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

COMMENTS OF ROBERT L. BORLICK

COMES NOW Robert L. Borlick, Senior Energy Advisor with Borlick Energy Consultancy, who submits comments in response to the Commission's request dated August 2, 2021.

ABOUT THE AUTHOR

Robert L. Borlick is an energy consultant with more than 40 years of experience related to the electric power industry. He previously held partner-level positions in two international consulting firms: Putnam, Hayes & Bartlett, Inc, and Hagler, Bailly, Inc. He also served as a Senior Advisor with the Brattle Group. From 2005 through 2013 he assisted the Midwest Independent System Operator in developing its energy-only market and its demand response programs, including the preparation of MISO's filings in the FERC dockets that gave rise to Orders 719 and 745. From 1989 through 1998 he assisted the governments of Great Britain, Singapore, India, Australia, New Zealand, and Canada, with the development of their competitive electricity markets.

EXECUTIVE SUMMARY

Residential and small commercial customer demand response represents a large, untapped resource for increasing the reliability of the ERCOT electric power system. In addition, it provides these customers with the means to control their electric bills and also suppresses the market power of the large electric generators. The recently enacted (and ill-conceived) House Bill 16, effectively precludes demand response products that directly expose small customers to prices indexed to ERCOT wholesale market prices; however, it does not preclude customers from selling their load reductions (i.e., foregone energy usage) to their Retail Electricity Suppliers (REPs).

These comments address just the question of whether existing REP programs adequately enable residential demand response and proposes a way to enhance it.

QUSTION 4: IS AVAILABLE RESIDENTIAL DEMAND RESPONSE ADEQUATELY CAPTURED BY EXISTING RETAIL ELECTRIC PROVIDER (REP) PROGRAMS? DO OPPORTUNITIES EXIST FOR ENHANCED RESIDENTIAL LOAD RESPONSE?

The answer is emphatically **NO**. Other than Octopus Energy, few REPs offer customers opportunities to meaningfully participate in demand response. Furthermore, the existing DR programs substantially undercompensate customers for the economic value of their load reductions during hours when ERCOT supply scarcity is highest.[1] As described below, there is a substantial untapped potential for small customer demand response participation.

INTRODUCTION

In the wake of Winter Storm Uri, Texas State representative, Jared Patterson, tweeted:

> ***"…wouldn't a true free market allow homeowners to provide power to the grid…? What if homeowners were getting thousands of dollars in revenue instead of just a bill?"***

Since the 2011 ERCOT blackout I have advocated for the development of small customer price responsive demand (PRD) in Texas and have submitted comments to this Commission in Project 40000.[2] At that time it was observed that residential and small commercial customers contributed approximately 70 percent of the ERCOT summer peak demand.[3] This statistic is still roughly valid today; small customers account for about 50 GW of ERCOT's summer peak load.

Based on experiences in other regions of the US, aggressive marketing can achieve 20 percent small customer participation in PRD programs. Exposing these customers to ten-fold price increases typically produces demand reductions of about 25 to 40 percent, depending on whether enabling technologies are used to automate customers' responses.[4] However, when ERCOT declares an Energy

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[1] For example, Reliant's "Degrees of Difference" program pays customers cents per kWh at times when the market value of those reductions are worth dollars per kWh.

[2] Borlick, Robert. L., "COMMISSION PROCEEDING TO ENSURE RESOURCE ADEQUACY IN TEXAS, COMMENTS OF ROBERT L. BORLICK," PUCT Project 40000, August 30, 2012.

Borlick, Robert. L., "Response to Issues raised by Commissioners Anderson and Pablos in their recent memos to Chairperson Nelson," PUCT Project 40000, October 22, 2012.

Borlick, Robert. L., "Comments of Robert L. Borlick regarding ERCOT's VOLL study," PUCT Project 40000, July 13, 2013.

[3] The Brattle Group, "ERCOT Investment Incentives and Resource Adequacy," Report prepared for ERCOT, June 1, 2012, p. 92.

[4] Ahmad Faruqui and Stephen George, "Quantifying Customer Response to Dynamic Pricing," *The Electricity Journal* 18(4), May 2005, pp., 53-63.

Emergency Alert (EEA) the market price escalates to $9,000 per MWh, which represents about ***a hundred-fold*** price increase! While there is scant data describing how small customers respond to such high prices, it is not unreasonable to expect the aggregate demand reduction to reach at least 50 percent.[5] This implies that small customer PRD can produce at least 5 GW of load reduction – equivalent to the capacity of the two nuclear plants within ERCOT!

Small customer PRD would increase the reliability of the ERCOT power system by slowing the depletion of operating reserves during supply shortages. In effect, the PRD load reductions would provide the equivalent of additional operating reserve. This activity would also reduce wholesale market price volatility, which would provide unhedged supply capacity with more stable energy sales revenues, thereby facilitating long-term contracting and the entry of new supply resources.

Lastly, small customer PRD would force large generators to increase the capacity they must withhold from the market in order to achieve a desired market price increase while concomitantly increasing their lost opportunity cost from not operating the withheld capacity.

SELLING LOAD REDUCTIONS

When a customer sells a load reduction what is actually sold is the customer's entitlement to consume "all-you -can-eat" energy at the fixed energy price in its supply contract. This entitlement is a call option. Finance theory informs us that the call option's market value is equal to the ERCOT wholesale market price less the sum of the energy price in the customer's supply contract and the energy price in its delivery tariff.[6] Call options have been sold in other electricity markets for many years so there exists a significant body of operational experience.[7]

Selling call options is not as efficient, or as easily administered, as PRD products that require the

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Faruqui, Ahmad, Sanem Sergici, and Cody Warner. . "Arcturus 2.0: A meta-analysis of time-varying rates for electricity." *The Electricity Journal* 30(10), December 2017, pp. 64-72.

[5] Analyzing the smart meter data of former Griddy customers' responses the $9 per kWh price they faced during Winter Storm URI could provide valuable insights into how small customers respond to huge electricity price increases, However, they would not be representative of customer behavior in the summer season.

[6] Borlick, Robert L., "Pricing Negawatts," PUBLIC UTILITIES FORTNIGHTLY, August 2010, pp. 14-18.

[7] The FERC jurisdictional ISOs have been purchasing economic demand response from retail customers through aggregators for about ten years, facilitated by FERC Order 745. However, the compensation mandated by that order inefficiently overcompensates the demand response by not subtracting the demand response provider's retail energy supply and delivery tariffs from the wholesale market prices paid to the aggregators. The pricing scheme proposed in these comments avoids that flaw.

customer to pay prices indexed to the wholesale market prices (like the now-defunct Griddy product), primarily because the former requires use of a consumption baseline to estimate how much energy the customer would have consumed absent the increase in the wholesale market price. Baselines are developed from the customer's historical usage during times of normal energy prices and they may be adjusted for ambient temperature to account for nonprice-related changes in the customer's temperature-sensitive loads.

Consumption baselines have several disadvantages. Firstly, because they are created from the customer's historical consumption, they cannot immediately capture the effects of non-price causal factors that change over time. Thus, a customer may be over- or under-compensated for responding to price signals. For example, this can happen if the customer's family unit changes in size, or if the customer goes on an extended trip.

Secondly, a conniving customer may be able to manipulate its baseline in order to obtain payment for nonexistent load reductions. This can be done by artificially increasing usage when prices are low to inflate the credits received when prices are high. Most of the manipulation that has been detected has occurred among large commercial and industrial customers that could afford to dedicate significant resources to "gaming the system." For most residential and small commercial customers, the required transaction costs are likely to exceed the gain.

The bottom line is that there will always be instances when a customer is credited for load reductions that would have occurred in the absence of the demand reduction incentive payment or is not credited for legitimate load reductions.

IMPLEMENTING SMALL CUSTOMER PRD

Implementing load reduction sellbacks requires four separate activities:

- Developing consumption baselines for participating customers
- Assessing each customer's load reductions
- Settling each customer's account
- Crediting the customer and billing its REP.

The logical entities to perform these functions are the Transmission/Distribution Service Providers (TDSPs). Because their customers are captive, TDSPs can fully recover their costs of developing and implementing individual customer consumption baselines. In contrast, because of customer migration, REPs do not have this assurance. Furthermore, the TDSPs have access to all customers' historical smart meter data, whereas retail electricity suppliers do not.

Lastly, there will be a need for conducting pilot programs to assess the efficacy of various baseline methodologies and the best ways to market the PRD products before launching full-scale programs.

PRD produces a public good that benefits all customers, not just those participating in PRD programs; consequently, it is appropriate to socialize the costs of baseline development and pilot programs. TDSPs are ideally positioned to do this through their delivery tariffs.

It is worth noting that the demand response proposal described here would not make the TDSPs participants in the energy market. All they would do is facilitate the selling of retail customer load reductions to the REPs by providing settlement and billing services, similar to what they currently do.

When a REP pays for a load reduction it merely transfers revenues that it would have paid out (or would have gained if it were fully hedged) for the energy that its customer curtailed; consequently, REP participation in this PRD program will, at worst, be a revenue-neutral activity. But, more likely, the individual REPs will offer contracts that credit their customers at prices somewhat less than the full wholesale market prices in order for the REPs to profit from the transactions. Nonetheless, competition among REPs should limit the share of the wholesale market prices they keep. Paying customers less than the full wholesale market prices reduces economic efficiency but the welfare losses would likely be *de minimis* because small customer demand is quite price inelastic.

Some commenters have recommended that REPs be required to offer demand response products to small customers. Bad idea. It would almost certainly require enabling legislation, which could delay, or even derail, the effort to implement small customer demand response. And it is unnecessary. Progressive REPs would participate in the program and their success in attracting new customers would encourage other REPs to follow their lead.

THE ROLE OF ENERGY EFFICIENCY

Several commentors have heralded energy efficiency as vehicles for increasing ERCOT power system

reliability. While it is certainly true that energy efficiency efforts that pass rigorous cost-benefit tests are socially valuable, they will have essentially no effect on ERCOT's long-term power system reliability. Energy efficiency lowers the growth rate of ERCOT's load. Initially, that reduces the frequency of supply scarcity and the scarcity rents that new supply resources depend on to recover their fixed costs and invested capital. To maintain the level of supply scarcity needed to justify new entry developers will lower the rate of capacity additions to essentially track the reduced rate of load growth. So while energy efficiency may ameliorate the adverse impact on a customer whose electric service is involuntary interrupted, the goal of power system reliability is to minimize the need for such service interruptions,

SUMMARY

Residential and small commercial customers providing price responsive demand can effectively provide substantial reserves to ERCOT during hours when supply is scarce, thereby contributing to power system reliability. The Public Utility Commission of Texas is uniquely positioned to make small customer PRD a reality.

The Commission should initiate a rulemaking to explore the development and implementation of such a program.

I appreciate the opportunity to provide these comments and look forward to working with the Commission to develop and implement small customer PRD in Texas..

Respectfully submitted,

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