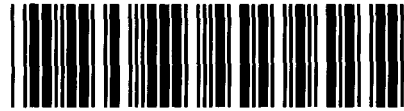




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PROJECT NO. 48540

REVIEW OF REAL-TIME §  
CO-OPTIMIZATION IN THE §  
ERCOT MARKET §

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**COMMENTS OF THE TEXAS ADVANCED ENERGY BUSINESS ALLIANCE**

The Texas Advanced Energy Business Alliance (TAEBA) hereby submits these comments regarding the Commission’s questions in the above-referenced proceeding. TAEBA includes local and national advanced energy companies<sup>1</sup> seeking to make Texas’s energy system more secure, clean, reliable and affordable. “Advanced energy” encompasses a broad range of products and services that constitute the best available technologies for meeting energy needs. Among these are energy efficiency, energy storage, demand response, natural gas electric generation, solar, wind, hydro, nuclear, electric vehicles, biofuels and smart grid. As the business voice of advanced energy in Texas, TAEBA appreciates the opportunity to provide our views regarding real-time co-optimization (RTC) to help inform this proceeding.

A 2016 study by the Brattle Group<sup>2</sup> estimated that, assuming market trends continue and markets are allowed to function properly, 85% of ERCOT generation will be natural gas, wind, or solar by 2035, with natural gas combined cycle plants providing the majority of new generation. As Brattle Group observed: “The price of natural gas is driving change in the ERCOT grid, much more than any other factor.”<sup>3</sup> With no reason to anticipate that market fundamentals will change significantly anytime soon, and with economics continuing to improve for renewables, there likely will be continued downward pressure on energy prices. Over the long run, as prices trend downward and market participants enter and exit the energy market based on economics, robust ancillary services markets are critical to ensuring that the ERCOT grid is reliable and economically efficient. These markets must be completely open to all technologies, without market barriers, and ensure market signals encourage the provision of services from the most efficient resources. If the Commission chooses to move forward with RTC, then we caution that the implementation of RTC must be done in such a way as to avoid erecting new barriers to competition. In particular, we urge the Commission to ensure that the implementation of RTC is technology-neutral, and does result in barriers to the participation in the ERCOT markets of advanced energy technologies with physical and operational characteristics that differ from legacy generation technologies. Additionally, regardless of whether the Commission chooses to move forward with RTC, more work is needed to “modernize” the ancillary services markets to reflect changing technology, system operations needs, and economics. Market-based mechanisms that provide for the most expansive array of ancillary service participants will provide ERCOT with the best set of tools to ensure reliable grid operation with the fewest possible out of market actions.

<sup>1</sup> <http://www.texasadvancedenergy.org/about-taeba>  
<sup>2</sup> <http://www.texascleanenergy.org/FINAL%20Brattle%20TCEC%2017%20May%202016.pdf>  
<sup>3</sup> *Ibid.*

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**1. What are the benefits of implementing real-time co-optimization (RTC) of the energy and ancillary services in the ERCOT market over the long term?**

RTC potentially could result in more efficient dispatch of resources in the wholesale market, which would result in lower wholesale costs and in turn, lower retail prices. However, if the implementation of RTC is done in a way that erects new barriers that would prevent certain technologies from being able to participate in the energy and A/S markets, then that result would harm wholesale competition and in turn, retail customers. The Commission, ERCOT, and stakeholders should take care to avoid establishing market rules that create new barriers and continue working to improve existing rules to reduce barriers to advanced energy technologies. For example, technologies such as storage and demand response have characteristics different from other technologies such as duration, ramp rates, and recall times, but nevertheless these technologies are well-suited to provision of certain ancillary services.<sup>4</sup> Wind and solar technologies are able to use system controls and other features to allow them to be dispatchable and provide a range of ancillary services.<sup>5</sup> Additionally, aggregations and combinations of technologies, such as renewable generation, storage and demand response can provide highly flexible energy and grid reliability services to wholesale markets. As the generation fleet changes, we expect that ERCOT will need more of these flexible services to continue to reliably and efficiently operate the grid, making it critical that a broad array of resources be available to provide them.

In past comments,<sup>6</sup> TAEBA has urged the Commission to focus efforts on ensuring that the ancillary services markets are as robust and competitive as possible, and we continue to do so here. Regardless of whether the Commission moves forward with RTC, focusing on modernizing ERCOT's ancillary services to promote competition among all technologies is a "no regrets" opportunity. We are encouraged by continuing stakeholder conversations around disaggregation of ancillary services, but the stakeholder process could benefit from additional policy direction from the Commission.

**2. Are the benefits identified in response to Question 1 sufficient to justify the near term costs to the market as a whole? Please consider individual stakeholder implementation costs as well as the costs to ERCOT identified in its study.**

TAEBA has no way to evaluate the full range of individual stakeholder implementation costs and therefore cannot answer this question as it is presented. Additionally, as noted before, the "devil is in the details," and the specific protocols around bidding parameters and other market rules to implement RTC can either serve to remove barriers or erect new barriers, and those costs to the market are impossible to predict. We continue to urge the Commission to apply its resources toward ensuring that the ancillary

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<sup>4</sup> For storage, state of charge, duration of charge, and discharge times should all be considered when integrating into ancillary services markets. Additionally, demand response should not be subjected to 24x7 availability requirements. It is critical that rules allow for aggregation of distributed resources and for treatment of the aggregation as a single resource, as opposed to being composed of multiple individual resources.

<sup>5</sup> NREL/ERCOT/First Solar study: <https://www.nrel.gov/docs/fy16osti/65368.pdf>

<sup>6</sup> See Project No. 47199



services definitions and markets truly reflect current and future system needs and are free of market barriers for resources that are technically feasible of providing such services.

**3. What are the effects on retail customers and the retail market from the implementation of RTC?**

In theory, RTC could result in more efficient dispatch of generation in the wholesale market, which would result in lower wholesale costs and in turn, lower retail prices if the REPs pass through those savings. However, if the implementation of RTC is done in a way that erects new barriers that would prevent any technologies from being able to participate in the energy and A/S markets, then that result harms wholesale competition and in turn, retail customers. To the extent that the implementation would foster competition, then that would be beneficial to the market.

**4. What costs would be incurred by market participants if ERCOT implemented RTC? Please provide an estimate of the costs that would be incurred by your company or companies or customers represented by your organization. Please describe the elements of those costs.**

Without knowing the specific protocols to be implemented, market participants cannot accurately predict costs to implement those protocols.

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

This question is not applicable to TAEBA as an organization.

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

This question is not applicable to TAEBA as an organization.

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

RTC by itself does not fundamentally affect reliability per se. It has the potential to make dispatch more efficient, if implemented in a way that promotes competition among resources. To the extent that a wider range of technologies can compete to provide ancillary services through modernizing and disaggregating A/S, then that greater competition could have the potential to improve reliability by allowing for greater flexibility and diversification of resources and fewer out-of-market actions by ERCOT.

**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?**

There are many factors that could affect investment in new generation. However, as noted previously, Brattle Group has observed that: "The price of natural gas is driving change in the ERCOT grid, much more than any other factor."<sup>7</sup> Thus, whether or not RTC is implemented is not a major driver of investment in generation. Conversely, whether or not the decision to implement RTC will drive investment in new generation should not be a determining factor in whether to go forward with RTC, as it is too narrow

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<sup>7</sup> <http://www.texascleanenergy.org/FINAL%20Brattle%20TCEC%2017%20May%202016.pdf>.



a consideration for the ERCOT market as a whole. The Commission should take into consideration the economic opportunity provided by all resources, not just traditional thermal generation.

In Texas, advanced energy represents a more than \$16 billion economic engine, employing approximately 233,000 people in the state – more than mining, oil and gas extraction, and double the number of jobs of auto dealers. By reducing barriers to advanced energy technologies – not just generation – regulators can drive much broader investment across multiple market segments, even if new investment in “traditional” generation would not be supported by economics.

The 21<sup>st</sup> century electricity system is one that is predominantly served by renewable and advanced natural gas generation for energy needs, but one in which market participation through distributed energy resources (DERs) – broadly defined to include energy storage, electric vehicles, distributed generation, demand response, and energy efficiency – plays a greater role in providing energy and other system services. Greater flexibility and variability of resources on both the supply side and the demand side will characterize the grid over the next five years, ten years, and beyond. Again, the best way to drive investment for all types of resources is to remove market barriers and ensure the broadest possible participation for everyone, including customers.

TAEBA recommends further that the Commission consider as a foundational principle what services should be valued for reliable operation of the grid. Proper market pricing should value services and operational characteristics such as flexibility and response time, for example, that contribute to improved operation of the grid. Advanced energy technologies such as battery storage, demand response, energy efficiency, distributed generation, wind, solar, CHP, and others can play a role in improving grid reliability.

**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?**

As noted previously, protocols to implement RTC can reduce barriers to competition, perpetuate existing barriers or create new ones. Implementing with an eye toward reducing and eliminating market barriers wherever possible will ensure the lowest costs to markets and, by extension, customers.

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

The usual mechanism in ERCOT for funding systems changes is for loads to bear those costs. This funding obligation is all the more reason to ensure that all technologies – and all market participants, including customers in all customer classes – have a fair opportunity to participate fully in the ERCOT markets, and that the benefits to competition and customers outweighs the costs of implementation.

**11. How would RTC change the ancillary services market?**

Please see our response to Question 1.



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

TAEBA has no response to this question at this time.

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

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

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

Again, we urge that customers and competitive markets would be served best by focusing the efforts of the Commission and stakeholders on ensuring that the ancillary services markets are disaggregated and allow all technologies to compete. As discussed in our comments filed today in Project No. 48539, *Review of the Inclusion of Marginal Losses in Security-Constrained Economic Dispatch*, maintaining the status quo of averaging losses provides greater benefits to customers over the long run, so marginal losses should not be implemented.

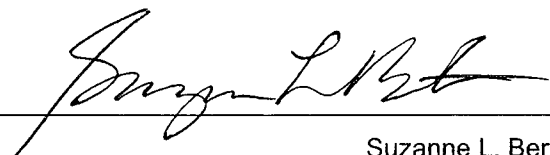
**16. What effects, if any, would the implementation of RTC have on existing administrative scarcity pricing mechanisms, such as the Operating Reserves Demand Curve and the Reliability Deployment Price Adder?**

TAEBA has no response to this question at this time.

**Conclusion**

We appreciate the opportunity to provide the perspective of advanced energy businesses in Texas, and look forward to working with the Commission and stakeholders on these important issues.

Respectfully submitted,



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