

Control Number: 39764



Item Number: 14

Addendum StartPage: 0

PROJECT NO. 39764

ISSUES RELATING TO ENERGY § PUBLIC UTILITY COMMISSION  
STORAGE AND EMERGING §  
TECHNOLOGIES § OF TEXAS

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PUBLIC UTILITY COMMISSION

ELECTRIC RELIABILITY COUNCIL OF TEXAS, INC.'S COMMENTS

Electric Reliability Council of Texas, Inc. (ERCOT) submits these comments to address the Commission's request for identification of issues that should be considered in this project to facilitate the deployment and use of energy storage facilities in the ERCOT Region.

**I. Current Design of the ERCOT Market**

In its simplest form, the current design of the ERCOT market allows a Resource Entity that owns or controls an All-Inclusive Resource to participate by: (1) offering to supply Ancillary Service capacity in the Day-Ahead Market (DAM) or a Supplementary Ancillary Service Market (SASM); or (2) offering to sell energy at or above a certain price and at a certain quantity in the DAM or Real-Time Market (RTM).<sup>1</sup> As defined in Section 2.1 of the ERCOT Protocols, Ancillary Service is a "service necessary to support the transmission of energy to Loads while maintaining reliable operation of the Transmission Service Provider's (TSP's) transmission system using Good Utility Practice." Ancillary Services include Non-Spinning Reserve (Non-Spin), Regulation Service (either Regulation Down Service or Regulation Up Service) and Responsive Reserve (RRS). ERCOT procures these Ancillary Services in hourly increments and therefore Resources are expected to meet their Ancillary Service obligations in hourly increments. Thus, the ERCOT systems were built to accommodate an Ancillary Service market

<sup>1</sup> Under the ERCOT Protocols, Qualified Scheduling Entities (QSEs) perform these scheduling actions on behalf of Resource Entities.

14

for a Generation Resource or a Load Resource that could sustain maximum operational output over at least an hour.

The emergence of energy storage facilities could provide flexibility in managing Ancillary Services and could lead to long-term energy, economic and environmental benefits. ERCOT is committed to integrating these types of resources that promote the reliability and market efficiency of the ERCOT System. However, energy storage facilities, such as flywheels, advanced batteries, compressed air energy storage (CAES) and plug-in electric vehicles, are not currently part of the Resource fleet within the ERCOT Region. As such, ERCOT has no operational experience with these types of resources and therefore does not know with certainty all the market design barriers that may limit maximizing the full capabilities of these resources.

One possible barrier under the current market design is the procurement of Ancillary Services in hourly increments. Energy storage facilities may be limited in duration on the amount of energy they can sustain over a period of time and therefore not able to provide maximum output over one hour. On the other hand, energy storage facilities may have the ability to respond rapidly to control signals and continually recharge making them a valuable resource for Ancillary Services such as Regulation Service. However, without operational experience, the Commission, ERCOT and stakeholders will not be able to design a market that can fully integrate and utilize these types of resources.

## **II. Issues to Be Considered By the Commission**

ERCOT proposes that the Commission consider the following issues in this project:

- (1) Does a new type of Resource need to be defined in the Commission rules or ERCOT Protocols for energy storage facilities?**

As indicated above, the ERCOT systems were designed to accommodate Generation Resources and Load Resources that have operational parameters distinct and different from

energy storage facilities. For instance, ERCOT systems are not currently designed to recognize a state-of-charge from energy storage facilities and therefore are not able to dispatch these resources efficiently. Additionally, certain energy storage resources may be limited in duration and not able to provide maximum output over one hour. These operational characteristics could limit participation in Ancillary Service markets. Therefore, a new Resource definition may be necessary in order to fully recognize parameters that are unique to energy storage facilities thereby allowing them to participate in the ERCOT market.

- (2) How should energy storage facilities be settled when acting as a consumer of electricity by consuming energy from the ERCOT System or acting as a supplier of electricity by releasing stored energy onto the ERCOT System?**

Under the Commission's rules, Generation Resources are settled at the Locational Marginal Price produced by the DAM process or the SCED process. *See* PUC Substantive 25.501(f). On the other hand, Loads are settled at a Load Zone energy price. *See id.* at (h). Thus, depending upon the current operation, the energy storage facility will be settled as either a Generation Resource at the Resource Node or a Load at the Load Zone under Commission rules and ERCOT Protocols and therefore have two different pricing points for energy. This potential price separation may not be the most efficient way to settle a new type of resource in the ERCOT market and may in fact prevent participation by energy storage facilities due to settlement uncertainty.

- (3) Should the Commission consider a new rule that gives ERCOT authority to deviate from certain Protocols to conduct pilot projects for emerging technologies, including energy storage facilities, to gather operational experience and data in order to evaluate future Commission rules, Protocols and system changes?**

In February 2007, the Federal Energy Regulatory Commission (FERC) sought to reduce barriers to the inclusion of alternative power suppliers in electricity markets.<sup>2</sup> Several Regional Transmission Operators (RTOs) / Independent System Operators (ISOs) responded to FERC's guidance by implementing pilot projects for energy storage facilities. Specifically, ISO New England Inc. (ISO-NE) and New England Power Pool (NEPOOL) submitted tariff revisions with FERC to institute a pilot program for alternative technology resources to participate in the Regulation market on a trial basis.<sup>3</sup> The purpose of the pilot program was to allow ISO-NE and participating entities the opportunity to evaluate the preferred manner in which such alternative technologies are able to provide Regulation and determine the nature and extent of further revisions to market rules that are necessary to effectively incorporate alternative technologies into the Regulation market. In addition, California ISO, New York ISO, and PJM Interconnection, Inc. have all conducted some type of pilot projects on energy storage facilities to help them better understand the operational characteristics of these resources. Some of these RTOs/ISOs have begun filing tariff revisions with FERC to incorporate new market rules for these emerging technologies based upon the lessons learned during the pilot projects.

ERCOT believes that a pilot project would have significant benefits in gathering operational experience and data on energy storage facilities. A pilot project would help assess current market rules deficiencies and, if necessary, foster development of requirements for some of the key areas where experience is needed on these types of resources, such as testing and qualification for providing Ancillary Services, operations in DAM and Real-Time, telemetry requirements, settlement implications, compliance metrics and implications on Load Forecasting

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<sup>2</sup> FERC Order No. 890, February 16, 2007.

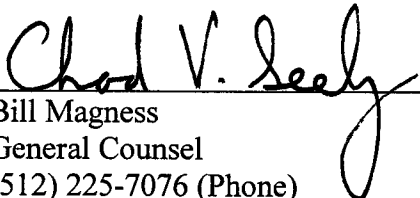
<sup>3</sup> ISO New England Inc. and New England Power Pool, Docket Nos. ER08-54-000 and ER08-54-001, Market Rule 1 Revisions Regarding the Provision of Regulation by Non-Generating Resources, August 5, 2008.

and Capacity Demand Reserve (CDR). A pilot project would allow ERCOT to deviate from certain Protocol provisions that restrict full participation by energy storage facilities in the ERCOT market in order to allow ERCOT and stakeholders to give input to the Commission on the experience gained to support any changes to Commission rules, ERCOT Protocols or system changes to better align requirements with the operational capabilities of energy storage facilities. As such, ERCOT encourages the Commission to investigate this option as the most effective solution to integrating emerging technologies.

### III. Conclusion

ERCOT looks forward to working with interested parties in this project and serving as a resource for the Commission to facilitate the deployment and use of energy storage facilities in the ERCOT Region.

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