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PUBLIC UTILITY COMMISSION  
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# OPEN MEETING COVER SHEET

**MEETING DATE:** February 7, 2019

**DATE DELIVERED:** January 31, 2019

**AGENDA ITEM NO.:** 17

**CAPTION:** Project No. 48540 – *Review of Real-Time Co-Optimization in the ERCOT Market*

**ACTION REQUESTED:** Discussion and possible action

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
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# *Public Utility Commission of Texas*

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## **Memorandum**

**TO:** Chairman DeAnn T. Walker  
Commissioner Arthur C. D'Andrea  
Commissioner Shelly Botkin

**FROM:** Mark Bryant, Competitive Markets   
Diana Zake, Competitive Markets  
Kennedy Meier, Legal

**DATE:** January 31, 2019

**RE:** **February 7, 2019 Open Meeting – Agenda Item No. 17 – Project No. 48540**  
*– Review of Real-Time Co-Optimization in the ERCOT Market*

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At its January 17, 2019 open meeting, the Commission decided that real-time co-optimization (RTC) of energy and ancillary services (AS) in the ERCOT wholesale electricity market should be implemented. The Commission instructed staff to identify policy issues that should be addressed before ERCOT can proceed with implementation; those issues are identified below. ERCOT also was instructed to return with a high-level implementation plan and timeline.

### **Recommendation and Next Steps**

*Technical workshop* – ERCOT stakeholders have not held substantive discussions on RTC for over a year. Commission Staff believes that all stakeholders would benefit from a review of work that previously has been done on the issues surrounding implementation of RTC. Commission Staff recommends that ERCOT staff conduct one or more technical workshops in the next four to six weeks to re-acquaint stakeholders with the issues before commenting on the issues raised in this memorandum.

*Public comment* – This memo reviews, at a high level, key policy questions that should be addressed prior to RTC implementation. Commission Staff, ERCOT, and the Independent Market Monitor are continuing to discuss (1) whether additional foundational policy issues exist, and (2) whether more detailed questions for public comment would allow for a more robust examination of the issues by the Commission. Staff proposes to bring a set of specific questions for comment to the February 28, 2019 open meeting for the Commission's consideration.

*Ongoing rulemaking related to §25.505* – Amendments to 16 Texas Administrative Code (TAC) § 25.505 have been proposed in Project No. 48721.<sup>1</sup> Staff recommends that the amendments that have been published in that project should be allowed to proceed through the rulemaking process.

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<sup>1</sup> *Rulemaking Proceeding to Amend 16 TAC §25.505, Relating to Resource Adequacy in the Electric Reliability Council of Texas Power Region and to Repeal 16 TAC §25.508, Relating to the High System-Wide Offer Cap in the Electric Reliability Council of Texas Power Region, Project No. 48721 (pending).*

# *Public Utility Commission of Texas*

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## **Memorandum**

A future rulemaking proceeding could re-open 16 TAC § 25.505 for amendment at such time as the Commission determines that further changes are needed.

### **Background**

RTC will permit the dispatch of the most efficient generation or load resource to meet the system's needs at each dispatch interval. In the current market design, AS are procured in the Day-Ahead Market (DAM), and cannot be procured in the Real-Time Market (RTM). A resource that is awarded AS in the DAM is therefore unavailable to provide energy in the RTM, even if it would be the most efficient resource to provide that energy. RTC will allow the market to clear the best offers for both AS and energy in the RTM. In order to do so, the RTM must be changed to account for AS in dispatching resources.

At a high level, there are three major components to accommodating the real-time co-optimization of energy and AS. First, the AS that will be co-optimized must be identified: are these the same set of services that are currently<sup>2</sup> in use in the ERCOT market or should a different set of services be created? Next, a demand curve must be built for each AS and incorporated into the security constrained economic dispatch (SCED) engine. Finally, any changes to the DAM that would be appropriate upon implementation of RTC should be identified.

While many of the technical details of RTC implementation will be determined through a robust stakeholder process at ERCOT, there are fundamental threshold policy questions that are appropriately decided by the Commission. Commission Staff presents these below:

### **Threshold Issues**

#### **1) Value of the System-Wide Offer Cap (SWOC) relative to the Value of Lost Load (VOLL)**

**Issue:** Parameters must be put in place to ensure that dispatch through RTC always provides a rational result. Under RTC, the values of SWOC and VOLL (both currently equal to \$9,000/MWh) can result in market outcomes where *the price of energy would exceed the current VOLL*, which represents the maximum amount that customers are assumed to be willing to pay for electricity.

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<sup>2</sup> The ERCOT Technical Advisory Committee (TAC) approved NPRR 863 - *Creation of ERCOT Contingency Reserve Service and Revisions to Responsive Reserve* at its January 30, 2019 meeting. The NPRR will be set for consideration at the February 12, 2019 ERCOT Board of Directors meeting. This NPRR makes modifications to Responsive Reserve Service (RRS) and creates a new ancillary service – ERCOT Contingency Reserve Service (ECRS). As approved by TAC, the revisions to RRS would be implemented no sooner than January 1, 2020 and ECRS would be implemented no sooner than January 22, 2019. The NPRR as approved by TAC also contains a proviso in the preamble that the implementation schedule should be reviewed by ERCOT as implementation of RTC proceeds to determine whether the new ancillary services could be implemented more efficiently in conjunction with the implementation of RTC.

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## **Memorandum**

Under the current system, the Operating Reserve Demand Curve (ORDC) price adder is coordinated with the SWOC. As the price of energy increases (as we move up the offer stack), the value of the ORDC adder is reduced if the sum of the energy price and the ORDC adder would exceed VOLL. If the energy price were to rise to \$9,000, the value of the ORDC adder is set to zero, so that the all-in price cannot exceed VOLL. Payment to AS is not an issue, because they were already bought and paid for in the DAM.

Under RTC, the same kind of mechanism comes into play, but now the actual price paid for AS are set by the demand curve for each AS. An identical value for the SWOC and the VOLL, as is the case under the current paradigm, cannot work in this situation. If the price of energy rises to the SWOC (\$9,000) and the VOLL is also \$9,000, then logic would dictate that the maximum price for AS would need to be \$0. This is an unworkable result, because AS would be uncompensated.

**Decision point:** There are two possible resolutions to the issue of zero-value AS prices: either 1) VOLL needs to be increased to an amount above \$9,000, to permit a positive price to be set for AS (thereby allowing the all-in price of electricity to rise above \$9,000), or 2) the value of SWOC needs to be decreased to provide headroom for AS pricing while keeping the all-in price of electricity below or at \$9,000. Either approach will allow prices of AS to have meaningful positive value reflective of the value of those services in maintaining system reliability.

**Why this is a policy issue:** Both the SWOC and the VOLL are set by the Commission. The SWOC is currently codified in the Commission's Substantive Rules at 16 TAC § 25.505(g). The Commission specified the VOLL verbally when directing ERCOT to establish the ORDC.

## **2) Policy objectives for the AS demand curves**

**Issue:** Under RTC, a separate demand curve will exist for each AS. Currently, the ORDC approximates the value of all AS. Is it appropriate to continue this relationship under RTC such that, taken together, the AS demand curves replicate the total revenue generated by the ORDC, for any given level of total reserve capacity, or should separate demand curves be developed?

**Decision point:** AS demand curves could be developed to replicate, in aggregate, ORDC outcomes, or each demand curve could be developed separately. This "top down" design would have the demand curve for each AS designed to "fit" to a portion of the existing ORDC. Alternatively, the Commission could direct ERCOT to determine each AS demand curve independently, based on the value of the reliability benefit associated with a given amount of each service in a "bottom up" approach. The choice between "top down" and "bottom up" is not necessarily binary. For example, the Commission could direct ERCOT to approach the curves in a "bottom-up" manner, but ensure that the total impact is not "too far" away from the current methodology.

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## **Memorandum**

**Why this is a policy issue:** The ORDC was established by the Commission, with the objective of implementing a market mechanism to ensure that the all-in price of energy properly reflects the value of AS in maintaining reliability. The Commission should determine the best method for achieving that objective with RTC.

### **3) Treatment of AS offers in the DAM**

**Issue:** Currently, AS are procured only in the DAM. The DAM is financial-only for energy offers but is physically binding for AS offers. Under RTC, AS are procured in the RTM together with energy; therefore, AS purchases do not need to be physically binding in the DAM. Once AS offers are no longer physically binding, should they continue to be traded in the DAM as financial-only?

**Decision point:** The DAM could be financial-only for both AS and energy, which would introduce the concept of “virtual” AS offers. Virtual offers for AS in the DAM would align the treatment of AS in the DAM with the treatment of energy. This would aid convergence of the RTM and the DAM, and could deter certain anti-competitive behaviors.

**Why this is a policy issue:** Market participants are prohibited by 16 TAC § 25.503(g)(3) from offering reliability services to the market that they cannot deliver. This rule would require amendment or repeal if the DAM for AS is to become a financial-only market.

### **4) Appropriate parameters for AS offers from online units**

**Issue:** What rules should govern the offering of AS in the RTM? Should these be the same as or different from those that govern energy offers? For example, the Commission may wish to consider:

- whether withholding rules and guidelines (e.g. “small fish”) should be established for AS offers and whether withholding online AS capacity is allowed; and
- whether to require an AS offer curve, or ERCOT-entered proxy offer curve, for all online capacity qualified to provide AS.

**Decision point:** Whether the same market rules that apply to energy offers in the RTM should also apply to AS offers (such as no withholding, mandatory offer curves, IMM scrutiny of offers above marginal cost, and the “small fish” rule).

**Why this is a policy issue:** The market rules applicable to energy offers are fundamental market design issues under the purview of the Commission.

Staff looks forward to discussing these issues at the February 7<sup>th</sup> Open Meeting.