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June 13, 2022

Public Utility Commission of Texas
Chairman Peter Lake
Commissioner Will McAdams
Commissioner Lori Cobos
Commissioner Jimmy Glotfelty
1701 N. Congress Ave.
Austin, Texas 78711

Re: PUC Project No. 52933, *CY 2022 Reports of the Electric Reliability Council of Texas*

Dear Chairman and Commissioners:

In May, the Chairman and Commissioners of the Public Utility Commission of Texas (Commission) requested a filing from Electric Reliability Council of Texas, Inc. (ERCOT) regarding efforts to improve the efficiency of Reliability Unit Commitment (RUC). This filing is intended to meet that request.

RUC, or its equivalent, is an integral process found in every North American Independent System Operator (ISO)-run market. Generation owners have incomplete information regarding system-reliability needs and sometimes do not commit resources required to reliably operate the grid. RUC allows the system operators to run those resources to maintain reliability. RUC can be deployed either for system-wide reliability or local congestion (a local reliability issue).

As with any ISO-instructed deployment of resources, RUC deployment occurs outside the merit order associated with economic deployment, and consequently ERCOT takes steps to minimize the use of RUC. Since adopting more conservative operations, ERCOT has initiated a process to examine where the utilization of RUC may be more efficient. The remainder of the filing will describe those efforts.

I. ERCOT Initiatives to Improve RUC

ERCOT has two active initiatives that make improvements to RUC. First, ERCOT is working with stakeholders to reflect the true operating cost of shorter-lead-time units in the RUC process through updating the existing scaling factor. Second, Real-Time Co-optimization protocols are approved, and ERCOT is examining, next steps in coordination with the Commission. Lastly, in addition to these efforts, ERCOT will examine ways to reliably reduce RUC commitments on an ongoing basis.

A. Updating the Scaling Factor

The scaling factor makes shorter-lead-time units appear less costly than their actual costs, thereby skipping longer-lead-time units that may be a lower-cost solution. The cost-scaling factor currently used by the RUC process for Off-Line Resources with a cold start time of one hour or less was implemented in October 2018, as approved in Nodal Protocol Revision Request (NPRR) 864, *RUC Modifications to Consider Market-Based Solutions*. This scaling factor is used to modify the Startup Cost and minimum-energy cost that would otherwise be used for this subset of Resources in the RUC optimization. The value has been set to 20% since implementation of the NPRR.

The intent of the scaling is to make Resources with a cold start time of one hour or less appear to be more economical in the RUC optimization, as compared to Resources with longer start times. While the old scaling adjustment tended to make the RUC solution less economically optimal from a true Resource cost point of view, the intent was that the biasing of RUC to commit shorter start time Resources would allow ERCOT to defer commitment decisions and provide the market participants additional time to self-commit the Resources within their portfolio. To the degree market participants made those self-commitment decisions or forecast systems conditions improved, the need for commitments by ERCOT for reliability concerns could be lessened or avoided entirely. Unfortunately, that bias also led to ERCOT missing the opportunity to deploy less costly units when commitment of longer-lead-time units is desired.

Furthermore, while this concept was generally effective in meeting its purpose under ERCOT's previous operational paradigm, it does not align with ERCOT's more conservative operational approach which has been in place since the middle of 2021. In fact, the biasing of Resource costs to prefer shorter-lead-time Resources has led to ERCOT Operators needing to make many of their RUC decisions outside of the economic-based recommendations made by the RUC optimization.

The proposal is to change the scaling to 100% from a discounted value of 20%. The proposed change is easy to implement because, as written under NPRR864, the cost-scaling factor is defined in paragraph (9) of Protocols Section 5.5.2, *Reliability Unit Commitment (RUC) Process*. This paragraph includes the table shown below. As specified in the table, this parameter can be changed through a recommendation by the Technical Advisory Committee (TAC) and approval by the Board. Such change does not require an NPRR. Additionally, as implemented, this parameter is configurable within ERCOT's software systems; the change in value does not require any modifications to existing software.

Parameter	Unit	Current Value*
1HRLESSCOSTSCALING	Percentage	Maximum value of 20%
* The current value for the parameter(s) referenced in this table above will be recommended by the Technical Advisory Committee (TAC) and approved by the ERCOT Board. ERCOT shall update parameter value(s) on the first day of the month following ERCOT Board approval unless otherwise directed by the ERCOT Board. ERCOT shall provide a Market Notice prior to implementation of a revised parameter value.		

ERCOT has kicked off the process to change the value from 20% to 100%. When implemented, the change allows the RUC engine to select a lower-cost, longer-lead-time unit over a higher-cost, shorter-lead-time unit, thereby allowing ERCOT to better utilize the RUC optimization recommendations when commitment of longer-lead-time units is desired. By changing the cost scaling factor to 100%, this will help ensure that the commitment decisions recommended by the RUC optimization reflect the economically optimal solution and that ERCOT commitments utilize the least-cost Resources in meeting the forecasted reliability needs of the ERCOT grid. This has the potential to be beneficial to both the general market through decreases in Make-Whole Payments for the Resources that are committed through the RUC process and to ERCOT staff by reducing the need for additional studies outside of RUC to identify potential Resources to commit.

B. Implementing Real-Time Co-optimization

Real-Time Co-optimization (RTC) can also decrease the incidences of RUC. ERCOT filed analysis demonstrating the improvement to RUC for resolving local congestion issues.[1] To summarize the findings: when RTC is implemented in the ERCOT market, the current, approved protocols presume the optimization engine for the RUC process will also be modified to co-optimize energy and Ancillary Service (AS). As a result, the RUC engine would have improved capability to resolve projected congestion on the transmission system with resources that are already committed by their Qualified Scheduling Entity (QSE) to be On-Line. Co-optimization would allow all On-Line capacity from Resources, including capacity that is currently reserved by Market Participants to provide AS, to most effectively meet all the constraints of the system: balancing power needs, meeting AS requirements, and managing transmission constraints. This would lead to an overall reduction in the need for ERCOT to instruct additional Resources On-Line through RUC.

Currently, each QSE decides which of its Resources will be responsible for satisfying the QSE's AS Obligation in Real-Time. These obligations can result from DAM awards, Supplemental Ancillary Services Market awards, self-schedules of AS, or trades with other Market Participants. The decisions are communicated to ERCOT through Resource Current Operating Plans (COPs), and the COPs are used as inputs to the RUC optimization engine. The RUC optimization engine is unable to modify the AS assignments of Resources, even if the reserved capacity could help resolve transmission congestion and avoid out-of-market Resource commitments. Incorporating the co-optimization of energy and AS in the RUC process would provide the RUC optimization engine the flexibility to determine the most efficient use of the Resources projected to be On-Line and available.

Two conditions need to be met for co-optimization to reduce the need for RUC instructions by ERCOT. First, at least one Resource with an AS responsibility must be located at a point in the system where it could help manage transmission congestion that cannot be resolved through the redispatch of other On-Line Resources. Second, there must be other Resources elsewhere in the system that are both qualified to provide the service and not currently needed to help resolve other constraints on the system. In cases where these conditions are not met, co-optimization will not affect the need for RUC instructions. In cases where these conditions are met, the magnitude of

[1] PUC Project No. 47199, *Project to Assess Price-Formation Rules in ERCOT's Energy-Only Market*, ERCOT Studies on Benefits of Real-Time Co-optimization and Marginal Losses at 4-7 (June 29, 2018).

the benefit will depend on the amount of capacity being reserved on the Resource to provide AS, the sensitivity of the Resource in helping to resolve the transmission congestion, and the magnitude of the projected overloading of the transmission equipment prior to rearranging the AS responsibilities.

C. Future Improvements to RUC

Lastly, ERCOT plans to keep studying RUC and work with stakeholders to identify possible future improvements. ERCOT staff develops reports each month to discuss RUC activity with stakeholders and will update the Commission as issues or new proposals arise.

ERCOT is available to answer any questions the Commission may have and stands ready to take any other actions as directed by the Commission.

Regards,

/s/ Kenan Ögelman
Kenan Ögelman
Vice President, Commercial Operations