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PROJECT NO. 52373

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

Cypress Creek Renewables, LLC Response to Memorandum Requesting Responsive Briefs

Pursuant to Public Utility Commission of Texas (“Commission”) procedural rules Cypress Creek Renewables, LLC (“Cypress Creek”) files this response to the Commission’s Memorandum filed on September 20, 2021 in Project No 52373 (“52373”), Review of Wholesale Electric Market Design. The Memorandum requests that parties file responsive briefs by September 30, 2021, so this filing is timely. Cypress Creek appreciates the opportunity to participate in the discussions.

Introduction

Cypress Creek is an active developer, owner, and operator of battery energy storage and solar energy facilities interconnected throughout the ERCOT region. Cypress Creek presents to the Commission market design recommendations that are intended to solve two central issues that the Commission must clearly define to arrive at a durable solution that guarantees Texans cost-competitive, reliable energy across the state’s interconnected natural gas and electric systems.

1. Winter storm Uri in February 2021 exposed that ERCOT system reliability is inextricably linked to natural gas fuel security. Neither the natural gas nor the electricity systems have made sufficient levels of investment to operate either system reliably during extreme, prolonged winter events. The origins of this problem are two-fold. Firstly, in a highly competitive energy only marketplace that pays for performance and not standby capacity, it is very difficult for market participants to finance new winterization investments on the basis of low-probability events, even if they present high value opportunities. Secondly, not all market participants may be capturing the

increased probability of storms like Uri in the decades ahead in their own modeling and forecasting. In tandem, this leads to a market failure, where the incentives present in the market today (primarily, high Value of Lost Load (“VOLL”) pricing for energy during scarcity events) are insufficient and/or imperfectly understood, leading market participants to not make the win-win weatherization investments to make infrastructure—upstream and midstream oil and gas, and downstream power plants—resilient in the face of extreme weather events.

2. In addition to this market failure, the energy system is changing, with highly cost-competitive solar and wind resources being built in large volumes to the benefit of Texans, and battery energy storage poised to see similarly high uptake in the coming years. These resources have unique attributes that are different from traditional thermal generation – renewables don’t require fuel delivery and are variable, though controllable, and battery storage is more precisely controllable but duration limited. The output of these resources is increasingly predictable, and their energy cost savings are immensely beneficial to the system and Texas. Because of these benefits and unique attributes, grid operation parameters should continue to be reviewed and adapt as deemed prudent to the changing energy landscape.

CCR Market Design Proposals

We orient our recommendations for addressing the issues described above through three overarching market objectives:

- **Ensuring Resource Adequacy.** A reliable system requires sufficient effective capacity in the system to meet demand at any point in time with a diverse portfolio of resources at least cost.
- **Ensuring Resource Availability.** Targeting a planning reserve margin is insufficient – capacity has to show up when the system needs it, which may not happen at times because it is on forced outage, or cannot access the fuel that it needs at that time, as was seen with many generators during Uri.

- **Ensuring Efficient System Operation.** While the energy market is effective at incentivizing resources to operate in a way that is consistent with system needs, Ancillary Services are critical to ensuring that ERCOT has the tools it needs to meet demand in real-time and maintain system power quality in the face of large generator and large load outages, as well as variability and uncertainty around real-time supply and demand.

Our solutions try to address these objectives in accordance with first principles. Namely, that market design reforms should be non-discriminatory and transparent, and should enable easy market entry and exit so that all resource types and market participants can effectively evaluate and respond to market signals (prices) and thereby achieve an optimal resource mix at least cost.

Resource Adequacy

ERCOT today encourages resource adequacy through an energy-only and ancillary services market that operate in tandem with a competitive retail market. These create a highly liquid marketplace whereby generators can easily access offtake to underpin their investments. A testament to its design, ERCOT is highly cost-competitive, with very thin margins available during most hours to resource entities. As referenced by Commissioner Lake during the August workshop in this Project, long-term investment incentives today are largely scarcity-driven, where investors expect to earn much of their returns in a relatively small number of hours. Under the current ORDC construct, this can be highly uncertain, often with profit expectations falling in such a small number of hours that it becomes challenging to finance new projects – debt lenders in particular need a high degree of certainty that they will be paid back according to a particular schedule, or else impose much higher costs on mezzanine capital that can be prohibitive. Equity financing can in some cases bear a higher degree of uncertainty, but in such cases, requires higher levels of return.

As recommended by many of the commenters in response to the Questions for Comment released as part of Project 52373 on August 2, we support changing the ORDC curve to create a more stable environment for realizing reasonable levels of returns, which is less dependent on a small number of scarcity events. In addition to creating a more stable investment climate, we highlight that the PUCT has also stated an additional objective for this effort (paraphrasing) is to avoid raising costs to consumers.¹ Towards this end, changes can goal seek for an outcome that is cost-neutral for ratepayers – for instance, by (i) increasing the “X” and shifting the curve to the right while (ii) reducing the VOLL, the ORDC could be made into a much more reliable revenue construct (higher frequency of payments) without necessarily increasing the cumulative expected ORDC revenue payments.

Additionally, without rehashing the many good points that have been made on this subject, we agree with many of the other market participants that have identified problems that would arise if the ORDC payments were tied to day-ahead market participation. We agree that this would reduce resource adequacy by disincentivizing hub settled resources from delivering in real time if excluded from ORDC capture, among other things.

Resource Availability

Capacity availability is critical to ensure that there is not only enough capacity to meet peak demand across all hours of the year, but that it can perform when the market needs it. Combined with investment signals, short-term capacity planning proxy constructs such as the Seasonal Assessment of Resource Adequacy (“SARA”) is necessary but is not sufficient to ensure a reliable system. SARA and more traditional planning constructs generally treat outages and fuel supply limitations as uncorrelated events and hence can arrive at the wrong expectations related to the reliability of a given generation

¹ July 22, 2021 PUCT ERCOT joint press conference

fleet.² As we saw most recently with Uri, generation units and fuel delivery infrastructure can see highly correlated outages. It is critical that the interconnected gas and electric systems be hardened to these multi-system correlated failure events, but as we noted above, there has been a market failure to do so historically and there is no reason to expect the market to take corrective action in the future.

Therefore, we do not think that electricity market reforms would be effective or cost efficient – if access to \$9,000/MWh prices were neither sufficient nor their incidence sufficiently understood to incentivize weatherization in the past, tweaking these incentives are unlikely to lead to infrastructure weatherization in the future, and could be immensely costly to ratepayers, as experienced during Uri. Moreover, due to the unpredictability of future storm impacts, generators and parts of the gas system that were not impacted by Uri may not be safe during a future event.

Regulation is therefore the appropriate tool to deal with such an instance of market failure—in this case, it would be a more reliable and affordable avenue to ensuring capacity availability—and we therefore are greatly supportive of the Commission’s Rulemaking to Establish Electric Weatherization Standards (51840). We think that a logical outcome from this rulemaking, together with the regulatory authority of the Texas Railroad Commission (TX RRC), would be requirements for weatherization of different pieces of downstream, midstream, and upstream infrastructure, including both in the oil and gas and power sectors, and that these should be studied through benefit cost analyses and system simulations to identify the most prudent, cost-effective means of weatherization the integrated energy system against future Uri-like events. The study by FERC/NERC on what happened during Uri arrives at a similar conclusion and is a useful place to start.³

System Operation

² Energy Systems Integration Group, “Redefining Resource Adequacy for Modern Power Systems,” 2021, <https://www.esig.energy/wp-content/uploads/2021/08/ESIG-Redefining-Resource-Adequacy-2021.pdf>

³ FERC, NERC. “February 2021 Cold Weather Grid Operations: Preliminary Findings and Recommendations” <https://www.ferc.gov/media/february-2021-cold-weather-grid-operations-preliminary-findings-and-recommendations-ppt>

Finally, it is critical to recognize that the system is changing. Landowners, ratepayers, and local and state government have reaped immense benefits from the entry of cost-competitive solar and wind resources over the last decade-plus. Going forward, this will continue and increasingly be augmented by the entry of high-value, low-cost energy storage resources. In tandem, these changes will complement the existing resource mix to create an increasingly diverse portfolio of resources that is more cost-effective and less exposed to variant commodity prices, and also has the potential to be more resilient and reliable. However, as noted above, these new resource types have different characteristics from traditional, thermal generation sources – most notably, they are variable and do not involve large, spinning masses.

Variability is not inherently problematic, and there are many grids with high penetrations of variable generation resources that operate highly efficiently and reliably. Indeed, ERCOT has seen substantial increases in variable wind and more recently solar over the last decade-plus and has continued to operate in an efficient fashion during this time (the issues above with resource adequacy and resource availability are distinct from system *operation*). During this time, ERCOT did not see an increase in the need for existing ancillary services for two reasons – as referenced by other parties noting that the volume of ancillary services has not increased during the 2010-2020 timeframe, ERCOT has become increasingly good at predicting variable generation levels ahead of time as software has improved and their capabilities have increased, and the intermittent generation fleet has become increasingly predictable over time due to diversification of these resources with increased volumes and sites across locations.

Inverter-based resources do not inherently involve spinning masses, and though they are capable of providing synthetic inertia through grid-forming inverters, this requires deliberate action. The benefits of spinning masses have been taken for granted to-date – inertial benefits to load provided by many resources today are not compensated. We think that the market should recognize and

compensate the benefits that this inertia provides. One form in which these materialize is in the level of Responsive Reserve Service ('RRS') that is procured in the system today. Inertia could be compensated through a new mechanism to the degree that it avoids RRS at the margin.

Finally, we see the rationale for exploring new reliability products in light of the changing resource mix, and would support and contribute to these efforts through a separate, deliberative proceeding at the commission. However, we would re-emphasize here that Ancillary Services are tools for ensuring robust system operation and are not the primary mechanisms for ensuring resource adequacy and/or resource availability. Using Ancillary Services to procure capacity in large volumes for resource adequacy purposes, as has been proposed by certain market participants, would be a highly expensive and ultimately ineffective way to address the problems underlying resource adequacy and resource availability in the system today.

Executive Summary

Regulatory and market reforms should be considered to ensure that the Texas integrated natural gas and electric system can supply reliability electricity to end-users going forward:

1. To **ensure more robust resource adequacy**, the ORDC construct should be reviewed and reformed to create a more consistent compensation arrangement that is more financeable, though it need not necessarily pay out more revenues than it does today – this can be achieved by lowering the VOLL, increasing “X”, and potentially changing the shape. Requiring that resources participate in the day-ahead market to access ORDC would serve as a detriment to resource adequacy in the system.
2. To **ensure better resource availability**, weatherization should be required of certain critical infrastructure, which should be identified through the weatherization docket in tandem with the powers of the Texas RRC. Given historical outcomes, there is no reason to expect that market-based solutions to weatherization would be effective, but there is reason to expect that they would be expensive.
3. To **ensure continued robust system operation**, ERCOT should consider compensating resources that provide inertia today to be sure that existing and new resources, including inverter-based resources, are incentivized to provide this service going forward. Furthermore, it should study the need for new reliability products, bearing in mind that the role of Ancillary Services is to give ERCOT the tools to operate the system effectively, and not as blunt instruments for procuring capacity – using Ancillary Services to procure capacity for resource adequacy purposes would be expensive, and would not address the underlying problems.