Filing Receipt

Received - 2021-08-16 02:25:58 PM
Control Number - 52373
ItemNumber - 37

PROJECT NO. 52373

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

SHELL ENERGY NORTH AMERICA (US) LP's RESPONSE TO PUBLIC NOTICE OF REQUEST FOR COMMENTS

Pursuant to Public Utility Commission of Texas (Commission) procedural rules Shell Energy North America (US) LP ("Shell Energy"), files this response to public notice of request for comments filed on August 2, 2020 in Project No 52373, Review of Wholesale Electric Market Design. The Order indicates that parties should file responsive briefs by August 16, 2021, so this filing is timely. Shell Energy appreciates the opportunity to participate in the discussions.

INTRODUCTION

Shell Energy, a wholly owned subsidiary of Royal Dutch Shell PLC, trades and markets natural gas, wholesale and retail power, and environmental and risk management products. Shell Energy has been actively trading in the US electricity market since 1995, as a leading supplier to independent energy retailers, corporatives, municipalities, C&I loads and as a leading hedge provider for getting generation built. In North America, Shell Energy manages more than 10,000 MW of generation capacity, about a third of which comes from renewable sources, and sells more than 270 million MWh of power each year. Royal Dutch Shell's long-term objective is to expand its position in the U.S. power sector and build a modern, integrated power business to deliver more and cleaner energy. Shell Energy has been an active ERCOT market participant itself and through its wholly owned subsidiary MP2 Energy and has participated extensively in ERCOT committees and groups towards helping strengthen market rules and competitiveness. MP2 Energy delivered one of the first controllable load resources, which routinely provides RRS and is one of the largest providers of ERS in ERCOTs system. With the history and the experience of our extensive involvement, Shell Energy offers these recommendations in connection with the Commission's questions.

EXECUTIVE SUMMARY

- **Policies objectives should be clearly defined** to ensure that market design changes being proposed are needed to achieve policy objectives and not solutions looking for problems. This will empower stakeholders with varied financial interests to come to consensus on the most efficient competitive market-based mechanisms to achieve desired policy reliability objectives.

- **Policies should be developed with long-term reliability and long-term market sustenance in mind** and should be in line with basic economic principles. Reliability objectives should be achieved through transparent, technology neutral, competitive market-based mechanisms so that prices can reflect the value of the services being provided and market incentives will be aligned with reliability objectives. Products should be specified by the quality of MWs needed and not by technology type so that the market can innovate and compete to provide services in the most efficient way.

- **ORDC curve should be modified** to (1) reflect the value of the reserves ERCOT determines are needed for maintaining system reliability (2) create incentives for resources to self-commit near scarcity (3) effectuate a gradual increase in price as we approach scarcity so as to reduce the volatility in the value of hedges procured by Retail Electric Providers (REPs), encouraging them to hedge adequately (4) generate a more stable revenue stream so that the forwards can reflect the need for reserves and market can invest in offering the reserves. Value of Lost Load (VOLL) reduction to reduce the hedging risk for REPs/generators should not be done to a level that would significantly reduce the incentive for price responsive demand and resources to respond to help maintain reliability. Shell Energy recommends reducing VOLL no lower than $6000/MWh and setting minimum contingency level no lower than 2800MWs to be priced at VOLL so that Operating Reserve Demand Curve (ORDC) shows appropriate value for the reserves ERCOT wants to maintain in the system.

- **Incentives need to be created for non-firm resources to firm up** to prevent further deterioration of reliability. This will ensure that the system operator can reasonably rely on

the capacity estimated in the planning horizon to be available in real time and the market can invest in remaining capacity needed for each season. To be effective, these incentives need to be targeted based on individual resource firmness: cost assignment inversely proportional to variability of each resource's availability for the 4-hour time block per season. Without these incentives, maintaining reliability by just incentivizing addition of dispatchable generation would be a costly and inefficient way to reliably integrate renewables.

- **ERCOT should consider expanding program eligibility** to ensure access to all available resources. Aggregated Load Resources could provide Responsive Reserve Service and expanding the ERS to provide a mechanism to buy-back or offer incremental capacity in the DAM would ensure access to actual available resources in short turn-around times.

- **Services needed to maintain reliability should be defined and valued.** ERCOT should define the quality and performance standard for these services, create pricing signals for market investments by procuring through tech-neutral transparent competitive market-based mechanism and conduct periodic studies to determine if changes in procurement MWs are needed to maintain reliability.

- **Changes should not deteriorate the flexibility and liquidity in the market.** Must offer and minimum procurement requirements in the Day-Ahead Market (DAM) would reduce hedging flexibility and increase cost for loads. Liquidity could be increased by implementing Ancillary Service (AS) demand curves in DAM, allowing virtual AS offers and bids in DAM and clearing AS a year in advance.

- **An independent study should be conducted** to determine the effectiveness of energy and AS market design changes in achieving long term reliability objective – the frequency of load shed (Loss of Load Expectation: LOLE) and the depth of load shed (Expected Unserved Energy: EUE) at the reserve margin that the market will sustain (Market Equilibrium Reserve Margin: MERM)

COMMISSION QUESTIONS

Question 1: What specific changes, if any, should be made to the Operating Reserve Demand Curve (ORDC) to drive investment in existing and new dispatchable generation?

Please consider ORDC applying only to generators who commit in the day-ahead market (DAM). Should that amount of ORDC - based dispatchability be adjusted to specific seasonal reliability needs?

ORDC was designed to incentivize resources to make them available when real time emergencies develop through rewards commensurate with the timeliness of availability and performance. Limiting ORDC-eligible resources to those assets committed in the DAM would defeat the purpose of real time reserve price signals. It would be especially punitive to fast start resources - commitment decisions of which are decided near Real-Time; and Load Resources, which despite their desire to be selected in the DAM, might not get selected in the over-subscribed Load Resource program. However, both resources provide significant valuable services during Real Time emergencies.

The ORDC curve as designed, creates a significant jump in pricing as scarcity is approached. The significant binary change in price makes the decision to hedge beyond expected load more difficult for REPs as the value of their hedge could drastically drop if the scarcity condition doesn't materialize. However, reducing the VOLL to reduce the binary nature of pricing could significantly reduce the incentives for price responsive demand and resources to respond in order to help maintain reliability. Setting VOLL to $6000/MWh would provide a good balanced incentive in both directions.

A more gradual increase in price also helps value reserves better as scarcity is approached and generates a more stable revenue stream for resources. The current curve doesn't reflect the values of the reserves that ERCOT wants to maintain in the system. Since the prices are not reflecting the need for the reserves, resources are not self-committing and ERCOT has to commit resources out of market and make them whole to their cost. Setting the minimum contingency level to at least 2800MWs would shift the curve to create incentives for resources to self-commit and result in the reserve levels ERCOT wants to maintain.

Question 2: Should ERCOT require all generation resources to offer a minimum commitment in the day-ahead market as a precondition for participating in the energy market? a. If so, how should that minimum commitment be determined? b. How should that commitment be enforced?

Shell Energy does not believe there is a need in ERCOT for a capacity market, a Day-Ahead must-offer requirement (an artifact of capacity market construct), or a Day-Ahead minimum commitment requirement. The rationale given for committing resources in DAM to meet load forecast plus additional reserves is that it provides operational certainty on resource commitments. As described in answer to previous question, ORDC changes will create the price certainty needed for self-commitment of resources, removes the need for out of market commitments by ERCOT and hence removes the justification for a minimum commitment requirement in DAM. The uncertainty in Current Operating Plan (COP) is seen 2 days out (i.e., the part of COP which is not reliable is the COP for Operating Day +2 and beyond) which would not be resolved by a must offer or a minimum commitment requirement in DAM. Maintaining the financial nature of DAM provides maximum flexibility for hedging which is crucial for maintaining liquidity in the market and ensuring convergence of the DAM and Real-Time markets. Historic data has proven that the net flows in DAM has been consistently higher than real time load indicating that financial commitment is taken by entities to flow power in real time to meet system needs. Prescribing the form of financial commitment would reduce hedging flexibility for both loads and generators and will only result in increasing cost to loads without achieving additional benefits.

Question 3: What new ancillary service products or reliability services or changes to existing ancillary service products or reliability services should be developed or made to ensure reliability under a variety of extreme conditions? Please articulate specific standards of reliability along with any suggested AS products. How should the costs of these new ancillary services be allocated?

Shell Energy believes that existing AS procurement could be improved by implementing Ancillary Service Demand Curves (ASDC) in DAM (corresponding to the ORDC in Real-Time) and allowing virtual AS offer and bids in DAM clearing. Loads would receive AS price certainty if AS requirements are procured 12 months in advance using a multi settlement system like the current Congestion Revenue Rights Auction /DAM/ SCED settlement for congestion. This also provides a stable revenue stream for investment in resources to provide the service.

May 2020 CDR values shows that Wind and utility scale Solar contributed to 21.3% of the 17.3% reserve margin predicted for 2021 summer i.e. a negative 4% reserve margin if the output of these resources drops to zero. Based on the output of these resources in the historic 20 peak hours, even if all other resources operated perfectly, the operational reserve margin that could materialize from a 17.3% planning reserve margin, based on historic averages, could be anywhere from 2.16% to 24.93% just from the variability of these resources. Per May 2021 CDR for 2022 summer, a 28.8% planning reserve margin would result in a range of operational reserve margins from 10.8% to 39% in real time from the variability of just renewables and would go to -4.35% if the output of these resources drops to zero. To reliably and efficiently integrate renewables into the system, incentives need to be created for non-firm resources to firm up. Without this incentive, the reserve margin needed to meet 1 in 10-year Loss of Load Expectation (LOLE) will keep on increasing and the spread between the low/high operational reserve margin that will materialize from a planned/predicted reserve margin level will keep increasing. I.e. This firming up incentive, if created effectively, will prevent deterioration of reliability at given reserve margin levels, will ensure that the system operator can reasonably rely on the capacity that they estimated in the planning horizon to be available in real time, and will enable the market to confidently invest in remaining capacity needed for each season. These incentives could be assignment of the costs of AS or penalties for non-firmness. To be effective, it is crucial to design these incentives to be targeted i.e., base it on individual resource firmness and not by resource type or region. One way to do that would be by assigning it to individual resources inversely proportional to that resource's variability which could be determined as difference between 5^{th} percentile available MW and 95^{th} percentile available MW of that resource in the last year, same month, same 4-hour time block. It is proven that variability of available MWs from additional non-firm resources would deteriorate reliability if additional actions are not taken. Without these firming incentives, addressing the deterioration of reliability by just creating incentive for addition of dispatchable generation would be costly and inefficient. A balance of these incentives would provide the ideal outcome given where we are now.

From additional AS perspective, ERCOT should define the AS needed to maintain reliability, define the quality and performance standard for those services, create price signals for market investments by procuring them through tech-neutral, transparent, competitive market-

based mechanisms and conduct periodic studies to determine if changes in procurement MWs are needed to maintain reliability.

Question 4: Is available residential demand response adequately captured by existing retail electric provider (REP) programs? Do opportunities exist for enhanced residential load response?

Shell Energy believes that the technology that enables loads to rapidly respond to observed grid frequency is burgeoning, and likely to grow into the residential space. Specifically, residential Battery Electric Storage Devices, available today, have the capability to provide frequency response. At home Electric Vehicle Charging likely has the same potential as it proliferates across Texas. ERCOT has an existing program that allows Aggregated Controllable Load Resources to participate in a SCED dispatch and Non-spinning Reserve Services. Shell Energy requests that the Commission consider expanding this program to allow Aggregated Load Resources to provide Responsive Reserve Service.

Question 5: How can ERCOT's emergency response service program be modified to provide additional reliability benefits? What changes would need to be made to Commission rules and ERCOT market rules and systems to implement these program changes?

Shell Energy respectfully requests that the Commission consider a procurement mechanism in the DAM for ERS. The existing procurement mechanism requires that QSEs predict their availability months in advance of a potential reliability event. The system needs and ERS availability can change drastically between the initial offer and performance expectation. Further, the tools to communicate ERS availability to ERCOT are manual and not always timely, potentially giving ERCOT false hope upon an asset base whose availability changes radically, as evidenced during Uri. Complimenting the existing procurement methodology with a Day-ahead opportunity to buy back an obligation, or perhaps sell incremental capacity in the DAM rewards those resources who invest the capability to respond in the most extreme events, while not unnecessarily punishing those resources who cannot perform for a given day or system circumstance.

For example, several distributed generation sites routinely inject into the ERCOT grid in times of emergency. If these sites were separated from the Grid during a multi-day event, ERCOT has no avenue to re-procure the reliability benefit from an alternative supplier. Similarly, an alternate supplier who made incremental investments to ensure availability at the most dire times, has no mechanism to recover their investment. Shell Energy believes, as a provider of reliability by way of the distribution system, that changes must be made to ensure ERCOT has the reliability tools it procured when they are most needed.

Question 6: How can the current market design be altered (e.g., by implementing new products) to provide tools to improve the ability to manage inertia, voltage support, or frequency?

Services that ERCOT relies on to maintain reliability should be appropriately valued by procuring those through tech-neutral, transparent, competitive market processes so that the market can innovate and invest in resources to provide the services in the most efficient way.

Shell Energy appreciates the opportunity to provide input on these important market design issues and looks forward to participating in future discussion on market design changes to support Commission in developing competitive wholesale market solutions to achieve the level of grid reliability that Texans are expecting.

Respectfully submitted,

/s/ R. Surendran

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SHELL ENERGY

CERTIFICATE OF SERVICE

I certify that a true and correct copy of this filing has been forwarded to all parties of record via electronic mail on the 16th day of August, 2021 in accordance with the Order Suspending Rules, issued in Project No. 50664.

/s/ R. Surendran
Resmi Surendran