

April 20, 2023

Sent via email to NeedsStudy.Comments@hq.doe.gov

Dr. Adria Brooks
Transmission Engineer
U.S. Department of Energy
Grid Deployment Office
1000 Independence Ave., SW
Washington, DC 20585

Re: National Transmission Needs Study

Dear Dr. Brooks:

Electric Reliability Council of Texas, Inc. (ERCOT) appreciates the opportunity to provide comment on the public draft of the Department of Energy's National Transmission Needs Study. As the entity responsible for overseeing the planning of the transmission system that serves the majority of the State of Texas, ERCOT understands the critical importance of identifying transmission projects to meet future system needs and the related challenge of forecasting long-range load and generation scenarios many years out. Under ERCOT's oversight of the regional transmission planning process, transmission utilities serving the ERCOT region have constructed over 52,700 miles of transmission lines to reliably and cost-effectively serve the needs of Texas consumers.

Given our deep experience with transmission planning, I commend you and others at DOE for your ample efforts in this study to identify transmission needs across the United States. We appreciate DOE providing ERCOT an opportunity to comment on the discussion draft of this study, and we also appreciate the changes DOE made to the study based on those comments. However, my staff and I still have several concerns with this study. We therefore offer the following comments for your consideration:

Consideration of Relevant Costs

As ERCOT noted in its original comments, DOE's analysis of the economic benefits of new transmission does not give appropriate attention to the substantial cost associated with the transmission additions for which benefits have been identified. Established planning principles dictate that a transmission project may be justified under economic criteria only if the estimated benefits of the project exceed a measure of its estimated costs. If a project's benefits don't exceed that measure, the project cannot be justified under economic criteria. The study identifies substantial economic benefits of a number of new transmission facilities across the country, and

in particular, projects linking Texas to the western United States and the “Plains” region.¹ However, the study does not address the cost of these projects, which in many cases is likely to be very substantial, given the contemplated scale. ERCOT therefore recommends that the DOE provide a more robust cost-benefit analysis with estimates of project costs so that the net benefit of these additions can be fully understood. Without such an analysis, this study does not establish that an independent economic “need” exists to support the construction of expansive and costly new interregional transmission lines.

In the updated public version of the study, DOE responds to ERCOT’s concern by noting that “[t]he National Transmission Needs Study is not meant to displace the transmission reliability or planning responsibilities” of regional entities. See study at 156. ERCOT does not read this to address the stated concern. Cost considerations are relevant in any case where new transmission is proposed based on economic principles; they are not limited to traditional regional planning processes.

In evaluating project costs, DOE should consider that adding substantial capacity between ERCOT and other regions (such as the 9.8 GW [median] recommended for connecting ERCOT to the Plains region by 2035²) would require a number of new separate transmission lines, each limited to approximately 1.5 GW. This is because relying on a single point of interconnection to provide this transfer capability would result in a material increase in ERCOT’s single largest contingency, which would in turn require a substantial increase in ERCOT’s costs of ancillary services to counter the operational risk of losing the facility while it is importing or exporting. The costs of building these separate points of interconnection should be considered.

Increasing transfer capability between ERCOT and other regions would also result in the need for additional transmission facilities to address stability and voltage limits that would be encountered for each of the new injection points. Voltage and stability limits often dictate the limits for interregional transfer capability. The study does not adequately consider the limitations imposed by these constraints or the additional costs associated with the facilities needed to mitigate the constraints. The cost of these upgrades could be significant and, in some cases, could exceed the costs of the proposed lines.

In addition to the costs of the identified transmission facilities and the land on which they would be built, DOE’s assessment should include consideration of other costs attributable to the proposed changes to the grid, which would include the following:

- Additional transmission upgrades that may be needed to ensure sufficient grid strength and inertia

¹ Study at viii-ix.

² Study at ix, 156.

- Changes in dispatch costs due to retirements of older or less efficient generation caused by the increased transfer capability
- Changes the increased transfer capability will have on the regional dispatch costs due to intermittency of renewable resources
- Changes to operating reserve requirements due to increased reliance on intermittent resources
- Potential changes to existing market designs and Texas state rules to manage interregional transfers

Interdependency of Transmission Benefits

The study identifies a number of benefits associated with additional connections between Texas and other regions of the country. For example, the study notes that the increased transfer capability would help address capacity shortages under emergency conditions like those that occurred during the February 2021 cold weather event.³ The study also identifies Texas as one of the regions in greatest need of cost-effective transmission growth.⁴ However, the economic, reliability, and resiliency benefits identified in the study for Texas cannot be achieved by implementing only certain projects identified as providing the highest value. Rather, the benefits depend on additional proposed transfer capability being built between other regions. As the study notes, “the coincident scarcity of generation resources among ERCOT’s immediate neighbors during [the February 2021 cold weather event] calls into question the value of increased transfer capability limits without an accompanying increase [in] multiregional transfer capability”⁵ Any analysis of improvements would therefore need to consider the costs of building all of these facilities—not just a select few facilities that the study identifies as having the highest value.

Reliance on Anomalous 2021 Data

The study explores historical trends since 2012 to identify a need for transmission investment. The study uses several metrics to highlight the regional market price differences and congestion. However, the study still fails to fully account for data that may skew the overall historical trend. The most obvious example is the use of 2021 price data for ERCOT and SPP.⁶ The February 2021 winter storm was a statistical outlier by any metric. Some analyses suggest this storm was a 1 in 100 or even a 1 in 130-year event for the Texas region.⁷ The extreme weather produced equally extreme market pricing outcomes, as energy costs in ERCOT in 2021 were six

³ Study at 51.

⁴ Study at 106.

⁵ Study at 51.

⁶ Study at 29.

⁷ See *Reliability and Resilience in the Balance*, Texas Section of the American Society of Civil Engineers at 46, available at <https://www.texasce.org/wp-content/uploads/2022/02/Reliability-Resilience-in-the-Balance-REPORT.pdf> (“Winter Storms Uri . . . appears to be a 1 in 100- or 130+-year risk event.”).

times higher than in 2020 due to the February 2021 winter storm.⁸ Such anomalous results should not be expected to reoccur with any regularity. While ERCOT appreciates DOE's efforts to reduce the report's emphasis on the anomalous 2021 data by introducing data from additional time periods, continued reliance on 2021 data would still tend to overestimate the benefits of increased interregional transmission connections between ERCOT and other regions because of reforms undertaken since 2021 that would reasonably be expected to reduce the likelihood and the financial impact of a similar event.⁹

For example, the Public Utility Commission of Texas (PUC) has adopted market pricing changes, including a \$4,000/MWh reduction in the system-wide offer cap, that would alter the value of transmission between ERCOT and other regions if a similar loss of generation were to occur today.¹⁰ Additionally, the PUC has adopted rules requiring a number of important reforms, such as requiring weatherization of generators, transmission facilities, and critical gas infrastructure,¹¹ creating new market products that ensure the availability of alternative on-site fuel supplies in the event of gas curtailments or shortages that impact generators,¹² requiring operators of gas supply infrastructure to register with transmission utilities as critical loads,¹³ and mapping the natural gas supply chain to enable identification of critical gas infrastructure needed to support power generation.¹⁴ These changes should be accounted for in estimating the economic benefits of new interregional transmission projects. Furthermore, an ongoing market re-design will alter future market outcomes and therefore impact many of the conclusions found in the study.

Consideration of Generator Retirements

Building more transfer capability between regions could reduce the total reserves available to all regions because the increased competition from other regions could lead some generators to retire. As ERCOT noted in its previous comments, these retirements would impact the economic benefits cited in the study and should therefore be considered as part of the study.

⁸ See *2021 State of the Market Report for the ERCOT Electricity Markets*, Potomac Economics (May 2022) at 11, available at https://ftp.puc.texas.gov/public/puct-info/industry/electric/reports/ERCOT_annual_reports/2021annualreport.pdf (“Average real-time prices rose to \$167.88 per MWh in 2021, more than 6 times higher than in 2020, due almost entirely to the effects of Winter Storm Uri.”).

⁹ See Study at 128-129.

¹⁰ *Review of the ERCOT Scarcity Pricing Mechanism*, Public Utility Commission of Texas, Order (Dec. 2, 2021) https://interchange.puc.texas.gov/Documents/52631_47_1171647.PDF. DOE did note that “[t]he high prices found in ERCOT in 2021 may also have been reduced had certain regulatory changes already been implemented, including requirements for weatherization for generation resources and lower peak price limits.” Study at 29. However, as discussed above, ERCOT believes that the establishment of the price cap and other reforms would need to be considered in any cost-benefit analysis.

¹¹ See Tex. Util. Code § 35.0021; Tex. Nat. Res. Code § 86.044; 16 Tex. Admin. Code § 25.55.

¹² See [Nodal Protocol Revision Request 1120](https://www.ercot.com/services/programs/firmfuelsupply), Create Firm Fuel Supply Service; ERCOT Firm Fuel Supply Service Request for Proposals, <https://www.ercot.com/services/programs/firmfuelsupply>.

¹³ See 16 Tex. Admin. Code § 25.52(h).

¹⁴ Tex. Util. Code § 38.201. As required by section 38.201(c), the supply chain map was jointly developed by the PUC, the Railroad Commission of Texas, the Texas Department of Energy Management, and ERCOT.

For ERCOT’s operational purposes, this additional transfer capability also means that adding 10 GW of transfer capability between ERCOT and the Plains region, for example, would not equate to an increase of 10 GW in ERCOT’s reserves. These retirements could result in ERCOT becoming more reliant on sources of generation located outside of Texas to serve load during certain peak hours. And ERCOT could be put at an operational disadvantage if market designs in neighboring regions lead generators to develop in those areas and both regions end up needing the capacity to serve their load during peak days.

Reliability Risks of More Interconnections

Increasing connections between regions can increase some reliability risks. Generally, more connections to geographically diverse areas would help in slow events, such as the February 2021 winter storm. On the other hand, more connections would make ERCOT more susceptible to fast events like the January 2019 Eastern Interconnection event, which arguably put the entire Eastern Interconnection on the brink of a collapse.¹⁵ DOE should address these risks in the study. In response to ERCOT’s comment raising this concern on the initial draft of the study, DOE points to language added in the public study stating that transmission can help to reduce congestion and losses and to address resource adequacy concerns in certain cases. *See* Study at 151, comment 28. That language does not appear to be relevant to the concern ERCOT is addressing here, which is that greater interdependency between regions increases the risk that more of the country will be affected by large-scale, fast-moving disturbances, and that fewer regions will remain energized and available to help those affected by the disturbance.

Historical Transmission Investment Figures

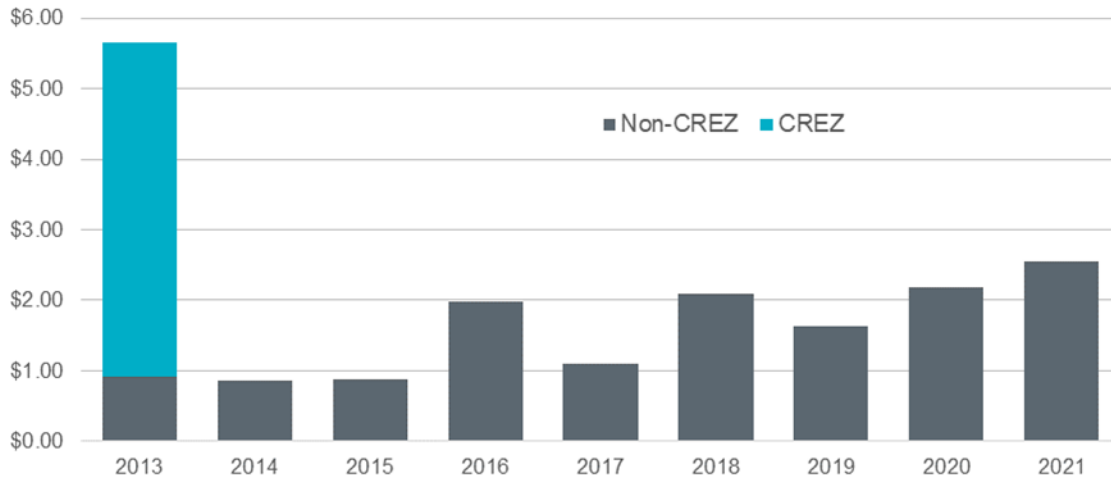
The study states that transmission investment and transmission construction in the ERCOT region have experienced a “sharp decrease” from 2016 through 2020.¹⁶ However, as noted in the report, transmission investment is “inherently lumpy,” and large investments should be considered when determining trends in transmission investment.¹⁷ In ERCOT’s case, the PUCT’s Competitive Renewable Energy Zone (CREZ) initiative, which resulted in a number of major transmission projects that connected wind-rich areas in West Texas to population centers, yielded significant new transmission investment from 2013 to 2016. When transmission investment over the past decade is considered, ERCOT has actually seen a steady increase in the transmission investment (see figure below).

¹⁵ https://www.nerc.com/pa/rrm/ea/Documents/January_11_Oscillation_Event_Report.pdf.

¹⁶ Study at 22.

¹⁷ Study at 19.

ERCOT Transmission Improvements by In-Service Year
(\$ Billion)



Also, as shown in Table IV-1 in the study, Texas’s average Load-Weighted Circuit-Miles is the highest compared to all other regions and more than twice the regional average. ERCOT appreciates DOE’s acknowledgment on page 20 that Texas built more transmission than other regions. Study at 20. However, the report’s suggestion that transmission investment and construction has experienced a “sharp decrease” from 2016 through 2020 remains inaccurate.

We appreciate the opportunity to review the study and your consideration of these comments. Please feel free to contact me if you would like to discuss these comments further.

Respectfully,

/s/ Woody Rickerson

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