

**UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**

**Establishing Interregional Transfer)
Capability, Transmission Planning and)
Cost Allocation Requirements)**

Docket No. AD23-3-000

**TESTIMONY OF DAVID W. SOUDER
ON BEHALF OF THE
EASTERN INTERCONNECTION PLANNING COLLABORATIVE**

Thank you for the opportunity to participate in this workshop, addressing critically important national issues associated with extreme conditions and other challenges associated with planning for increased reliability and resilience across the regions. My name is David W. Souder. I am currently the Executive Director of System Planning of PJM Interconnection, L.L.C. (“PJM”), where I am responsible for the System Planning Modeling & Support, Transmission Planning and Infrastructure Coordination departments. Collectively, these departments are responsible for the development and maintenance of planning models, the implementation of the PJM Regional Transmission Expansion Plan, and all the necessary coordination required to ensure operations is prepared to place transmission and generation projects into service. I have served PJM for more than 30 years in a variety of engineering and supervisory roles within System Planning and Operations.

I currently serve as Vice Chair of the Eastern Interconnection Planning Collaborative (EIPC) Technical Committee, and it is in that role that I am submitting this testimony.

In accordance with the EIPC’s participation in Panel 3, “Process for Establishing Interregional Transfer Capability Requirements,” my testimony will primarily address the technical requirements for the development of a methodology (including the criteria, metrics and models) that can be used by transmission planners, the Commission and others to identify the appropriate interregional transfer capability across various interfaces of the bulk electric system during extreme conditions.

I. BACKGROUND AND STATEMENT OF INTEREST

The EIPC is an organization that was formed in 2009 by North American Electric Reliability Corporation (“NERC”)-registered Planning Coordinators in the Eastern Interconnection (“EI”) to perform coordinated interconnection-wide transmission analysis (*see* Figure 1, below). The EIPC is a “Technical Organization” pursuant to its Mission Statement, which provides a forum for interregional coordination of the combined plans of its regional members (representing both ISO/RTO and non-ISO/RTO regions) to evaluate how well the regional plans

mesh to maintain the reliability of the bulk electric system. The EIPC develops transmission system models and performs interregional scenario analysis to identify stress points on the EI-wide system, providing feedback to enhance the regional plans of our members. The EIPC also publishes periodic reports to assess the state of the Eastern Interconnection, the most recent of which was the 2021 “State of the Grid” Report (“2021 Grid Report”).¹ In the 2021 Grid Report, the EIPC concludes:

This report, as well as other studies completed by EIPC, demonstrate that the respective Planning Coordinator transmission planning and interconnection processes have yielded transmission plans that are well-coordinated on a regional and interconnection-wide basis. EIPC studies also show that Planning Coordinators’ regional transmission plans, including generator retirements and additions, require continued study and interconnection-wide coordination to ensure that individual regional plans do not conflict with the regional plans of other Planning Coordinators.

The 2021 Grid Report, and other reports documenting additional EIPC initiatives, serve as informational tools for policy makers and regulators by providing objective information from those directly charged with the responsibility to plan and operate a reliable transmission grid for the EI. Such studies address the present and future state of transmission planning for bulk electric system reliability and the interregional coordination of those efforts.

In 2010, under a grant from the U.S. Department of Energy (DOE), the EIPC undertook an extensive potential “build-out” of the EI grid in response to various scenarios developed by stakeholders and the Eastern Interconnection States Planning Council (“EISPC”). Those scenarios focused on the integration of renewable resources across the EI. Since that study, the EIPC has continued to publish its analyses and work with stakeholders on the interconnection-wide issues outlined above. This information is available on the EIPC’s website at www.eipconline.com.

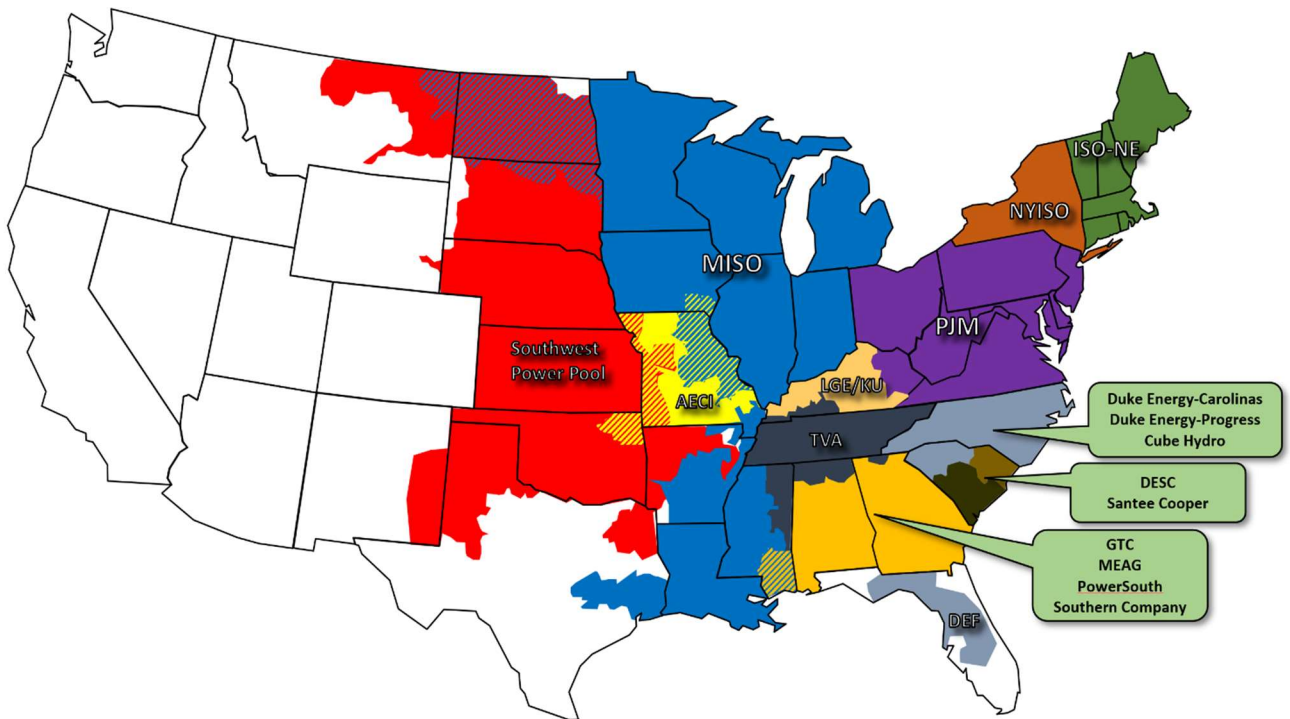
As noted in the 2021 Grid Report referenced above, EIPC’s analyses over the years have consistently confirmed that the EI remains strong and that individual and collective transmission planning activities have yielded a system that is reliable and well-coordinated on both a regional and interconnection-wide basis. Nevertheless, looking forward, we recognize that the grid is being challenged in new ways as the profile of the generation fleet, customer demands, and the impacts of weather and other extreme conditions are changing. Continued vigilance, effective use of planning tools and coordination with policymakers are essential for ensuring that today’s robust and reliable grid remains so in the future. In December 2021, the EIPC issued a White Paper which identifies the challenges ahead and offers recommendations to federal and state regulators and other policymakers to ensure the reliability of the transmission grid as system operators work to integrate an increasing level of renewable resources.² The EIPC’s recommendations for policymakers in the White Paper includes the need for:

¹ See EIPC State of the Grid Report – 2021, *available at*: <https://static1.squarespace.com/static/5b1032e545776e01e7058845/t/61b8f9ae4172c60bdd3a72ad/1639512495712/2021+EIPC+State+of+the+Grid+12-7-21.pdf>.

² See EIPC, Planning the Grid for a Renewable Future, *available at*: <https://static1.squarespace.com/static/5b1032e545776e01e7058845/t/615c4f5a4db2646842186286/1633439579689/EIPC-Hi+Renewables+WHITE+PAPER+-+FINAL+FOR+POSTING+-+10-5-21%60.pdf> (“White Paper”).

- Enhanced education and collaboration between the utility industry, policymakers and regulators;
- Transmission sufficient to reliably and cost-effectively integrate increasing levels of new local and remote renewable wind and solar resources;
- Collaboration among the electric industry, policymakers, and regulators to ensure that future initiatives are achievable in a timely, cost effective and reliable manner; and
- A seat at the policymaking table for power system operators and planners to articulate the system reliability needs and how those needs are changing, so that public policy has built-in processes to account for such needs.

Figure 1.



Accordingly, the EIPC and its member regions stand ready to assist the Commission in the development of a methodology for the identification of the appropriate amount of incremental interregional transfer capability that would be available to address multi-regional, if not interconnection-wide extreme events. Such events could include widespread physical or cyber-attacks on critical infrastructure such as natural gas pipelines serving multiple regions within the Interconnection or extreme weather events that impact a wide area within the Interconnection. We view this challenge as an extension of the interregional planning coordination currently performed by our members individually, and collectively through EIPC.

II. INTERREGIONAL TRANSFER CAPABILITY TODAY

Today, transmission planners perform analyses to review their respective Balancing Authorities' connections to other Balancing Authorities in order to determine and plan for an appropriate level of transmission transfer capability. This transfer capability is utilized to address system reliability concerns, enable firm or economic transfers, and allow for emergency purchases. Moving forward, the goal of minimum interregional transfer criteria would be to develop a metric and methodology that would be informative to transmission planners to facilitate their determination of the incremental increase in interregional transfer capability that would help address reliability concerns in those situations where there is a widespread impact within the Interconnection (or multiple regions of the Interconnection) of an extreme event (such as extreme weather, cyber and/or physical events threatening electric system reliability) and the changing resource mix.

III. EIPC INITIAL THOUGHTS ON DEVELOPING APPROPRIATE METRICS TO MEASURE THE EFFECTIVENESS OF TODAY'S INTERREGIONAL TRANSFER CAPABILITY

The transmission system enables the delivery of economic transfers, firm capacity, and emergency power purchases. A robust transmission system helps maintain reliability between regions during extreme events, when reliable power is needed the most. Maintaining sufficient Interregional transfer capability will become more important to preserve reliability during more frequent frigid winters and extreme hot summer peak loads, and in response to potential catastrophic loss of infrastructure that impacts a wide portion of the Interconnection. Understanding and planning to the appropriate level of Interregional transfer capability will lead to enhanced reliability, enabling the continuous delivery of electric power to customers during extreme weather, fuel supply disruptions and physical or cyber-attacks.

The EIPC can assist in the development of metrics and a methodology that would be informative to transmission planners to facilitate their determination of the appropriate level of interregional transfer capability (*i.e.*, minimum interregional transfer criteria) between regions under extreme conditions. The resultant minimum interregional transfer criteria would be informative to help ensure adequate transfer capability between regions, enhancing both reliability and resilience as the nation faces more extreme weather and other transmission-related challenges. Although the metrics and analysis should be common across the Interconnection for the reasons stated below, the application of those metrics and analysis to any particular interregional tie would reflect the specific locational and regional characteristics of the two adjoining regions.

While the EIPC will be focusing its validation analysis on the Eastern Interconnection, ultimately the minimum interregional transfer criteria effort could result in a transmission driver used by transmission planners across the country to develop the necessary transmission reinforcements needed to maintain the appropriate level of interregional transfer capability.

EIPC membership offers the following three-step approach:

Step 1 – Metric Development:

- Work with the industry, the United States Department of Energy (“DOE”) National Laboratories and Technology Centers (“National Labs”), and the National Oceanic and Atmospheric Administration (“NOAA”) to help develop a metric to quantify the necessary interregional transfer capability for extreme events covering a wide area.
 - Engage NOAA and National Labs experts to help identify extreme weather patterns that have an impact on the EI and assess the impact on load and generation performance. The focus should be on extreme events that require the exchange of significant volumes of interregional power transfer, such as extreme temperatures.
 - Determine a range of transfer capabilities needed to offset the impacts of extreme temperatures on load, unit performance (paying specific attention to impact on predominant fuel type performance), and the impact of potential loss of transmission path(s).
 - Identify any major contingency that has the potential to impact more than two regions, regardless of the cause (e.g., an extreme bulk electric system contingency, loss of a major gas pipeline or supply facility, physical or cyber-attack on key infrastructure affecting electric system reliability).

- Step 2 – Scenario Analysis:
 - EIPC will work with National Labs and NOAA experts to develop probable extreme weather patterns in order to establish source/sink combinations.
 - EIPC will develop a future Eastern Interconnection Base Case (5 -10-year) reflecting the changing resource mix. This process would begin with updating the most recent MMWG Series Planning Models
 - EIPC will develop the contingency list (standard plus extreme event contingencies).
 - EIPC will perform analysis to assess transmission adequacy by iteratively raising source generation and sink load, applying contingencies and identifying violations.

- Step 3 – Results Validation (Comparison of Scenario Analysis Results to Metric):
 - EIPC will identify the transfer levels at which violations are identified, including an initial value.
 - EIPC will perform analysis to trend violations that are common across scenarios.
 - EIPC will compare scenario analysis results to historical NERC Transmission Loading Relief issuance, market congestion, and applicable emergency procedures.
 - Transmission reinforcements may be needed when violations appear at transfer levels below a minimum interregional transfer level metric

IV. GUIDING PRINCIPLES

As the Commission approaches the issue of whether to require planning for interregional transfer capability, EIPC believes that certain guiding principles from a technical perspective should be kept in mind:

1. No Substitution for Regional Resource Adequacy. Planning for and utilizing interregional transfer capability should not serve as a substitute for each region ensuring its own resource adequacy. As noted herein, planning processes already consider a certain degree of transfer capability from adjoining regions. The question before the Commission is whether regions should modify their planning processes to provide a greater degree of interregional transfer capability to enhance the amount of transfer capability that a region could normally count on from its neighbors in such circumstances. The events in question are those that affect a number of regions within the Interconnection and could include such extreme but plausible scenarios as a widespread storm that impacts transmission and generation infrastructure across multiple regions or a physical or cyber- attack on infrastructure such as interstate pipelines that serve multiple regions within the Interconnection.
2. Recognition of the Industry's Culture of Mutual Support Between Regions. Any Commission action should recognize the longstanding history of mutual support that has been a hallmark of the industry since its inception. Commission policy guidance in this area should encourage and enhance those existing arrangements and not detract from them or add regulatory or compliance requirements to a process that works well to support reliability across regions.
3. The Value of Consistent Analytics Across the Interconnection. The Commission should recognize the value of consistent analytics and metrics across an Interconnection, while also respecting regional differences as to transfers between neighboring regions. EIPC proposes to address this by developing common analytics and metrics in recognition of the fact that the Eastern Interconnection is one large, interconnected machine and that consistency in the analysis and metrics is provided to address reliability and resource adequacy concerns across the Interconnection. By contrast, a panoply of different analyses and metrics will inevitably lead to one region potentially leaning on its neighbors or causing unaccounted for flows on other systems.
4. Respecting Regional Differences. Although the EIPC believes that it is appropriate to develop common metrics (just like there are common baseline reliability standards affecting all users of the bulk electric system), the application of those metrics to a given seam between two regions should be left to neighboring regions to develop through their Joint Operating Agreements and similar means.

The EIPC believes that this division of tasks between the development of common analyses and metrics to be applied within the Interconnection on one hand, versus the application of those metrics on the other hand, provides the appropriate balance between recognizing the impacts of

flows between regions within the Interconnection while respecting regional differences in the application of the metrics and analysis.

V. NEXT STEPS

There is ample record support before the Commission in the Long-Term Regional Transmission Planning proceeding,³ as well as strong support from the state commissions as evidenced in the record of the July 20, 2022 public meeting of the Joint Federal-State Task Force on Electric Transmission, for taking steps to examine enhancements to interregional transfer capability. Given the complexity of this task and the resources which will need to be dedicated to its development, the EIPC believes it important that the Commission indicate support for the effort proposed by the EIPC and use its convening authority to bring forward NERC, the National Labs and states to work with the EIPC on this effort before work begins. Further, the EIPC suggests that the Commission use workshops such as this one to provide for “check-ins” as to the progress of the EIPC efforts in the Eastern Interconnection. Accordingly, the EIPC urges the Commission to provide its support for this effort in the Final Order addressing the LTRTP NOPR, based on the full record developed in that proceeding to date in support of such an initiative.

VI. CONCLUSION

Thank you again for the opportunity to participate in this workshop. The EIPC stands ready to work with the Commission and stakeholders on this endeavor and looks forward to Commission guidance and support for this initiative going forward.

Respectfully submitted,

/s/ David W. Souder

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³ *Building for the Future Through Electric Regional Transmission Planning and Cost Allocation and Generator Interconnection*, Notice of Proposed Rulemaking, 179 FERC ¶ 61,028, (2022) (“LTRTP NOPR”).