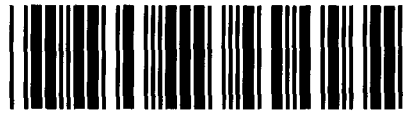


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REVIEW OF THE INCLUSION OF MARGINAL LOSSES IN SECURITY CONSTRAINED ECONOMIC DISPATCH	§ § §	PUBLIC UTILITY COMMISSION OF TEXAS
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SOUTH TEXAS ELECTRIC COOPERATIVE, INC.’S RESPONSE TO THE COMMISSION’S AUGUST 9, 2018 REQUEST FOR COMMENTS

TO THE HONORABLE PUBLIC UTILITY COMMISSION OF TEXAS:

COMES NOW, South Texas Electric Cooperative, Inc. (“STEC”) and submits its comments in response to the request by the Public Utility Commission of Texas (“Commission”) in the above referenced proceeding. The deadline for the filing of comments in the above-styled proceeding is October 8, 2018, and as a result these comments are timely filed.

I. INTRODUCTION

The Independent Market Monitor (“IMM”) made a comment at the August 10, 2017 workshop in Project No. 47199 *Project to Assess Price Formation Rules in ERCOT’s Energy-Only Market*, that socializing marginal losses was a market flaw and that market flaws should be corrected. This comment was in response to statements that the efficiencies to be gained by implementing marginal losses may remove the future benefits that some market participants have received in the past by socializing the impacts of losses on the ERCOT market. In a market where the capital cost of transmission is socialized, the operational cost of using that transmission should not be socialized. Marginal losses, much like nodal prices will be different depending on the time of day, season, flows in the market, demand and any number of other factors that impact prices in the market. Marginal loss pricing, directly assigns those operational costs in much the same way the costs of congestion are now directly assigned. Marginal losses

would become a part of the nodal price at each node in the market, and as a result, market participant settlement and communications systems with ERCOT would not need to be modified. Marginal losses also will value line losses rather than spreading the costs to the market as a whole. What marginal losses do, in essence, is to recognize that when generation must move across long transmission lines to reach load, the generation output must be greater to overcome the losses incurred along the way that reduce the ability of the full amount of generation to serve that load. In an energy-only market, this is important. In a market where the costs of transmission are spread across those entities that consume energy during the 4CP intervals, it is a calculator of a fraction of the true costs for generation to reach load. STEC believes that marginal losses should be properly implemented in order for the market to reflect the cost of generation needed to serve load in different areas of the market.

STEC appreciates and supports the Commission's decision to require that marginal losses be studied so that a common set of assumptions can be used by the Commission and market participants to discuss and review marginal loss implementation and its associated impacts on the ERCOT market. ERCOT conducted the study in a relatively short time period and was helpful in providing information about the study in both the ERCOT technical workshop and with respect to requests to make the underlying data available to market participants. In reviewing the underlying data, STEC would note that a single reference bus, rather than a distributed reference bus was used for the study. It is STEC's understanding that using a distributed reference bus will provide more accurate signals. It is possible that ERCOT did not have the time to develop and study its scenarios using a distributed reference bus. Additionally, the data used for the study included average data, rather than actual data sets. STEC cannot verify all of the data used, however with respect to data associated with respect to data associated with STEC's generating

assets the data used in the study did not reflect the actual operating characteristics of STEC's generating assets. STEC would encourage the Commission to seek additional clarification, and additional study runs, from ERCOT that utilize both actual generator data and assumptions, including High Sustained Limits, Low Sustained Limits and other physical characteristics, as well as a distributed reference bus since the implication of a single reference bus appears to change the congestion outcomes and the value of Congestion Revenue Rights ("CRR") instruments. In so doing, the Commission should be able to get a more accurate set of data to evaluate the benefits of marginal losses on the ERCOT system. STEC recognizes that ERCOT has not performed this type of study previously and was doing so at the same time as it conducted the Real-Time Co-optimization study and as a result may not have been able to devote the resources necessary to running the marginal losses studies utilizing historical, actual data. Because ERCOT has now performed this study, STEC believes that these changes to the study parameters would only serve to improve ERCOT's study and provide more granular information to the Commission and market participants.

II. COMMENTS

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?

The ERCOT market has evolved from a postage stamp congestion management system to a partially directly-assigned zonal congestion management system to a nodal system of direct assignment of congestion costs. When the transitions were made to direct assignment, overall costs and efficiencies were gained because there was a cost to market participants that did not efficiently schedule load and generation and that cost was no longer socialized to the market. The ERCOT group overseeing transmission losses at the time postage stamp congestion

management was implemented aligned losses pricing with that of congestion management. When zonal congestion management was implemented, it was not possible to partially assign losses along the Commercially Significant Constraints. When nodal congestion management was implemented, marginal losses were discussed, but there were so many difficulties with putting the nodal market in place, that marginal losses were not implemented in order to reduce the cost and complexity of the Nodal market implementation. Now that the nodal market has been in effect for nearly eight years, and price formation and market signals are not providing incentives for existing generation to remain in the ERCOT market, or for new generation to site without the benefit of federal subsidies, transmission losses continue to be socialized costs rather than utilizing cost-causation principles to directly assign those costs using accurate price signals.

With average transmission losses, there are inaccurate price signals for the energy-only market. Average transmission losses result in the average cost of losses being charged across the entire ERCOT footprint with every load allocated a load ratio share of the deemed system-wide transmission losses. With marginal losses, transmission losses are priced, like the congestion component of Locational Marginal Prices (LMPs), in accordance with power injection and withdrawal at particular buses. Marginal losses are the most efficient means of pricing transmission losses because every generator on the ERCOT system will see a price (included in its LMP) that equates to the incremental cost of transmission losses that results from that particular generator's impact on power flows on the ERCOT system as a whole. Over the long-term, this price signal will reward generation that creates fewer transmission line losses, by siting in closer proximity to load. There is another benefit to be gained in a market where the capital cost of transmission is socialized, and that is to recognize the additional value of generators that do not require large outlays of rate-based assets to serve load when service can be accomplished

by generators located in the same vicinity as the load. Although the changes in LMPs resulting from marginal loss implementation are unlikely to be near the magnitude needed to solely signal the siting of new generation, they will inform that siting decision, and at a minimum, will not require loads to pay a socialized share of the losses created by third parties and by which a particular load is not benefitted.

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.

Yes, the near term costs of implementing a properly instituted marginal loss construct using a distributed reference bus will be far outweighed by the long-term benefits on a system-wide basis. There will be costs to individual stakeholders to implement the marginal loss construct even though losses will be priced into the nodal price at each node. Market participants will continue to buy and sell based on nodal prices, though each nodal price will include a marginal loss component. That part of the price will need to be added to market participants' shadow settlement systems to accurately capture costs going forward. For most market participants that utilize outside vendors to help them with the scheduling and settlement functions of their business, the costs to implement marginal losses will be very low since the software vendors often include these types of market changes in their software maintenance agreements. Increased data capture requirements may require the upsizing of storage hardware, however, the costs of storage hardware continue to decrease and this cost should be de minimus. For the few parties that do have their own homegrown software systems, this cost will be greater to develop and test the new formulas that will be needed to handle the settlement changes that will occur. Otherwise, most of the costs incurred will be related to training market participant staff in the settlement nuances and formulas related to marginal losses. Training requirements

for front-office personnel should be minimal. It would be difficult to imagine a circumstance in which total costs for implementation would exceed twenty thousand dollars (\$20,000), particularly for smaller market participants such as STEC.

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

The actual benefits to the ultimate retail customer in the competitive market are unclear and will greatly correlate with how the marginal loss surplus is distributed, however overall costs to loads in the market should decrease. However, competitive retailers should be able to better manage their overall costs by contracting with generators located closer to their load, thereby reducing their own costs and the costs to the system as a whole. Competitive retailers' customers in fixed price contracts are not likely to see any benefit because the costs and benefits are not passed through. For those customers on variable rates, they may well see relief depending on how their contract is structured. For cooperative customers such as STEC's Member Cooperatives, those benefits would be passed through to STEC's Members for the benefit of Member loads.

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?

STEC believes that if implemented correctly through the use of a distributed reference bus rather than a single reference bus, the cumulative, multi-year benefits of using marginal losses will be significant, and also will have the additional benefit of influencing future siting decisions for generators, and not socializing the costs to others in the market when a generator sites in such a way as to increase overall transmission losses. While STEC has supported the concept of marginal losses, STEC has reviewed the ERCOT marginal loss study and has found

some flawed assumptions such as the use of average rather than actual data, the use of a single reference bus rather than a distributed reference bus, and assumptions concerning the gas price estimates that provide counterintuitive results for one of the three gas price studies. Moreover, regarding unit commitment and dispatch, the study inputs on which these study conclusions are based do not appear to be in line with actual data for the STEC portfolio. As a result, STEC questions whether the benefits stated in the study report are materially accurate and would need to see additional, modified study results to definitively comment as to the cumulative multi-year impact. STEC does agree, however, that a properly implemented marginal losses construct should continue to more efficiently price losses and reduce overall system costs in the long-term.

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 your company or companies or customers represented by your organization. Please describe the elements of those costs.

As set forth above, market participants will incur systems costs associated with marginal loss pricing. As noted in the response to question 2, most of the software costs incurred to implement marginal losses will be absorbed through the maintenance fees paid by most market participants to their software vendor of choice for scheduling and settlement, thereby leaving most of the cost incurred to be training hours. STEC estimates that the cost to conduct training for its staff will be less than twenty thousand dollars (\$20,000).

Other than the direct cost of implementation, some market participants will have contracted for power with generators and not previously paid the marginal loss amount. This is a cost that has been previously borne by the remainder of the market. Some of these entities will see cost increases while others that have previously subsidized the transmission losses costs of these entities will pay a lesser share based on cost causation.

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

STEC will need to modify its internal market systems as a result of marginal losses implementation to allow for this third component to the Locational Marginal Price and to accommodate the settlement formula changes.

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

STEC has acted prudently in building or contracting for generation near its load and would continue to operate in the same manner it does today. For entities that do not transact for power in ways that minimize overall costs to load, those entities may change their operations to reduce the overall impact of losses that would now be directly assigned to them, or may see a decrease in overall costs that were previously socialized to such entities.

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

Since the energy-only ERCOT market relies solely on price signals to support reliability, improvement of price signals will support reliability of the ERCOT grid. Moreover, the recognition that distance from load impacts prices because it impacts deliverability, costs over transmission lines, and remotely located generation that are all challenges for reliability, a marginal loss construct should improve reliability and grid resiliency by encouraging generation to site closer to loads. Increased reliability will not be immediately felt, but improved price signals should play a role in future siting decisions and increase future reliability. While marginal losses should improve long-term reliability, it must be noted that the implementation of marginal losses will not adversely affect reliability in the short-term since we already operate reliably with generation imports already existing from far flung corners of the ERCOT region.

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

Please see response to Question No. 8, above.

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?

In areas of ERCOT where non-synchronous generation is prevalent and/or saturated (e.g. the Panhandle), the ERCOT grid already experiences limitations on the export capability of generation from those regions. The implementation of marginal losses will not change the reliability challenges that these regions of the grid already face, but will serve as a signal to future generation that there may be better locations to site those facilities. Marginal losses implementation is not a mechanism in and of itself to increase reliability in any regions, but is yet another signaling mechanism to identify locations where the siting of generation would be the most beneficial.

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?

Marginal losses alone will not yield changes to generation siting that better and more efficiently serve the ERCOT system. However, marginal losses coupled with effective congestion management should send important signals to investors about where to site future generation resources. Marginal losses will, over time, encourage generation and load to be sited closer together which will increase reliability on the system and better utilize existing transmission infrastructure.

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

STEC does not believe that the implementation of marginal losses alone will be enough to materially change the dispatch of existing generation. Marginal losses alone will also not change the existing generation fleet in the ERCOT portfolio. In order to preserve existing generation and incent the siting of new generation, price formation measures will have to be implemented. Marginal losses will not offset lower gas prices in the ERCOT market or federal tax credits that subsidize renewable generation such that marginal losses could be seen as supporting dispatchable generation. Marginal losses are an efficiency to be gained for the benefit of ERCOT loads, not a tool that will change the composition or the number of assets available to the ERCOT grid.

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?

Given that this method of marginal loss implementation will result in the collection of more money than necessary to cover actual losses, the resulting surplus will need to be allocated. However, as a longer-term prospect, it is important to recognize that marginal losses should benefit those that pay for the construction and maintenance of transmission assets. Losses are incurred because generation is located apart from load and transmission must be built to move that generation to load. As a result, the entities that pay for the transmission should be the entities that are allocated the marginal loss surplus, and in the same manner that they pay for transmission. The current incentives for Transmission Cost of Service (“TCOS”) recovery reward the entities that have the ability and the incentive to avoid paying for transmission in the four coincident peak (“4CP”) transmission cost allocation. Such avoidance disproportionately

shifts the TCOS burden to residential, small commercial and other larger commercial consumers that cannot or do not avoid TCOS. Any allocation of a surplus from marginal losses should be allocated to those customers paying for the construction and operation of transmission assets. As stated in STEC's comments in Project No. 47199, no marginal loss surplus amounts should be paid to customers that do not pay the costs of transmission due to 4CP avoidance. Additionally, to ensure that consumers that pay for transmission actually receive the marginal loss surplus payment in the competitive market, all retail electric providers should be required to pass through to their end-use customers the marginal losses credit. Allocating the marginal losses surplus in the manner will serve to mitigate some of the TCOS subsidization of customers that avoid paying for TCOS.

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?

STEC believes that a properly implemented marginal losses construct will benefit the ERCOT system. While STEC continues to support the concept of marginal losses, STEC has reviewed the ERCOT marginal loss study and has found some flawed assumptions regarding the unit commitment and dispatch and questions whether the benefits stated in the study report are materially accurate. STEC has described these issues in greater detail in response to Question 4, above, and would reiterate the need for additional studies using modified inputs that include at a minimum the use of inputs that consist of actual, historical data and the use of a distributed reference bus instead of a single reference bus. STEC would encourage the Commission to have additional studies run that will better inform the Commission's decision and demonstrate the benefits of marginal losses. STEC believes that these studies will also find substantial benefits to marginal losses, and that the Commission should have that information before making its

determination based on the existing study information. The existing study may be subject to challenge due to the issues STEC has identified herein and which can be corrected in future study parameters.

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

Marginal losses are accounted for in Security Constrained Economic Dispatch ("SCED") and in the Day-Ahead Market clearing engine and as a result, ERCOT actions with respect to marginal losses will be performed automatically with each SCED or Day-Ahead Market run. It is important to note, however, that ERCOT is required to take operational steps, or command and control actions, as a result of congestion or stability issues on the system. Because marginal losses should help to decrease overall system congestion in the long-term by incenting generation and load to contract in an efficient manner, or by encouraging efficient dispatch through proper price signals, the need for ERCOT operators to take these types of actions should either remain the same or decrease, but would not increase, as a result of the implementation of marginal losses.

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

Because the impact of marginal losses would be small, it is unlikely to change the transmission planning process and transmission build-out. However, the impacts of marginal losses would be used in the nodal prices utilized for the cost/benefit analysis conducted by ERCOT for projects that proceed through the ERCOT Regional Planning Group.

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?

Anytime generation is located closer to load, the reliability advantages are greater. This would include improved voltage support at all times, and improved stability for black start resources attempting to build islands or starting the Next Start Resource. With Black Start Resources closer to load centers, restoration time from a black start event should be decreased.

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

The CRR market would no longer create a perfect hedge from the point of purchase in the CRR auction through to the Real-Time market because the CRR instruments would not hedge marginal losses. Furthermore, as indicated in the technical workshop on September 6, the determination of the reference bus may result in the valuation of those instruments differing from the CRR auction to their Day-Ahead Market settlement. STEC is not sure that this is a material issue, but warrants additional investigation and would potentially need to be monitored for gaming.

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

If the Commission wanted to ensure that a CRR maintains its ability to be a perfect hedge from the point of purchase in the CRR market through the Real-Time market, then the feasibility and cost of implementing marginal losses in the CRR market should be investigated. It is possible, however, that the costs to implement changes in the CRR market could outweigh the benefits.

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

No, although a three year-long implementation period would allow for adjustments to the CRRs held by various entities as a result of the annual auctions.

21. What are the effects of implementing both Real Time Co-optimization (RTC) and marginal transmission losses on reliability and price formation?

Each of these mechanisms will result in better, more efficient dispatch of generation on the ERCOT grid. Each should benefit price formation, although neither will address the lack of price formation in ERCOT relating to over-mitigation, the failure to have thermal generation set prices when on-line but operating at their Low Sustained Limit because their generation is needed to serve base load demand, or the lack of any value for capacity services provided free to the market, including the free capacity call option during times of shortages. Both RTC and marginal losses implementation will provide more efficient signals to the ERCOT market, and send more accurate price signals to generators that provide greater benefits to the ERCOT system as a whole. As a result, each would separately benefit reliability and price formation, and together the impact of reducing these market inefficiencies will be greater, though one is not dependent on the other. However, in the case of RTC where payments to generators are reduced, care must be taken to ensure that the implementation of RTC does not inadvertently squeeze generators out of the market, particularly when the ERCOT system is operating with reserve levels that are at or below the EORM, and therefore harm reliability. The Commission should take action to ensure that the efficiencies gained from RTC does not harm long-term resource adequacy.

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

Both the implementation of RTC and marginal losses would increase efficiencies in the ERCOT market. The lack of these building blocks for the market are inefficiencies, or market flaws, that should be corrected. Improved market signals from both RTC and marginal losses implementation would benefit the market, though it is not clear that the two need to be done on the same time.

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

Each of these mechanisms will result in better, more efficient dispatch of generation on the ERCOT grid. Each should benefit price formation, although neither will address the lack of price formation in ERCOT relating to over-mitigation, the failure to have thermal generation set prices when on-line but below the Low Sustained Limit, or the lack of any value for capacity services provided free to the market, including the free capacity call option during times of shortages. Both RTC and marginal losses implementation will provide more efficient signals to the ERCOT market, and send more accurate price signals to generators that provide greater benefits to the ERCOT system as a whole. As a result, each would separately benefit reliability and price formation, and together the impact of reducing these market inefficiencies will be greater, though one is not dependent on the other.

CONCLUSION

STEC encourages the Commission to seek additional studies that will further inform the Commission's decision in this proceeding. STEC believes that a properly implemented marginal loss pricing is a means to send accurate price signals while ceasing to spread the costs of losses

to all entities, including those entities that are not in a position to reduce the overall cost of losses currently socialized across the market.

Respectfully submitted,



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