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PROJECT NO. 52373

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

Comments of Tesla, Inc.

1. **Describe existing and potential mechanisms for residential demand response in the ERCOT market.**
   a. **Are consumers being compensated (in cash, credit, rebates, etc.) for their demand response efforts in any existing programs today, and if not, what kind of program would establish the most reliable and responsive residential demand response?**

The most effective and compelling change the Commission can enact in in this area is to allow aggregations of demand response and DERs to participate in the energy and ancillary services markets. Tesla detailed the needs for this in our prior comments in the instant Project (submitted 8/16/21, at pp. 7-9). The Commission should prioritize market design changes which allow residential DER aggregations, or virtual power plants (VPPs) to provide the full suite of energy and ancillary services needed by ERCOT: energy exports, regulation service, fast frequency response, non-spinning reserves, and emergency response service.

   b. **Do existing market mechanisms (e.g., financial cost of procuring real time energy in periods of scarcity) provide adequate incentives for residential load serving entities to establish demand response programs? If not, what changes should the Commission consider?**

In addition to enabling DER aggregations to export energy and provide ancillary services as soon as possible, the Commission should also create new mechanisms to facilitate additional demand response from residential customers. The Commission may use its existing authority to create new demand response programs. For example, the Commission could create a Price Responsive Demand program (PRD). This program could function like the existing ERS program, except instead of being deployed by ERCOT during emergencies, it would be deployed by the aggregator or retail electric provider at certain price points based on customer values of lost load. These values would be known to ERCOT and could be integrated into ORDC. The PRD program would require participation in response to real-time prices and would compensate customers for being ready to respond. However, the market itself should provide the majority of the revenue for this program. PRD would merely create revenue certainty for readiness in the program. This could include building control systems, backup batteries, control software, smart devices, or any other mechanism which retailers use to respond directly to price signals.

2. **What market design elements are required to ensure reliability of residential demand response programs?**
   a. **What command/control and reporting mechanisms need to be in place to ensure residential demand response is committed for the purpose of a current operating plan COP?)**

Currently, demand response is either day-ahead or real-time. Creating a multi-hour lookahead market for demand response would allow customers with longer lead times to agree to curtail an hour or two or more in advance based on a price signal.

In addition, DER aggregations (VPPs) would provide Current Operating Plans (COPs), whereas today's residential programs do not.

b. Typically, how many days in advance can residential demand response commit to being available?

In general, more notice is better than less notice. Having at least one day's notice may increase the certainty that customer programs can curtail. For example, a VPP aggregation in Vermont run by Green Mountain Power and Tesla exports frequency regulation service to ISONE – this resource commits day-ahead and responds to a 4-second regulation signal.

3. How should utilities' existing programs, such as those designed pursuant to 16 TAC §25.181, be modified to provide additional reliability benefits?

a. What current impediments or obstacles prevent these programs from reaching their full potential?

The Commission should increase the goal for energy efficiency (EE) and allow more kinds of programs to participate. The Commission could allow more programs to participate in market transformation or research and development initiatives. Funding programs through this mechanism should also allow other technologies, such as batteries, to solve distribution grid issues, and those issues should be compensated when resolved. For example, batteries or demand response can respond at certain times not based on wholesale prices, but to reduce the load on a local transformer. These responses may occur because of EE budgets, but could be compensated separately to increase the efficacy of EE spending. For example, deferring the need to upgrade or replace a transformer has real benefits that could be shared between the utility and participating customer. These additional services provided by customers should be compensated, and would of course increase the value proposition for investment in demand response and DERs.

4. Outside the programs contemplated in Question 3, what business models currently exist that provide residential demand response?

a. What impediments or obstacles exist in the current market design or rules that prevent these types of business models from increasing demand response and reliability?

DERs are a growing source of reliability throughout the world. Tesla hopes to deliver this reliability value in ERCOT. The support of the market and its stakeholders, and leadership from the Commission, is needed to update the state's market design to accommodate the full potential of residential VPPs. DER programs are already providing energy and ancillary services on multiple continents and within the US, as discussed in Tesla's comments in this Project (submitted 8/16/21 at pp 5-6). ERCOT should not be left behind. The Commission should take all actions necessary to create an ERCOT market design framework which allows DER aggregations to export energy and ancillary services.

Respectfully Submitted,

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Tesla Comments

Executive Summary

Tesla appreciates the Commission's focus on demand response to meet reliability goals for ERCOT. Demand Response, especially through Distributed Energy Resource (DER) programs, is largely untapped and can be the source for most new dispatchability for ERCOT. While it can be difficult to justify investment in a single new generator that can put millions of dollars at risk, DR and DERs can be built out on the system with incremental investments which can add up to a substantial amount of dispatchable megawatts.

To allow and encourage this, the Commission should prioritize DER aggregations, or virtual power plants (VPPs). These assets are capable of providing the full suite of energy and ancillary services needed by ERCOT: energy exports, regulation service, fast frequency response, non-spinning reserves, and emergency response service. DERs must be easy to register, allowed to export, receive the same price for exports that the customer pays for electricity, have clearly defined processes for ERCOT to manage aggregation sizes and have simple rules for measurement and verification that can work for several hundred or thousands of individual customer-owned batteries in a VPP resource.

In addition, the Commission could create new programs to encourage demand response and DER participation, such as a price responsive demand program or enhanced participation in energy efficiency.

Per Commission instructions, comments are filed in a separate document.

Respectfully Submitted,

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[September 10, 2021]