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Public Utility Commission of Texas
1701 N. Congress Avenue
P.O. Box 13326
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RE: Project No. 54335; *Review of Market Reform Assessment Produced by Energy and Environmental Economics, Inc. (E3)*, Errata to LCRA's Response to Request for Comments

To whom it may concern:

Enclosed is an Errata to the Lower Colorado River Authority's Response to Request for Comments. In the Executive Summary, bullet three, LCRA inadvertently left off the word "not" in the following sentence:

"The ERCOT forward market should not be the only mechanism to buy or sell PCs; a bilateral market will emerge, just as it has for energy under the current market design."

Please feel free to contact me at Emily.jolly@lcra.org if there are any questions regarding this Errata.

Sincerely,

A handwritten signature in black ink that reads "Emily R. Jolly". The signature is written in a cursive style with a large, stylized "E" and "J".

Emily R. Jolly
Sr. Vice President, Regulatory Affairs

PROJECT NO. 54335

**REVIEW OF MARKET REFORM
ASSESSMENT PRODUCED BY
ENERGY AND ENVIRONMENTAL
ECONOMICS, INC. (E3)**

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**BEFORE THE
PUBLIC UTILITY COMMISSION
OF TEXAS**

**LOWER COLORADO RIVER AUTHORITY’S ERRATA TO THE
RESPONSE TO REQUEST FOR COMMENTS**

TO THE HONORABLE PUBLIC UTILITY COMMISSION OF TEXAS:

The Lower Colorado River Authority (LCRA) appreciates the opportunity to comment on the *Assessment of Market Reform Options to Enhance Reliability of the ERCOT System* produced by Energy and Environmental Economics, Inc. (E3).¹ The E3 report represents an important milestone in the Commission’s implementation of Senate Bill 3. Now, building on the various proposals, analyses, and public comments that have been presented to date, the Commission is well positioned in “phase two” of market design to fulfill the Legislature’s requirements that the Commission both “evaluate whether additional services are needed for reliability in the ERCOT power region while providing adequate incentives for dispatchable generation,”² and ensure that ERCOT “establishes requirements to meet the reliability needs of the power region.”³ In addition, as the Commission already began addressing as part of “phase one” market reform, the Legislature ordered the Commission to procure, on a competitive basis, reliability services from resources with “on-site fuel storage, dual fuel capability, or fuel supply arrangements to ensure winter performance for several days.”⁴

Fundamentally, these three legislative directives define the three primary problems to be solved and ensure that the Commission has the statutory authority it needs to solve them. As Governor Abbott detailed in his letter to the Commission of July 6, 2021, under Senate Bill 3’s directives, the Commission was expressly given

the ability to redesign segments of the market to incentivize and maintain the reliable electric generating plants our state needs. Those incentives must be directed toward the types of electric generators we need for reliability purposes. The goal of

¹ Energy and Environmental Economics, Inc., *Assessment of Market Reform Options to Enhance Reliability of the ERCOT System* (Nov. 2022) (hereafter “E3 Report”).

² Tex. Util. Code § 35.004(g)(2).

³ *Id.* § 39.159(b)(1).

⁴ *Id.* § 39.159(c)(2).

this strategy is to ensure that Texas has additional and more reliable power generation capacity.⁵

The first step in achieving the Legislature and Governor Abbott’s mandate is to establish a mandatory reliability standard for the ERCOT region, as has been broadly acknowledged. LCRA supports adoption of the industry standard “1-in-10” Loss of Load Expectation (LOLE) metric. Experience post-Winter Storm Uri has proven that in order to compete with other regions of the country and continue to attract economic development within ERCOT, this market must be designed for no less rigorous a reliability standard than what is used in other states and support a 1-in-10 year standard.

The second critical measure needed at this time is the Commission’s announcement of a wholesale market design policy. LCRA believes that, structurally speaking and with appropriate adjustments, the Performance Credit Mechanism (PCM) is a market design solution that can incentivize dispatchable generation investment and retention in ERCOT. This in turn will decrease consumers’ exposure to periods of inadequate supply and emergency conditions. While more analysis needs to be performed to determine the specific parameters of the PCM solution, LCRA recognizes that the Commission’s clear endorsement of a policy construct will provide the market much-needed regulatory certainty that will pave the way for long-term dispatchable supply adequacy in ERCOT.

Finally, the Commission should maintain the Firm Fuel Supply Service and further expand the program to effectively address extreme winter weather risk, which will persist even if ERCOT achieves and maintains adequate levels of dispatchable capacity through the PCM.

I. INTRODUCTION

Since Winter Storm Uri and the close of the 87th Legislative Session, the Commission has worked diligently on its holistic review of the wholesale electricity market. Through a series of Commissioner-led work sessions and multiple rounds of stakeholder comments on a comprehensive and diverse set of topics, the Commission worked to further refine the problems that the Legislature directed it to solve. As the Commission’s decisions and the E3 report collectively illustrate, those problems can generally be organized into three categories: (1) the need for a reliability standard to define the generation supply needs of the ERCOT region; (2) the need for a new market-based, structural incentive to ensure ERCOT attracts and retains sufficient

⁵ Governor Greg Abbott’s letter to the Commissioners (July 6, 2021).

dispatchable generation to satisfy the reliability standard; and (3) the need for increased fuel resiliency to protect Texans from extreme weather events like Winter Storm Uri. All three of these issues were directly called out in Senate Bill 3, the Legislature’s bipartisan, omnibus electricity reform effort.

LCRA, and many other market participants and industry experts, have actively engaged in the Commission’s wholesale electricity market review—formulating potential solutions, testifying before the Commissioners, conducting analysis, and providing thorough written feedback. LCRA recognizes that there is no one solution that resolves every problem, but appreciates the Commission’s commitment to iterating on these difficult questions and working to arrive at a set of complementary approaches that, together, will address the challenges facing ERCOT.

While there is no single solution to address the complex set of problems the Commission is tasked with resolving, there is also no justification for impeding the Commission’s progress in moving toward phase two implementation at this late stage in the process. Interested parties have had more than eighteen months to present their ideas and weigh in on the types of solutions being brought forward. While the PCM as formulated by E3 has only recently been introduced, it is unquestionably the type of “hybrid” solution that the Commission previewed that it would pursue back in January 2022.

LCRA strongly supports the Commission’s direction and encourages the Commission to proceed with haste to put in place a mandatory reliability standard and finalize its policy framework for wholesale electricity market reform in ERCOT.

II. GENERAL COMMENTS

A. The Commission should mandate a 1-in-10 LOLE reliability standard.

As the Commission is aware, most electric systems in North America target the “1-in-10” year standard, or a probability-weighted average of 0.1 loss-of-load events (LOLE) per year. A system with this level of reliability would expect to experience a load shed event one day every ten years (without regard to the duration of the expected load shed event on that day).⁶ Only ERCOT’s existing energy-only market design does not target a specific reliability standard. Yet even ERCOT’s most recent analysis, conducted by Astrapé Consulting and published this month, refers to 0.1 LOLE as the “industry standard.”⁷

⁶ E3 Report at 43.

⁷ Astrapé Consulting, *Effective Load Carrying Capability Study: Final Report* at 8 (Dec. 7, 2022), available at www.ercot.com/files/docs/2022/12/09/2022-ERCOT-ELCC-Study-Final-Report-12-9-2022.pdf.

The question of the appropriate reliability standard for ERCOT has been teed up before the Commission for years. LCRA has previously commented on the need for a more resilient standard and provided significant supporting data.⁸ In Project No. 42302, *Review of the Reliability Standard in the ERCOT Region*, ERCOT’s analysis showed that the current ERCOT market design is expected to experience a 1-in-2 year LOLE.⁹ Although the E3 report suggests that ERCOT appears “to be close” to the 0.1 LOLE benchmark today, “under equilibrium conditions in 2026, the Energy-Only (status quo) design results in 1.25 days/yr.”¹⁰

This level of reliability is far too low for the ERCOT market; it does not protect against extreme events like Winter Storm Uri, nor does it account for the operational risks that ERCOT experiences today and will see to an even greater degree in the future as the proportion of energy provided by intermittent resources increases. In order to achieve a resilient grid with adequate operating reserves that will protect against extreme weather conditions, ERCOT should have a market design that supports at least a 1-in-10 LOLE standard. Given the size and relative isolation of the ERCOT interconnection, it would also be appropriate to consider a more stringent reliability standard than 1-in-10.

LCRA does not agree with suggestions that a different metric should be considered for the ERCOT region. The Commission’s reliability standard needs to support economic growth in Texas and provide assurance to businesses and end-use consumers that ERCOT is, and will remain, among the most competitive and reliable electric grids in the country. The LOLE standard is commonly accepted and well understood across industries, and it corresponds to a rational and cost-effective level of reliability.¹¹

Deviating from the industry standard in favor of untested approaches may put ERCOT at a disadvantage compared to other regions from the standpoint of economic development. This risk is real—not theoretical. The first questions LCRA is asked in discussions with major businesses and manufacturers looking to site within its footprint routinely focus on system reliability. These

⁸ See, e.g., LCRA comments filed in Project No. 47199, *Project to Assess Price-Formation Rules in ERCOT’s Energy-Only Market* (Dec. 1, 2017); Project No. 42302, *Review of the Reliability Standard in the ERCOT Region* (Mar. 27, 2015); Project No. 40000, *Proceeding to Ensure Resource Adequacy in Texas* (Dec. 16, 2013).

⁹ Project No. 42302, *Review of the Reliability Standard in the ERCOT Region*, ERCOT’S Letter to Commissioners – The Brattle Group’s Report, “Estimation of the Market Equilibrium and Economically Optimal Reserve Margins for the ERCOT Region” at 9 (Feb. 21, 2019).

¹⁰ E3 Report at 7.

¹¹ Other metrics such as Expected Unserved Energy (EUE) may be instructive to gauge the impact and magnitude of an event in terms of load quantity and duration, but should not be used in place of a mandatory 1-in10 LOLE standard.

questions have only become more pointed since Winter Storm Uri and the highly publicized reports of ERCOT's lack of a reliability standard. Texas should not be put in a position where it can be cast as willing to accept less reliability in the future than it has historically experienced—particularly as the Commission and ERCOT work so diligently to address the impacts of Winter Storm Uri.

From a process standpoint, LCRA recommends that the Commission include adoption of a mandatory reliability standard at its market redesign meeting in January 2023. Following that determination, the Commission should expeditiously open a project to memorialize this determination in its substantive rules, in compliance with the Senate Bill 3 directive to “establish[] requirements to meet the reliability needs of the power region.”

B. The Commission should approve the PCM concept and begin work on defining the PCM market design parameters.

While the process of conducting analysis to evaluate and suggest improvements to the specific design parameters of the PCM is ongoing, LCRA's initial analysis indicates the PCM structure comports with the Legislature and the Governor's mandate to adopt a market-based mechanism to incentivize dispatchable generation investment and retention in ERCOT.

The case for why ERCOT needs to secure sufficient dispatchable generation has been clearly made, and a well-designed PCM will support ERCOT's growing demand for electricity and ensure that demand is served even during times of scarcity. This is a solution that can be geared toward ensuring resource adequacy during summer peak when ERCOT continues to break demand records (as it did throughout 2022), as well as during off-peak periods when ERCOT has indicated a need for greater operational flexibility.

Of course, details matter. LCRA's preliminary back-cast analysis suggests that the proposed use of the 30 lowest reserve hours would not necessarily reflect the tightest hours, which could result in unintended consequences. To the extent the Performance Credit (PC) hours are carefully designed to align with times of genuine shortage (rather than reflect operational idiosyncrasies), these types of concerns would be mitigated. Our initial analysis indicates that PC prices are primarily sensitive to weather, with milder years producing potentially anomalous results. The PCM design needs to ensure a strong correlation between PC prices and the ERCOT planning reserve margins. Therefore, it is important to determine PC hours that promote predictability, follow market fundamentals, and support market participants' forecasting efforts.

Additionally, generation owners will have to manage their maintenance against anticipated PC hours, and load serving entities will need to procure adequate hedges against uncertain PC costs. LCRA also has reservations about the aspect of the proposal wherein the ERCOT forward market would be the only mechanism to buy or sell PCs. In LCRA's view, a liquid bilateral market would emerge for PCs, just as it has for energy under the current market design.

LCRA supports the Commission's approval of the PCM concept, while leaving open the specifics of the solution to ensure that it is ultimately designed to (1) be transparent and predictable, (2) promote liquidity in the market, and (3) provide generators and loads the opportunity to appropriately hedge their risk.

C. The Commission should expand the Firm Fuel Supply Service program.

Some critics of the E3 report have noted its lack of analysis of or focus on Winter Storm Uri.¹² As the Commission is aware, the two leading causes of generation resource failures during Winter Storm Uri were issues with freezing (all resource types) and fuel (thermal resources).¹³ With regard to the first cause, in addition to the Commission's efforts on mandatory weatherization for generation resources, the Commission has also begun (or completed) both supply-side and demand-side reforms aimed to lessen the impacts of generation resource failures on consumers. With regard to the second, LCRA strongly urges that the Commission expand the Firm Fuel Supply Service (FFSS) program that it approved as part of phase one.

Winter Storm Uri proved that a significant and rapid expansion of the FFSS program is necessary. Phase 2 of FFSS, as recently proposed by ERCOT, supports that objective by broadening eligibility requirements for FFSS resources and thus expanding the potential firm supply. Yet in order for that expansion to be effective, it must be increased in a manner that incentivizes additional capital investment in fuel resiliency and equally promotes and rewards fuel resiliency across more resource types.

With regard to the proposed FFSS phase 2 expansion in particular, LCRA is concerned that many of the fuel supply-related risks that impacted natural gas generators during Winter Storm Uri

¹² For example, in discussing how it modeled unplanned outages as a function of temperature, the report did not include outages during Winter Storm Uri on the basis that "the Consulting Team does not expect the same levels of outage would be observed during similar weather conditions due to improvements that have been made by the PUCT, such as weatherization rules and firm fuel procurement." E3 Report at 41.

¹³ The joint FERC/NERC report determined that freezing issues and fuel issues together caused 75.6 percent of all unplanned outages, derates, and failed starts during the Winter Storm Uri event. *See* FERC, NERC, and Regional Entity Staff Report, "The February 2021 Cold Weather Outages in Texas and the South Central United States at 21-22 (Nov. 2021) ("FERC/NERC Report") (internal citations omitted), at <https://www.ferc.gov/media/february-2021-cold-weather-outages-texas-and-south-central-united-states-ferc-nercand/>.

may not be fully mitigated through the contractual requirements proposed for phase 2 FFSS Resources (or “firm gas FFSSRs”). The provision of FFSS from natural gas stored and transported over third-party facilities is necessarily more prone to interruption than fuel stored on-site or in proprietary storage and pipelines. For example, given the pervasiveness of Force Majeure declarations during Winter Storm Uri, overreliance on “firm gas FFSSRs” could lead to significant vulnerabilities if similar conditions occur in the future. Fundamentally, a Resource whose fuel supply is dependent on third parties that can declare Force Majeure is less “firm” than a Resource with on-site dual fuel or one that exercises direct operational control over both the storage and transport of its fuel. Further, a “firm gas FFSSR” may still be susceptible to other issues such as low pressure on the natural gas transport system that could affect the availability of its fuel, even in the absence of a Force Majeure declaration.

To address this risk, LCRA recommended in its comments to ERCOT that, for the next FFSS procurement, the PUC and ERCOT restructure the procurement to recognize value differences for the distinct tiers of resources. Tier 1 would include the currently qualified, “most firm” Resources with on-site dual fuel or owned storage and transport. Tier 2 would include the Resources covered by the proposed Phase 2 framework (“firm gas FFSSRs”).¹⁴

While phase two FFSS is a reasonable start, the FFSS program will have to grow substantially to expand the amount of firm fuel capacity in ERCOT and more meaningfully reduce the risk to consumers of generator outages and derates due to fuel curtailments. The goal of this program should be to ensure the most efficient mix of firm resources overall, including other types of (non-natural gas-fired) resources. Resources fueled by nuclear, coal and hydro (among others, potentially) should also be eligible for the FFSS program in order to align incentives for those types of resources to bolster their fuel supply “to ensure winter performance for several days,” as set forth in Senate Bill 3. This type of expansion will decrease both cost and risk for consumers.

¹⁴ LCRA’s comments to ERCOT are included as Attachment A to these comments.

III. RESPONSE TO SELECTED QUESTIONS

Question 3:

What is the appropriate reliability standard to achieve the goals stated in Question 2? Is 1-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)?

As described further in Section II.A above, the Commission should mandate a 1-in-10 LOLE reliability standard.

Question 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?

As set forth in Section II.B above, LCRA has several concerns with awarding PCs based on the 30 lowest-reserve hours of the prior year. It is crucial that the PC-determinative hours of highest reliability risk align with genuine shortage, rather than reflect operational idiosyncrasies. In order to achieve this goal, reliability risk must be unambiguous. It would be helpful for ERCOT to conduct additional back-cast analysis to aid the Commission in determining the appropriate reliability risk hours. Such analysis would (1) identify which hours would have been designated PCM hours in each year, and (2) assess the fundamental tightness in those hours (using, e.g., total available dispatchable capacity, including from offline slow-start resources, plus actual output from intermittent resources, minus total gross load) compared to the tightness duration curve for that year and against actual periods of historical emergency.

Further analysis should also be performed to ensure that PC prices will reflect market fundamentals (demonstrating that PCs would have cleared higher in years with tight reserve margins and challenging weather, and lower in years with ample supply). This too can also be explored through back-cast analyses:

(1) For each year, ERCOT would estimate the clearing price by intersecting the “supply” of PCs produced in the identified top 30 hours with a demand; the demand curve for each year could be provided by E3 and Astrapé, accounting for different load forecasts and renewable penetration in each of the years.

(2) ERCOT would analyze the price against the fundamental tightness metrics and against other metrics such as CDR/SARA reserve margins.

(3) E3 and Astrapé would produce alternative demand curves using different unit commitment assumptions and using 10 years of historical weather instead of 40, to see how different the demand is and how different the back-cast results would be.

Question 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?

As set forth above, LCRA believes that more analysis and clarity is needed to ensure that the PC hours align with times of true shortage. The determination of the highest reliability risk hours should align with the availability of all related forecasts (weather, load, renewable generation, planned outages, etc.). The design should also build in flexibility to allow for revision and updates as generation mixes changes, forecast trends evolve, and other factors emerge that will impact a well-functioning PCM.

LCRA's early analysis of the 30 lowest-reserve hours per year approach showed variability and resource type ambiguity. Analyzing historical data from 2015 to 2022, the overwhelming majority of the 30 hours of highest reliability risk occurred in the summer. Under the PCM, the loss of load risk is concentrated in the winter (as shown in Table 19 in E3 report), but very few of the years evaluated would have had PC hours occurring in the winter. More analysis is needed to determine the hours and time intervals for establishing PCs.

Question 10:

What is the impact of the PCM on consumer costs?

LCRA is still in the process of analyzing the potential costs of the PCM, but agrees with E3's analysis that the cost impact of any proposal should account for the expected impact on energy prices in order to provide a proper comparison to today's energy-only market. LCRA recognizes that it is a feature of the PCM that all resources, whether they participate in the PC market or not, are eligible to participate in the energy and ancillary services markets, which enables these resources to help moderate energy prices.¹⁵ A well-designed PCM will send appropriate price signals for true scarcity, which will in turn incentivize new and dispatchable generation, improve system reserve adequacy, and reduce the frequency and magnitude of price spikes in both the Day

¹⁵ E3 Report at 80.

Ahead Market and the Real-Time Market. As such, LCRA believes that the PCM market design will benefit consumers in the long run.

Question 12:

In what ways could the Dispatchable Energy Credit design be modified through quantity and resource eligibility requirements, e.g., new technology such as small modular nuclear reactors, in such a way that it incentivizes new and dispatchable generation?

As LCRA has previously commented, the DEC proposal, even with modifications, does not present a practical or effective solution.

IV. CONCLUSION

LCRA applauds the Commission's work and appreciates the Commission's consideration of these comments.

Respectfully submitted,

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Emily R. Jolly

**Attachment A:
Comments on proposed ERCOT Framework for Firm Gas Firm Fuel
Supply Service Phase 2**

Date	12/9/2022
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Submitter's Information	
Name	Emily Jolly
E-mail Address	Emily.Jolly@lcra.org
Company	Lower Colorado River Authority
Market Segment	Cooperative

Comments

The Lower Colorado River Authority (LCRA) appreciates ERCOT's efforts to expand Firm Fuel Supply Service (FFSS) for the next phase of FFSS procurement. LCRA agrees that significant and rapid expansion of FFSS is necessary to meet the directives of Senate Bill 3 and bolster resiliency in ERCOT during extreme winter weather events. In service of these goals, the Public Utility Commission of Texas (PUC) and ERCOT should focus on maximizing the benefits of the FFSS program to the consumers who fund it. In LCRA's view, this means that the PUC and ERCOT should (1) make certain that Phase 2 FFSS expansion does not hamper implementation of Nodal Protocol Revision Request (NPRR) 1154, Include Alternate Resource in the Availability Plan for the Firm Fuel Supply Service, and (2) appropriately value FFSS Resources that provide the "most firm" type of FFSS, which may require changes to the procurement mechanisms.

1. The ERCOT Board and the PUC should approve and support prioritization of NPRR 1154.

On December 5, 2022, the ERCOT Technical Advisory Committee (TAC) unanimously endorsed NPRR 1154, the goal of which is to make sure that financial incentives for Phase 1 FFSS Resources (those with either on-site dual fuel capability or owned natural gas storage and owned transport) align with the goal of maximizing FFSS availability in the event of an actual FFSS deployment. Put simply, NPRR 1154 will allow an FFSS Resource with a qualified and ERCOT-approved alternate (or back-up) unit to count on the availability of that alternate Resource for both performance and financial purposes. Accordingly, this will increase the likelihood that ERCOT will receive the FFSS MWs it contracted for when it deploys the service (rather than merely penalizing non-performance) and provide resource diversity. If NPRR 1154 is approved by the ERCOT Board of Directors and the PUC, ERCOT Staff has indicated that it could be implemented in

time for the next FFSS contract period (i.e., winter 2023-2024), subject to ERCOT resource constraints. LCRA urges ERCOT and the PUC to approve NPRR 1154 and support its prioritization in time for the next procurement of FFSS.

2. Optimal use of the FFSS budget requires tier-based and unit-specific rating factors.

With regard to ERCOT's proposed Phase 2 expansion, LCRA believes that the program should recognize the relative firmness of resources in order to promote the most effective and cost-efficient expansion of FFSS. Opening FFSS procurement to a wider array of resource types introduces greater variability in levels of performance capability.

LCRA is concerned that many of the fuel supply-related risks that impacted natural gas-fired generators during Winter Storm Uri may not be fully mitigated through the contractual requirements proposed for these Phase 2 FFSS Resources (or "firm gas FFSSRs"). The provision of FFSS from natural gas stored and transported over third-party facilities is necessarily more prone to interruption than fuel stored on-site or in proprietary storage and pipelines. For example, given the pervasiveness of Force Majeure declarations during Winter Storm Uri, overreliance on "firm gas FFSSRs" could lead to significant vulnerabilities if similar conditions occur in the future. Fundamentally, a Resource whose fuel supply is dependent on third parties that can declare Force Majeure is less "firm" than a Resource with on-site dual fuel or one that exercises direct operational control over both the storage and transport of its fuel. Further, a "firm gas FFSSR" may still be susceptible to other issues such as low pressure on the natural gas transport system that could affect the availability of its fuel, even in the absence of a Force Majeure declaration.

To best serve ERCOT customers with the limited budget available for FFSS, ERCOT should recognize tradeoffs in the expected performance of providers. In order to achieve fungibility in a single clearing price environment, each provider of FFSS must provide the same per-MW quantity of expected performance using tier-based and unit-specific rating factors. Failure to recognize clear, quantifiable differences in expected performance risks would lead to an inefficient use of consumer dollars, improper recognition of tradeoffs, and price signals that incentivize suboptimal investment decisions.

Accordingly, in the next phase of FFSS, the PUC and ERCOT should recognize value differences for two distinct tiers of resources. Tier 1 would include the currently qualified, "most firm" Resources with on-site dual fuel or owned storage and transport. Tier 2 would include the Resources covered by the proposed Phase 2 framework ("firm gas FFSSRs").

With distinct resource tiers offering to provide FFSS, ERCOT should revise both the method to develop the price cap and the procurement target quantity. These two parameters were developed in Phase 1 based on the characteristics of gas generation with onsite fuel (informed by the survey responses and the Independent Market Monitor's cost estimates for storing fuel). As FFSS eligibility expands to include new resource types—and especially to eventually include new capital investment—these characteristics should be revisited.

A simple, short-term solution is to conduct separate procurements for distinct tiers of resources, with each procurement featuring its own tailored price cap and target quantity. With just two tiers of resource in Phase 2, separate procurement targets and price caps are a straightforward and expedient approach to appropriately accommodating diverse tiers (rather than developing values that make sense in the context of both tiers).¹⁶

¹⁶ In the longer term, the program will have to grow to substantially expand the amount of firm fuel. This should eventually be conducted on a unified basis to ensure the most efficient mix of firm resources overall, including other types of (non-natural gas-fired) resources.

PUC PROJECT NO. 54335

**REVIEW OF MARKET REFORM
ASSESSMENT PRODUCED BY
ENERGY AND ENVIRONMENTAL
ECONOMICS, INC. (E3)**

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**BEFORE THE
PUBLIC UTILITY COMMISSION
OF TEXAS**

**LOWER COLORADO RIVER AUTHORITY'S
EXECUTIVE SUMMARY**

- In order to achieve a resilient grid with adequate operating reserves, the Commission should mandate a reliability standard. LCRA supports having at least a “1-in-10” LOLE standard in order to support economic development and keep ERCOT on a level playing field with the rest of the country. The Commission should adopt this mandatory reliability standard as part of its final determination on market redesign and expeditiously adopt a substantive rule enshrining the reliability standard for ERCOT.
- LCRA believes that the Performance Credit Mechanism (PCM)—structurally, with appropriate adjustments—can incentivize dispatchable generation investment and retention in ERCOT. This in turn will decrease consumers’ exposure to periods of inadequate supply and emergency conditions.
- The Commission should approve PCM concept, while leaving open the specifics of the solution to ensure that it is ultimately designed to (1) be transparent and predictable, (2) promote liquidity in the market, and (3) provide generators and loads the opportunity to hedge their risk.
 - Performance Credits (PCs) need to align with the quality of the reliability service provided by Resources that are available during true scarcity. More analysis is needed to define the PC hours.
 - Additional parameters, including how demand is set and what the slope of the demand curve will be, should not be defined until further analysis is completed.
 - The ERCOT forward market should not be the only mechanism to buy or sell PCs; a bilateral market will emerge, just as it has for energy under the current market design.
- The ERCOT region will continue to require the procurement of Firm Fuel Supply Service (FFSS) to address extreme winter weather risk. FFSS should be expanded to incentivize additional capital investment in fuel resiliency and to promote and reward fuel resiliency across more resource types (including, for example, coal and hydro).