If the Resource Entity or IE does not agree with ERCOT's decision in paragraph (3), above, it shall appeal the decision to the [PUCT] pursuant to P.U.C. PROC. R. 22.251.”<sup>56</sup> ERCOT claims the exemption process will be iterative and allow for communication between ERCOT and the Resource Entity, but ERCOT's proposal doesn't provide for such iteration. ERCOT also claims that its proposed appeal process was designed “to speed up the ADR process”—*i.e.*, if a Resource Entity “[does not] agree with ERCOT's

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<sup>55</sup> See US Chamber of Commerce, Article, *The Business Community Needs Regulatory Certainty Now More Than Ever* (Feb. 10, 2021) (regarding the roll-back of two Executive Orders by the Biden administration) at <https://www.uschamber.com/regulations/the-business-community-needs-regulatory-certainty-now-more-ever>.

<sup>56</sup> See ERCOT Comments (Mar. 20, 2024), Section 2.12.1 at <https://www.ercot.com/files/docs/2024/03/20/245NOGRR-68%20ERCOT%20Comments%20032024.docx>.



assessment; if we deny an exemption request, that they're able to **quickly take that to the Commission** to be able to get them to weigh in on that matter. ... a faster process than say, using the ADR process” (emphasis added).<sup>57</sup> Filing a formal complaint with the Commission under 22.251<sup>58</sup> is anything but speedy—*i.e.*, Resource Entity files a complaint, then ERCOT has 28 days to respond, intervenors have 45 days to intervene, and Commission Staff has 45 days to comment. After that, there are factual issues to be determined, findings of facts, conclusions of law, oral arguments, a hearing, etc. Under TAC-approved NOGRR245, if a Resource Entity challenges ERCOT’s denial of an exemption request, the appeal process requires ERCOT to make a final determination (approval/rejection) within 30 days.

TAC-approved NOGRR245 provides a clear process for requesting exemptions and approving/rejecting requests for exemptions—it was modeled off ERCOT’s process for submitting, reviewing, and appealing verifiable costs,<sup>59</sup> and is a considerably faster process than the Alternative Dispute Resolution (ADR) process in Protocol Section 20. TAC-approved NOGRR245 provides structure and details regarding how to submit a request, the information that must be submitted, the timeline for submitting and reviewing requests, and provides Market Participants with an opportunity to resolve a disagreement regarding commercial reasonability prior to subjecting the Commission to a contested case. It also provides IBR owners with information regarding where the request is in the process, and assurance that it has, in good faith, worked with ERCOT to resolve any misunderstandings or disagreements before litigating the issue at the Commission.

TAC-approved NOGRR245 also specifies reporting requirements and deadlines, as well as the steps that must be followed following an apparent ride-through failure. This will help IBR operators better plan for, prevent, investigate, and report on performance issues associated with system disturbances.

At the end of the day, Resource owners, operators, manufacturers and investors want the same thing as ERCOT—to rely on and support a reliable grid. To succeed in that, however, clear and understandable rules for reliability cannot be based solely on engineering principles, they must also consider economic principles.

### **Regulatory Takings**

TAC-approved NOGRR245 was also drafted to include sufficient language around exemptions, extensions and appeals (beyond that proposed by ERCOT), in an attempt to avoid litigation. ERCOT’s proposal does not contain the requisite processes and structure to insure Resource owners that ERCOT will not take excessive, unilateral actions amounting to uncompensated regulatory takings under state law, the Texas Constitution

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<sup>57</sup> See TAC Meeting (Mar. 27, 2024) at <https://ercot.new.swagit.com/videos/301040> (Timestamp 00:33:56 - 00:34:26).

<sup>58</sup> See 16 TAC 22.251 at <https://www.puc.texas.gov/agency/rulesnlaws/procrules/pr-m/22.251/22.251.pdf>.

<sup>59</sup> See ERCOT Verifiable Cost Manual, Sections 10 – 12 (Dec. 29, 2023) at <https://www.ercot.com/files/docs/2023/12/29/ERCOT%20Verifiable%20Cost%20Manual%20010124.doc>.

and United States Constitution.<sup>60</sup> ERCOT's discretion under its March 20, 2024 proposal could have a serious impact on IBRs, potentially requiring them to invest millions to retrofit or rebuild under threat of penalties, operating restrictions and enforcement actions, even though at the time the original investments were made, and interconnections approved, there were no such ride-through requirements. Moreover, many IBRs on the ERCOT System have investment-backed expectations, land leases, and power purchase agreements that rely on participation in the ERCOT market until the end of their expected useful lives. To avoid this problem, TAC-approved NOGRR245 provides reasonable options to Resources that cannot meet the new standards due to technical infeasibility or uneconomic upgrades. ERCOT's proposal does not reasonably solve the reliability concerns associated with IBRs, and may therefore result in the unconstitutional appropriation of private property through a regulatory taking.

### ***Disconnections***

Joint Commenters suggest that discussion and interpretation of ERCOT's authority to disconnect IBRs as a result of ride-through capabilities or performance be addressed by the Commission, and ERCOT's existing authority regarding disconnections should remain unchanged in this NOGRR. The Commission is uniquely positioned to: consider stakeholder and investor interests; avoid the unlawful taking of private property; evaluate regulatory risk associated with future investment in Resources of all technology types; and define ERCOT's authority under Texas law and NERC Standards to protect the grid.

## **CONCLUSION**

TAC-approved NOGRR245 provides an appropriate balance to ensure that new IBRs achieve compliance with the new reliability standards in IEEE2800-2022, and that existing IBRs and IBRs for which investments made prior to the adoption of these standards are not required to make uneconomic changes. By designating software, parameter, and firmware changes as commercially reasonable, TAC-approved NOGRR245 addresses the known issues with regard to ride-through standards for existing and future resources.

TAC-approved NOGRR245 is a data driven approach that focuses on implementing ride-through improvements to address the issues as identified in recent events. For instances where physical changes are technically feasible for existing IBRs, TAC-approved NOGRR245 allows for the appropriate balance of requiring only those physical changes that will still allow the IBR to remain interconnected and operational.

For IBRs that require an exemption or extension, TAC-approved NOGRR245 provides a specific standard of review and defined process for how ERCOT will evaluate and approve or reject an exemption or extension request. This level of detail and process is necessary to ensure that if any ERCOT action places an IBR at risk of being unable to operate economically, there is a meaningful record available at the Commission.

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<sup>60</sup> Tex. Gov't Code §§ 2007.001, *et seq.*; Tex. Const. Art. I, § 17; U.S. Const. Amend. V.

Joint Commenters agree with ERCOT that continued delay in implementing enhanced ride-through standards will continue exposing the ERCOT system to risk.<sup>61</sup> These Comments are in support of the March 27, 2024 TAC action taken by ERCOT stakeholders to adopt NOGRR245. Immediate action by the ERCOT Board to approve TAC-approved NOGRR245 (i.e., the March 27, 2024 TAC Report<sup>62</sup>) will provide a clear signal to Market Participants and OEMs regarding what is required of future IBRs and will encourage OEMs to support the development of improvement. Procedurally, Joint Commenters respectfully request that the ERCOT Board adopt TAC-approved NOGRR245 without delay.<sup>63</sup>

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<sup>61</sup> See e.g., TAC Meeting (Mar. 27, 2024) at <https://ercot.new.swagit.com/videos/301040> (Timestamp: 00:46:24 - 00:46:47).

<sup>62</sup> See NOGRR245, TAC Report (Mar. 27, 2024) at [https://www.ercot.com/files/docs/2024/04/01/245NOGRR-72%20TAC%20Report%20032724\\_1.docx](https://www.ercot.com/files/docs/2024/04/01/245NOGRR-72%20TAC%20Report%20032724_1.docx).

<sup>63</sup> At the March 27, 2024 TAC meeting, ERCOT Staff indicated that it would challenge TAC's approval of Joint Commenters' language to the ERCOT Board. See <https://ercot.new.swagit.com/videos/301040> (Timestamp 02:23:05). It is the understanding of Joint Commenters that ERCOT Staff intends to request that the ERCOT Board remand or refer TAC-approved NOGRR245 back to TAC for reconsideration. Section 8.1 of the [ERCOT Board Policies & Procedures](#) provides that "ERCOT may:... (b) submit written comments requesting a Board action to reject, defer, remand, or refer a matter that is before the Board for consideration, and requires a TAC recommendation as part of the approval process ("TAC Recommendation Opposition")." Because NOGRR245 has been designated "Urgent", ERCOT was required to have submitted a written request for the Board to remand or refer NOGRR245 back to TAC within 48 hours of the March 27, 2024 TAC Meeting per Section 8.4 of the ERCOT Board Policies and Procedures ("Written notice of such TAC Appeals or TAC Recommendation Oppositions must be submitted to ERCOT's General Counsel within forty-eight (48) hours after the end of the relevant TAC meeting and those TAC Appeals or TAC Recommendation Oppositions shall be heard at the next Board meeting" (emphasis added)).

However, ERCOT failed to timely file a challenge to the TAC approval of NOGRR245. On March 27, 2024, TAC adjourned its meeting at 2:49 pm CST. Therefore, for ERCOT to request that the Board remand or refer NOGRR245 back to TAC, ERCOT must have filed a TAC Appeal or TAC Recommendation Opposition by 2:49 pm CST on Friday, March 29, 2024. As of April 12, 2024, it does not appear that ERCOT has filed either.

## EXHIBIT A

[Excerpt from Joint Commenters' March 22, 2024 Comments<sup>64</sup>]

### ***Expeditious Improvements & Software Upgrades***

The JC Proposal requires prompt implementation of available software and parameter changes to increase ride-through performance. As discussed in more detail below, review of the recent Odessa disturbances identified software and parameter changes as solutions to the inability of certain makes/models of PhotoVoltaic Generation Resources (PVGRs) to ride through the disturbances. Under the JC Proposal, software, firmware, and settings or parameterization modifications are presumed to be commercially reasonable and are required by all IBRs/WGRs unless the Resource Entity and ERCOT mutually agree that pricing of such modifications is unreasonable. Furthermore, Resource Entities have a duty to use best efforts to continuously evaluate and implement such upgrades as they become available.

The requirement to implement software-related changes is an essential component of the JC Proposal because the vast majority of performance issues identified with IBRs involved in the 2021 and 2022 Odessa disturbances (and other PVGRs with the same inverter make/model that were not involved in the Odessa events) are being addressed with software-based modifications, similar to the requirements in the JC Proposal. Following the Odessa disturbances, the causes of performance deficiencies at affected PVGRs were identified, which allowed for the development of non-physical, software-based solutions being deployed. The JC Proposal requirements would have resolved the issues identified in the table below, as related to the 2022 Odessa disturbance.

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<sup>64</sup> NOGRR245, Joint Commenters 2 Comments (Mar. 22, 2024) at <https://www.ercot.com/files/docs/2024/03/22/245NOGRR-69%20Joint%20Commenters%202%20Comments%20032224.docx>.

## EXHIBIT A

Equipment Manufacturer	IBRs in ERCOT <sup>65</sup>	IBRs in 2022 Odessa Event	Deployed Solutions <sup>66</sup>
TMEIC	32% (36 facilities)	65% (8 facilities)	<ul style="list-style-type: none"> <li>• 4 systemic issues; all now have software, settings, or firmware solutions</li> <li>• Solutions largely deployed at the 8 Odessa projects. (6 of 8 have all 4 changes made; remaining 2 have 3 out of 4 changes made to-date and plan to deploy remaining changes)</li> <li>• For the 28 projects not involved in Odessa events, solutions are either deployed (11), planned for 2024 (9), or plan is under development (7), except for 1 generator in construction</li> </ul>
Power Electronics	22% (23 facilities)	29% (5 facilities)	<ul style="list-style-type: none"> <li>• 1 systemic issue – has a firmware solution</li> <li>• Some non-systemic, project-specific issues and limitations at the 5 affected facilities</li> <li>• 5 facilities involved in Odessa events appear to be working with ERCOT to maximize capability and document remaining limitations</li> <li>• Outside Odessa, 16 of 18 projects have fixed the systemic issue through a firmware upgrade; ERCOT is following up with remaining 2 facilities</li> </ul>
KACO	7% (8 facilities)	6% (4 facilities)	<ul style="list-style-type: none"> <li>• At the 4 Odessa projects, limited corrective actions identified; 3 of 4 implemented</li> <li>• No data provided on the remaining 4 projects (not involved in previous disturbances)</li> <li>• KACO no longer in service</li> </ul>

<sup>65</sup>See 2022 Odessa Disturbance, Joint NERC and Texas RE Staff Report (Dec. 2022) available at [https://www.nerc.com/comm/RSTC\\_Reliability\\_Guidelines/NERC\\_2022\\_Odessa\\_Disturbance\\_Report%20\(1\).pdf](https://www.nerc.com/comm/RSTC_Reliability_Guidelines/NERC_2022_Odessa_Disturbance_Report%20(1).pdf).

<sup>66</sup>See IBRWG Meeting, ERCOT Report: Odessa Events Update & Follow Up Efforts (Mar. 8, 2024), available at [https://www.ercot.com/files/docs/2024/03/06/Odessa%20Update\\_03082024.pptx](https://www.ercot.com/files/docs/2024/03/06/Odessa%20Update_03082024.pptx).