

Implementation Plan

Project 2021-01 System Model Validation with IBRs Reliability Standard MOD-033-3

Applicable Standard

- MOD-033-3 – Steady-State and Dynamic System Model Validation

Requested Retirement

- MOD-033-2 – Steady-State and Dynamic System Model Validation

Prerequisite Definitions

These definitions must be approved before the Applicable Standard becomes effective:

- Model Validation: The process of comparing measurements with simulation results to assess how closely a model's behavior matches the measured behavior.
- Distributed Energy Resources: Generators and energy storage technologies connected to a distribution system that are capable of providing Real Power in non-isolated parallel operation with the Bulk-Power System, including those connected behind the meter of an end-use customer that is supplied from a distribution system.

Applicable Entities

- Planning Coordinator
- Reliability Coordinator
- Transmission Operator

Background

In October 2023, FERC issued Order No. 901,¹ which directs the development of new or modified reliability standards, including new requirements for disturbance monitoring, data sharing, post-event performance validation, and correction of IBR performance. In January 2024, NERC submitted a filing to FERC outlining a comprehensive work plan² to address the directives within Order No. 901. Within the work plan, NERC identified milestones that must be accomplished. Milestone 3 has three projects that address issues identified in NERC assessments regarding modeling. The projects include 2020-06 Verifications of Models and Data for Generators,³ 2022-02 Uniform Modeling Framework for IBR,⁴ and

¹ Reliability Standards to Address Inverter-Based Resources, Order No.901, 185 FERC ¶ 61,042 (2023); https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20231019-3157&optimized=false

² See Informational Filing of the N. Am. Elec. Reliability Corp. Regarding the Development of Reliability Standards Responsive to Order No. 901., Docket No. RM22-12-000 (January 18, 2024).

³ https://www.nerc.com/pa/Stand/Pages/Project-2020_06-Verifications-of-Models-and-Data-for-Generators.aspx

⁴ <https://www.nerc.com/pa/Stand/Pages/Project2022-02ModificationstoTPL-001-5-1andMOD-032-1.aspx>

2021-01 System Model Validation with IBRs.⁵ All Milestone 3 projects must be filed with FERC by November 4, 2025, with full implementation by January 1, 2030, to comply with Order No. 901.

Project 2021-01 addresses Model Validation of both steady-state and dynamic system models (including registered IBRs, unregistered IBRs and aggregate DERs) against actual system behavior.

General Considerations

MOD-033-3 was developed to address directives issued by the Federal Energy Regulatory Commission (FERC) in Order No. 901 on October 19, 2023. The Order addresses a wide spectrum of reliability risks to the grid from the application of Inverter-Based Resources (IBRs), including both utility scale and behind-the-meter or Distributed Energy Resources (DERs). The modifications to MOD-033 address System Model Validation and complement the work proposed by Project 2020-06 Verifications of Models and Data for Generators and Project 2022-02 Uniform Framework for IBR.

The proposed revisions in MOD-033-3 are intended to improve the clarity of the requirements and are not substantive in nature; i.e., they do not change the scope of the requirements. While MOD-033-3 is not dependent on the proposed revisions to Reliability Standards in the other two Milestone 3 projects, it is dependent on the two proposed Glossary terms “Model Validation” and “Distributed Energy Resources”.

This implementation plan is not intended to affect the timelines provided in the implementation plans for the other Milestone 3 Reliability Standards addressing the provision of unregistered IBR data or aggregate DER data.

Effective Date

Where approval by an applicable governmental authority is required, Reliability Standard MOD-033-3 shall become effective on the first day of the first calendar quarter after the effective date of the applicable governmental authority’s order approving the standard or order approving the proposed definitions of Model Validation and Distributed Energy Resources, whichever date is later, or as otherwise provided for by the applicable governmental authority.

Where approval by an applicable governmental authority is not required, the standard shall become effective on the first day of the first calendar quarter after the date the standard or the proposed definitions of Model Validation and Distributed Energy Resources are adopted by the NERC Board of Trustees, whichever date is later, or as otherwise provided for in that jurisdiction.

Retirement Date

Reliability Standard MOD-033-2 shall be retired immediately prior to the effective date of Reliability Standard MOD-033-3 in the particular jurisdiction in which the revised standard is becoming effective.

⁵ https://www.nerc.com/pa/Stand/Pages/Project_2021-01_Modifications_to_MOD-025_and_PRC-019.aspx