

Proposed Real-Time Co-optimization of Energy and Ancillary Services

ERCOT stakeholders have been directed by the Public Utility Commission of Texas (PUC) to study the implications of adding Real-Time Co-optimization to the ERCOT wholesale market, with the goal of increasing the efficiency and reliable operation of the Real-Time Market (RTM).

What is Real-Time Co-optimization?

Real-time Co-optimization is the process of procuring energy and ancillary services simultaneously in the Real-Time Market. In the current market, ERCOT generally cannot use ancillary services to provide energy in real-time operations, except in emergency conditions. However, in some cases, these resources which are secured for specific reliability purposes, may be more economical. Co-optimization would be designed to find the most efficient solution to meet both energy and ancillary services requirements every five minutes. This potential market change would not impact ERCOT's process of securing ancillary services in the Day-Ahead Market.

As real-time conditions change, the resources committed in the Day-Ahead Market (DAM) may not always be the most optimal solutions to address system needs. Co-optimization would automatically allow the most efficient available resource to be dispatched in the energy market and assign ancillary services responsibilities to other available resources that are capable of providing those services. For example, if a transmission constraint could be alleviated by dispatching energy from a resource that was procured for ancillary services, ERCOT's Security Constrained Economic Dispatch (SCED) system would select that option.

Potential Benefits

- ERCOT would be able to dispatch the most economical resources to provide energy in the Real-Time Market, which could reduce the costs for load-serving entities and consumers.
- The ability to use a wider variety of generation resources to solve transmission constraints could help reduce the use of out-of-market actions (e.g., Reliability Unit Commitments) by ERCOT to support system reliability needs that arise during real-time operations.
- The market's ability to find more economical reliability solutions could also reduce financial risk for market participants.

Potential Challenges

- The cost, time and resources to modify ERCOT and market participant systems to support the changes to the Real-Time Market would need to be considered.
- Some stakeholders have expressed concern that introducing costly changes to enhance the efficiency of the market may not help achieve longer-term reliability and market objectives.
- The PUC may need to revise market rules, such as the system-wide offer cap, to help address inadvertent effects on market operations.

Additional background

ERCOT published a concept paper on Real-Time Market improvements in late 2014. The paper addressed Co-optimization of Energy and Ancillary Services and a Multi-Interval Real-Time Market (MIRTM). In March 2017, ERCOT and stakeholders determined that the anticipated costs of MIRTM would exceed the estimated benefits. Following this determination, the focus shifted to Real-Time Co-optimization.

In April 2017, the PUC asked ERCOT to restart the evaluation of Real-Time Co-optimization and to provide the Commission with periodic status reports. On July 14, 2017, ERCOT filed a status report with the PUC ([Project 41837](#)) that included an updated estimate of the timeline and costs associated with the implementation of Real-Time Co-optimization.

In May 2017, at the request of NRG Energy and Calpine Corp., Dr. William W. Hogan of Harvard University and Dr. Susan L. Pope of FTI Consulting published a paper titled *Priorities for the Evolution of an Energy-Only Electricity Market Design in ERCOT*, to address their views of current market conditions in ERCOT. Among other recommendations, Real-Time Co-optimization coupled with locational operating reserve requirements is listed in the paper as a possible way to help address those views.

Also on July 14, 2017, ERCOT filed a second report with the PUC ([Project 47199](#)) that includes an update on recent market changes to the ERCOT market. The report also discusses adding a local reserve product in conjunction with Real-Time Co-optimization and incorporating marginal losses into dispatch and pricing.

The PUC will host a workshop to discuss a variety of topics related to price formation in the ERCOT market on Aug. 10, 2017.

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