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TEXAS
ADVANCED ENERGY
BUSINESS ALLIANCE

PROJECT NO. 54335

REVIEW OF WHOLESALE ELECTRIC	§	PUBLIC UTILITY COMMISSION
	§	
MARKET DESIGN	§	OF TEXAS

COMMENTS OF TEXAS ADVANCED ENERGY BUSINESS ALLIANCE ON REVIEW OF WHOLESALE ELECTRIC MARKET DESIGN

Texas Advanced Energy Business Alliance (TAEBA) hereby submits these comments on the Commission Staff's Questions filed on November 11, 2022, in the above-referenced project. TAEBA includes local and national advanced energy companies seeking to make Texas's energy system secure, clean, reliable, and affordable. Advanced energy technologies include energy efficiency, energy storage, demand response, solar, wind, hydro, nuclear, and electric vehicles ("EVs"). Used together, these technologies and services will create and maintain a higher performing energy system — one that is reliable, resilient, diverse, and cost effective — while also improving the availability and quality of customer facing services. TAEBA's membership also includes advanced energy buyers, representing the interests of large electricity consumers interested in increasing their purchases of advanced energy to meet clean energy and sustainability goals.

Context for Reliability Improvement Needs

TAEBA fully supports the focus the Governor's Office, the Texas Legislature, the Commission, and ERCOT have put on grid reliability in the wake of Winter Storm Uri.

The storm exposed deficiencies within the ERCOT system which merit continued exploration to identify necessary improvements to both physical grid maintenance and grid management, resulting in the passing of Senate Bill 3 ("SB 3"). This proceeding is an important opportunity to assess progress made through Phase 1 reforms, evaluate remaining reliability gaps, and consider targeted, competitive, market-based solutions.

TAEBA emphasizes the importance of a technology-neutral approach to understanding grid challenges and identifying solutions. Winter Storm Uri did not expose a single clearly defined and quantifiable grid need, and certainly does not implicate any specific generation technology deficiencies within the ERCOT system. While some stakeholders have suggested that more dispatchable resources (and in particular, dispatchable thermal resources) are needed to maintain reliability, outages during Uri were the result of multiple overlapping grid failures; it is unclear that more dispatchable resources would have made much, if any, dent in the severity of outages given the inability of available capacity to reach customers. Among the causes of power plant failures identified by the University of Texas at Austin Energy Institute include "'weather-related' issues (30,000 MW, ~167 units), 'equipment issues' (5,600 MW, 146 units), 'fuel limitations' (6,700 MW, 131 units), 'transmission and substation outages' (1,900 MW, 18 units), and 'frequency issues' (1,800 MW, 8 units)."[1] Of note is the level of MW outages due to fuel limitations, which were exacerbated by failures in the natural gas system, contributing to the lack of generation capability.[2] A new market mechanism could potentially incentivize generators to create solutions for some of these issues, but doing so cost-effectively will require targeting identified grid needs

[1] The Timeline and Events of the February 2021 Texas Electric Grid Blackouts, The University of Texas at Austin Energy Institute, p. 9. (July 2021) https://energy.utexas.edu/sites/default/files/UTAustin%20%282021%29%20EventsFebruary2021TexasBlackout.pdf

[2] Id.

and desired reliability objectives, and ensuring that reliability solutions can come from any technologies and services capable of meeting clearly defined grid needs. This should include consideration of the technologies provided by TAEBA members, including energy efficiency ("EE"), demand response ("DR"), distributed energy resources ("DER"), battery storage, and renewable energy such as wind and solar.

It is therefore prudent for the Commission to first define what reliability deficiencies any potential solution which may be considered is attempting to mitigate. The current construction of the Performance Credit Mechanism ("PCM") merely provides an incremental incentive for generation to be available during a set number of constrained hours each year. It is not targeted at improving ERCOT's ability to meet daily operational needs, nor is it equipped to meaningfully and cost-effectively lower the risk of outages during emergency events.[3] Designing the PCM to incentivize generation to be online during hours which mirror net peak load does not create an inherent solution for a storm like Uri and the associated outages, which while intermittent, will have less predictable frequency in the future. Given TAEBA's expectation that adoption of the PCM will result in significant cost increases for consumers while failing to yield corresponding reliability benefits for the ERCOT system during either daily generation constraints or extreme weather events, we urge the Commission to reconsider its adoption and reexamine alternative market mechanisms, including an additional proposal not studied by Energy and Environmental Economics, Inc. ("E3") for a Dispatchable Reliability Reserve Service, which was filed in this proceeding by the Coalition for a Dispatchable Reliability Reserve Service.

[3] Assessment of Market Reform Options to Enhance Reliability of the ERCOT System, E3, Figure 4. https://interchange.puc.texas.gov/search/documents/?controlNumber=52373&itemNumber=382

As the Commission considers the PCM and alternative market mechanisms, TAEBA notes that many of the operational grid constraints that were experienced during Uri have been addressed with Phase 1 responses to SB 3.[4] In determining whether current market rules achieve the level of reliability targeted in the study, E3's analysis makes a series of assumptions about market entry and retirement that warrant further scrutiny prior to concluding that additional costly market mechanisms are needed to fill identified reliability gaps. Some entities, including the IMM, have spoken to just how reliable the ERCOT market is under current market rules, suggesting that only minor modifications are needed (if any) to achieve desired levels of reliability.[5]

TAEBA therefore recommends that the Commission refocus its decision-making process to understand 1) what reliability outcomes are desired by various stakeholder groups, including whether those outcomes exceed the currently proposed 1-in-10 Loss of Load Expectation standard, 2) how those reliability standards should be measured, and then 3) if the current ERCOT market (including Phase 1 reforms) satisfy those reliability outcomes and metrics currently and into the future. Only after a fulsome exploration of these questions with robust stakeholder input should the Commission move forward with sweeping, costly proposals to introduce new market constructs. While TAEBA does not support adoption of the PCM, our comments provide

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[4] "Reforms included in Phase I that contribute to reliability in the face of a Uri-level storm include: changing the Operating Reserve Demand Curve (ORDC) to bring generation units online and prompt consumer demand response earlier, changing demand response pricing from zonal to locational marginal pricing (LMP), higher performance standards for energy efficiency programs, setting the minimum contingency level (MCL) to 3,000 MW, directing ERCOT to utilize the Emergency Response Service at the MCL, developing the Fast Frequency Response Service (FFRS), expanding the existing Non-Spinning Reserve Service (Non-Spin), development of a discrete firm fuel-based reliability service, and creation of the ERCOT Contingency Reserve Service (ECRS)." APPROVAL OF BLUEPRINT FOR WHOLESALE ELECTRIC MARKET DESIGN AND DIRECTIVES TO ERCOT, p. 2-3. (January, 2022) https://interchange.puc.texas.gov/Documents/52373_336_1180125.PDF

[5] IMM testimony given at the November 17, 2022 Senate Committee on Business & Commerce hearing.

recommendations for incremental improvements to its design should the Commission choose to move forward with it. Below, we introduce TAEBA's principles for evaluation of any new market design construct, evaluate the PCM against these principles, explain the need to specifically explore opportunities to leverage demand-side solutions to meet reliability needs, and then respond to the Commission's questions.

TAEBA Principles for Evaluating Potential Market Mechanisms

As TAEBA developed responses to the Commission's questions, we encountered several recurring principles that, if followed, we believe will lead to a robust ERCOT Market design consistent with, and supportive of, the current competitive market in Texas. Through discussion with our members and other stakeholder groups, we find that any new wholesale market design should:

1) solve for a need that is clearly defined;
2) be transparent and technology neutral;
3) be quantifiable and justifiable in cost and expected market size; and
4) leverage competition to ensure lowest possible consumer cost.

Our assessment of the PCM and the other market design proposals is done through the lens of these principles, which we believe work well to guide the development of a market mechanism that is simple to implement, cost efficient, and non-discriminatory. Though some of these principals are incorporated into the Energy and Environmental Economics ("E3") study, there are limitations in the E3 evaluation that TAEBA believes merit reexamination and expanded research.

Evaluation of PCM Against TAEBA's Market Design Principles

The E3 study fails to demonstrate that the PCM has met TAEBA's principles for effective wholesale market design outlined above. Here we evaluate the PCM and the E3 report generally against these guiding principles.

Solving for a need that is clearly defined. Grid reliability is the first ERCOT responsibility, and fulfilling that responsibility is paramount for the financial and physical wellbeing of Texans. The passage of Section 18 of SB 3 (2021) for the first time requires the Commission to adopt a reliability standard. The Commission should adopt a clear reliability standard so that both it and ERCOT can operate within their statutory mandate. Though the E3 study targets a Loss of Load Expectation ("LOLE") of 0.1 (i.e., one day of expected outage over 10 years),[6] more robust discussion is warranted to determine whether this industry standard metric is the reliability standard that the Commission and ERCOT should be targeting.[7] Indeed, the goal of addressing a future Winter Storm Uri suggests an unstated intent to achieve a reliability standard that focuses on duration or impact, not merely occurrence of a loss-of-load event. If that is the objective of the Commission's market design efforts, it should be clearly and explicitly scrutinized upfront, with input from a wide range of stakeholders. TAEBA appreciates that the E3 study had to pick a standard against which to evaluate reliability outcomes under both the *status quo* energy-only market design, as well as under alternative proposals,[8] and we also recognize that the Commission has asked stakeholders to weigh in on the appropriate reliability standard (see Question 3 below).

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[6] Assessment of Market Reform Options to Enhance Reliability of the ERCOT System, E3, Table 5. https://interchange.puc.texas.gov/search/documents/?controlNumber=52373&itemNumber=382

[7] "1-Day-in-10-Years: Shorthand for a common electricity industry reliability standard that specifies that an electricity system must have sufficient generating resources to serve load all but one day every ten years. This standard is equivalent to 0.1 days per year loss of load expectation." Assessment of Market Reform Options to Enhance Reliability of the ERCOT System, E3, p. v.

[8] Assessment of Market Reform Options to Enhance Reliability of the ERCOT System, E3, Figure 24 at 48 and Table 18 at 53. https://interchange.puc.texas.gov/search/documents/?controlNumber=52373&itemNumber=382

However, this complex and multi-faceted question must be asked before, and not after, advancing preferred solutions.

Putting aside the question of the correct reliability standard against which to evaluate any market construct, the reliability justification for the PCM is premised on a questionable assessment of current reliability deficiencies stemming largely from over-inflated retirement assumptions. Indeed, the IMM has attested to this point,[9] and the E3 report itself states, "Without further adjustments to the resource mix beyond [Capacity, Demand, and Reserves report] CDR additions and retirements, the 'pre-equilibrium' 2026 portfolio would achieve an LOLE of 0.02 days per year, more reliable than the common industry benchmark of 0.1 days per year."[10] Pairing this admission with E3's assumptions for the analysis being unreasonably high,[11] TAEBA believes further analysis of expected resource retirements is also merited before reliability outcomes of the current market design are evaluated and any identified reliability deficiencies are interpreted as justifying new market products.

Additional deficiencies in the analysis warrant further consideration to ensure that the PCM or any market design is tailored to address a clearly defined need. First, when evaluating resource performance for the study, E3 did not include analysis of generator access to firm fuel.[12] This is an important omission when studying reliability, given the number of generation resources that reported going offline due to fuel

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[9] IMM testimony given at the November 17, 2022 Senate Committee on Business & Commerce hearing.
[10] Assessment of Market Reform Options to Enhance Reliability of the ERCOT System, E3 at 46. https://interchange.puc.texas.gov/search/documents/?controlNumber=52373&itemNumber=382
[11] E3 assumes additional resource retirements of 11,560 MW beyond the "pre-equalibrium" state for the 2026 portfolio year, an assumption parties have raised issue with, particularly in the Senate Committee on Commerce hearing. Assessment of Market Reform Options to Enhance Reliability of the ERCOT System, E3 at 46. https://interchange.puc.texas.gov/search/documents/?controlNumber=52373&itemNumber=382.
[12] Assessment of Market Reform Options to Enhance Reliability of the ERCOT System, E3, at 25 and 41. https://interchange.puc.texas.gov/search/documents/?controlNumber=52373&itemNumber=382

constraints during Winter Storm Uri,[13] and an analysis of resource performance during different levels of fuel constraints should be done to help evaluate the effects of the PCM on reliability in extreme weather conditions. Second, the winter weather analysis for E3's study was done only with winter weather data from December,[14] and E3 claims that month-to-month weather data is not required to properly reflect seasonal analysis.[15] While the study does include weather data from the 1989 storm, this analysis leaves out February data which would have included data from Winter Storm Uri.[16]

Transparency and technology-neutrality. TAEBA firmly believes that any market mechanism should be technology neutral, meaning that all generation types should be explicitly able to participate in a new mechanism. As explained in more detail below, this eligibility should extend to load management, demand response ("DR"), and distributed energy resources. Specifically, DR, DERs, and other demand-side resources should be integrated directly into wholesale markets—under any market construct—so they can directly contribute to, and be fully compensated for, the reliability and resilience benefits they provide. The E3 report evaluates DR as a static value; more consideration should be given to the role of this vital resource. The Commission should also explicitly extend the same performance protections given to thermal generation resources to all technologies, particularly not penalizing resources curtailed due to transmission issues.[17]

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[13] "Reasons for power plant failures include…'fuel limitations' (6,700 MW, 131 units)." The Timeline and Events of the February 2021 Texas Electric Grid Blackouts, The University of Texas at Austin Energy Institute, p. 9. (July 2021) https://energy.utexas.edu/sites/default/files/UTAustin%20%282021%29%20EventsFebruary2021TexasBlackout.pdf

[14] Testimony given during the December 2, 2022 Technical Conference.

[15] Id.

[16] Assessment of Market Reform Options to Enhance Reliability of the ERCOT System, E3, Figure 14 at 35. https://interchange.puc.texas.gov/search/documents/?controlNumber=52373&itemNumber=382

[17] Testimony given during the December 2, 2022 Technical Conference.

While the PCM is nominally "technology neutral" because all technologies are permitted to bid into the forward market and produce credits, E3 and the Commission have repeatedly confirmed that the hours of highest constraint are likely to occur at times of highest peak net load.[18] This means the design of the PCM is targeted to produce performance credits ("PCs") at times when thermal resources are already incentivized to ramp up production in the energy market to capture high prices. Additionally, a subset of Commissioners has stated a preference to disallow wind and solar from being able to receive PCs, which is discriminatory on its face.[19] Furthermore, as explained in more detail below, there are challenges for participation by demand response and DERs.

Justifiable cost and market size. Vetting the design of a new market mechanism and justifying its costs are also important to its success. The proposed market cost models for the PCM also have not had adequate review and discussion, so the PCM cannot be identified as the most cost-effective tool to achieve the identified 0.1 LOLE standard. While the ERCOT market may be susceptible to interruptions in a storm the size of winter storm Uri, the PCM does not solve this type of storm interruption in a complete way. The value of the incremental reliability benefits the PCM does provide must not only be quantified, but compared to that of other solutions, including more surgical tweaks to market design.

While the E3 report incorporated input from stakeholders before the PCM's development, the only stakeholder engagement on its viability and implementation is happening in this comment period, after the PCM has been presented as the market

[18] Assessment of Market Reform Options to Enhance Reliability of the ERCOT System, E3 at 23. https://interchange.puc.texas.gov/search/documents/?controlNumber=52373&itemNumber=382
[19] Assessment of Market Reform Options to Enhance Reliability of the ERCOT System, E3 at 74. https://interchange.puc.texas.gov/search/documents/?controlNumber=52373&itemNumber=382

mechanism of choice. While TAEBA is open to novel solutions, any proposed market mechanism should be appropriately tested and evaluated through multiple analyses, as well as qualitatively researched for possible unintended effects. This testing is especially important for a market mechanism with no currently operating analog. This would mean allowing for more stakeholder input into the development of the PCM's structural details and implementation, with the understanding that expertise on how products impact different market participants and the market overall lies within those participants. If PCM is advanced as the basic structure of a resource-adequacy mechanism, most of its details should be delegated to a stakeholder process. Given the potential expense of the PCM and lack of certainty that it will produce corresponding reliability benefits,[20] it would be imprudent to approve it after only receiving the public feedback the Commission is receiving on these questions.

Leverage competition to achieve the lowest possible cost. TAEBA vehemently supports the competitive market principles fundamental to the wholesale and retail electricity markets in Texas. Any new market design should preserve and extend competitive market forces to achieve reliability objectives at the lowest possible consumer cost. While the PCM involves market-based clearing, it is an administrative construct that relies on a demand curve and voluntary forward market that will be difficult to hedge. It also fails to narrowly target gaps in reliability to achieve incremental improvements in performance at a reasonable cost to consumers; instead of leveraging competition to meet specific observed operational needs or providing ERCOT with additional visibility and tools to manage reliability, the PCM simply

[20] Katie Coleman, Senate Committee on Business & Commerce hearing (Nov. 17, 2022) *available at* https://tlcsenate.granicus.com/MediaPlayer.php?view_id=52&clip_id=17072.

provides additional payment to resources that are already likely to face a strong incentive to perform during constrained hours.

The PCM has other deficiencies that would need to be addressed that undermine its ability to serve as a transparent and competitive market construct. E3 confirmed the PCM is designed so that generation resources produce PCs based on their offer into the energy market (i.e., resource availability), and that resource capacity has no bearing on PC earning.[21] This effectively means that no resource accreditation is performed, which is unusual for a capacity market mechanism. It also means there is no upfront evaluation of whether generation resources can meet their offerings into the PCM market and leaves many open questions about how performance will be enforced given the lack of understanding of how frequently generators will fail to meet their performance promises. In order to produce a performance credit, a resource should be required to demonstrate its bona fide availability by an energy or ancillary-services offer.

The forward marketplace for the PCM also has unclear performance standards due to its lack of minimum bid requirements from generators. If no minimum bid is required, generators may bid in 1MW for an average expected price in order to be permitted to produce PCs, only to produce substantially more PCs than 1MW would require in the hopes that prices are higher in the PCM's retroactive clearing.

Finally, if PCM is adopted, additional consideration will also be needed to ensure compatibility with ERCOT's competitive retail electricity market construct and

[21] Assessment of Market Reform Options to Enhance Reliability of the ERCOT System, E3 at 21-24. https://interchange.puc.texas.gov/search/documents/?controlNumber=52373&itemNumber=382; Testimony given during the December 2, 2022 Technical Conference.

avoid undue cost being passed on to consumers due to increased risk.[22] Retailers depend on the ability to forecast or hedge costs in order to make economically efficient retail offers. If the costs of a new policy are not readily predictable, a price-offer to retail customers could include a substantial risk premium. The Commission could allow that costs be passed-through to retail customers, but this would diminish the incentive for retailers to engage the loads they serve in demand response to avoid the costs of PCM.

For all of these reasons, TAEBA urges the Commission against moving forward with the PCM at this time. Should the Commission decide to approve the PCM, the deficiencies outlined above must be addressed through robust stakeholder discussion.

The Role of Demand-Side Technologies

The Commission should ensure that demand-side technologies, both dispatchable demand response and passive energy efficiency, perform a greater role in maintaining the reliability of the grid. First and foremost, TAEBA notes that there is a significant low-hanging fruit in other programs the Commission administers that can urge along demand response and energy efficiency. The Commission has already taken important steps, including expanding Emergency Response Service ("ERS") and approving the Aggregated DER pilot program, which can be built upon and expanded. Additionally, TAEBA notes the recent Energy Efficiency Implementation Project meetings and next steps coming out of them present an opportunity to increase deployment of energy efficiency and demand response, and to target savings in a way that bolsters reliability. Any evaluation of the need for new market designs to address

[22] Blueprint for Wholesale Electric Market Design and Directives to ERCOT, p. 8. https://interchange.puc.texas.gov/Documents/52373_336_1180125.PDF

reliability needs should account for readily-available, near-term reliability benefits available through demand-side solutions.

The PCM is not the most efficient or targeted tool to deploy cost-effective DERs and demand response to increase grid reliability. Should the Commission move forward with further consideration of the PCM, it will be vital to explicitly consider how demand response and other DERs would participate and be compensated for their ability to reduce load or inject energy during times of highest grid need. This should include evaluating potential barriers to participation, identifying price signals, ensuring that DERs and load resources can offer as supply in the PCM, and evaluating whether the PCM will provide any meaningful incentives on the demand side, akin to the incentive that commercial and industrial customers receive from avoided coincident peak ("4-CP") transmission costs.[23] While the PCM is proposed to have a similar cost-allocation as ERCOT transmission costs, it has a much wider sample of hours, 30 rather than 4. Given the PCM's ex post true-up design, this larger sample of hours corresponds to an even larger sample of potential PCM hours, which may dampen any market incentive DR would otherwise receive through the PCM. Furthermore, the experience of 4-CP suggests that demand response will only emerge organically on the demand side to serve customers who actually face the price signal, which may exclude residential customers that represent a significant portion of DR and DER potential.

The PCM presents additional challenges for participation by load resources on the supply side because it does not include compensation for reliability shifts when dispatchable load bids into the energy market during what would otherwise be one of

[23] Customers who face the 4-CP price signal currently pay a $64.29 per kW charge during those hours. *See Docket No. 52989, Commission Staff's Final Transmission Charge Matrix for 2022 (Feb. 25, 2022), Attachment A, p. 2.* Mass-market customers served by competitive retail electric providers do not face this incentive because the Commission has decided to flatten this transmission charge into a flat cents/kwh fee that is passed through by REPs without any intermediation.

the 30 most constrained hours *but for* these load reductions. This could cause the constrained hour to shift from what would have been, for example, the 26th most constrained hour of the compliance period to the 33rd most constrained hour. In this instance, dispatchable generation that comes online would not be compensated by the PCM because in retroactive clearing that hour would not qualify for compensation, despite generators behaving exactly in a way that promoted reliability. If the Commission adopts PCM, it may be appropriate in the implementation work that follows to consider potential solutions and their implications, such as adding load that bids as a resource into PCM back into the hour's demand solely for the purpose of determining whether the hour should be part of PCM's sample.

Given these challenges, PCM appears unlikely to serve as an effective tool to incentivize demand response and DERs. Winter Storm Uri highlighted the importance of focusing not only on the supply side of the market, but also on the demand side. DERs, DR, and energy efficiency are affordable and effective tools to enhance grid reliability and resilience, and there are a range of efficient, targeted policy and regulatory mechanisms to incentivize their deployment. Many of these policy solutions have been raised in other Commission proceedings (Projects No. 51603 and 38578), and are also described in a recent TAEBA report, Future Proofing the Texas Grid with Distributed Energy Resources.[24] that should be considered as part of any evaluation of market mechanisms in the name of reliability. The Commission should continue to evaluate these more targeted policy options to optimize use of low-cost DERs that can be rapidly deployed to increase system resilience. Prior undertaking more costly market design changes that will have other potentially harmful impacts on market

[24] Future Proofing the Texas Grid with Distributed Energy Resources, Texas Advanced Energy Business Association. (June 2022) https://interchange.puc.texas.gov/Documents/51603_42_1215797.PDF

efficiency, the Commission should fully explore and evaluate the reliability impact of these other policy tools.

Responses to Commission Questions

1. The E3's report observes that the PCM has no prior precedent for implementation, does this fact present a significant obstacle to its operation for the ERCOT market?

TAEBA is not opposed to the use of a novel market mechanism. TAEBA believes the PCM's high cost, lack of clearly justified need, and lack of robust understanding of its potential effects and unintended consequences on the ERCOT market present much bigger obstacles to its implementation than its novel design. While there is no reason to reject a market mechanism based only on the novelty of its design, without enhanced, iterative stakeholder input about its potential market effects there is little guarantee the PCM will achieve the reliability standards the E3 report claims it will. TAEBA cautions against implementing any new market design without additional analysis and thorough vetting from stakeholders, but this process has heightened importance for a market mechanism with no precedent.

2. Would the PCM design incentivize generation performance, retention, and market entry consistent with the Legislature's and the commission's goal to meet demand during times of net peak load and extreme power consumption conditions? Why or why not?

Without a firm definition of the reliability issues the new market mechanism is solving for, and without stakeholder feedback and enhanced study, this is a difficult determination to make. However, the PCM design on its face also appears unlikely to provide an efficient means to improve reliability during extreme conditions, particularly

because E3's assessments do not include calculations for loss of fuel accessibility or depletion of duration-limited resources, and rely on incomplete winter weather data. The PCM would provide additional payment primarily to existing generating resources for performance during peak hours when generators are already incentivized to perform, without providing an incremental incentive to prepare for more extreme conditions that might be costlier to prepare for but that yield the same hourly payment and no penalty. This would be an expensive and inefficient way to target incremental reliability.

More exploration should be done to determine whether existing market products or new, more targeted market products can achieve the same or better reliability outcomes with modification or increased procurements.

3. **What is the appropriate reliability standard to achieve the goals stated in Question 2? Is l-in-10 loss of load expectation (LOLE) a reasonable standard to set, or should another standard be used, such as expected unserved energy (EUE). If recommending a different standard, at what level should the standard be set (e.g., how many MWh of EUE per year)?**

The correct reliability standard and target level of reliability for any standard is a social, economic, and political question as much as it is a technical question. TAEBA encourages starting with an evaluation of the desired outcome with respect to grid reliability, with input from a broad set of decision-makers and stakeholders.

As part of that undertaking, TAEBA would support consideration of EUE as an appropriate measurement of reliability since it accounts for the severity of outage events, unlike LOLE which only tracks outage event frequency; consideration should also be given to outage duration. A reliability measurement incorporating outage severity and duration is necessary to capture events such as Winter Storm Uri, a single

outage event whose devastating impact was a result of its duration and severity. It would also be appropriate, as described below, to ensure that any reliability mechanism be seasonal in nature, since the winter has a more distinct pattern of low-frequency, high-impact tail events, while the summer has a more routine staccato of scarcity that sometimes appear as near-misses in the context of reliability discussions.

4. The E3 report examines 30 hours of highest reliability risk over a year. Is 30 the appropriate number of hours for this purpose? Should the reliability risk focus on a different measure?

E3 has explained that it landed at 30 hours as the number of highest reliability risk hours when PCs would be generated after considering a band of 10-100 hours. It was explained that any using an hour set of fewer than 10 hours would have data that was too noisy to properly determine if those hours were indeed the most resource constrained, while using greater than 100 hours to award PCs would produce PC payments for hours that were not particularly risky based on resource constraints.[25] However, TAEBA notes that E3's analysis does not study outcomes under a different number of PC hours, and instead uses the recommended 30-hour requirement for all analysis. Should the Commission decide to implement the PCM, TAEBA urges further analysis of the PCM market size, cost, and reliability outcomes across different levels of high risk hours before stakeholders can adequately weigh in on what an appropriate hour requirement would be for the PCM were it implemented.

5. Over what period should the hours of highest reliability risk be determined? A year, a season, a month, or some other interval? At what point in time should that determination be made?

[25] Testimony given during the December 2, 2022 Technical Conference.

While TAEBA does not endorse the PCM, should the Commission adopt the PCM (or any similar performance- or availability-based market product), the evaluation period should be at least as granular as a seasonal product. Making the market mechanism seasonal allows for more accurate measurement of winter needs and risks rather than allowing them to be smoothed over the year, incentivizing better winter reliability. This would also prevent the sample of most constrained hours from occurring only during the summer, where tight grid conditions can occur without triggering an emergency event. Our members have also expressed concern that a yearlong accrual is too long, resulting in large settlement payments occurring between loads and generators all at once. While there may be value in monthly true-ups or trading, a monthly product is likely too granular and cumbersome to implement and for market participants to navigate. This is particularly true of the PCM's demand curve, which will need to be reset before each compliance period. Adjusting the demand curve based on monthly data may result in "noisy" and unpredictable changes.

6. Would a voluntary forward market for generation offers and a mandatory residual settlement process for LSE procurement provide additional generation revenue sufficient to incentivize resource availability in a way that improves reliability?

TAEBA expects that some LSEs would participate in the forward market trying to control price risk associated with the settlement process, but that does not guarantee the premium they would be willing to pay would be high enough to meet E3's CONE of $93/kW. It is perhaps more likely that the premium would reduce generation retirements, but at what rate retirements would be mitigated is unclear, if there would be any effect at all. Based on these uncertainties, further study is needed to understand what effects the PCM may have on generator participation.

7. Does a centrally cleared market through ERCOT sufficiently mitigate the risk of market power abuse? Should additional tools be considered?

While the central clearing of the PCM does give the IMM opportunity to take responsive action to market manipulation, this does not guarantee that the PCM will not be unreasonably susceptible to market power abuses to begin with. There has been insufficient study of the PCM to show that market power cannot be used to manipulate which hours will produce PCs, or whether market power will gain certain PC purchasers uncompetitively low PC pricing in the PCM forward market. TAEBA believes that an independent study of market power and manipulation potential of PCM should be performed and the role of tools such as Voluntary Mitigation Plans (as exist in ERCOT today) and other potential mitigation remedies should be evaluated before it is implemented to ensure that a mechanism that already has the potential to cost customers more money for the same services does not also direct those payments to a select few participants that have the ability to exert market power. Should the Commission move forward with the PCM, further study on possible market power abuses should be conducted and additional tools should be considered as needed.

8. If the commission adopts a market design with a multi-year implementation timeline, is there a need for a short-term "bridge" product or service, like the Backstop Reliability Service, to maintain system reliability equivalent to a l-in-10 LOLE or another reliability standard? If so, what product or service should be considered?

The exploration of a bridge service provides additional reservation about whether implementing a new market mechanism is the best course of action – the more complicated the implementation process for the PCM is, the more cumbersome its use becomes. Having to adapt generator and load behaviors to an interim service

then to the PCM could have volatile price effects on consumers and on generators, which should be avoided. In the pursuit of simplicity, it is important that the Commission reconsider identification of need in implementing a new market mechanism. This reevaluation is reasonable given that other system evaluations, such as the IMM's, show that sufficient reliability can be reached by increasing procurements of ERCOT's current suite of ancillary services.[26] Allowing DGRs and DESRs to fully participate in ancillary services would provide further benefit. Ideally, any new product would simultaneously incentivize generation retention based on system needs in the short term and incentivize entry of new resource entries, including advanced energy technologies such as energy storage, DR and EE, or ultra-efficient thermal generation.

9. If implementing a short-term design as a "bridge" delays the ultimate solution, should it be considered? Is there an alternative to a bridge solution that could be implemented immediately, using existing products, such as a long-term commitment to buy the additional 5,630 MW of Ancillary services necessary to achieve the 1-in-10 LOLE reliability standard?

As discussed in question 8, the exploration of increasing ancillary services as a long-term market solution has been discussed in several proposals and could theoretically serve long term reliability. Ideally, if the expansion of AS is needed as a bridge mechanism, it would be used as a long-term reliability solution in place of the PCM. However, ancillary services participation rules must be reviewed in the near-term to ensure that resources that are technically capable of providing services are able to do so. Specifically, DGR/DESR participation rules still need to be addressed to facilitate full participation, otherwise the Commission will be leaving behind a whole class of resilient, cost-effective resources that could be deployed close to load.

[26] IMM testimony given at the November 17, 2022 Senate Committee on Business & Commerce hearing.

10. What is the impact of the PCM on consumer costs?

The E3 study identifies a significant cost to implement the PCM of $500 million above maintaining the energy only market.[27] However, actual costs to consumers may be much higher due to PCM being a novel market construct with risks that are difficult to hedge. More fundamentally, TAEBA emphasizes that additional analysis is needed to evaluate the impacts of the PCM prior to moving forward with such a significant and costly market change. Relying on a single analysis with a single set of assumptions and inputs by a single consultant—no matter how thorough the analysis or qualified the consultant—will inevitably limit understanding of the impacts of the design.

11. What is the fastest and most efficient manner to build a "bridge" product or service, such as BRS, in order to start sending market signals for investment in new dispatchable generation, while a multi-year market design is implemented by ERCOT? Please provide specific steps.

Any "bridge" product should also meet the principles for market design outlined above by TAEBA. Furthermore, as noted above, a well-designed "bridge" product may preclude or at least delay the need for any larger market changes. TAEBA reiterates that there is significant low-hanging fruit to achieve improvements in reliability and resilience through deployment of DERs, DR, energy efficiency, and other demand-side solutions.

12. In what ways could the Dispatchable Energy Credit (DEC) design be modified through quantity and resource eligibility requirements, e.g. new technology

[27] Assessment of Market Reform Options to Enhance Reliability of the ERCOT System, E3 at 49, See Figure 25. https://interchange.puc.texas.gov/search/documents/?controlNumber=52373&itemNumber=382

such as small modular nuclear reactors, in such a way that it incentivizes new and dispatchable generation?

The design of the Dispatchable Energy Credits ("DEC") proposal does not satisfy technology neutrality in TAEBA's view. The generation duration requirement of 48 hours[28] to be an eligible resource does not have a basis in actual system need, and is plainly biased toward thermal generation resources since those are the only technologies that could reasonably sustain generation for that period. One issue with this is that the DEC seems to be solving for a different reliability issue than the PCM, since a duration requirement such as this appears to be targeting relief for sustained outages, whereas the PCM appears to be designed to alleviate more frequent grid constraints that may be very short in duration. Once again this raises the fundamental, unresolved question about what reliability outcomes these proposals are supposed to achieve. There is also no reason to believe that resources that are not capable of sustaining generation of 48 hours cannot provide helpful relief to the system during a sustained outage. For these reasons, TAEBA believes a more reasonable generation duration requirement for DEC participation is 4 hours. The generator requirements of a net heat rate below 9,000 LHV Btu/kWh[29] is also irrelevant to securing dispatchability and firm, long-duration capacity. This requirement would unfairly favor large combined cycle power plant units.

[28] Assessment of Market Reform Options to Enhance Reliability of the ERCOT System, E3 at 28. https://interchange.puc.texas.gov/search/documents/?controlNumber=52373&itemNumber=382

[29] Assessment of Market Reform Options to Enhance Reliability of the ERCOT System, E3 at 27. https://interchange.puc.texas.gov/search/documents/?controlNumber=52373&itemNumber=382

ßRespectfully submitted,
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PROJECT NO. 54335

REVIEW OF WHOLESALE ELECTRIC MARKET DESIGN	§	PUBLIC UTILITY COMMISSION
	§	
	§	OF TEXAS

COMMENTS OF TEXAS ADVANCED ENERGY BUSINESS ALLIANCE

TAEBA offers the following recommendations regarding the ERCOT Market Redesign and possible adoption of the PCM:

- The Commission should not move forward with the Performance Credit Mechanism at this time, but should instead work with stakeholders to evaluate and align on desired reliability outcomes, determine an appropriate reliability metric to meet those desired outcomes, and then reassess whether current market rules, expansion or adjustment of existing market products, or targeted market designs can reach that metric cost-effectively.
- The Commission must ensure that any market mechanism that is used to ensure reliability is technology neutral, and includes clear pathways for technologies such as DR, DER, EE and battery storage to participate.
- The Commission should consider near-term opportunities to improve reliability through deployment of demand-side resources that can be deployed quickly.
- Any new market design should preserve and extend competitive market forces to achieve reliability objectives at the lowest possible consumer cost.