DOE National Transmission Needs Study – Draft for Public Comment

Comments of the American Council on Renewable Energy (ACORE)

April 20, 2023

I. Introduction

The American Council on Renewable Energy (ACORE) is a national nonprofit organization that unites finance, policy and technology to accelerate the transition to a renewable energy economy. ACORE's members include developers, manufacturers, top financial institutions, major corporate renewable energy buyers, grid technology providers, utilities, professional service firms, academic institutions and allied nonprofit groups.

ACORE appreciates the Department of Energy (DOE)'s compilation and analysis of these data and studies of transmission needs and development for this important assessment of the nation's transmission needs. Not only does the draft National Transmission Needs Study ("Needs Study") show the critical need for new transmission, but it also highlights the limitations of the current transmission planning processes. This analysis provides further impetus for the Federal Energy Regulatory Commission (FERC) to act on the pending proposed rulemakings on Regional Transmission Planning and Cost Allocation ("Transmission Planning Proposed Rule")[1] and on Generator Interconnection Procedures and Agreements ("Interconnection Proposed Rule").[2] Moreover, once finalized, the Needs Study will serve as a resource for other DOE endeavors that contribute to the needed expansion of transmission, as recognized by DOE's statement that the Needs Study "will also support the implementation of existing Department programs, including the Department's Loan Programs and Transmission Infrastructure Program, the regional transmission planning processes, and the potential designation of National Interest Electric Transmission Corridors (NIETC)."[3]

[1] *Building for the Future Through Electric Regional Transmission Planning and Cost Allocation and Generator Interconnection*, Docket No. RM21-17-000, 179 FERC ¶ 61,028 (2022).

[2] *Improvements to Generator Interconnection Procedures and Agreements*, Docket No. RM22-14-000, 179 FERC ¶ 61,194 (2022).

[3] Needs Study at 1.

II. Scope of the Study

DOE provides a sound basis for the scope of the study by defining a transmission need as "the existence of present or expected electric transmission capacity constraints or congestion in a geographic area"[4] and then incorporating the full array of benefits that result from addressing such needs. Specifically, ACORE supports the following description of need provided by DOE:

> Geographic areas where a transmission need exists could benefit from an upgraded or new transmission facility— including non-wire alternatives—to improve reliability and resilience of the power system; alleviate transmission congestion on an annual basis; alleviate transmission congestion during real-time operations; alleviate power transfer capacity limits between neighboring regions; deliver cost-effective generation to high-priced demand; or meet projected future generation, electricity demand, or reliability requirements.[5]

The comment matrix contained in Appendix A-2 lists comments received during the consultive period. ACORE strongly disagrees with the comment from the Southeastern Regional Transmission Planning (SERTP) entity that the Needs Study *"*undertakes a very broad analysis of 'transmission needs' rather than the statutorily specified study of 'electric transmission capacity constraints or congestion.'"[6] The breadth of the study is needed to show that the existence of capacity constraints and congestion on the current transmission system directly impedes achievement of the myriad benefits of transmission, including access to more cost-effective generation, including resources developed in future years, and enhanced reliability and resilience, especially in the face of extreme weather. Therefore, DOE's description of need and the scope of the study fit squarely within Section 216 of the Federal Power Act which requires DOE to conduct a study of electric transmission system capacity constraints and congestion.[7]

The draft Needs Study particularly demonstrates the strong reliability benefits that arise from addressing transmission capacity constraints and congestion, especially during extreme weather events and the added benefit of mitigating price spikes during such events. These benefits are also confirmed by the following findings of several recent studies issued by ACORE:

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[4] *Ibid.*

[5] *Id.* at 1-2.

[6] *Id.* at 123.

[7] 16 U.S.C. 824p(a)(1); Needs Study at 5.

- During Winter Storm Uri in February 2021, an additional gigawatt (GW) of transmission ties between the Texas grid and the Southeast could have saved nearly $1 billion during that storm.[8]

- Similarly, an additional GW of interregional transmission capacity between a number of regions would have saved nearly $100 million during Winter Storm Elliott in December 2022.[9]

- While the Midcontinent ISO (MISO) benefits analysis of the first tranche of lines in its Long-Range Transmission Planning initiative estimates the value of reduced power outages to be between $1.2 billion to $11.5 billion, a more accurate measurement would be $21 billion.[10]

III. Improvements to Transmission Planning

The draft Needs Study correctly highlights not just the critical need for transmission itself, but for improvements to regional and interregional planning. While DOE states that the Needs Study is not meant to displace current planning processes, they also explain that it "is intended to help inform and drive effective regional and interregional planning to properly assess the multiple values of transmission."[11] Further, DOE points out that:

> More holistic and comprehensive planning assessments that consider a range of scenarios of the future of the bulk power system help ensure a more robust and cost-effective bulk power system that will address future needs and ensure that expected transmission constraints and congestion are identified and mitigated before they harm consumers.[12]

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[8] Goggin, Michael, Grid Strategies LLC, *Transmission Makes the Power System Resilient to Extreme Weather* (July 2021), available at: https://acore.org/wp-content/uploads/2021/07/GSResilient-Transmissionproof.pdf.

[9] Goggin, Michael, Grid Strategies LLC, *The Value of Transmission During Winter Storm Elliott* (February 2023), available at: https://acore.org/wp-content/uploads/2023/02/The-Value-of-Transmission-During-Winter-Storm-Elliott-ACORE.pdf.

[10] Gramlich, Rob, *Enabling Low-Cost Clean Energy and Reliable Service Through Better Transmission Benefits Analysis: A Case Study of MISO's Long Range Transmission Planning* (August 2022), https://acore.org/wp-content/uploads/2022/08/ACORE-Enabling-Low-Cost-Clean-Energy-and-Reliable-Service-Through-Better-Transmission-Analysis.pdf.

[11] Needs Study at 2.

[12] *Id.* at 3.

ACORE strongly agrees with DOE's findings regarding the shortcomings in the current transmission planning processes and the necessity of improving regional and inter-regional transmission planning. This is confirmed by the Brattle Group and Grid Strategies LLC's finding in their assessment of transmission planning:

> Most of the planning processes used today result in inefficient investments that increase total system-wide costs. The narrowly focused current approaches do not identify opportunities to take advantage of the large economies of scale in transmission that come from "up-sizing" reliability projects to capture additional benefits, such as congestion relief, reduced transmission losses, and facilitating the more cost-effective interconnection of the renewable and storage resources needed to meet public policy goals.[13]

The identification of transmission needs is fundamentally intertwined with a more holistic, long-term transmission planning process that covers a wider geographic area, and that incorporates interregional transmission needs. Current shortcomings in transmission planning highlight the importance of this analysis. The final Needs Study therefore presents an opportunity for DOE to further enhance the discussion of the improvements needed to transmission planning. ACORE asks that DOE provide additional clarity about where there are shortcomings in the regional and interregional transmission planning processes and where there are best practices employed.[14]

Improved transmission planning should also involve greater incorporation of grid-enhancing technologies (GETs). DOE explains that GETs "are not explicitly modeled in the studies considered here," but that a need for additional transmission capacity "could be met, at least in part, by increasing the carrying capacity of existing grid infrastructure already within the region." ACORE agrees and strongly supports incorporation of GETs into transmission planning and the interconnection studies.[15]

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[13] Pfeifenberger, et al, *Transmission Planning for the 21st Century: Proven Practices That Increase Value and Reduce Costs*, (October 2021) at 3, available at: https://acore.org/transmission-planning-for-the-21st-century/.

[14] See for example, Gramlich (August 2022).

[15] See ACORE Comments on Transmission Planning Proposed Rule at 15-16 (August 2022), available at: https://acore.org/wp-content/uploads/2022/08/ACORE-Comments-on-FERCs-Transmission-Planning-NOPR.pdf; ACORE Comments on Interconnection Proposed Rule at 6-7 (October 2022), available at:

IV. Recommended Improvements for Final Needs Study

While ACORE is supportive of the draft Needs Study, we also recommend several areas for improvement for the final study.

Section IV of the draft Needs Study provides valuable data on historical transmission investments, both in total and by driver and developer. These data affirm the findings in the prior section about the limitations of the current transmission planning process, as shown by the following notable data points:

- Incumbent transmission developers, or entities that develop transmission within their own retail distribution footprint, have always dominated project development space nationwide.[16]
- The proportion of circuit-miles installed to provide high transmission capacity for moving generation long distances dropped precipitously after 2013, and few circuit-miles have been installed in response to this primary driver since. The proportion of circuit-miles installed to increase system reliability, however, has grown with time.[17]

These two findings are interrelated and reflect FERC's findings that "the regional transmission planning and cost allocation processes have yielded limited investment in regional transmission facilities"[18] and "the vast majority of investment in transmission facilities since the issuance of Order No. 1000 has been in local transmission facilities."[19] To shed further light on the implications of the shortcomings in current planning processes, ACORE therefore recommends that the final Needs Study provide an additional breakdown of this historical data as follows:

- Show how the data on transmission drivers in Figure IV-3 is aligned with the types of developers of such transmission shown in Figure IV-2, and whether or not these projects were incorporated into the regional planning process.

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https://acore.org/wp-content/uploads/2022/10/ACORE-Comments-on-FERC-Proposed-Rule-on-Improvements-to-Generator-Interconnection-Procedures-and-Agreements.pdf.

[16] Needs Study at 20.

[17] *Id.* at 22.

[18] Transmission Planning Proposed Rule at P 39.

[19] *Id.* at P 40.

- Within the above data, include the share that is built to replace existing lines, which are not typically included in the planning process.[20]

DOE characterized the studies reviewed into three scenarios regarding load growth and clean energy penetration: Moderate/Moderate; Moderate/High; and High/High, and notes that "modeling for all studies was performed before the passage of the bipartisan Infrastructure Investment and Jobs Act of 2021 and the Inflation Reduction Act of 2022," and that the "Moderate/Moderate scenario group most closely represents the evolution of the power system had IIJA and IRA not been enacted."[21]

ACORE recommends the final Needs Study use the High/High scenario as the most reflective of the drivers of transmission needs. Moderate clean energy projections are not reflective of these two important pieces of legislation and their significant impact on future clean energy growth. Moreover, due to the ongoing efforts at greater electrification of buildings and transportation, the high load scenario is best representative of the base case.

For regional transmission comparisons, DOE uses the "carrying capacity (GW or TW) of a modeled power line multiplied by the length (miles) of the line," explaining that "GW-mi or TW-mi is a convenient unit for capacity expansion models but is not a common practice in industry. Transmission planners and developers quantify power lines by their nominal voltage rating (kilovolts, kV) multiplied by the length (miles) of the line."[22] As DOE explains, shorter lines have a higher carrying capacity. Yet these different lengths and voltages serve different purposes and grouping them all into a single measure can make it more difficult to compare the identified needs to the planned transmission**.**

DOE uses a different measure of interregional transmission. For the analysis of interregional transfer capacity, the draft study uses "the amount of power that new or upgraded lines can move between neighboring regions, regardless of the length of the lines that make that connection across boundaries."[23]

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[20] *Id.* at P 385.

[21] Needs Study at 84.

[22] *Id.* at 88.

[23] *Id.* at 96.

The Needs Study therefore uses different measures for the interregional and regional transmission needs and plans, but the developments of interregional transmission could impact regional transmission. For example, power delivered into a region would then need to be distributed through a regional line. DOE should at a minimum qualitatively discuss the relationship between these two analyses.

V. Additional Resources for Final Study

ACORE recommends that the following resources be reviewed and incorporated into the final analysis. A brief summary of the primary findings from each is also provided.

- The Value of Transmission During Winter Storm Elliott, Grid Strategies LLC (2023)

An additional GW of interregional transmission capacity between a number of regions would have saved nearly $100 million during Winter Storm Elliott in December 2022.

- The Benefit and Urgency of Planned Offshore Transmission: Reducing the Costs of and Barriers to Achieving U.S. Clean Energy Goals, The Brattle Group (2023)

Well-planned offshore transmission can integrate offshore wind generation more cost effectively while also reinforcing the onshore grid, with cost and resilience benefits spread across regions.

- Enabling Low-Cost Clean Energy and Reliable Service Through Better Transmission Benefits Analysis: A Case Study of MISO's Long Range Transmission Planning, Grid Strategies LLC (2022)

The multiple benefits analyzed by the Midcontinent Independent System Operator for its Long-Range Transmission Planning process generally follow best practices for benefits analysis.

- Multi-Value Transmission Planning for a Clean Energy Future: A Report of the Transmission Benefits Valuation Task Force, Telos Energy (2022)

A wide range of benefits should be considered when evaluating transmission, including reduced operating costs, environmental benefits, access to low-cost renewable energy, generation capital cost reductions, risk mitigation, and improvements in reliability and resilience; and should be measured over the lifetime of the asset.

VI. Conclusion

ACORE greatly appreciates the significant value of this Needs Study and looks forward to the final version.

Respectfully submitted,

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