

**Reliability Standard Audit Worksheet[[1]](#footnote-1)**

# MOD-033-1 – Steady-State and Dynamic System Model Validation

***This section to be completed by the Compliance Enforcement Authority.***

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| **Audit ID:** | Audit ID if available; or REG-NCRnnnnn-YYYYMMDD |
| **Registered Entity:** | Registered name of entity being audited |
| **NCR Number:** | NCRnnnnn |
| **Compliance Enforcement Authority:** | Region or NERC performing audit |
| **Compliance Assessment Date(s)[[2]](#footnote-2):** | Month DD, YYYY, to Month DD, YYYY |
| **Compliance Monitoring Method:** | [On-site Audit | Off-site Audit | Spot Check] |
| **Names of Auditors:** | Supplied by CEA |

# **Applicability of Requirements**

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|  | **BA** | **DP** | **GO** | **GOP** | **PA/PC** | **RC** | **RP** | **RSG** | **TO** | **TOP** | **TP** | **TSP** |
| **R1** |  |  |  |  | X\* |  |  |  |  |  |  |  |
| **R2** |  |  |  |  |  | X |  |  |  | X |  |  |

**\*** This proposed standard combines “Planning Authority” with “Planning Coordinator” in the list of applicable functional entities. The NERC Functional Model lists “Planning Coordinator” whiles the registration criteria lists “Planning Authority.” NERC defines “planning coordinator” in its Glossary by simply referencing “See Planning Authority.” The Federal Energy Regulatory Commission has stated that for “reliability purposes planning authorities and planning coordinators are interchangeable. Thus any entity registered with NERC as a planning authority is subject to any Reliability Standard that applies to planning coordinators.”[[3]](#footnote-3)

**Legend:**

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| Text with blue background: | Fixed text – do not edit |
| Text entry area with Green background: | Entity-supplied information |
| Text entry area with white background: | Auditor-supplied information |

Findings

**(This section to be completed by the Compliance Enforcement Authority)**

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| **Req.** | **Finding** | **Summary and Documentation** | **Functions Monitored** |
| **R1** |  |  |  |
| **R2** |  |  |  |

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| **Req.** | **Areas of Concern** |
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| **Req.** | **Recommendations** |
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| **Req.** | **Positive Observations** |
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Subject Matter Experts

Identify the Subject Matter Expert(s) responsible for this Reliability Standard.

**Registered Entity Response (Required; Insert additional rows if needed):**

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| **SME Name** | **Title** | **Organization** | **Requirement(s)** |
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R1 Supporting Evidence and Documentation

1. Each Planning Coordinator shall implement a documented data validation process that includes the following attributes:
   1. Comparison of the performance of the Planning Coordinator’s portion of the existing system in a planning power flow model to actual system behavior, represented by a state estimator case or other Real-time data sources, at least once every 24 calendar months through simulation;
   2. Comparison of the performance of the Planning Coordinator’s portion of the existing system in a planning dynamic model to actual system response, through simulation of a dynamic local event, at least once every 24 calendar months (use a dynamic local event that occurs within 24 calendar months of the last dynamic local event used in comparison, and complete each comparison within 24 calendar months of the dynamic local event). If no dynamic local event occurs within the 24 calendar months, use the next dynamic local event that occurs;
   3. Guidelines the Planning Coordinator will use to determine unacceptable differences in performance under Part 1.1 or 1.2; and
   4. Guidelines to resolve the unacceptable differences in performance identified under Part 1.3.
2. Each Planning Coordinator shall provide evidence that it has a documented validation process according to Requirement R1 as well as evidence that demonstrates the implementation of the required components of the process.

**Registered Entity Response (Required):**

**Compliance Narrative:**

Provide a brief explanation, in your own words, of how you comply with this Requirement. References to supplied evidence, including links to the appropriate page, are recommended.

Evidence Requested:[[4]](#endnote-1)

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| **Provide the following evidence, or other evidence to demonstrate compliance.** |
| Documented data validation process that addresses Parts 1.1 through 1.4. |
| Evidence the entity implemented its documented data validation process. |

Registered Entity Evidence (Required):

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| **The following information is requested for each document submitted as evidence. Also, evidence submitted should be highlighted and bookmarked, as appropriate, to identify the exact location where evidence of compliance may be found.** | | | | | |
| **File Name** | **Document Title** | **Revision or Version** | **Document Date** | **Relevant Page(s) or Section(s)** | **Description of Applicability of Document** |
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Audit Team Evidence Reviewed (This section to be completed by the Compliance Enforcement Authority):

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Compliance Assessment Approach Specific to MOD-033-1, R1

***This section to be completed by the Compliance Enforcement Authority***

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|  | (R1) Verify existence of a documented data validation process addressing parts 1.1 through 1.4. |
|  | (Part 1.1) Review documented data validation process to verify it includes a provision for comparison of the existing system to actual system behavior per the requirements of Part 1.1 at least once every 24 calendar months. Review the entity’s comparison(s) to determine that it was executed in accordance with its data validation process document and that it occurred at least once every 24 months. |
|  | (Part 1.2 ) Review documented data validation process to verify it includes a provision for dynamic comparison of the existing system to actual system behavior per the requirements of Part 1.2 at least once during the timeframe established in Part 1.2. Review the entity’s comparison(s) to determine that it was executed in accordance with its data validation process and that it occurred within the timeframe established in Part 1.2. If no dynamic local event occurs within the 24 calendar months, use the next dynamic local event that occurs. |
|  | (Part 1.3) Review documented data validation process to verify it includes guidelines to determine unacceptable differences in performance under Part 1.1 or 1.2. Review entity’s analyses to gain reasonable assurance that it was executed as described in its data validation process document. |
|  | (Part 1.4) Review documented data validation process to verify it includes guidelines to resolve unacceptable differences in performance identified under Part 1.3. Also, review the analyses outlined in Part 1.3 to ascertain whether unacceptable differences in performance identified resulted in actions being taken to address the differences. |
| **Note to Auditor:**  **Background for a dynamic local event:**  A dynamic local event could include such things as closing a transmission line near a generating plant. A dynamic local event is a disturbance on the power system that produces some measurable transient response, such as oscillations. It could involve one small area of the system or a generating plant oscillating against the rest of the grid. The rest of the grid should not have a significant effect. Oscillations involving large areas of the grid are not local events. However, a dynamic local event could also be a subset of a larger disturbance involving large areas of the grid.  **Initial Performance of Periodic Requirements**  Requirement R1, parts 1.1 and 1.2 include periodic components for validation that contain time parameters for subsequent and recurring iterations of implementing the requirement, specified as, “at least once every 24 calendar months”. Entities shall comply initially with those periodic components by July 1, 2019. | |

Auditor Notes:

R2 Supporting Evidence and Documentation

**R2.**  Each Reliability Coordinator and Transmission Operator shall provide actual system behavior data (or a written response that it does not have the requested data) to any Planning Coordinator performing validation under Requirement R1 within 30 calendar days of a written request, such as, but not limited to, state estimator case or other Real-time data (including disturbance data recordings) necessary for actual system response validation.

**M2.**  Each Reliability Coordinator and Transmission Operator shall provide evidence, such as email notices or postal receipts showing recipient and date that it has distributed the requested data or written response that it does not have the data, to any Planning Coordinator performing data validation under Requirement R1 within 30 days of a written request in accordance with Requirement R2; or a statement by the Reliability Coordinator or Transmission Operator that it has not received notification regarding data necessary for validation by any Planning Coordinator.

**Registered Entity Response (Required):**

**Question:** Did the Entity receive a request from a Planning Coordinator for actual system behavior data?  Yes  No

**Registered Entity Response (Required):**

**Compliance Narrative:**

Provide a brief explanation, in your own words, of how you comply with this Requirement. References to supplied evidence, including links to the appropriate page, are recommended.

Evidence Requested:i

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| **Provide the following evidence, or other evidence to demonstrate compliance.** |
| Dated data requests the entity received from any Planning Coordinator performing validation under Requirement R1. |
| Evidence the entity provided actual system behavior data (or a written response that it does not have the requested data) within 30 calendar days of receiving a written request from any Planning Coordinator performing validation under Requirement R1. |

Registered Entity Evidence (Required):

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| --- | --- | --- | --- | --- | --- |
| **The following information is requested for each document submitted as evidence. Also, evidence submitted should be highlighted and bookmarked, as appropriate, to identify the exact location where evidence of compliance may be found.** | | | | | |
| **File Name** | **Document Title** | **Revision or Version** | **Document Date** | **Relevant Page(s) or Section(s)** | **Description of Applicability of Document** |
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Audit Team Evidence Reviewed (This section to be completed by the Compliance Enforcement Authority):

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Compliance Assessment Approach Specific to MOD-033-1, R2

***This section to be completed by the Compliance Enforcement Authority***

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|  | (R2) Verify the entity provided actual system behavior data (or a written response that it does not have the requested data) within 30 calendar days of receiving a written request from any Planning Coordinator performing validation under Requirement R1. |
| **Note to Auditor:** | |

Auditor Notes:

Additional Information:

Reliability Standard



The full text of MOD-033-1 may be found on the NERC Web Site (www.nerc.com) under “Program Areas & Departments”, “Reliability Standards.”

In addition to the Reliability Standard, there is an applicable Implementation Plan available on the NERC Web Site.

In addition to the Reliability Standard, there is background information available on the NERC Web Site.

Capitalized terms in the Reliability Standard refer to terms in the NERC Glossary, which may be found on the NERC Web Site.

Regulatory Language

[*Federal Energy Regulatory Commission*, Letter Order Approving Proposed Reliability Standards MOD-032-1 and MOD-033-1, Docket No. RD14-5-000 (May 1, 2014).](http://www.nerc.com/FilingsOrders/us/FERCOrdersRules/May_1_2014_Order_Aprpving_MOD_B_Standards.pdf)

Reliability Standard MOD-033-1 requires each planning coordinator to implement a documented process to perform model validation within its planning area. NERC states that the purpose of the Reliability Standards is to establish comprehensive modeling data requirements, reporting procedures, and validation requirements necessary to effectively model the interconnected transmission system for the near-term transmission planning horizon and the long-term transmission planning horizon.

NERC states that Reliability Standards MOD-032-1 and MOD-033-1 improve upon the existing MOD-010 through MOD-015 standards by: (1) clarifying and updating the data requirements and reporting procedures; (2) expanding the coverage of the Existing MOD B Standards to include short circuit data; (3) providing a mechanism for addressing technical concerns with the modeling data collected; and (4) requiring the validation of steady-state and dynamics models against actual system responses.

Revision History for RSAW

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| --- | --- | --- | --- |
| **Version** | **Date** | **Reviewers** | **Revision Description** |
| 1 | 04/07/2017 | RSAW Working Group | New Document |
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1. NERC developed this Reliability Standard Audit Worksheet (RSAW) language in order to facilitate NERC’s and the Regional Entities’ assessment of a registered entity’s compliance with this Reliability Standard. The NERC RSAW language is written to specific versions of each NERC Reliability Standard. Entities using this RSAW should choose the version of the RSAW applicable to the Reliability Standard being assessed. While the information included in this RSAW provides some of the methodology that NERC has elected to use to assess compliance with the requirements of the Reliability Standard, this document should not be treated as a substitute for the Reliability Standard or viewed as additional Reliability Standard requirements. In all cases, the Regional Entity should rely on the language contained in the Reliability Standard itself, and not on the language contained in this RSAW, to determine compliance with the Reliability Standard. NERC’s Reliability Standards can be found on NERC’s website. Additionally, NERC Reliability Standards are updated frequently, and this RSAW may not necessarily be updated with the same frequency. Therefore, it is imperative that entities treat this RSAW as a reference document only, and not as a substitute or replacement for the Reliability Standard. It is the responsibility of the registered entity to verify its compliance with the latest approved version of the Reliability Standards, by the applicable governmental authority, relevant to its registration status.

   The NERC RSAW language contained within this document provides a non‑exclusive list, for informational purposes only, of examples of the types of evidence a registered entity may produce or may be asked to produce to demonstrate compliance with the Reliability Standard. A registered entity’s adherence to the examples contained within this RSAW does not necessarily constitute compliance with the applicable Reliability Standard, and NERC and the Regional Entity using this RSAW reserves the right to request additional evidence from the registered entity that is not included in this RSAW. Additionally, this RSAW includes excerpts from FERC Orders and other regulatory references. The FERC Order cites are provided for ease of reference only, and this document does not necessarily include all applicable Order provisions. In the event of a discrepancy between FERC Orders, and the language included in this document, FERC Orders shall prevail. [↑](#footnote-ref-1)
2. Compliance Assessment Date(s): The date(s) the actual compliance assessment (on-site audit, off-site spot check, etc.) occurs. [↑](#footnote-ref-2)
3. *Planning Resource Adequacy Assessment Reliability Standard*, 133 FERC¶ 61,066 (2010). [↑](#footnote-ref-3)
4. Items in the Evidence Requested section are suggested evidence that may, but will not necessarily, demonstrate compliance. These items are not mandatory and other forms and types of evidence may be submitted at the entity’s discretion. [↑](#endnote-ref-1)