UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

North American Electric Reliability Corporation	))	Docket No. RD26-3-000

COMMENTS OF ELECTRIC RELIABILITY COUNCIL OF TEXAS, INC., ISO NEW ENGLAND INC., MIDCONTINENT INDEPENDENT SYSTEM OPERATOR, NEW YORK INDEPENDENT SYSTEM OPERATOR, PJM INTERCONNECTION L.L.C., AND SOUTHWEST POWER POOL

Electric Reliability Council of Texas, Inc. ("ERCOT"), ISO New England Inc. ("ISO-NE"), Midcontinent Independent System Operator ("MISO"), New York Independent System Operator ("NYISO"), PJM Interconnection, L.L.C. ("PJM"), and Southwest Power Pool ("SPP") (collectively, the "ISOs") submit these comments on the Petition of the North American Electric Reliability Corporation ("NERC") for Approval of Proposed Reliability Standard MOD-026-2 filed with the Federal Energy Regulatory Commission ("Commission") on November 4, 2025 in the above-referenced docket ("Petition").

The ISOs agree with NERC that MOD-026-2 advances the reliability of the Bulk-Power System ("BPS")[1] by improving the accuracy and dependability of models used in planning and interconnection analyses through enhanced requirements for model verification and validation. However, the ISOs disagree with exempting legacy facilities from the requirement to provide electromagnetic transient ("EMT") models where the original equipment manufacturer no longer supports those models for the facilities. Accurate EMT models are critical to the reliable operation of the system. The ISOs

[1] Capitalized terms used but not defined in these Comments have the meaning ascribed to them in the Glossary of Terms Used in NERC Reliability Standards.

respectfully submit that the responsibility of maintaining and providing EMT models must remain with the owner of the facility because that entity is in the best position to obtain EMT models through other ways if the original equipment manufacturer no longer supports such models.

I. IDENTIFICATION OF THE FILING PARTIES

ERCOT is the independent system operator designated by the Public Utility Commission of Texas to direct the operation and planning of the transmission system serving most of Texas and to administer the wholesale market within that region. ERCOT also serves as a NERC-registered Transmission Operator and as the sole NERC-registered Planning Coordinator, Reliability Coordinator, Balancing Authority, Resource Planner, and Transmission Service Provider for the Texas Reliability Entity, Inc. region of the BPS.

ISO-NE is a private, non-profit entity that serves as the regional transmission organization ("RTO") for New England. ISO-NE operates the New England BPS and administers New England's organized wholesale electricity market pursuant to the ISO New England Transmission, Markets, and Services Tariff and the Transmission Operating Agreement. In its capacity as an RTO, ISO-NE also has the objective to assure that the BPS within the New England Control Area conforms to the proper standards of reliability as established by the Northeast Power Coordinating Council ("NPCC") and NERC.

MISO is an RTO approved by the Commission that administers significant energy and operating reserve markets using security constrained economic dispatch of

electricity and administers Day-Ahead, Real-Time, and Financial Transmission Rights markets as well as Locational Marginal Pricing.

The NYISO is an independent, not-for-profit entity that is responsible for the reliable operation of the bulk power transmission system in New York State, planning for that bulk power transmission system's continued reliability, and administering competitive wholesale electricity markets. As the independent system operator, the NYISO is responsible for the reliability of the BPS within the New York Control Area, ensuring compliance with the applicable reliability standards established by NERC, the NPCC, and the New York State Reliability Council.

PJM is a Commission-established independent system operator and RTO. PJM is a transmission provider under, and the administrator of, the PJM Open Access Transmission Tariff, operates the PJM Interchange Energy Market and Capacity Credit Markets, and conducts the day-to-day operations of the BPS in the PJM region.

SPP is a Commission-approved RTO, a non-profit managing the bulk electric grid across multiple states to ensure reliable power, adequate transmission, and competitive wholesale markets through its Integrated Marketplace (day-ahead/real-time markets, Locational Marginal Pricing) and planning for growth.

II. COMMENTS ON MOD-026-2

Under Requirement R1 of MOD-026-2, each Transmission Planner and its Planning Coordinator are required to jointly develop dynamic model requirements for the purpose of Model Verification and Model Validation. The dynamic model requirements must at a minimum include, among other things, identification of which legacy facilities require EMT models under Requirement R3 accompanied by a statement of need. In its Petition, NERC explains that a legacy facility for the purpose of the standard is any facility

with a commercial operation date prior to the effective date of MOD-026-2. Accordingly, if a legacy facility is not identified by the Transmission Planner/Planning Coordinator as requiring EMT models, it does not have to provide those models. However, even if the legacy facility is identified as requiring EMT models under Requirement R1, it can be exempted from that requirement pursuant to Requirement R3, which states, in relevant part:

> R3. For facilities listed in Applicability Sections 4.2.3.2 (FACTS devices), 4.2.4 (HVDC), 4.2.5 (BES IBRs), and 4.2.6 (Non-BES IBRs), **excluding legacy facilities where the original equipment manufacturer[2] no longer supports EMT model(s) for the facility** as well as legacy facilities not identified by the Transmission Planner under Requirement R1, Part 1.2.1, each Generator Owner or Transmission Owner shall provide to its Transmission Planner EMT model(s) with associated parameters, any information pertaining to changes to the model(s) or its parameters, and accompanying documentation, in accordance with the periodicity requirements of Attachment 2. . . (Emphasis added).

The ISOs respectfully submit that legacy facilities identified as requiring EMT models where the original equipment manufacturer no longer supports EMT models for the facility should not be exempted from the requirements of MOD-026-2.

Legacy facilities under MOD-026-2 include those already in service and those that are currently going through the interconnection process and will achieve commercial operation prior to the effective date of the standard. From those facilities, the Transmission Planner and its Planning Coordinator must jointly identify which ones require EMT models. However, even if identified by the Transmission Planner and Planning Coordinator as requiring EMT models, a legacy facility can be exempted from providing

[2] If the original equipment manufacturer that commissioned the facility was acquired, merged, or operating under a different name, the new company would be considered the original equipment manufacturer.

EMT models if the original equipment manufacturer decides to no longer support EMT models for its equipment.

This exemption inappropriately shifts the burden of obtaining EMT models for identified legacy facilities from the owners of such facilities, who have the necessary knowledge and access to the facilities, to Transmission Planners and, therefore, poses a significant risk to the reliability of the transmission network. Without EMT models from the owners of identified legacy facilities, Transmission Planners will not be able to accurately assess the reliability of their systems given the inadequacy of purely positive sequence modeling when analyzing systems with significant amounts of inverter-based resources ("IBRs") and IBR-based distributed energy resources ("IBR-DERs"). NERC disturbance reports have pointed to this being a contributing factor in many disturbances across the country with the current set of facilities,[3] and the related reliability concerns will only increase with further interconnection of IBRs and IBR-DERs.

Specifically, the types of facilities listed in Requirement R3 of MOD-026-2 (*i.e.*, FACTS devices, HVDC, BES IBRs and Non-BES IBRs) have fast-acting switching devices and complex control interactions that are typically not reliably captured with currently available positive sequence dynamic models. Positive sequence modeling is adequate for studying slow electromechanical behavior but cannot explicitly represent fast transient or high frequency control interactions. Thus, a lack of EMT details for identified

[3] *See, e.g.,* San Fernando Disturbance, Southern California Event: July 7, 2020, Joint NERC and WECC Staff Report at p. viii (Nov. 2020), available at https://www.nerc.com/globalassets/our-work/reports/event-reports/san_fernando_disturbance_report.pdf; Odessa Disturbance; Texas Events: May 9, 2021 and June 26, 2021, Joint NERC and Texas RE Staff Report, at p. vi (Sept. 2021), available at https://www.nerc.com/globalassets/our-work/reports/event-reports/odessa_disturbance_report.pdf; Multiple Solar PV Disturbances in CAISO, Disturbances between June and August 2021, Joint NERC and WECC Staff Report at p. vii (Apr. 2022), available at https://www.nerc.com/globalassets/our-work/reports/event-reports/nerc_2021_california_solar_pv_disturbances_report.pdf.

legacy facilities prevents the Transmission Planner/Planning Coordinator from evaluating important fast dynamic behaviors that impact system reliability.

In addition, positive sequence dynamic simulation platforms have generally been developed to represent the electromechanical response of synchronous machines that was most relevant for traditional transient stability assessment. These simulations cannot capture sub cycle phenomena or fast control interactions and therefore may overlook stability or reliability concerns in mixed-resource systems. For this reason, EMT models are necessary in situations where fast transient electronic control dynamics are integral to system behavior, while positive sequence simulation remains adequate only for slower system level phenomena. In contrast, electromagnetic transient simulations provide time domain resolution at microsecond scale and capture the fast transients, control interactions, and device switching behavior that increasingly define system dynamics with significant numbers of IBRs. These simulations are essential whenever there is risk of rapid control interactions, weak grid conditions, sub synchronous interactions, or other high frequency instability mechanisms.

Based on all the facilities that would fall under the definition of "legacy facility," the exemption in Requirement R3 of MOD-026-2 would potentially diminish Transmission Planners' ability to properly model and study the system to ensure reliability for many years. In addition, without accurate EMT modeling and analysis, power system performance could be degraded and there could be adverse impacts on other equipment. If inaccurate models (including the use of generic parameterizations) are used by Transmission Planners due to unavailability of EMT models for legacy facilities, then the system will not be properly studied, and might not be operated reliably, or, conversely, might be operated with limits that are more conservative than necessary due to uncertainty

in modeling. For these reasons, the owners of legacy facilities must be required to provide EMT models when a Transmission Planner/Planning Coordinator determines that these models are needed to adequately assess system performance and reliability through EMT analyses.

Furthermore, the exemption fails to recognize and hold accountable the facility owner and original equipment manufacturer—both of which are in the best position to accurately prepare or maintain EMT models. Owners of legacy facilities and original equipment manufacturers should work together to ensure that models that properly represent the facilities are maintained for the full life of the facilities. As proposed, the exemption removes incentives for an original equipment manufacturer to maintain EMT models for its equipment and reduces the ability for owners of legacy facilities to require the continued maintenance of EMT models for the life of the facility. Even where the original equipment manufacturer decides to not maintain models for its equipment that is interconnected to the system, an owner of a legacy facility must still be the entity responsible for meeting the requirements of MOD-026-2 given its knowledge of and access to the facility. For example, the owner of a legacy facility could engage consultants to develop models based on the latest specifications, existing product documentation, current product settings, manuals, existing positive sequence models, and understanding of how these devices operate, including possibly conducting field testing to validate EMT model performance. Contractors and specialized modeling firms can develop surrogate or proxy EMT models for the identified legacy facilities using a combination of field measurements, staged tests, and system identification techniques. These reconstructed models can provide sufficient fidelity for Transmission Planners to evaluate fast dynamics behavior and identify potential reliability concerns.

III. CONCLUSION

In conclusion, the ISOs respectfully request that the Commission approve reliability standard MOD-026-2 and direct NERC to revise Requirement R3 to remove the language exempting legacy facilities from the requirement to provide EMT models.

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing document upon each person designated on the official service list compiled by the Secretary in this proceeding in accordance with the requirements of Rule 2010 of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.2010.

Dated at Holyoke, MA this 8th day of December, 2025.

/s/ Julie Horgan
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