

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

Reliability Standards for Frequency and Voltage)	
Protection Settings and Ride-Through for)	Docket No. RM25-3-000
Inverter-Based Resources)	

**COMMENTS OF
THE CALIFORNIA INDEPENDENT SYSTEM OPERATOR CORPORATION,
ISO NEW ENGLAND INC., MIDCONTINENT INDEPENDENT SYSTEM OPERATOR,
INC., PJM INTERCONNECTION, L. L.C., AND THE SOUTHWEST POWER POOL,
INC. IN SUPPORT OF RELIABILITY STANDARDS ESTABLISHING
PERFORMANCE REQUIREMENTS FOR INVERTER-BASED RESOURCES**

The California Independent System Operator Corporation (“CAISO”), ISO New England Inc. (“ISO-NE”), Midcontinent Independent System Operator, Inc. (“MISO”), PJM Interconnection, L.L.C. (“PJM”) and the Southwest Power Pool, Inc. (“SPP”) (the “aligned ISOs/RTOs”), respectfully submit these joint comments in response to the Commission’s Notice of Proposed Rulemaking (“NOPR”) issued in the above-captioned docket on December 19, 2024.¹ The Commission’s December 19th NOPR, sets forth a path to finalize the specific details of the reliability standards developed by the North American Electric Reliability Corporation (“NERC”). The aligned ISOs/RTOs support the work of NERC and submit these comments in support of NERC’s development of performance requirements for Inverter-Based Resources (“IBR”).² Issuance of a final rule approving these standards will further the reliability of the

¹ *Reliability Standards for Frequency and Voltage Protection Settings and Ride-Through for Inverter-Based Resources*, 189 FERC ¶ 61,212 (2024) (“Performance Standard NOPR”).

² An “Inverter-Based Resource” is defined as a “plant/facility consisting of individual devices that are capable of exporting Real Power through a power electronic interface(s) such as an inverter or converter, and that are operated together as a single resource at a common point of interconnection to the electric system.” *See Approval Order*, 190 FERC ¶ 61,098 at PP 3, 12 (2025).

nation's electric system. The aligned ISOs/RTOs support prompt action on the December 19th NOPR.

I. Background

This proceeding arises from the Commission's issuance of Order No. 901, a rule supported by the ISO/RTO Council ("IRC").³ In Order No. 901, the Commission directed NERC to begin a three-phase development of new or modified reliability standards to ensure the continued reliability of the nation's electric grid.⁴ For the first phase, the Commission directed NERC act, on or before November 4, 2024, to provide new or modified Reliability Standards that establish IBR performance requirements, including requirements addressing frequency and voltage ride-through, post disturbance ramp rates, phase lock loop synchronization, and other known causes of IBR tripping or momentary cessation.⁵

On November 4, 2024, NERC submitted its Petition for Approval of Proposed Reliability Standards establishing the minimum set for performance requirements requiring applicable Bulk Power System-connected IBRs to Ride-through system disturbances, avoiding reliability risks associated with unnecessary tripping and momentary cessation.⁶ NERC's proposed standards include the associated violation risk factors, violation severity levels, implementation plans, and

³ *Reliability Standards to Address Inverter-Based Resources*, Order No. 901, 88 FR 74250 (Oct. 30, 2023), 185 FERC ¶ 61,042 (2023) ("Order No. 901").

⁴ *Id.*

⁵ *Id.* PP 7, 56, 190, 229.

⁶ See NERC Petition, Docket No. RM25-3 (Nov. 4, 2024). NERC made additional submissions not included within the scope of the NOPR and addressed in parallel proceedings. See, e.g., *Approval Order*, 190 FERC ¶ 61,098 at PP 3, 12 (2025). (approving the definition of Inverter-Based Resource in NERC's Glossary of Terms). An "Inverter-Based Resource", also referred to within these comments as an "IBR", is now defined within the Glossary of Terms as a "plant/facility consisting of individual devices that are capable of exporting Real Power through a power electronic interface(s) such as an inverter or converter, and that are operated together as a single resource at a common point of interconnection to the electric system."

effective dates for proposed Reliability Standards PRC-024-4 and PRC-029-1 and the retirement of currently effective Reliability Standard PRC-024-3.⁷

II. Support for Approval of Definition and Proposed Reliability Standards

In the NOPR, the Commission proposes to approve the proposed definition of Ride-through and proposed Reliability Standards PRC-024-4 and PRC-029-1 as just, reasonable, not unduly discriminatory or preferential, and in the public interest.⁸ The Commission also proposes to approve the associated violation risk factors, violation severity levels, implementation plans, and effective dates of Reliability Standards PRC-024-4 and PRC-029-1 and the retirement of currently effective Reliability Standard PRC-024-3.⁹

The aligned ISOs/RTOs support the Commission's proposal to find that the proposed Reliability Standards are consistent with the performance requirement directives of Order No. 901 as generator owners of NERC-registered IBRs will be subject to the Ride-through performance requirements of proposed Reliability Standard PRC-029-1 unless exempted under that standard.¹⁰ Finalizing this finding promptly is consistent with the public interest.

A. Proposal to Approve the Addition of Defined Term Ride-through to NERC Glossary of Terms

Generator ride-through is a foundational essential reliability service which enables dynamic reactive power support, frequency response, and other services. Multiple NERC disturbance reports, including, but not limited to, those analyzing the Blue Cut Fire and Canyon 2 Fire, have demonstrated a risk to the reliability of the Bulk-Power System when IBRs have failed to ride-through system disturbances. In 2018, the CAISO began the process of amending

⁷ See NERC Petition, *passim*.

⁸ See NOPR at P 27.

⁹ *Id.*

¹⁰ Compare NOPR at P 28.

its tariff to require newly-interconnecting IBRs ride-through system disturbances.¹¹ Over the past nine years, generators throughout the West have been able to interconnect to the CAISO system in a manner consistent with the CAISO's enhanced IBR performance requirements.

In its Petition, NERC proposes Reliability Standard PRC-029-1 to address the important reliability issue of IBR ride-through performance through capability and performance-based requirements for IBRs.¹² In requiring that IBRs "Ride-through" system disturbances, it is necessary to document the agreed-upon definition in NERC's Glossary of Terms.¹³ The aligned ISOs/RTOs support finalizing the proposed definition of "Ride-through" to mean that "The plant/facility remains connected and continues to operate through voltage or frequency system disturbances."¹⁴

B. Proposal to Approve Proposed Reliability Standard PRC-024-4

Proposed Reliability Standard PRC-024-4 contains revisions that would enable the standard to be retained as a protection-based standard with applicability to only synchronous generators, synchronous condensers, and type 1 and type 2 wind units.¹⁵ Approval of NERC's proposed standard should ensure synchronous generators, type 1 and 2 wind resources, and

¹¹ See, e.g., *Cal. Indep. Sys. Operator Corp.*, 168 FERC ¶ 61,003 (2019) (approving the CAISO's tariff revisions to prevent momentary cessation and other measures to enhance reliability).

¹² NERC Petition at 24.

¹³ See NOPR at P 29.

¹⁴ See NERC Petition at 24 (explaining the proposed definition) and NOPR at P 29 (proposing to approve the proposed definition).

¹⁵ See NERC Petition at 49-52.

synchronous condensers will have to have voltage and frequency protection set to avoid tripping during defined frequency and voltage excursions.¹⁶

The aligned ISOs/RTOs support the Commission's proposal to approve removal of the IBR references in proposed Reliability Standard PRC-024-4, as IBRs will be subject to Ride-through requirements in proposed Reliability Standard PRC-029-1.¹⁷

C. Proposal to Approve Proposed Reliability Standard PRC-029-1

NERC's proposed Reliability Standard PRC-029-1 responds to the Commission's relevant Order No. 901 Ride-through performance requirement directives.¹⁸ The aligned ISOs/RTOs support the Commission's approval of NERC's proposed Reliability Standard PRC-029-1.

As explained in NERC's petition, the proposed standard will be applicable to all Generator Owners that own (1) Bulk Electric System IBRs and (2) non-Bulk Electric System IBRs that either have or contribute to an aggregate nameplate capacity of greater than or equal to 20 MVA, connected through a system designed primarily for delivering such capacity to a common point of connection at a voltage greater than or equal to 60 kV.¹⁹

The aligned ISOs/RTOs support the applicability of proposed Reliability Standard PRC-029-1 and reinforce support for a broadly-applicable standard that is applied in a manner that limits exemptions to limited and rare circumstances. Proposed Reliability Standard PRC-029-1 Requirement R1 establishes requirements that all applicable IBRs will Ride-through grid voltage disturbances consistent with the "must Ride-through zone" and the specified operation regions.²⁰

¹⁶ See NOPR at P 30.

¹⁷ See NOPR at PP 30-31. If IBRs were not subject to PRC-029-1, then it would be unjust and unreasonable and inconsistent with the public interest to remove the references in existing standard PRC-024-4.

¹⁸ See NERC Petition at 19-47.

¹⁹ See NERC Petition at 24. The terms "Bulk Electric System" and "Inverter-Based Resource" are defined in NERC's Glossary of Terms.

²⁰ *Id.* at 25-26 (explaining R1).

These “must Ride-through zones” and “operation regions” are consistent with those terms used within IEEE 2800-2022 and the aligned ISOs/RTOs appreciate the drafting team’s careful consideration and usage of terms in a manner that ensures consistency and reduces confusion. The considered and careful work of the drafting team, NERC staff, and others is evidenced in the supporting material provided with the Petition²¹ and further reflected in proposed Reliability Standard PRC-029-1 Requirement R2, establishing voltage Ride-through performance criteria during system disturbances for all applicable IBRs, and Requirement 3, establishing Ride-through requirements during frequency excursion event. The aligned ISOs/RTOs support the Commission’s approval of the requirements of proposed Reliability Standard PRC-029-1 as consistent with the directives of Order No. 901.

D. Proposal to Require Informational Filings Pertaining to Requests for Exemption

In Order No. 901, the Commission recognized that a “limited and documented” exemption process may be necessary to implement its directives but directed NERC to determine whether the reliability standards should provide an opportunity for a Generator Owner to seek such an exemption. If NERC were to determine that such an exemption was necessary, then the Commission directed NERC to develop new or modified Reliability Standards to mitigate the reliability impacts to the Bulk-Power System of such an exemption. Proposed Reliability

²¹ See, e.g., Exhibit E-2 (providing technical rationale); Exhibit F-2 (providing analysis of violation risk factors and violation severity levels); Exhibit H (providing a summary of alternatives considered).

Standard PRC-029-1 Requirement R4 reflects NERC’s work in compliance with the Commission’s directive.²²

The aligned ISOs/RTOs support the Commission’s proposal to require informational reports sufficient to allow parties to assess the impact of any exemptions granted. We appreciate the Commission’s commitment to ensuring the continued reliability of the Bulk-Power System and the required informational filings, which will include an analysis of the reasons that entities provided for exemptions (both granted and denied) and an evaluation of the efficacy of the exemption process, reflect a careful consideration of the needs of regional entities and also those limited stakeholders with qualifying legacy assets.²³

The aligned ISOs/RTOs note that the exemption process outlined by NERC does not contemplate the actual exemption requests also be submitted to system operators such as ISOs and RTOs. Although the aligned ISOs/RTOs believe that it is reasonable to provide that generators seeking such exemptions provide copies of their submittals to ISOs and RTOs and other system operators, the aligned ISOs/RTOs support the standard as written based on the common understanding that nothing in the standard interferes with ISOs and RTOs seeking such information or submittals pursuant to their existing tariff authority.

III. Conclusion

The aligned ISOs/RTOs support NERC’s Petition for approval of the standards drafted in compliance with the directives of Order No. 901. A final rule will require IBRs to meet a

²² NERC has determined that a limited and documented exemption may be available to units currently in commercial operation with hardware limitations for sites with equipment deployed before IEEE 2800 standard. The aligned ISOs/RTOs would not support a broad exemption to include broader exemptions or exemptions driven by cost of non-hardware limitations (*e.g.*, control systems and software). The Commission’s proposed informational reports will help ensure the exemption is administered as described.

²³ See NOPR at P 34 (requesting comment on “the adequacy of NERC’s proposed exemption provision in Requirement R4 as it pertains to both projects in service and those under contract, but not yet in-service as of the effective date of Reliability Standard PRC-029-1”).

minimum set of performance requirements to continue operating in conjunction with the Bulk-Power System. While a process for limited exceptions is made available, the aligned ISOs/RTOs support the Commission's proposal to allow NERC to strictly administer this limited exemption in a manner that protects the continued reliability of the Bulk-Power System. The required informational filings will provide significant details on any requested exemptions and will assist all parties in understanding the volume, circumstances, and effects of approved exemptions.

Respectfully submitted,

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March 24, 2025

CERTIFICATE OF SERVICE

I certify that I have served the foregoing document upon the parties listed on the official service list in the captioned proceedings, 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 Folsom, California this 24th day of March, 2025.

/s/ Ariana Rebancos

Ariana Rebancos

An employee of the California ISO