NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

Implementation Plan

Project 2022-02 Uniform Modeling Framework for IBR

Applicable Standard(s)

- Reliability Standard MOD-032-2 Data for Power System Modeling and Analysis
- Reliability Standard IRO-010-6 Reliability Coordinator Data and information Specification and Collection
- Reliability Standard TOP-003-8 Transmission Operator and Balancing Authority Data and Information Specification and Collection

Requested Retirement(s)

- Reliability Standard MOD-032-1 Data for Power System Modeling and Analysis
- Reliability Standard IRO-010-5 Reliability Coordinator Data and information Specification and Collection
- Reliability Standard TOP-003-7 Transmission Operator and Balancing Authority Data and Information Specification and Collection

Prerequisite Standard(s)

These standard(s) or definitions must be approved before the Applicable Standard becomes effective:

- None

Applicable Entities

- See subject standards

Glossary of Terms used in NERC Reliability Standards

This section includes a newly defined term used in the NERC Reliability Standards. The new definition listed below becomes approved when the proposed standard is approved. When the standard becomes effective, the defined term will be removed from the individual standard and added to the NERC Glossary.

Proposed New Definition:

Distributed Energy Resource (DER):

A generator or energy storage technology connected to a distribution system that is capable of providing Real Power in non-isolated parallel operation with the Bulk-Power System, including one connected behind the meter of an end-use customer that is supplied from a distribution system.

Background

As the penetration of DERs continues to increase across the many distribution systems connected both directly and indirectly to the North American Bulk-Power System (BPS), it is necessary to account for the potential impacts of DERs on reliability in the planning, operation, and design of the BPS. The NERC System Planning Impacts of Distributed Energy Resources Working Group (SPIDERWG) has identified the need for improved modeling of aggregate DERs for planning studies (including both utility-scale and retail-scale DERs) conducted by Transmission Planners (TPs) and Planning Coordinators (PCs), including updated modeling data requirements specific to DERs.

Further, in Order No. 901,[1] the U.S. Federal Energy Regulatory Commission ("FERC") found that it is imperative for NERC to develop new or modified Reliability Standards to address reliability concerns "related to IBRs at all stages of interconnection, planning, and operations."[2]. Among other things, FERC directed NERC to develop requirements addressing the provision of IBR and DER data to the entities responsible for the planning and operation of the BPS. Detailed information on the specific FERC Order No. 901 directives addressed through this project is available in Project 2022-02 Consideration of Order No. 901 Directives.

Proposed Reliability Standard MOD-032-2 replaces Load-Serving Entity with Distribution Provider as an applicable entity. Data items specific to IBRs and DERs were added to Attachment 1: Data Reporting Requirements, consistent with addressing the FERC Order No. 901 directives. Proposed Reliability Standard MOD-032-2 also adds a new Part 1.4 in Requirement R1, which would require the Planning Coordinator and Transmission Planner to specify submission of standard library dynamic models, user-defined models or both. Allowing the specification of standard library models incorporated within modeling software is responsive to FERC concerns about usability and allows PCs to maintain current requirements for generic models that may be necessary for the creation of large Interconnection-wide base cases. Allowing the specification of user-defined models is responsive to industry feedback expressed during the NERC Industry Engagement workshops. New Requirement R1, Part 1.4.2 is responsive to FERC concerns about model usability and non-convergence by requiring PCs and TPs that accept user-defined models to specify usability requirements and require appropriate model documentation and instructions. New Requirement R2, Part 2.1 addresses estimation of unregistered IBR or DER data where actual data is not available, consistent with the directives in Order No. 901. New Requirement R2, Part 2.2 addresses the provision of dynamic models accepted under the MOD-026 standard, and new Requirement R2, Part 2.3 requires any entity submitting a model included on the Unacceptable Model List maintained by the ERO to include a technical rationale with its submission supporting the use of the model. Altogether, these modifications establish a uniform modeling framework that incorporates both IBR and DER data and facilitates model accuracy in alignment with FERC Order No. 901.

[1] Reliability Standards to Address Inverter-Based Resources, Order No. 901, 185 FERC ¶ 61,042 (2023).
[2] Id. at P 25

Revisions in the Reliability Standards TOP-003-8 and IRO-010-6 data specification standards specify that entities responsible for developing and distributing data specifications shall include requirements for model submissions consistent with the model submitted for planning purposes, as applicable.

General Considerations

In developing this implementation plan, the drafting team (DT) considered the time that would be necessary to update modeling data requirements and reporting procedures for MOD-032-2, including identifying the proper reporting entity for modeling data related to IBRs (including IBRs that are not DERs and do not meet the criteria that would require the owner(s) to register with NERC for mandatory Reliability Standards compliance purposes) and aggregate DERs. The DT also considered that the standard would become applicable to the Distribution Provider (DP) for the first time. During the 24 months prior to the effective date of Requirement R1, the applicable entities would be expected to participate in PC/TP processes to change the modeling data reporting requirements related to IBRs and aggregate DERs and should be able to start working on data collection processes and methods. The applicable entities in Requirement R2 would then have an additional 12 months to complete and implement data collection prior to the compliance dates of Requirements R2, R3, and R4. This timeline also allows for the development of new data estimation processes developed under MOD-032-2 Requirement R2, Part 2.1 and for the development of technical rationale to support the use of models included on the Unacceptable Model List maintained by the ERO, where applicable. Requirements adjusted in Reliability Standards IRO-010-6 and TOP-003-8 may not be practical to implement prior to full implementation of MOD-032-2, and therefore were set to the same implementation timeline. One additional limitation the DT considered is the requirement for all FERC Order No. 901 directives to be fully implemented by January 1, 2030, including those to be addressed by future standard revisions that may be dependent upon the implementation of these standard revisions.

In summary, this implementation plan would provide a full 36 months for MOD-032 Requirements R2, R3, R4, IRO-010, and TOP-003 from FERC approval until data is required to be reported under the revised requirements. During the phased-in compliance period for Requirements R2-R4, entities shall continue to provide data and perform other required actions in accordance with specifications developed under Reliability Standard MOD-032-1, unless entities are able to comply with the revised requirements sooner.

Effective Date and Phased-In Compliance Dates

The effective date for the proposed Reliability Standard and NERC Glossary term Distributed Energy Resource is provided below. Where the DT identified the need for a longer implementation period for compliance with a particular section of a proposed Reliability Standard (i.e., an entire Requirement or a portion thereof), the additional time for compliance with that section is specified below. The phased-in compliance date for those particular sections represents the date that entities must begin to comply with that particular section of the Reliability Standard, even where the Reliability Standard goes into effect at an earlier date.

Reliability Standard MOD-032-2

Where approval by an applicable governmental authority is required, the standard shall become effective on the first day of the first calendar quarter that is twenty-four (24) months after the effective date of the applicable governmental authority's order approving the standard, 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 that is twenty-four (24) months after the date the standard is adopted by the NERC Board of Trustees, or as otherwise provided for in that jurisdiction.

Compliance Date for Reliability Standard MOD-032-2 Requirements R2, R3, and R4

Entities shall not be required to comply with Requirements R2, R3, and R4 relating to revised Planning Coordinator and Transmission Planner data requirements and reporting procedures developed under MOD-032-2 Requirement R1 and Attachment 1 until 12 months after the effective date of Reliability Standard MOD-032-2.

During the phased-in compliance period, entities shall continue to comply with Requirements R2, R3, and R4 related to Planning Coordinator/Transmission Planner data requirements and reporting procedures developed under MOD-032-1 Requirement R1 and Attachment 1 unless they are compliant with revised Planning Coordinator/Transmission Planner data requirements and reporting procedures under Reliability Standard MOD-032-2 Requirement R1.

Definition – Distributed Energy Resource (DER)

Where approval by an applicable governmental authority is required, the definition of Distributed Energy Resource (DER) shall become effective on the first day of the first calendar quarter that is after the effective date of the applicable governmental authority's order approving Reliability Standard MOD-032-2, or as otherwise provided for by the applicable governmental authority.

Where approval by an applicable governmental authority is not required, the definition shall become effective on the first day of the first calendar quarter that is after the date that Reliability Standard MOD-032-2 is adopted by the NERC Board of Trustees, or as otherwise provided for in that jurisdiction.

Reliability Standard IRO-010-6

Where approval by an applicable governmental authority is required, the standard shall become effective on the first day of the first calendar quarter that is thirty-six (36) months after the effective date of the applicable governmental authority's order approving the standard, 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 that is thirty-six (36) months after the date the standard is adopted by the NERC Board of Trustees, or as otherwise provided for in that jurisdiction.

Reliability Standard TOP-003-8

Where approval by an applicable governmental authority is required, the standard shall become effective on the first day of the first calendar quarter that is thirty-six (36) months after the effective date of the applicable governmental authority's order approving the standard, 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 that is thirty-six (36) months after the date the standard is adopted by the NERC Board of Trustees, or as otherwise provided for in that jurisdiction.

Retirement Date

Reliability Standard MOD-032-1

Reliability Standard MOD-032-1 shall be retired immediately prior to the effective date of Reliability Standard MOD-032-2 in the particular jurisdiction in which the revised standard is becoming effective.

Reliability Standard IRO-010-5

Reliability Standard IRO-010-5 shall be retired immediately prior to the effective date of Reliability Standard IRO-010-6 in the particular jurisdiction in which the revised standard is becoming effective.

Reliability Standard TOP-003-7

Reliability Standard TOP-003-7 shall be retired immediately prior to the effective date of Reliability Standard TOP-003-8 in the particular jurisdiction in which the revised standard is becoming effective.