UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Transmission System Planning Performance Requirements for Extreme Weather	)))	Docket No. RM22-10-000

COMMENTS OF THE EDISON ELECTRIC INSTITUTE, THE AMERICAN PUBLIC POWER ASSOCIATION, THE LARGE PUBLIC POWER COUNCIL, THE NATIONAL RURAL ELECTRIC COOPERATIVE ASSOCIATION, AND THE TRANSMISSION ACCESS POLICY STUDY GROUP

The Edison Electric Institute ("EEI"), the American Public Power Association ("APPA"), the Large Public Power Council ("LPPC"), the National Rural Electric Cooperative Association ("NRECA"), and the Transmission Access Policy Study Group ("TAPS") (together, the "Trade Associations") submit comments in response to the Notice of Proposed Rulemaking ("NOPR") issued by the Federal Energy Regulatory Commission ("Commission") on June 16, 2022, in the above-captioned docket.[1] The Commission seeks comments on its proposal to direct the North American Electric Reliability Corporation ("NERC"), the Commission-certified Electric Reliability Organization, to submit to the Commission modifications to Reliability Standard TPL-001-5.1 (Transmission System Planning Performance Requirements) to address reliability concerns pertaining to transmission system planning for extreme heat and cold weather events impacting the reliable operations of the bulk electric system.

As discussed herein, addressing extreme heat and cold weather events is complex and requires a holistic approach, including using new and existing tools such as transmission

[1] *Transmission System Planning Performance Requirements for Extreme Weather*, 179 FERC ¶ 61,195 (2022).

planning Reliability Standards. The Trade Associations support addressing the planning for extreme heat and cold weather events in the NERC Reliability Standards. That said, the variation in extreme weather events between regions and the highly varied system topologies of registered entities call for the Commission to vest NERC and the standard drafting team with flexibility in determining how to address the issues identified by the Commission, including potential corrective actions.

I. BACKGROUND

A. The Trade Associations

EEI is the association that represents all U.S. investor-owned electric companies. EEI members provide electricity for about 235 million Americans and operate in all 50 states and the District of Columbia. Collectively, the electric power industry supports more than 7 million jobs in communities across the United States. EEI's members are committed to providing affordable and reliable electricity to customers now and in the future. EEI's members include generator owners and operators, transmission owners and operators and other entities that are subject to the mandatory Reliability Standards developed and enforced by NERC, the Regional Entities, and the Commission.

APPA is the national service organization representing the interests of not-for-profit, state, municipal, and other locally owned electric utilities in the United States. More than 2,000 public power systems provide over 15 percent of all kilowatt-hours sales to ultimate customers in the United States, and serve over 49 million people, doing business in every state except Hawaii. Over 240 public power utilities are registered entities subject to compliance with mandatory NERC Reliability Standards.

LPPC is the association of the 27 largest state-owned and municipal utilities in the

Nation. LPPC's members are located throughout the Nation, both within and outside the boundaries of regional transmission organizations and independent system operators. The members comprise the larger asset-owning utilities in the public power community, owning approximately 90 percent of the transmission assets owned by non-federal public power entities. LPPC members are also members of APPA.

NRECA is the national trade association representing nearly 900 local electric cooperatives and other rural electric utilities. America's electric cooperatives are built by and owned by the people that they serve and comprise a unique sector of the electric industry. Electric cooperatives operate at cost and without a profit incentive. From growing regions to remote farming communities, electric cooperatives power 1 in 8 Americans and serve as engines of economic development for 42 million Americans across 56 percent of the Nation's landmass.

TAPS is an association of transmission-dependent utilities ("TDUs") in more than 35 states promoting open and non-discriminatory transmission access.[2] Representing entities entirely or predominantly dependent on transmission facilities owned and controlled by others, TAPS has long recognized the need for reliable transmission infrastructure that enables TAPS members to serve their load affordably. As TDUs, TAPS members pay, through transmission rates, for investments made by other utilities to meet future reliability needs. In addition, some TAPS members themselves own transmission facilities. Many TAPS members participate in the development of and are subject to compliance with NERC Reliability Standards.

[2] Jane Cirrincione, Northern California Power Agency, is TAPS Chair. Dave Osburn, Oklahoma Municipal Power Authority, is Vice Chair. Terry Huval is TAPS Executive Director.

II. COMMENTS

A. Trade Associations Support Development of Requirements to Address Extreme Heat and Cold Weather, With Sufficient Flexibility Given to the Standards Drafting Team.

Trade Associations share the Commission's desire to better address and respond to extreme heat and cold weather events and therefore support efforts to improve system planning specifically for these extreme heat and cold weather events. The manner and process required to achieve these goals is complex, requiring flexibility and multiple tools, if this effort is to be fully effective.

The purpose of the TPL standard is to establish transmission system planning performance requirements over a broad spectrum of system conditions, including extreme events, "based upon operating experience that may result in wide-area disturbances" and following a wide range of probable contingencies.[3] Including extreme heat and cold weather as described by the Commission potentially could require adding numerous elements and specifics to a planning analysis. Given the wide set of issues and corresponding circumstances that a new or modified standard must entail, the Trade Associations recommend that the Commission defer to the technical competence of the subject matter experts on a standard drafting team in order to develop a risk-based approach to the myriad issues raised in the NOPR.

Electric utilities manage and mitigate risk before, during, and after extreme heat and cold weather events. NERC's strategic plan emphasizes a risk-based focus to reliability, noting that "[a]s reliability and security risks emerge quickly, coordinated and swift development of improved processes, tools, and simulation models provide a strong foundation and catalyst to

[3] "Table 1 – Steady State & Stability Performance Extreme Events", TPL-001-5 - Transmission System Planning Performance Requirements, p. 26.

mitigate these risks."[4] The Commission has long supported this approach and has acknowledged and approved NERC's risk-based approach that directs efforts towards activities with a greater potential impact on Bulk-Power System reliability. In the context of the instant rulemaking, a risk-based approach would empower the standards drafting team to consider whether coordination between a variety of functional entities, and across regions, would be the most effective means of addressing certain identified extreme heat and cold weather events.

B. The Variation in Extreme Heat and Cold Weather Events Among Electric Utilities Based on Their Locations and Systems Call for a Flexible Approach.

Addressing challenges to electric system reliability posed by extreme heat and cold weather should be informed by the highly varied nature of risks and potential consequences to the electric system posed by these events. Different parts of the country face different risks, in terms of both type and severity of weather events. The risks faced by, and appropriate measures for, an entity in Florida may look very different from those of an entity in Texas, Wisconsin, or California; the risks may, moreover, change over time. Entities also vary in terms of the scope of their facilities. For example, some NERC-registered transmission owners own only one or two bulk electric system transmission lines, while others own extensive transmission systems covering a wide range of varying topography. The flexible approach proposed by the NOPR is thus imperative to help ensure that threats are assessed accurately and that selected corrective actions are suited to the region, system topography, and affected entities.[5]

Further emphasizing the need for flexibility in the approach to new or modified standards, many of the Trade Associations' members currently assess risk to their systems due to

[4] ERO Enterprise Long-Term Strategy (Dec. 12, 2019) at 2.

[5] *See*, *e.g.*, NOPR at PP 53, 57, 84.

extreme heat and cold weather effects in varying ways. Some already have developed studies and implemented plans to maintain system performance in light of extreme weather.[6] Electric utilities constantly evaluate and update these risks depending on their particular location and system topology.

In addition, NERC registered entities have obligations under TPL-001-4 to include events that are expected to produce more severe system impacts on the bulk electric system in planning assessments.[7] While NERC develops Reliability Standards that apply on a continent-wide basis, in some instances a regional variance may be developed if a standard cannot be met or complied with because of a physical difference in the Bulk-Power System or because of an operational difference. In the case of extreme heat and cold weather, regional differences require some flexibility or customization because systems vary widely in their topology and electrical characteristics, as well as in the weather impacts they face. The standard drafting team should determine the best possible approach for addressing a continent-wide extreme heat and cold weather planning standard that accounts for geographic, system topology, and other variations, as well as the best approach to accommodating such variations or determining if regional variances are necessary. This approach is consistent with the pending standards development project tasked with confronting the problem of geographic variation in winter weather and improving reliability by preparing generation for extreme cold weather performance and ensuring situational awareness in both planning and operations. The current draft of EOP-012-1 would account for geographic variation without resorting to regional variances by requiring that

[6] *See, e.g.,* Con Edison's Climate Change Vulnerability Study (2019), Climate Change Implementation Plan (2020), and the Summary of 2020 Activities (2021) provide a detailed description of the proactive steps taken by Con Edison since 2013 to advance energy resilience in the face of climate change. These documents and more are found in its Climate Change Resiliency Plan at http://coned.com/en/our-energy-future/our-energy-vision.

[7] NERC Transmission Planning Reliability Standard, TPL-001-4, Requirement R3 and Table 1.

each generating unit subject to the standard be capable of operating at that unit's "Extreme Cold Weather Temperature," which is a value determined for each unit based on historical weather data.[8]

The varied nature of programs already underway underscores the importance of flexibility in any new standards. Any new or modified transmission planning performance standard must account for varying challenges and other factors continent-wide, as well as across each utility's service territory; the nature and scope of each utility's system; and the applicable regulatory framework. Further, the results of any assessment are dependent on a range of assumptions about how and when particular weather impacts will manifest. For example, the standard drafting team should have the ability to develop language allowing entities through the various regional planning processes to establish guidelines for defining extreme weather, extreme heat, or extreme cold because these assumptions could have a wide impact on the studies. While these assessments can provide insights into potential actions to address extreme event risks, they should not be viewed as definitive road maps for next steps. Specifically, the nature of the extreme heat and cold weather events may change faster or slower than previously assumed in the study process, and entities need the ability to modify studies as new information is available. To the extent that such analyses are undertaken, any future investments to address these potential extreme heat and cold weather impacts should take into consideration factors including the potential risks and the time frame in which they may be more likely to manifest, relative to the costs of potential mitigations. In other words, forecasting future events means making judgment calls on the output of models, as is the case with current transmission planning.

[8] Project 2021-07 Extreme Cold Weather Grid Operations, Preparedness, and Coordination, at https://www.nerc.com/pa/Stand/Pages/Project-2021-07-ExtremeColdWeather.aspx.

This is consistent with the Commission's recognition that long-term transmission planning studies cannot mitigate all reliability impacts from extreme heat and cold weather.[9]

In addition, it is important to recognize that these risks are assessed at the appropriate level, whether by a planning coordinator, Regional Transmission Organization, or Independent System Operator. The standard drafting team should review the sufficiency of these analyses before making any determinations regarding how often they should be undertaken and whether they should be mandatory.

C. Use of Benchmarks and Expanding Planning for Extreme Heat and Cold Events Using Steady State and Transient Stability Analyses Warrant Discussion by a Standards Drafting Team.

While Trade Associations support the use of benchmarks generally, ensuring proper benchmarks is critical and appropriately a matter that should be committed to subject matter experts on the standards drafting team. All the examples of benchmarks identified in the NOPR are worth consideration by a drafting team. That said, universal benchmarks for one extreme heat or cold weather event may be challenging to implement given regional differences and the standard drafting team must be able to consider these differences when assessing benchmarks. The drafting team also should address how frequently and quickly an update is required, the entities that should be responsible for updating the benchmark(s), and how to right-size a benchmark to avoid planning and building the system for an overly narrow set of conditions.

The currently-effective TPL Reliability Standard includes requirements for a multitude of system conditions, which include simultaneous outages of generation and transmission facilities. The NOPR contemplates modeling of concurrent generator and transmission outages under extreme heat and cold weather events while attaching corrective action plans to "mitigate

[9] NOPR at P 38.

instances where performance requirements for extreme heat and cold events are not met."[10] It is important to recognize the range and quantity of complexities layered onto the modeling process. For example, whether concurrent generators must be in a single or multiple balancing authority area, and how many are needed for a given study, are important questions for the standard drafting team to consider. Also, if there is a particular combination of generators needed for modeling, a planning coordinator or transmission planner will need to understand the basis for the selection. Whatever proposal the standard drafting team develops, modeling these scenarios will likely require additional resources in time, expertise, and enhanced software capabilities.

The Commission also proposes to direct NERC to require that planning for extreme heat and cold events using steady state and transient stability analyses be expanded to consider a range of extreme heat and cold weather scenarios, including the expected resource mix's availability during extreme heat and cold weather conditions, and the broad area impacts of extreme heat and cold weather. The Commission identified many topics that NERC would be required to address in a modified or new standard. For example, the Commission seeks comment on whether planning coordinators and transmission planners should include contingencies based on their planning area and perform both steady state and transient stability analyses using extreme heat and cold cases. In carrying out such a directive, it is important for entities responsible for performing studies of extreme heat and cold weather to access the data necessary to complete such studies. While it is likely that MOD-032-1 is adequate,[11] FERC

[10] NOPR at P 83.

[11] MOD-032-1 Requirement R1 requires Transmission Planners and Planning Coordinators to "develop steady-state, dynamics, and short circuit modeling data requirements and reporting procedures for the Planning Coordinator's planning area that include," among other things, "[o]ther information requested by the Planning Coordinator or Transmission Planner necessary for modeling purposes." MOD-032-1, R1 & Att. A. Requirement R2 requires other responsible entities to provide such data to the Transmission Planner and Planning Coordinator upon request. This language allows flexibility for the Transmission Planner and Planning Coordinator to request additional items not

should recognize in any final rule that the standard drafting team should be tasked with identifying what data is already collected and what more is needed to ensure that responsible entities performing studies of extreme heat and cold weather conditions have the necessary data.

Similarly, the standard drafting team should be invested with substantial discretion in addressing whether and how wide-area planning studies should be defined geographically or electrically; who should oversee and coordinate the wide-area planning models and studies and who should address the results of the studies; and how those results should be communicated among transmission planners. Trade Associations submit that questions regarding the nature of wide-area studies and who should be responsible are appropriately within the ambit of standard drafting team considerations. Other challenges that the standard drafting team will need to address with the proposed "wide-area" analysis is data sharing with registered entities outside the transmission planner/planning coordinator's footprint and the definition of "wide-area" which may vary across regions.

Another issue that belongs before standard drafting team experts is whether and how to combine and layer probabilistic and deterministic approaches when planning for extreme heat and cold weather conditions in the context of the TPL standard. In response to the Commission's request for comment on sensitivities, if the baseline extreme case used for analysis considers load, generation, and possible interface changes, the number of sensitivity cases as well as the range of factors considered should be relatively small. The load and interface assumptions for the baseline should represent system conditions that are at, or are near, possible seasonal extreme heat and cold weather limits and therefore would provide the information needed to ensure reliability. A wide range of forecast values to evaluate does not

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specifically called out in Attachment 1 to account for, e.g., changing technology, region-specific needs, or (as in this case) revised planning requirements.

necessarily ensure reliability. Sensitivity cases could then be required to evaluate potential generation restrictions resulting from the extreme conditions, but the sensitivities to be evaluated should be selected from a list of possible options with the final determination made by the planning coordinator or transmission planner performing the analysis based on their knowledge of the system and past operational experience. This approach will allow for consideration of regional and individual company differences and eliminate analysis that is not relevant to a particular planning coordinator or transmission planner.

Reliance on probabilistic planning will increase the complexity and risk associated with the development of transmission projects, which will in-turn hamper the construction of needed transmission infrastructure. In addition, use of probabilistic planning in the reliability context is highly speculative and dependent on the judgment of planners. It will be important for the drafting team to consider how an objective, auditable standard that incorporates a probabilistic approach can be drafted to ensure compliance and objective measurement.

D. Any Requirement for a Corrective Action Plan Must Recognize the Statutory Limitations on NERC's Authority.

The Trade Associations support FERC's decision to require corrective action plans addressing vulnerabilities identified in the study process. However, NERC and the Commission should remain mindful of the substantial statutory limitations on NERC's and FERC's authority under section 215(i) of the Federal Power Act ("FPA").[12] Subsection (2) of the provision stipulates that "[t]his section does not authorize the ERO or the Commission to order the construction of additional generation or transmission capacity or to set or enforce compliance with standards for adequacy or safety of electric facilities or services."[13] The limitations in this

[12] 16 U.S,C. § 824o(i).

[13] *Id.*

section bear on certain specific remedial measures the Commission highlights as examples of potential action, including "planning for additional contingency reserves…or increasing intra- and inter-regional transfer capabilities."[14] Therefore, given these jurisdictional limitations, aspects of mitigation identified in the NOPR appear to fall outside of the Commission's and NERC's authority.

The NOPR also suggests that "NERC could . . . establish measures of system performance (stability, voltage, thermal limits, etc.) to determine whether the responsible entities must implement a corrective action plan."[15] Trade Associations support evaluation of performance requirements in the context of extreme heat and cold weather events and agree with the Commission that responsible entities should have the flexibility to determine the best actions to include in their corrective action plan.[16] Transmission planning is one of many options for corrective actions, but other options and tools should be recognized.

In general, the standard drafting team should be charged with determining how to provide the needed flexibility. One possible solution to ensure flexibility in the corrective action plans for extreme heat and cold weather events can be limiting the scope of corrective action plans to a list of system deficiencies and a description of the different actions that could be used to achieve the performance requirements. Each major disaster has unique characteristics whereby after-the-fact assessments, let alone modeling, may not yield the same outcome as the event experienced.

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[14] NOPR at P 84.

[15] *Id.* at P 55.

[16] *Id*. at P 84.

E. Other Extreme Weather-related Events and Issues

While the NOPR focuses primarily on extreme heat and cold weather events, the Commission also notes that long-term droughts, floods, and wildfires also could pose a serious risk to Bulk-Power System reliability over a wide geographical area and could contribute to conditions that affect reliable operation of transmission systems, such as transmission outages, reduced plant efficiency, and reduced generation capacity. Trade Associations support the study of long-term drought impacts on relevant generation (e.g., hydro-electric, geothermal, and nuclear generation) in regions where drought has been, or may plausibly become, an issue. However, the Commission should take a phased approach when requiring changes to address other extreme weather-related events by giving a drafting team time to focus on the extreme heat and cold weather events. A drought event is a sustained long-term condition that may be fundamentally studied and addressed differently than a short-term extreme heat or cold weather event. While drought is a weather condition, it is more appropriately studied with other long-term fuel supply sensitivity assessments. The process and discussion on how to best address extreme heat and cold weather events will provide the Commission insight into how best to address other weather events, such as drought events, and better understand the impacts of Reliability Standard changes before adding other extreme weather events to the planning process.

F. Given the Challenges and Complex Topics Raised in the NOPR, Developing a Standard Warrants a Phased Approach.

The Commission proposes to direct that NERC develop a standard within one year of the effective date of a final rule. The issues raised by the Commission and further issues described by the Trade Associations above demonstrate the complexity of developing an extreme heat and cold weather planning standard. Creating benchmark case definitions and specifying the where

and when of extreme heat and cold weather scenarios that can be measured objectively alone will be challenging. NERC has used phased approaches in standard development in the past, and Trade Associations suggest that the Commission adopt a phased approach here to address critical issues first. Therefore, Trade Associations respectfully request that the Commission allow for a phased approach to develop a standard.

III. CONCLUSION

The Trade Associations appreciate the opportunity to comment on the NOPR, and respectfully request that the Commission consider the comments and requests proposed in this letter. As discussed above, variations in extreme heat and cold weather events among electric utilities based on their differing locations and systems call for a flexible and phased approach, given the challenges and complex topics raised in the NOPR.

Respectfully submitted,

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