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REVIEW OF PROTOCOLS ADOPTED BY THE INDEPENDENT ORGANIZATION	§ § § §	**PUBLIC UTILITY COMMISSION OF TEXAS**

POTOMAC ECONOMICS' COMMENTS ON ERCOT'S JUNE 21, 2024 NOTICE OF RECOMMENDED APPROVAL OF REVISION REQUESTS

Potomac Economics, the Independent Market Monitor (IMM) for the wholesale market in the Electric Reliability Council of Texas, Inc. (ERCOT) region, respectfully submits these comments on the June 21, 2024 Notice of Recommended Approval of Revision Requests by ERCOT Board of Directors.[1] Specifically, the IMM addresses the recommended approval of Nodal Protocol Revision Request (NPRR) 1224, ECRS Manual Deployment Triggers.[2]

I. INTRODUCTION

Potomac Economics is directly impacted by NPRR 1224. As the IMM, Potomac Economics is tasked with evaluating the performance of the ERCOT markets and monitoring for anticompetitive conduct and inefficient market rules or operations.[3] As discussed in these comments, NPRR 1224 will substantially undermine the performance of the markets, diminish reliability, and inflate costs for Texas' consumers.

Therefore, the IMM provides these comments to identify the serious concerns NPRR 1224 raises and respectfully recommends specific actions by the Public Utility Commission of Texas (Commission) to address them. Given the seriousness of these concerns, the IMM also requests the opportunity to address the Commission on these issues at its open meeting on July 25, 2024.[4]

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[1] Notice of Recommended Approval of Revision Requests by ERCOT Board of Directors (Jun. 21, 2024).

[2] *Id.* at 83-101.

[3] *See* Public Utility Regulatory Act, Tex. Util. Code Ann. § 39.1515 (West 2007 & Supp. 2014) (PURA); 16 Tex. Admin. Code (TAC) § 25.365(c)-(d).

[4] It is expected that NPRR 1224 will be considered at the July 25, 2024 open meeting. *ERCOT Governance and Related Issues*, Project No. 52301, Staff Memo Regarding ERCOT Revision Requests Approval Timelines (Apr. 5, 2024).

II. BACKGROUND AND SUMMARY

Implementation of the new ERCOT Contingency Reserve Service (ECRS) in June 2023 had profound adverse impacts on the ERCOT's market outcomes in 2023. As the IMM documented in the 2023 State of the Market Report, choices made by ERCOT in the deployment of this product raised market costs by more than $12 billion in 2023 by creating artificial dispatch shortages that doubled real-time energy prices on average between June and the end of 2023.[5]

ECRS is a 10-minute operating reserve product procured in advance of real-time and held primarily by offline gas turbines and battery storage resources. These resources are sequestered from the real-time dispatch model – the Security Constrained Economic Dispatch (SCED) – until they are deployed. Artificial shortages in 2023 occurred because ERCOT Operators failed to deploy the ECRS resources when they were needed by SCED, causing it to perceive that ERCOT could not serve the load and often setting prices at $5,000 per MWh.

These artificial shortages were the direct result of ERCOT's decision not to deploy the ECRS resources when SCED needed them to satisfy the demand on the system. It was clear that these were not real shortages because the Operating Reserve Demand Curve (ORDC), which prices shortages based on prevailing reserve levels, generally indicated that the system was not in shortage during these intervals.

ERCOT ultimately recognized that this was not ideal and committed to revisit its ECRS methodology prior to summer 2024. Accordingly, ERCOT began considering alternative deployment triggers for ECRS in early 2024. Every other market operator monitored by Potomac Economics writes its own operating procedures (including the reserve deployment triggers) because they are fundamentally operating actions to maintain reliability. Therefore, they should be under the exclusive control of the system operator. However, ERCOT decided to ask its stakeholders to assist in developing the revised triggers for deploying ECRS, providing an initial proposal to Technical Advisory Committee (TAC). These stakeholders, who have substantial economic interests in these artificial shortages, significantly modified the provisions to produce the approved version of NPRR 1224. It contains two key provisions:

1. Deployment trigger: ECRS will be deployed in 500 MW blocks only after SCED has been deficient by at least 40 MW for two consecutive intervals; and

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[5] *Reports of the Independent Market Monitor for the ERCOT Region*, Project No. 34677, 2023 State of the Market Report (May 30, 2024).

2. Offer floor: An offer floor of $750 per MWh will be applied to all deployed ECRS resources.

These comments will explain that it was inappropriate for ERCOT to address the established ECRS concerns by seeking an NPRR largely developed by interested stakeholders, rather than modifying its operating procedures based on its own independent expert judgement. The IMM will also explain that neither of the key provisions are reasonable and that the NPRR:

- Will likely diminish reliability and inefficiently raise prices;
- Is *not* necessarily an improvement over ERCOT's poor deployment practices in 2023, nor is it a reasonable first step toward any future operating state;
- Does *not* mimic or reflect how the system will operate after the implementation of real-time co-optimization (RTC) of energy and operating reserves; and
- Will *not* motivate investment in dispatchable resources or support the State's resource adequacy goals, despite the enormous revenues that may be generated in the near term.

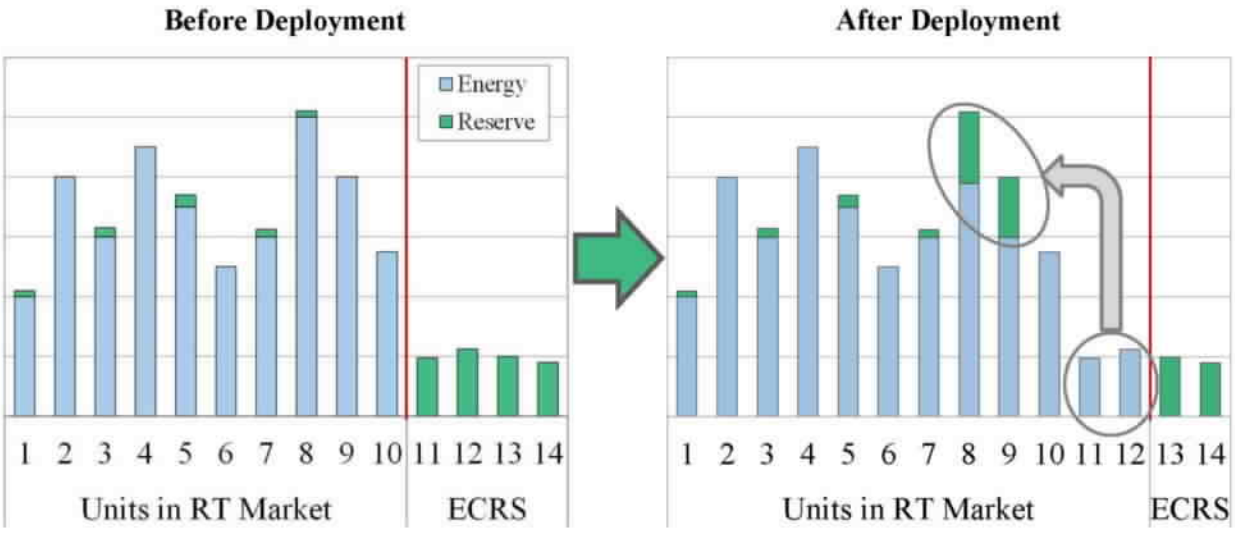
Hence, the IMM respectfully recommends the Commission to reject NPRR 1224 and direct ERCOT to implement an alternative remedy, which is well within the Commission's authority. In particular, the IMM proposes a deployment trigger based on the forecast of a SCED shortage in the look-ahead dispatch (t+10 minutes). The IMM describes these conclusions and this recommendation in the comments below.

III. POTOMAC ECONOMICS' COMMENTS

1. Deploying ECRS *increases* reliability and should not be unreasonably delayed

There has been substantial confusion and misinformation regarding the deployment of ECRS in the development of NPRR 1224. Before addressing the specifics of NPRR 1224, it is critical to understand what happens when ECRS is deployed. There has been a widespread misconception that ERCOT will have lower operating reserves after it deploys ECRS. This is generally *not* true, as shown in the illustration below.

The illustration depicts four units that are sequestered from the real-time market dispatch before deployment in the left panel. In the right panel, two of the four ECRS units have been deployed and are, therefore, visible to SCED. This does not mean that the deployed units will be started by SCED because the units may not be economic to start. In the illustration, however, SCED starts both of the units.



The illustration shows that when units 11 and 12 start and produce energy, other units ramp down to keep supply and demand in balance. In this case, it is units 8 and 9 that ramp down and provide spinning reserves to the system. Stated differently, offline 10-minute reserves were exchanged for online 10-minute spinning reserves when ECRS was deployed.

There are a number of key observations regarding ECRS deployment that can be drawn from the above illustration:

- **Operating reserves have *not* decreased**. As noted, the reserves have simply moved. The IMM evaluated tight conditions under which deployments would typically occur and found that the deployments transferred, on average, to roughly seven units and that, in most cases, these units could ramp up the entire deployment amount within 10 minutes.
- **Reliability has *increased.*** Operators generally acknowledge that holding reserves online in the form is spinning reserves is more reliable because: (i) spinning reserves can begin ramping immediately to produce energy rather waiting 10 minutes for an offline turbine to start; and (ii) offline turbines are less reliable because, sometimes, they fail to start.[6]

These two conclusions are essential to understand because they show that the justifications for including both of the key provisions in NPRR 1224 are invalid – there is no reasonable basis for waiting until SCED is deficient to deploy ECRS, and there is no basis for applying a $750 offer floor to the deployments. This is detailed in the next two subsections.

[6] This explains why RTOs such as the Midcontinent ISO and New York ISO that have separate requirements and AS demand curves for 10-minute spinning reserves and 10-minute total reserves (which can be satisfied by offline gas turbines) place higher values on the 10-minute spinning reserves.

2. Waiting until SCED is deficient *diminishes* reliability – ECRS deployments should occur *in anticipation* of a SCED deficiency

NPRR 1224 calls for ERCOT to allow the real-time dispatch model, SCED, to run out of resources by more than 40 MW for at least 10 minutes. This is unreasonable and undermines reliability. As shown above, there is no reliability-based reason to wait until such an extreme condition to deploy ECRS since ERCOT will not lose access to the deployed MWs. Instead, most of the concerns expressed about deploying increments of ECRS in advance of a SCED deficiency relate to its effects on prices. Indeed, preventing SCED from entering into avoidable shortages will significantly affect prices by eliminating artificial shortage pricing that undermines the competitiveness and efficiency of the ERCOT market.

In contrast, while deliberately allowing preventable SCED shortages (as proposed under NPRR 1224) may generate windfall revenues for generators, *it undermines reliability* and is inconsistent with ERCOT's perceived mandate to operate conservatively. Under such circumstances, SCED produces insufficient dispatch instructions for ERCOT generation to satisfy demand. This causes ERCOT to rely on its regulation reserves to prevent frequency from dropping, which is far from ideal because it consumes regulating capability that should be available for other system conditions that can cause energy output to lag the system demand. Hence, deliberately allowing preventable SCED shortages increases the likelihood of a frequency event or other reliability event for no reason, other than to manufacture artificial shortage pricing.

An alternative to the unreasonable deployment trigger proposed under NPRR 1224 is to implement a deployment trigger based on rationally preventing SCED deficiencies. ERCOT continuously runs a look-ahead SCED that produces prices and dispatch outcomes for future 5-minute intervals. ERCOT could develop a deployment trigger that would release an increment of ECRS (e.g., 500 MW) if the look-ahead SCED results for 10 minutes in the future indicate a SCED deficiency. This alternative deployment trigger is vastly superior because it would:

- Improve reliability by ensuring that SCED can continue to produce dispatch instructions that satisfy ERCOT's demand;
- Eliminate virtually all artificial shortage pricing caused by ECRS without inhibiting true shortage pricing under the ORDC; and
- Not require an NPRR since it is well within ERCOTs operating authority to develop deployment procedures for its operating reserves.

Reforming the deployment trigger to prevent avoidable SCED shortages is essential for addressing the inefficient costs documented in 2023. The IMM's analysis of these provisions

indicates that the proposed deployment trigger is a significant source of inefficient market costs. To evaluate each of the two key provisions, the IMM simulated alternatives for each of these provisions by re-running SCED for the relevant periods in 2023. One of the cases evaluated included a $100 per MWh offer floor, which was a compromise proposal to address the concerns with the $750 offer floor. In this case, we retained the proposed deployment trigger. The IMM found that lowering the offer floor to $100 per MWh without changing the proposed deployment trigger would still have produced inefficient market costs exceeding $3.6 billion in 2023. Hence, the proposal to withhold the ECRS resources from the market until SCED is deficient for more than 10 minutes must be addressed.

3. The $750 Offer Floor has no basis other than to raise prices above competitive levels

While the deployment trigger in NPRR 1224 raises substantial reliability and economic concerns, the $750 per MWh offer floor is perhaps the most unreasonable element of the NPRR from an economic perspective. This component of the NPRR was not included in ERCOT's original proposal but was proposed and advocated for by ERCOT's generators. In advocating for the $750 offer floor, its proponents relied entirely on the flawed justification that the offer floor roughly mimics pricing that would be produced in an RTC system. Unfortunately, this argument sounds potentially valid at first glance, but it is misleading and has led to substantial confusion in the discussions of NPRR 1224. For the reasons discussed in this section, this argument is entirely untrue and the Commission should ascribe no validity to it.

Proponents of the offer floor highlighted that under RTC, ECRS will have a demand curve that reflects its reliability value. The proponents showed figures illustrating ECRS demand curves, arguing that as ECRS levels fall under RTC, the ECRS demand curves will establish values that will be reflected in reserve or energy prices. Specifically, the proponents pointed to $750 as the approximate midpoint on the demand curves and asserted that the amount represents a reasonable proxy for the price effects of the RTC ECRS demand curve (i.e., reliability value associated with depletion of ECRS reserves) in the current non-RTC market.

This argument for applying a $750 offer floor to deployed ECRS sounds valid superficially, but is *not* valid or justified for the following reasons. First, it conflates *deploying* ECRS with *depleting* ECRS:

- The 10-minute reserves provided by ECRS resources *do not disappear when deployed*. As detailed above, the reserves simply move to online resources.

- Hence, ERCOT is no shorter of reserves after deployment than before deployment, which eliminates the proponents' rationale for the $750 offer floor.

Second, applying a $750 offer floor to deployed ECRS is not needed or justified to mimic or simulate pricing under the RTC:

- The RTC market will have access to all resources and optimize their scheduling every five minutes to meet the energy and reserve needs of the system.
- Since ECRS is a high-value product, RTC will only begin to run short of ECRS if its total reserve levels are falling and it is short of its lower-value products.
- If these conditions happen today, the aggregate ORDC will set prices that reflect these reserve shortages.
- The ORDC is a reliable mechanism for pricing reserve shortages, which is based on all available reserves and "unloaded" capacity that can ramp up in 10 minutes. Hence, there is no basis for believing that the current ORDC would leave a 10-minute reserve shortage unpriced.
- Therefore, the $750 offer floor is extraneous and does not address any legitimate pricing concern. There is no need to supplement or preempt the existing shortage pricing mechanism by imposing a $750 offer floor.

In conclusion, because deploying ECRS will not lead to 10-minute reserve shortages, and because ERCOT has an effective framework for pricing any legitimate shortages that do arise under the ORDC, the $750 per MWh offer floor serves no purpose and would only function to distort efficient electricity pricing in ERCOT's markets.

4. NPRR 1224 is *not* necessarily an improvement over ERCOTs poor deployment performance in 2023

The primary factor cited by both ERCOT Board members and executives in recommending approval of NPRR 1224 is that it is an improvement compared to ERCOT's deployment practices in 2023. This justification is partly based on the IMM analysis showing that the aggregate market costs of the artificial shortages in 2023 would have been $5.7 billion rather than the $12.5 billion that actually occurred. At the outset, the IMM notes that it is dubious to approve demonstrably unreasonable rule changes simply because they are perceived to be an improvement. In this case, ERCOT could eliminate *all* of these artificial shortage costs by simply implementing a reasonable deployment procedure that prevents avoidable SCED shortages.

Nonetheless, it is far from clear that NPRR 1224 is an improvement, and under many conditions, it could lead to market outcomes that are substantially worse than the status quo. The

element of NPRR 1224 that could lead to higher costs and less efficient outcomes is the $750 offer floor that does not exist today. While the IMM's analysis shows that the proposed changes would have lowered the costs of the market dysfunction in 2023, the reverse could be true under different conditions. Notably, if conditions arise wherein ECRS resources are deployed for extended periods, the $750 offer floor could produce much larger and more extended price increases than ERCOT's prior operating practices. If ECRS is deployed without NPRR 1224, it will much more effectively mitigate the artificial shortages and restore real-time market prices to efficient and competitive levels. Under NPRR 1224, such a case could produce prices that are inefficiently inflated over a number of hours.

Given the lack of a reasonable justification for the $750 offer floor and the fact that the offer floor could cause real-time prices to be less efficient and competitive than they would be without the NPPR, one cannot reasonably conclude that NPRR 1224 is an improvement.

5. NPRR 1224 but *will not* promote investment in dispatchable resources and, therefore, *will not* support resource adequacy in ERCOT

The NPRR will likely lead to substantial inefficient price increases, which could cause one to believe that it supports the State's goal of promoting investment in dispatchable resources. Unfortunately, although it may increase consumer costs and generator revenues substantially in the near term, it will not promote investment in new dispatchable resources or meet the State's resource adequacy goals for two main reasons.

First, the price and revenue effects will be highly unpredictable and uncertain. Since they result from the real-time market dispatch being deficient of supply resources, they will be highly correlated with tight system conditions. If conditions are mild or supply availability is high, the effects of these provisions could be small. Alternatively, conditions could arise over the next two years that generate inefficient revenues greater than was experienced in 2023.

Second, and more importantly, the revenue effects of the NPRR is too short-lived to motivate any investment in new resources. Generation developers have relatively long time horizons given that most new dispatchable resources will be in operation for the next 30 to 40 years. However, the massive revenues that may be generated by NPRR 1224 will disappear entirely when RTC is implemented. This is the case because SCED under RTC will have access to all resources; it will not run out of resources and set very high shortage prices unless the system is actually short of resources – conditions that would be priced by the ORDC today.

Given the go-live date for RTC in 2026 coupled with the long investment time horizons for most new dispatchable resources, it is highly unlikely that potential revenues associated with NPRR 1224 will promote investment in new dispatchable generation. Hence, it will provide no benefits toward satisfying the goal to support and improve resource adequacy in Texas.

6. The ERCOT Board's approval of NPRR 1224 was based on faulty assumptions and misleading statements made by ERCOT

The IMM participated in the ERCOT Board Reliability and Markets Committee meeting where the committee recommended the Board vote to approve NPRR 1224. As discussed in the prior section, the assertion that NPRR 1224 is an improvement over ERCOT's current operating practices was the most commonly cited factor in favor of approving the NPRR. The fact that the NPRR may not be an improvement and that the artificial costs could be completely eliminated by a simple change in ERCOT's deployment procedures is reason enough for the Commission to reject NPRR 1224.

Nonetheless, a number of other assertions and statements were made in support of the Board approving the NPRR that merit discussion. First, in response to a question from an ERCOT Board member, Pablo Vegas asserted that if the NPRR is not approved:

> ...we would have to go back and the control room would have to make a recommendation on when they would release [ECRS] to SCED...instead of having a standard that can be planned around that the market understands when it's gonna be released...we're gonna have a more arbitrary issue potentially, again, where the control room is making those decisions on whether or not they're gonna be releasing ECRS at this point or at that point...so it would look more like last year potentially, unless we came up with another criteria that the control room would utilize...

This is a disturbing response given earlier arguments that NPRR 1224 should be approved to provide certainty to the market and to mitigate the costs that were incurred in 2023. Mr. Vegas acknowledged at the end of this answer that ERCOT could develop another criteria or procedure than is proposed in NPRR 1224 but stopped short of committing to do so. If ERCOT will not voluntarily commit to developing a clear and reasonable deployment procedure for ECRS resources, the IMM recommends that the Commission order ERCOT to do so because this is central to the competitive performance of the market and its ability to produce reasonable prices for Texas customers.

Second, as he argued in support of the NPRR, Mr. Vegas asserted that ECRS resources have different characteristics and uses:

> ECRS has very specific characteristics based on how they're utilized and we see from the history of how ECRS has been deployed, over 80% of it has been deployed specifically to address forecast errors or ramp issues…

This statement unambiguously supports our position that ECRS should be deployed earlier before SCED runs out of resources and *not* in accordance with the deployment trigger proposed in the NPRR. The "very specific characteristics" to which Mr. Vegas refers is that these resources can start within 10 minutes. However, if the system is short of ramp capability or subject to forecast errors, waiting 10 minutes for resources to start is much less effective in addressing these issues than having the reserves online and dispatchable immediately.

If ERCOT were to implement the deployment criteria recommended by the IMM (releasing a portion of the ECRS resources when ERCOT forecasts a shortage of resources in SCED), SCED would be much more capable to address these issues. Under this process, SCED would likely start the ECRS resources earlier, allowing SCED to immediately begin ramping up its online resources to address ramp or forecast error issues. In other words, adopting a more reasonable deployment procedure for ECRS that makes resources available to SCED before SCED is deficient is a much more effective approach for addressing the issues cited by Mr. Vegas.

Third, the ERCOT Board repeatedly referred to NPRR 1232, which would further alter the deployment of ECRS resources.[7] This discussion included a misimpression that the $750 offer floor could potentially be revisited under NPRR 1232, which is not the case. Currently, NPRR 1232 is proposed to adopt the offer floor from NPRR 1224, if approved, and would permanently deploy all ECRS resources.[8] While potentially better than withholding the ECRS resources until SCED is deficient, permanently deploying ECRS resources with an uneconomic offer floor is also not efficient.

Therefore, the anticipation of NPRR 1232 provides no reason to approve NPRR 1224. A reasonable deployment procedure with no offer floor or a relatively low offer floor (~$100 per MWh) is substantially better for reliability and economic efficiency than either of the proposals under NPRR 1224 or NPRR 1232.

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[7] NPRR 1232, *Standing Deployment of ECRS in the Operating Hour for a Potion of ECRS that is Provided from SCED-Dispatchable Resources* (available at: https://www.ercot.com/mktrules/issues/NPRR1232).

[8] *Id.*

7. NPRR 1224 is an anticompetitive proposal

The fact that NPRR 1224 was produced through ERCOT's stakeholder process provides no guarantee that the resulting rule will be economically efficient or competitive. The poor implementation of ECRS produced sizable financial windfalls for ERCOT suppliers, creating strong incentives to propose provisions that will retain as much of these inefficient revenues as possible. Hence, the suppliers took the lead in developing or modifying the key provisions of NPRR 1224 and unanimously voted in favor of it, while the consumers and every competitive load-serving entity voted against it.

Importantly, if suppliers were to privately agree to withhold resources or to offer them at prices 20 times higher than their marginal costs, the anticompetitive nature of such a collusive agreement would be clear. In this case, however, ERCOT's suppliers have advocated for a substantially similar arrangement in the form of NPRR 1224, which would enlist ERCOT to administer the withholding scheme. The IMM finds that ERCOT's administration of these proposed rules makes them no less anticompetitive. Sequestering resources from SCED when it is short of resources (and producing shortage pricing) is equivalent to physical withholding and applying an unjustified $750 offer floor to deployed ECRS is equivalent to economic withholding.

IV. Conclusions and Recommendations

Under Public Utility Regulatory Act (PURA) § 39.151(g-6), protocols adopted by ERCOT are subject to Commission oversight and review and cannot take effect before receiving Commission approval. Specifically, the Commission has the authority to approve, reject, or remand protocols adopted by ERCOT.[9] Additionally, the Commission has the authority to order ERCOT to take actions to ensure adequate performance of ERCOT's functions and duties.[10] For the reasons detailed above, the IMM respectfully requests that the Commission consider the following two recommendations.

1. The PUC should reject NPRR 1224

NPRR 1224 serves no legitimate purpose and it is regrettable that ERCOT decided to address the serious concerns with ECRS through an NPRR. The only element of the proposal that would require a protocol change is the $750 offer floor, which is anticompetitive and without any

[9] PURA § 39.151(g-6).

[10] PURA § 39.151; 16 TAC § 25.361.

legitimate basis as discussed in these comments. Hence, the IMM respectfully recommends the Commission reject NPRR 1224.

2. The PUC should order ERCOT to develop a transparent ECRS deployment procedure that would be triggered based on a forecast of SCED deficiency

A clear and reasonable deployment procedure is needed and will address all of the pricing and reliability concerns raised by ERCOT's past operations related to ECRS. Regrettably, although ERCOT recognizes the need for improvements, it has not committed to develop such a procedure. Therefore, the IMM respectfully requests that the Commission order ERCOT to develop such a procedure, which is well within the Commission's authority to require.[11]

ERCOT is directly responsible and accountable to the Commission, and the Commission has the complete authority to oversee and investigate ERCOT's operations to ensure that ERCOT adequately performs its functions and duties.[12] 16 Texas Administrative Code (TAC) § 25.361 details the functions that ERCOT must perform, which include the requirement to administer, on a daily basis, the operational and market functions of the ERCOT system, including procuring and deploying ancillary services. ERCOT must perform this function in accordance with Commission substantive rules, *Commission Orders*, and ERCOT rules.[13]

Given the serious issues described above and the costs these issues have already generated for Texas consumers, such an order is reasonable and justified.

Respectfully,

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[11] Under the interim process for Commission-issued directives to ERCOT (interim process), a proposed directive should be filed no later than nine calendar days before the open meeting at which it will be considered; however, best practice is to post a proposed directive 14 or more days before the open meeting. *ERCOT Governance and Related Issues*, Project No. 52301, Updated Staff Memorandum Regarding ERCOT Directives at 3 (Sept. 6, 2023). It is expected that NPRR 1224 will be considered at the July 25, 2024 open meeting. The IMM filed the immediate comments to ensure the Commission has adequate time under the best practices of the interim process to post a directive ordering that ERCOT develop a reasonable ECRS deployment procedure.

[12] PURA § 39.151.

[13] 16 TAC § 25.361(b)(1).