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REVIEW OF THE INCLUSION OF §  
MARGINAL LOSSES IN SECURITY- §  
CONSTRAINED ECONOMIC §  
DISPATCH §

BEFORE THE  
PUBLIC UTILITY COMMISSION  
OF TEXAS

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**THE ERCOT STEEL MILLS' JOINT COMMENTS**

**TO THE HONORABLE COMMISSIONERS:**

The ERCOT Steel Mills (collectively Gerdau Long Steel North America, Nucor Steel-Texas and CMC Steel Texas) hereby offer the following joint comments regarding the inclusion of marginal losses in Security-Constrained Economic Dispatch (SCED).

**I. INTRODUCTORY COMMENTS**

The ERCOT Steel Mills appreciate the opportunity to comment on this important public policy issue before the Public Utility Commission. For the reasons set forth in these comments, we do not support changing the Commission's current policy regarding treatment of transmission losses in ERCOT.

While we are sympathetic to the underlying economic theory for inclusion of such losses, we are most concerned about the potential unintended consequences of such a change on future resource adequacy. This proposed action would send the wrong message to potential suppliers of future generation resources, creating regulatory uncertainty and a potential chilling effect on new investment. The current treatment of transmission losses is a fundamental piece of the current market design. The current design has worked well for a long time and no one has shown it to be broken. In our view, changes to fundamental market design should not be entertained lightly and should only be seriously considered where the benefits of the change to all market participants as a whole are large, compelling and unassailable. That is not the case here; at best the proposal creates winners and losers and the overall claimed benefits are not all that large. Moreover, the longer the current design, structure and rules have been in place and relied upon by market participants, the more compelling the reasons should be before any significant change is truly considered – the current system has been in effect for over 15 years – since retail market open. In addition, the proposal seems fundamentally unfair to certain existing generation owners and other stakeholders who have made major, long-term economic decisions relying in good faith on the



current rules, while creating a windfall for others. Finally, even if a change were desirable, now is not a good time to make the change, given the level of reserves in ERCOT and the need to focus collective market participant, ERCOT and Commission attention and resources on the far more important issues of whether and how best to implement Real-Time Co-Optimization (“RTC”).

Before the advent of the current wholesale and retail market, the Commission and ERCOT spent considerable time and resources to obtain and consider extensive stakeholder and expert feedback on how transmission-related costs should optimally be determined, allocated and recovered within ERCOT. The almost universally shared view was that the public interest was best served by uniformly pricing transmission services and recovering those costs without regard to distance or geographic location. This view was subsequently written into law by the Texas Legislature. PURA Section 35.004(d), enacted in 2003, mandates that “...[t]he commission shall price wholesale transmission services within ERCOT based on the postage stamp method of pricing under which a transmission-owning utility’s rate is based on the ERCOT utilities’ combined annual costs of transmission divided by the total demand placed on the combined transmission systems of all such transmission-owing utilities within a power region.” This enlightened policy determination has made ERCOT a very successful wholesale and retail market today.

ERCOT stakeholders, when drafting the zonal Protocols (and later the Nodal Protocols), and the Commission in approving those Protocols, followed a parallel and consistent direction with respect to transmission losses by using a straightforward uniform non-distance-sensitive formulaic recovery method to estimate transmission losses for all consumers using the transmission system. This approach was consistent with the philosophy of encouraging potential owners of new generation to locate new power plants in the state by relieving them of worrying about issues related to transmission facilities, including transmission losses. This has resulted in new generation being built in many remote areas of Texas, minimizing adverse environmental impacts, particularly on more populated areas of the state. Through the past wisdom of the Legislature and the Commission, consumers have benefitted greatly from the many renewable generation plants and increasingly fuel-efficient gas turbine plants that have been constructed in the last 17 years that have replaced or supplemented the original generating capacity constructed prior to the opening of the ERCOT retail market.

If the proposal resulted in substantial tangible benefits to all ERCOT consumers, this issue might bear more analysis. However, that is not the case. The savings to consumers estimated by the ERCOT staff are modest at best and disproportionately spread across ERCOT's geographic area. And, as noted in ERCOT's report, there is considerable uncertainty surrounding these estimates, due to limitations in the Uplan production costing model.<sup>1</sup>

Furthermore, changing current policy to incorporate marginal losses in dispatch decisions will result in creating winners and losers in an unfair after-the-fact manner. For example, generation facilities enticed to locate in more remote areas as a result of the state's longstanding public policy would be placed at a competitive disadvantage relative to other more fortuitously sited generation. A good example is existing fossil fuel generation facilities built in furtherance of prior Commission policy favoring increased fuel diversity, which were located based on fuel proximity as opposed to proximity to load pockets. Changing the current treatment of transmission losses would entail substantial costs to market participants, would likely result in minimal, if any, financial and market efficiency benefits, and could significantly impact the financial foundation of most existing and in-progress generation within ERCOT. It would also likely negatively affect future investor interest in financing new generation units that, although remotely sited, nonetheless constitute highly desirable capacity additions.

Although we do not expect the direct costs and savings from this proposal to have a major financial impact on the ERCOT Steel Mills, we remain concerned about the proposal for the reasons outlined above. As a result, we recommend that the Commission reject the marginal losses proposal and continue the longstanding transmission policy which has served, and continues to serve, ERCOT so well in ensuring continued generation adequacy.

## II. RESPONSES TO PUBLISHED QUESTIONS

### 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 Steel Mills do not see major benefits in using marginal transmission losses in SCED, nor that these benefits would outweigh the costs. We do accept ERCOT Staff's assessment

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<sup>1</sup> In addition to the modeling limitations noted in ERCOT's report – namely, difficulties in modeling the day-ahead market (DAM) and reliability unit commitment (RUC) processes – production costing models in general have difficulty modeling real-world bidding behavior by market participants and often fail to simulate actual spikes in wholesale energy prices.

that consideration of transmission losses in dispatch decisions will tend to reduce overall transmission losses to some degree, which in turn could reduce market prices (LMPs) in some areas of ERCOT, while increasing them in other areas. A marginal loss approach would also likely result in needing slightly less energy generation to meet the demand on the ERCOT system. We also agree that such a change would favor generation that is located closer to load centers and in certain other locations within the ERCOT network. However, benefits resulting from these efficiencies will not be enjoyed by all market participants in an equitable manner, as is obvious from the ERCOT analysis. Certain generators and consumers will benefit while others are expected to bear higher costs or be paid less for their generation.

Adoption of a marginal losses construct could also negatively impact generation currently under construction as well as the future build-out of new generation on the ERCOT transmission system. Furthermore, the potential retirement of more economically marginal generating units as a consequence of a reallocation of transmission losses could in and of itself more than offset the benefits cited in ERCOT's economic analysis of the proposal. A marginal losses construct would give rise to a host of other countervailing considerations as well that must be considered in tandem with the economic efficiency benefits that are theoretically realizable. The long-term negative benefits to society as a whole could potentially include increased environmental emissions in urban areas and more risk to fuel delivery pipelines that transport natural gas to those load centers. Notwithstanding that the ERCOT analysis suggests the existence of some net monetary benefit from implementation of marginal losses, we believe that that benefit is far outweighed by the countervailing negative economic and social impacts which abandonment of the current average losses construct would impose on the ERCOT market as a whole.

**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.**

No. The ERCOT Steel Mills do not expect that adoption of a marginal losses construct will result in significant implementation costs for our manufacturing facilities, although they may impose such costs on other participants. However, we seriously doubt that the benefits of converting to a marginal losses construct outweigh the near-term costs to the market as a whole. The estimated implementation cost of the change for ERCOT alone is substantial and, if history holds true, the final implementation cost will be significantly higher than estimated. The cost of

the change to market participants as a whole in terms of modifying back-office systems and software will also undoubtedly be significant, although we are not well positioned to attempt a quantification of that aggregate market cost.

The change will result in a windfall for a very few thermal generators who, largely by historical accident, currently occupy optimal geographic locations within major urban areas that are not capable of duplication by competing thermal generators. The harm to generators who, due to prior Commission policy directives and technical and geographic constraints, operate units which are sub-optimally located under a marginal losses construct will likely prove substantial from both a near-term and long-term standpoint.

For retail customers, who will ultimately end up paying the substantial implementation costs, the benefits of abandoning the longstanding treatment of losses on an average cost basis in favor of marginal losses seem at best negligible. We do not disagree with ERCOT's analysis that this change has the potential to lower the overall prices faced by some (though not all) consumers in the market by improving dispatch decisions, but that benefit is in our view relatively minor and is in any event outweighed by potential near- and long-term costs and risks to the market and retail consumers as a whole.

While this change would, in theory perhaps, improve how generation from various power plants is valued in the market, we are skeptical that the change will lead to better price signals to consumers. Section 11.4.5 of the Protocols describe how ERCOT currently uses a Transmission Loss Factor (presently, 2%) and various utility-specific Distribution Loss Factors to scale-up the data obtained from advanced metering systems (AMI), interval data recorder (IDRs), and other metering equipment at customer premises and other locations to obtain estimates of the average losses for which each retail electric provider (in areas opened to competition) and each individual energy consumer in customer choice areas is responsible. Recognition of marginal transmission losses in dispatch decisions might improve the accuracy of the nodal bus prices slightly by better recognizing how transmission line losses affect the cost of generating energy to meet the needs at a particular point in the network. But, the improvement in price accuracy would be very minimal. The zonal LMPs (LMPZs) upon which load-serving entities are settled would presumably continue to be based on the load-weighted averages of 5-minute LMPs across very large regions of the state. As a consequence of the practice of averaging (at least) three 5-minute prices within 15-minute intervals and averaging across hundreds of nodal locations within each zone, the price faced by

REPs and certain consumers will always remain imprecise estimates of the cost of providing an additional unit of energy to any particular consumer.

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

Transitioning from average losses to marginal losses will likely have a larger impact upon the majority of providers of generation resources than upon retail customers. That said, this change could significantly and adversely impact retail customers in certain load pockets, especially those located within the Houston Zone. The extent of the impact would in large part be dependent upon how the Commission and ERCOT would choose to treat the revenues attributable to differences in cost between what generators are paid and what loads are charged. Questions that are currently unanswered are: What does ERCOT do with the differences in cost? Over what period of time would these differences accumulate? Who would receive any excess revenues that are collected?

How these questions are answered will largely determine the magnitude of the financial impact on retail customers. It would be our hope and expectation that any excess revenues would be allocated back to retail customers. Failure to definitively decide upon the appropriate treatment of excess revenues in this rulemaking, should the Commission choose to transition to a Marginal Losses construct, will result in protracted argument and debate among stakeholders at ERCOT, and would risk the ultimate adoption of a variety of possible negative outcomes for ERCOT consumers as a whole.

More importantly, the ERCOT Steel Mills are concerned that abandonment of the Commission's longstanding treatment of transmission losses will result in the closure of some generating units needed to meet future demand. Reserve margins will likely be reduced as a consequence of this action, as may the reliability of the electrical grid as a whole. Neither result can be viewed as a positive outcome for retail customers.

**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?**

The ERCOT Steel Mills have not conducted a study to determine cumulative multi-year impacts. We are skeptical that such an analysis would show substantial benefits. Our expectation is that under a forward-looking multi-year analysis, one would expect new generation to be sited closer to the load centers, to the extent possible, with all of the collateral issues and impacts which

that would entail. Generators who had the misfortune of having remotely sited their plants for a variety of legitimate reasons under the current policy would be penalized and may even close. Those few generators whose units, by historical accident or happenstance, proved to be located optimally under a marginal losses policy would benefit at the expense of others less optimally located.

**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.**

The ERCOT Steel Mills are very large consumers of electricity. We do not have specific cost estimate of the impact of this proposal on our mills. We anticipate that, either directly or indirectly, we would pay for a share of the implementation costs borne by ERCOT to implement such a change and would generally share in the long-term costs to consumers attributable to the policy change. We do not believe that the change would require additional capital improvements for our mills or require quantifiable up-front changes in internal operations or new software.

Please refer to our answer to Question 3 regarding the broader long-term costs which we believe could be incurred as a consequence of a Commission decision to abandon its long-standing treatment of transmission losses.

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

The change from using average losses to marginal losses is not expected to have any appreciable impact on market systems of the individual steel mills.

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

A change from Average Losses to Marginal Losses is not expected to have any appreciable impact on the internal operations of the individual steel mills. However, a change may affect power supply decisions made at the individual mills prior to the policy change.

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

One of the hallmarks of using average losses applied to the consumer's meter readings is that when no transmission congestion is present, the LMP on the sending end of a line is exactly



the same on the receiving end of the line. When marginal losses are applied in SCED, even when no congestion exists on a line, the LMPs on each end of the line will be different to account for the losses in that line. This fact was also alluded to by ERCOT speakers during the ERCOT Workshop held on September 6, 2018<sup>2</sup>. Speakers indicated that price differences solely due to marginal losses may be quite significant for certain transmission lines. Today, it is simple for ERCOT operators as well as market participants following the dispatch in real time, to know where congestion is present and where it is not. ERCOT, by protocol,<sup>3</sup> requires validation of any constraints used in SCED that cause congestion. Implementation of marginal losses could make this more difficult. Simply observing prices on the grid may no longer be sufficient to fully understand the current state of congestion on the grid if marginal losses are implemented.

ERCOT's "contour map" shows price variations across the entire ERCOT area. This map shows where true transmission congestion is located and is a valuable tool for operators to use to make sure all constraints being applied in SCED are indeed required. Just one or two missed false constraints being applied to SCED results could result in costs in excess of the entire benefit of using marginal losses.

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

No comment at this time.

**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?**

Please refer to our response to question 8 above.

**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?**

New commercial generation is being planned to serve consumers for as many as 5-10 years out. There are brown field and green field developers who are always looking for economical projects. Site location becomes one of the major constraints when determining where to invest

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<sup>2</sup> Technical Workshop on IMM and ERCOT Reports Concerning Impacts of Real-Time Co-Optimization and Marginal Losses, <http://www.ercot.com/calendar/2018/9/6/161639>

<sup>3</sup> ERCOT Nodal Protocol, 6.5.7.1.11 Transmission Network and Power Balance Constraint Management

extremely large amounts of money. One must consider availability of fuel (mostly natural gas pipelines or wind energy), proximity to high voltage transmission lines, available land, available water resources, environmental permit requirements, financing availability, stability of regulatory rules in the host area, transportation of heavy equipment, and other issues too numerous to state here. These new generation developers must convince their company board of the viability of a proposed project and the financial backers of such a project that eventually the investment will be successful. Spending billions of dollars does not come without careful consideration.

All of the new plants in the near future horizon we now see in ERCOT's tabulation of new plants under development, as well as the possibly dozens more who have yet to notify ERCOT of their long-term intention, presumably have performed their cost benefit and investment analyses based on the average losses approach in ERCOT. If the Commission were to change the rules in mid-stream, this would likely chill investment in future generation to serve load in ERCOT. Projects that are in design phase may suddenly have a different financial outlook that would have to be examined. This *ex post facto* change does harm to this process forever going forward and as a matter of fundamental fairness should be avoided.

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

Some older generation, built decades ago in the old multiple control area days before deregulation of the wholesale electric market, would benefit simply by being near the load centers of ERCOT. In contrast, newer generation would be penalized because the developers followed the Commission's existing rules, to their unforeseen financial detriment, should the current averages losses construct be abandoned in favor of a marginal losses approach. The proposed rule change would simply financially disadvantage one set of incumbent generators in order to give an unwarranted competitive advantage to a much smaller set of incumbent generators who enjoy geographical proximity to large load center purely by virtue of historical happenstance. Furthermore, potential new market entrants would be subjected to a significant new financial disincentive to development. Unnecessarily increasing the uncertainty and risk of new market entry does not well serve the objective of assuring the continued development of an ample supply of new generation sources with which to meet the ever-increasing energy requirements of the ERCOT market.

ERCOT requires, and will continue in the future to require, a diverse resource mix in terms of both fuel type and energy output in order to maintain optimal grid reliability. ERCOT presently enjoys a diverse mix of baseload, intermediate and peaking units as well as renewable resources, fueled by a diversity of fuel resources. This is in large part because, for decades, the Commission has pursued a deliberate policy of fostering a high level of resource diversity. The ERCOT Steel Mills fear that abandoning the current average losses methodology will lessen the diversity of the generation fleet in the future. Baseload and intermediate resources will be more difficult to develop relative to other units that can more easily be co-located within urban load pockets. The potential harm to generation resource diversity attributable to this fundamental policy shift in and of itself could outweigh any dispatch efficiency to be gained by adoption of the marginal losses methodology. We suggest that the maxim, “first do no harm” applies well here.

**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?**

All surplus revenues should be allocated to consumers, as they ultimately pay for everything in the ERCOT market design and any surplus simply means that they have overpaid for losses. We believe that this principle should be enunciated at the outset by the Commission if it chooses to move down the marginal losses path. Since we recommend not switching to a marginal losses approach, we think it is premature and have not yet developed a position on how such revenues should be returned to consumers.

**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?**

The ERCOT marginal losses cost/benefit analysis does not purport to quantify a wide variety of potential costs to the market which ERCOT cannot readily quantify due either to ERCOT’s lack of access to market participant-specific data or to the inherent difficulty of assigning dollar costs to inherently unquantifiable impacts such as the extent of detrimental impact on new market entry, investor expectations, financial risk premiums and consumer confidence in grid reliability and resource adequacy.

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

The ERCOT Steel Mills have concerns that constraint management by ERCOT will suffer because it will become more difficult to distinguish transmission congestion from the effects of line losses on LMPs, if marginal losses are implemented. Only a few missteps by an ERCOT operator failing to recognize false congestion and failing to make a correcting decision would obfuscate the rather minor financial benefits of marginal losses, significantly harming consumers.

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

ERCOT possesses a robust transmission system, unlike many other areas of the country. This is due in large part to the fortuitous policy foresight of the Texas Legislature and this Commission. ERCOT has constructed an extensive transmission network to connect new generation and new consumers all over the ERCOT region, and the State's economy has benefited greatly from the resulting availability of plentiful low-cost electric energy across ERCOT. Most new generation is located away from ERCOT's major load centers. This was a desirable outcome established by the Legislature and long-standing Commission policy. It has enabled the optimal development of diverse fuel resources, encouraged new market entry and has mitigated ambient air and water quality concerns in urban areas.

The transmission planning process follows the development of future generation sites and load center growth. Disincentivizing the remote siting of new generation will also disincentivize the continued expansion of the transmission grid, which in turn may lessen the continued robustness of the ERCOT grid, which is one of the major beneficial attributes of ERCOT that has made it a shining example of success relative to other regions of the country.

**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?**

The circumstances under which the proximity of generation to load centers during emergency events or market restart could be advantageous or disadvantageous are so varied and fact-specific that the ERCOT steel mills are not in a position to offer an informed opinion.

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

No comment at this time.

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

No comment at this time.

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

No. In our opinion there is not a good time to change from average losses to marginal losses. The current construct has been in place for over 17 years. It has functioned adequately and continues to function adequately, and existing and new market entrants have made and continue to make fundamental investment decisions based of the current transmission loss policy. However, should the Commission choose for some reason to replace the current construct with a Marginal Losses methodology, we believe that the Commission should postpone the implementation date as far into the future as necessary to ensure that the negative impacts of the policy change upon existing generators and generation projects in progress, as well as upon forward retail contracts, are mitigated to the greatest extent possible.

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

Both RTC and Marginal Losses are major projects that require not only a large investment of ERCOT's time and resources, but also major time and cost investments from all ERCOT market segments. Of the two, RTC is by far the more ambitious undertaking, but is also the one most likely to produce substantial benefits for all market participants if properly designed and executed. ERCOT stakeholders already have very limited qualified staff as well as limited budgets for actively participating in the design and implementation of major changes to the ERCOT market structure. Developing two unrelated projects at the same time is not efficient and may cause project failures in both areas; we see such an approach as exponentially increasing uncertainty in the market. Should the Commission be inclined to move forward with RTC, then a reasonable course would be to delay any decision to pursue or implement any additional major projects, enabling market participants to devote all of their available resources to ensuring that RTC is

designed and implemented in as optimal a manner as possible. With or without the coupling of marginal losses with RTC, the ERCOT Steel Mills believe that the potential benefits of adopting marginal losses, relative to cost and risk, are insufficient to warrant moving forward with the marginal losses proposal.

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

No. If anything, contemporaneous adoption of both would create negative synergies for the reasons stated in Question 21 above.

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

See answer to question 21 above.

**III. CONCLUSION**

The ERCOT Steel Mills thank the Commission for the opportunity to provide these comments and urge the Commission to give due consideration to our observations and recommendations.

Respectfully submitted,

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