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TEXAS ADVANCED ENERGY BUSINESS ALLIANCE

PROJECT NO. 48539

REVIEW OF THE INCLUSION OF MARGINAL LOSSES IN SECURITY-CONSTRAINED ECONOMIC DISPATCH	**§ § § §**	**PUBLIC UTILITY COMMISSION OF TEXAS**

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[1] 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 a multi-technology association having members that participate in the market in a variety of ways, TAEBA brings a unique perspective to the debate around marginal losses.

Additionally, TAEBA is focused on the economic opportunity that advanced energy brings to the State of Texas. In considering the question of marginal losses, therefore, we encourage the Commission to weigh the benefits that have come to the state as the result of substantial advanced energy development since market restructuring. Our most recent analysis of advanced energy jobs shows that more than 233,000 Texans are employed in advanced energy, which is more jobs than mining, oil & gas extraction, and double the number employed by auto dealers in the state. There are advanced energy jobs in all 254 counties, demonstrating the geographic diversity of economic opportunity afforded by advanced energy in Texas. There are many reasons that advanced energy has been able to become a more than $16 billion economic engine in in the state, including a pro-business environment, light regulatory touch, competitive wholesale and retail electricity markets, advances in technology, and policy decisions that have allowed Texas customers the opportunity to access zero fuel-cost renewable energy, just to name a few.

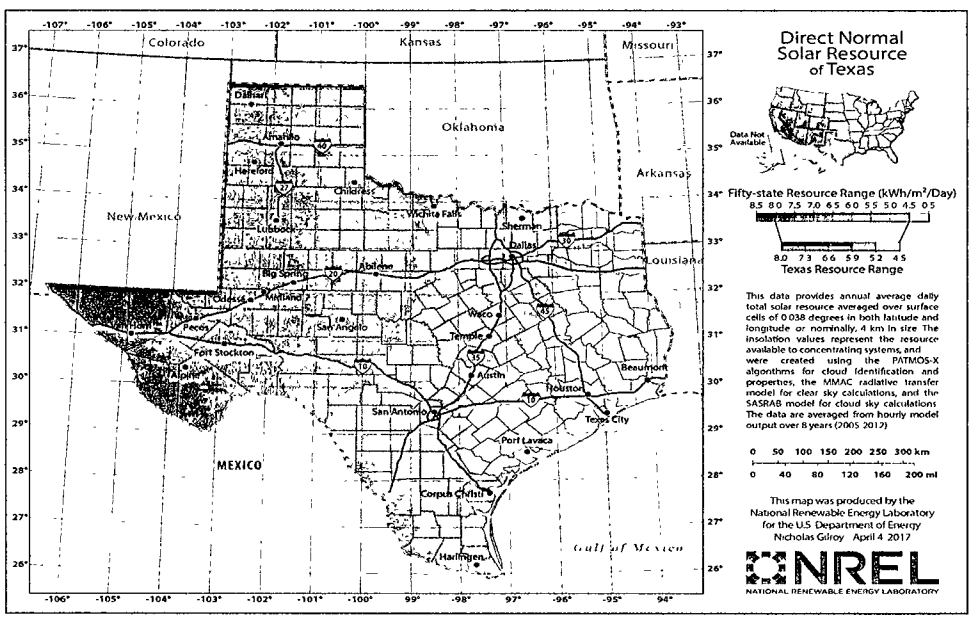
In considering whether to change policy direction and implement marginal losses, we note that given the diversity of membership and geographic locations of our members' assets, some individual resources could benefit while others would be worse off if the Commission moves ahead with implementation. When faced with the big picture question of what is best for Texans as a whole, however, the evidence points toward maintaining the existing average losses mechanism as we will discuss further below. As the business voice of advanced energy in Texas, TAEBA appreciates the opportunity to elaborate further in the following comments in response to the questions posed by the Commission.

[1] http://www.texasadvancedenergy.org/about-taeba

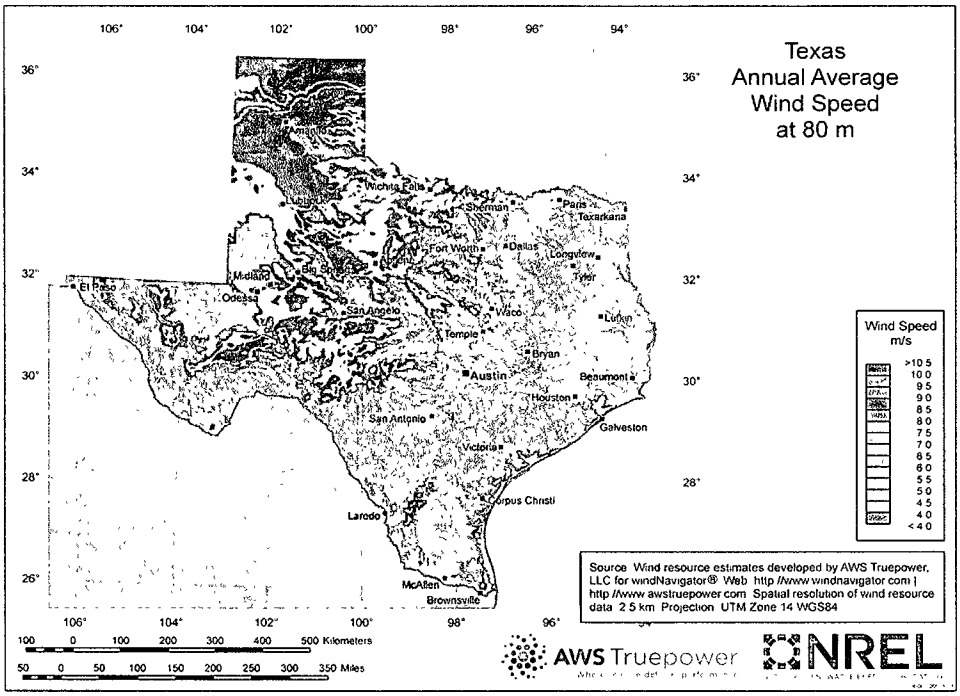
1. **What are the benefits of implementing the use of marginal transmission losses rather than average transmission losses in the Electric Reliability Council of Texas (ERCOT) Security-Constrained Economic Dispatch (SCED) over the long term?**
2. **Are the benefits identified in response to Question 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.**

In theory, implementing marginal losses would reward generation for locating closer to load to limit transmission losses experienced by the system as a whole. Although marginal losses theoretically would be more efficient under perfect economic conditions – which would include the ability for resources to locate any place on the system at the same cost – such conditions do not exist in the real world, for a host of reasons. Therefore, the costs to Texans are greater if the Commission decides to implement marginal losses.

We Texans are lucky to have been blessed with abundant natural resources. Besides the oil and natural gas resources that have deeply influenced the global energy economy for more than a century, Texas also has been blessed with some of the best wind and solar potential as compared to elsewhere in the country. Due to geography and forces of nature beyond human control, the best resources are generally located in the western part of the state, as shown below in the two figures from the National Renewable Energy Laboratory (NREL).[2]



[2] Solar resource map available at https://www.nrel.gov/gis/solar.html; wind resource map available at https://windexchange.energy.gov/maps-data/122.



Years ago, Texas made a considered policy choice to average the costs of the ERCOT transmission system for purposes of allocating costs to users of the system. This decision has made it possible for generators to locate wherever it has made most sense to locate, whether that means thermal generators being able to locate near water, or for solar and wind generators to locate where the best solar and wind resources are geographically located. Companies have made investment decisions based on these existing transmission policies that have been in place for many years, resulting in Texas becoming a national leader in both wind and solar installed capacity. As of 2018, Texas was number one in installed wind capacity, with more than 22.5 GW of installed capacity[3] – an order of magnitude greater than the number two state. Texas also ranks fifth in the nation in installed solar capacity, with more than 2.6 GW already installed[4] and more than 31 GW that have requested interconnection.[5] Of the more than 233,000 advanced energy jobs in Texas, a quarter of those are in advanced electricity generation and the grid technologies that integrate with generation to make the system more efficient and reliable. Other regions of the country that have implemented marginal losses do not have the same geographic diversity and abundant resources that we do, and the regional variations in economic development in advanced energy such as wind and solar generation reflect those different circumstances.

[3] https://emp.lbl.gov/wind-energy-growth-2010-2017
[4] https://www.seia.org/state-solar-policy/texas-solar
[5] ERCOT GIS Report, September 2018.

The strong resource availability in Texas, coupled with the state's competitive retail market, has been an important source of economic development, with Texas also emerging as a clear leader for corporate renewable energy procurement. As of March 2018, Texas projects accounted for a full 27% of all corporate renewable energy contracts—with more than double the number of projects as the next leading state.[6] Large businesses are increasingly seeking renewable and other advanced energy resources to meet their energy needs, driven by opportunities for cost savings and cost certainty, as well as a desire to meet the expectations of their investors, employees, customers, and other key stakeholders with respect to sustainability. Since 2013, voluntary customers have purchased over 13 GW of offsite renewable energy across the country. Over the past five years, annual purchases have increased by over 1000%, from just 0.32 GW in 2013 to 3.86 GW to date in 2018.[7] As this market continues to grow, Texas is poised to continue its leadership position.

Implementing marginal losses now would upend the long-standing state policy of broadly sharing transmission costs and the prior investment decisions made based on that policy in substantial ways, resulting in significant wealth transfers from generators in some regions of the state to generators in other regions of the state. In particular, ERCOT's analysis shows "a significant transfer of revenues within the generation fleet – specifically from generators in West and North Load Zones to generators in the Houston zone."[8]

The existing policy lowers costs to consumers by reducing barriers to development of zero fuel-cost resources, and to reverse that decision means that it will add costs to consumers. As PA Consulting Group, Inc. (PA) has reported in a recent study, "...within Texas, renewable capacity cannot simply be sited closer to load and achieve the same generation outcome, so the economic case for renewable capacity sited closer to load is worse, all else equal."[9] The PA study analyzed economic benefits of the current market structure versus the proposed integration of marginal losses and demonstrates that customers are better off under the current market structure. With respect to economic benefits,[10] PA found that Texans would have to forego the following benefits over the long run if marginal losses are implemented:

- $7.1 billion in economic output
- $4.6 billion in energy cost savings
- $5.1 billion in production cost savings; and
- 29,500 additional full-time equivalent employees.[11]

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[6] http://www.prweb.com/releases/2018/04/prweb15421076.htm.
[7] http://businessrenewables.org/corporate-transactions/.
[8] ERCOT, "Study of the System Benefits of Including Marginal Losses in Security-Constrained Economic Dispatch," June 29, 2018, at 15.
[9] PA Consulting Group, Inc. "The Long-Term Impact of Marginal Losses on Texas Electric Retail Customers," April 2018, at 7.
[10] The PA study also identifies environmental savings. See the report for details.
[11] PA Consulting Group study at 5.

In summary, we are better off economically with the existing policy that averages transmission losses for purposes of cost allocation, allowing Texas to take full advantage of state-specific natural resources.

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

See response to questions 1 and 2 for the general economic impact to Texans. Retail customers pay for losses today, but those losses are averaged across the region, and are a small overall percentage of the total served energy in ERCOT. According to a 2017 analysis by the Brattle Group, a change from average losses to marginal losses would result in a reduction in losses of 0.27%. Specifically, based on 393 TWh in total energy served, the losses would be reduced from 9.51 TWh (2.41%) to 8.45 TWh (2.15%).[12]

Assuming for the sake of argument that regardless of the long term negative economic impacts that would be realized according to the PA study that short term benefits could be attained consistent with ERCOT's analysis, the actual effects on retail customers cannot be determined. What can be said for certain is that changing to marginal losses means costs will shift from some retail customers to other retail customers, based on factors wholly out of their control. The ERCOT analysis shows a variety of potential changes to consumer costs to each load zone, which vary substantially depending on natural gas prices.[13] Notably, the change in costs to Houston customers could swing tens of millions of dollars in either direction depending on gas prices.[14] Furthermore, ERCOT states that how the costs may change still are not necessarily indicative of how consumers will be affected. In part, this uncertainty is due to contractual differences between customers and their retail electric providers, but another major unknown is how the over-collection of marginal costs will be redistributed, and to whom.[15]

4. **The ERCOT study of using marginal transmission losses instead of average transmission losses in SCED simulated one year. How would cumulative, multi-year impacts of using marginal transmission losses be different, if at all?**

See above discussion under questions 1 and 2. The PA study shows that the negative impacts of moving to a marginal losses scheme are substantial over a number of years, resulting in lost economic activity in the billions of dollars.

5. **What costs would be incurred by market participants if marginal losses were implemented in the ERCOT market? Please provide an estimate of the costs that would be incurred by**

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[12] Brattle Group, "Impacts of Marginal Loss Implementation in ERCOT: 2018 Reference Scenario Results," October 11, 2017, at 10.
http://files.brattle.com/files/5595_impact_of_marginal_loss_implementation_in_ercot.pdf
[13] ERCOT Analysis at 4.
[14] Ibid.
[15] Ibid.

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.

6. **How would a decision to use marginal transmission losses affect your company's market systems?**
7. **How would a decision to use marginal transmission losses affect your company's internal operations?**

These two questions are not applicable to TAEBA as an association.

8. **What are the effects on reliability on the ERCOT grid of using marginal transmission losses instead of average transmission losses in SCED?**

Implementing marginal losses would have the potential to diminish reliability of bulk power system by creating new barriers to locating renewable generation in the geographic locations that best use the natural resources in the state. The result is that geographic diversity of resources is discouraged if marginal losses are implemented.

9. **What effects, if any, would marginal transmission losses have on grid hardening and resilience?**

Changing from average to marginal transmission losses would not have a positive effect on grid hardening and resilience. On the contrary, the result of implementing marginal losses is to discourage development of generation where it makes the economic sense to locate it, and where siting difficulties and impacts on communities can be minimized. And if the competitive market cannot respond appropriately with competitive solutions, then regulated entities will have to step in to build additional infrastructure. This additional regulated infrastructure does not inherently provide a more resilient or "better" solution, but what it does provide is a regulated solution rather than a competitive one, with all the costs and risks borne by ratepayers instead of shareholders and investors.

If the Commission should wish to pursue additional competitive solutions to promote grid hardening and resilience, TAEBA suggests two areas for additional consideration. First, a localized operating reserve demand curve (ORDC) should be considered to determine if it would result in better price signals to incentivize solutions closer to load, rather than creating a marginal loss charge and incurring the cost and market disruption of doing so. Localized ORDC adders would provide a more direct incentive for locating close to load, particularly for advanced energy technologies that can be more easily sited close to load.

Second, the Commission should evaluate transparency of existing utility system planning processes to ensure that the competitive market has adequate information to be able to bring competitive solutions to solve reliability or congestion issues on utility systems. Customers and other DER owners should have full

access to all markets where they are capable of providing services and should be compensated appropriately for the services they bring to the system. Further, the Commission should adopt processes for evaluating "non-wires alternatives" to traditional infrastructure build-out, including clarifying regulatory treatment of service contracts for utilities in lieu of asset ownership. We anticipate this second set of issues will be addressed in the Commission's Project No. 48023, *Non-traditional Technologies in Utility Delivery Service*.

10. **What effects would the use of marginal transmission losses in SCED have on grid reliability in regions of the ERCOT grid where non-synchronous generation is more prevalent?**

TAEBA has no response to this question at this time.

11. **How would a decision to implement marginal transmission losses affect investment in new generation resources in ERCOT over the next five years, the next 10 years, and in the years beyond 10 years?**

See our response to questions 1 and 2. Implementing marginal losses raises costs for generators to locate where it otherwise makes the most sense to locate; that is, where siting difficulties and costs are lower.

12. **How would the implementation of marginal transmission losses affect the composition of the generation fleet in ERCOT?**

Implementation of marginal transmission losses would create a disincentive for investment in renewables, even though they have no fuel cost and economics would otherwise suggest investing in renewables is prudent. The intent of this change in policy is to create incentives for generation to locate near load, but there are numerous reasons that new generation may not be able to locate in those locations, such as lack of wind and solar resource potential, air permitting requirements, availability and cost of land, and other considerations. In short, the policy would raises cost to locate where it otherwise would make more sense to do so. This policy would have the added effect of squandering abundant natural resources in this state, which have allowed Texas to create jobs and become a national leader in wind and solar development.

13. **Assuming the Commission decided to go forward with implementation of marginal transmission losses, what are the key issues related to determining the appropriate treatment and allocation of the marginal transmission loss surplus revenues?**

If the Commission decides to adopt marginal loss pricing, then it also must answer the highly controversial question of how to handle over-collection and reallocation of those surplus dollars. Because marginal losses are twice average losses, marginal losses always will lead to over-collection of revenues that must be reallocated, either through an "uplift" credit or by scaling down the marginal loss

factors. According to a recent Brattle Group analysis, the over-collection of marginal loss payments in ERCOT would be approximately $205 million, so this issue is important to consider.[16]

The specifics of how over-collected payments are repaid can have significant effects and spur controversy and litigation. For example, in 2010 in CAISO, two alternative repayment schemes were proposed that would have changed the repayment method by $18.8 million and 13.8 million, respectively, as compared to the status quo method.[17] In PJM, the allocation of excess marginal loss revenues has spurred costly and long-running litigation. The Federal Energy Regulatory Commission ("FERC") and market participants struggled to determine who should share in the refunds of over-collected marginal loss payments, with litigation over that question (and resulting refunds) lasting for years.

14. **Does the ERCOT analysis of the benefits of including marginal transmission losses in SCED accurately measure such benefits? Are potential costs to the market or to market participants adequately accounted for?**

    See our comments above. The net impact is negative for Texas in the long run.

15. **What ERCOT operational changes would need to be made that are not considered in ERCOT' s studies?**

    ERCOT is best equipped to respond to this question.

16. **Would the use of marginal transmission losses in SCED change the ERCOT transmission planning process and transmission build-out?**

Yes, changing how transmission losses are paid for by the market would affect the costs of generation, which in turn would have an impact on transmission planning. Discouraging development of generation where it otherwise should be developed in turn would change decisions in the regulated market concerning where transmission should be developed. Transmission CCN cases are always the most controversial and difficult for the Commission, which gets put in the unenviable position of having to pick landowner "winners and losers." To the extent that these policy changes could create additional need for transmission because generation is unable to located where it otherwise "should" locate, then that simply creates unnecessary controversy for the Commission and landowners and results in the Commission having to impose costly regulatory solutions when the policy of the state is to prefer competition over regulation.

17. **Assuming that the implementation of marginal transmission losses results in the location of generation closer to load, what advantages and disadvantages would there be during an emergency event or a market restart to having generation located closer to load?**

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[16] Brattle Group, "Impact of Marginal Loss Implementation in ERCOT," October 11, 2017.

[17] Eldridge, B., O'Neill, R., and Castillo, A. *Marginal Loss Calculations for the DCOPF* (Jan. 24, 2017) at 3. https://www.ferc.gov/legal/staff-reports/2017/marginallosscalculations.pdf

TAEBA has already discussed in these comments why utility-scale generation is not likely to locate closer to load as a marginal losses scheme would dictate in an ideal world. Based on the ERCOT analysis, we would anticipate that Houston in particular is the location where new generation would be incentivized. In addition to the limitations that prevent generation from locating near load centers, Houston has the added disadvantage of being at higher risk of hurricane damage than other parts of the state where generation could locate, such as west Texas. Incentivizing generation to specifically locate in places that are subject to hurricane risk seems imprudent at best, and instead the state is better off with geographic diversity of its generation fleet.

Additionally, it is important to note that in a marginal losses scheme, distributed energy resources (DERs) become more critically important to maintain reliability. Because resources have an incentive to locate near loads, this incentive should create more value for DERs; unfortunately, that added value likely Is not outweighed by the harm to the rest of the market as a result of making utility-scale generation further from load more expensive to build. Furthermore, for DERs to fully participate in ERCOT markets, more work is needed to realize the value of these assets -- work that needs to happen regardless of whether the Commission implements marginal losses. We anticipate that in Project No. 48023, *Non-traditional Technologies in Utility Delivery Service*, the Commission will be able to consider options to better incorporate DERs into ERCOT markets.

18. **What effects, if any, would the implementation of marginal transmission losses have on the Congestion Revenue Rights (CRR) market?**

According to ERCOT, congestion revenue rights (CRRs) settled in the day-ahead market (DAM) would be based on the difference between the sink and source components of the DAM locational marginal price (LMP), such that CRRs are a hedge for congestion only.[18] In contrast, point-to-point CRRs settled in real-time would be based on the difference between the sink and source total real-time LMP; thus in real-time, these CRRs are a hedge for congestion plus losses. This difference creates a settlements disconnect between the day-ahead and real-time markets, in that it prevents a perfect hedge for congestion plus losses.

19. **How should the commission direct ERCOT to implement marginal transmission losses in a way that mitigates any deleterious effects on the CRR market?**

[18] ERCOT "Overview of the Market Changes Needed For Implementation of Marginal Losses," Sept 6, 2018, at 15.
http://ercot.com/content/wcm/key_documents_lists/161640/Overview_of_the_Market_Changes_Needed_For_Implementation_of_ML_final.pptx

The Commission should not direct ERCOT to implement marginal transmission losses, and therefore potential deleterious effects on the CRR market need not be mitigated.

20. **Does your assessment of the incorporation of marginal transmission losses change based on the timeline of implementation?**

As already discussed in these comments, the PA analysis shows greater economic benefits to Texas by not implementing marginal losses. The sooner that marginal losses are implemented, the sooner that Texans start to lose the benefits of the current market structure. If the Commission chooses to move forward with marginal losses implementation, then we urge that such transition be made over several years to allow the market to adapt.

21. **What are the effects of implementing both Real Time Co-optimization (RTC) and marginal transmission losses on reliability and price formation?**
22. **Are there any synergies that may result from contemporaneous adoption of both RTC and marginal transmission losses?**
23. **What are the effects on retail customers and the retail market from the implementation of both RTC and marginal transmission losses?**

Again, maintaining the status quo of averaging losses provides greater benefits to customers over the long run, so marginal losses should not be implemented. Further, as noted in our comments in Project No. 48540, 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 modernized, and all technologies allowed to compete. As discussed above, the Commission could investigate a localized ORDC and focus efforts on increasing market transparency. These are the best ways to protect customers and enhance competition in Texas.

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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