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Item Number: 8

Addendum StartPage: 0



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**Review of Real-Time Co-Optimization in
ERCOT Market**

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**PUBLIC UTILITY COMMISSION
OF
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**COMMENTS OF SIERRA CLUB REGARDING
CO-OPTIMIZATION**

The Lone Star Chapter of the Sierra Club is pleased to offer these brief comments on co-optimization of the ancillary service and energy markets within ERCOT. Sierra Club is a member of ERCOT and participates actively in several committees within ERCOT, including as a member of the Reliability and Operations Subcommittee. In general terms, we believe ERCOT should move toward co-optimization of its energy and ancillary markets as many other markets have done. We are following ERCOT's own definition of co-optimization, which they describe in a one-pager as:

“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.”

Source:http://www.ercot.com/content/wcm/lists/121384/RTC_OnePager_FINAL2.pdf

1. What are the benefits of implementing real-time co-optimization?

ERCOT itself has laid out in its June 29th, 2019 “Study of the Operational Improvements and Other Benefits Associated with the Implementation of Real-Time Co-Optimization of Energy and Ancillary Services” many of the principle benefits of co-optimization, including:

- The ability to dispatch the most economical resources to provide energy in the Real-Time Market, reducing costs for load-serving entities and consumers;
- The ability to utilize generation resources to solve constraints, and therefore reduce the need for Reliability Unit Commitments;
- The ability to be more flexible with the amount of reserves needed, rather than setting reserves annually some 13 months before they may be used;
- The likely elimination of the need to run a “SASM” when conditions change suddenly, such as a climate event, or sudden loss of wind, solar or other generation resource such that a resource expected to provide AS cannot do so. Again, RTC allows ERCOT to assign how available resources are used in real-time to solve issues and the higher-priced SASMs would be eliminated.

More specifically, as part of its analysis, ERCOT found that of the 165 cases it utilized RUC in 2016, some 109 cases would still have required RUC, but the other 56 would have eliminated or reduced the need for RUC. In addition, even in those cases where resources called onto RUC in 2016 would still have been utilized, 103 of those would have required less MWs at High-Sustaining Limits. This change alone -- reducing the out-of-market instructions by ERCOT and reducing the MWs needed - is of major benefit to the ERCOT market, since RUCs can discourage the proper formation of pricing.

Another major benefit we believe to implementation of RTC is ERCOT's changing resource mix. This year, ERCOT energy demand will likely be met by more than 20% IRRs (variable resources like wind and solar) and that is expected to increase over time. RTC allows ERCOT to adjust ancillary service quantities in real-time as demand, wind and solar power dynamically change and increase. If we don't change to co-optimization, to be conservative, ERCOT will likely need to over-estimate AS needs to assure system reliability.

2. Are the benefits identified in response to Question 1 sufficient to justify the near term costs to the market?

We believe they are. While ERCOT --looking at only one year -- found an \$11 million reduction in costs from the elimination of SASMs, they did not attempt to quantify the reduced costs due to less MWs RUC'd and less RUCs, or the likely reduced needs for AS. The IMM found in a separate analysis a reduction of \$10 to \$12 million in production costs savings in 2017 alone based on conservative estimates. As stated previously, co-optimization will be more important as more MWs are generated by renewable resources, which by their nature are variable. We think it makes sense to begin the process toward co-optimization today despite the expected challenges and upfront costs.

3. What are the effects on retail customers and the retail market?

We do not foresee a major issue for most retail customers, and certainly not for residential customers who do not interact directly with the wholesale market. Because we believe in general costs will be reduced by a move toward co-optimization, we think it will benefit the retail market in general. For load-serving entities and those currently providing ancillary services there likely will be changes in how they bid in their services to the Day-Ahead-Market, and whether they decide to self-commit or buy AS going forward, but the total obligations are not likely to be very different.

4. What costs would be incurred by market participants if ERCOT implemented RTC?

There will be costs to implement software and NPRRs but we believe these can be handled through the normal ERCOT regulatory fee process. Assuming that RTC implementation takes at least a few years these costs can be spread out over time.

5. How would a decision to implement RTC affect your company's market systems?

No response. We do not participate in this way in the ERCOT market.

6. How would a decision to implement RTC affect your company's internal operations?

No response. We do not participate in this way in the ERCOT market.

7. What are the effects of RTC on reliability of the ERCOT grid?

We believe that the flexibility offered by RTC will improve reliability on the system. There is nothing having to do with co-optimization that will prevent ERCOT and stakeholders from looking at additional changes in AS or even new services as we evolve as a market. As an example, currently stakeholders are involved in a discussion about changing AS through creation of a fast-frequency response service and creation of a 10-minute product that would reduce the need for non-spin reserves. We believe these changes proposed in NPRR 863 could increase reliability in the ERCOT grid and allow more technologies like batteries, faster more nimble gas services and demand response to provide ancillary services. But RTC does not prevent ERCOT from developing these products, it just means that SCED will choose to utilize those resources when and where they make the most sense from a system perspective.

8. How would a decision to implement RTC affect investment in new generation resources in ERCOT over the next five years, the next 10 years, and in the years beyond 10 years?

We believe it would increase confidence in our market since resources could be utilized more nimbly for AS or energy use and the need for out-of-market actions like RUCs will be decreased. It may also open up space for resources to locate in areas with congestion to provide relief on the system.

9. Do the ERCOT and IMM analyses of the benefits of implementation RTC accurately measure such benefits? Are potential costs to the market or market participants adequately accounted for?

The ERCOT analysis found cost savings from the elimination of SASMs and the lowered use of RUCs. The IMM analysis of the 2017 year found projected production cost savings of \$10 to \$12 million, as well as improvements in the accuracy of shortage pricing.

While there may be some costs born by individual market participants for certain ancillary services that have a high value those same resources may now be able to earn money on the energy market in a more dynamic manner.

ERCOT and the market should continually assess and adjust AS products to make sure they are technologically-neutral and meet performance needs (and are tested to assure they meet their obligations) but this will occur whether or not co-optimization moves forward.

What is the appropriate funding mechanism for the ERCOT implementation costs associated with RTC? How should these costs be recovered?

The system costs identified by ERCOT should be paid by the market on a load-shared basis through the ERCOT administrative fee.

We recognize that individual market participants will have costs as well in adjusting to operating in a co-optimized market but we assume each participant will have to decide how to pay for these individual costs.

How would RTC change the ancillary services market?

We believe it would make it more nimble, and might lead to the need for more frequent changes in the amount needed on a daily and monthly basis. We do not think it will change the DAM, or change the decision by LSEs on whether to self-provide, bid in, or contract for AS.

What effects, if any, would the implementation of RTC have on the Congestion Revenue Rights (CRR) market?

No opinion.

What are the effects of implementing both RTC and marginal transmission losses on reliability and price formation?

The Sierra Club does not favor moving forward on marginal transmission losses and believes it would be disruptive to existing contracts and have no impact on reliability. RTC should improve both.

Are there any synergies that may result from contemporaneous adoption of both RTC and marginal transmission losses?

RTC and marginal transmission losses are really dealing with different issues in the real-time market. Marginal losses is really about what to include in the pricing and settlement of the real-time market, while RTC is more of an operational change. We do not see a major benefit to trying to tackle two difficult issues at once.

What are the effects on retail customers and the retail market from the implementation of RTC and marginal transmission losses?

We believe that marginal transmission losses would have a more direct impact on pricing for certain customers than RTC and would be more disruptive to the market.

What effects, if any, would the implementation of RTC have on existing administrative scarcity pricing mechanisms, such as the Operating Reserves Demand Curve and the Reliability Deployment Price Adder?

We believe if RTC moves forward, there will not likely be a need to continue the ORDC and price adder, but if there is a need for some sort of adjustment that can be handled through the ERCOT stakeholder process. It could be there will need still to be some sort of adjustment to account for out-of-market mechanisms like RUC and RMR even after RTC is implemented.

Conclusions

The Sierra Club supports moving forward with co-optimization of ancillary services and the energy market even as our AS needs change as well as our resource mix. Now is the time to begin the process.

Sincerely,

A handwritten signature in black ink, appearing to read "Cyrus Reed". The signature is fluid and cursive, with a large initial "C" and "R".

Cyrus Reed, Conservation Director, Lone Star Chapter

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