Appendix J - Instructions for Submittal of Dynamics Data

ISO New England Transmission Equipment Rating, Characteristic, and Operational Data

Transmission System Dynamics Data

Effective Date: May 1, 2024

Review By Date: May 1, 2026

Table of Contents

I. Dynamic Modeling and Data Requirements 2
II. General Data Instructions 3
III. Dynamics Data Submittal Schedule 3
IV. Explanation Of Data Changes 4
V. Annual Dynamics Data Certification 4
VI. OP-16 Appendix J Revision History 5

I. DYNAMIC MODELING AND DATA REQUIREMENTS

Dynamics equipment characteristics shall be provided by the Market Participant (MP), Lead Market Participant (Lead MP), or Transmission Owner (TO) for the following equipment[1] connecting to the New England Transmission system at 69 kV and above, or designated as part of the Bulk Electric System[2], (BES).

- Dynamic Reactive Devices (DRDs) including but not limited to; Static Synchronous Compensators (STATCOMs), Static VAR Compensators (SVCs), and synchronous condensers
- Other Flexible AC Transmission System (FACTS) Devices
- High Voltage Direct Current (HVdc) transmission system steady-state and dynamics characteristics

Data for equipment connected at voltages less than 69 kV may be requested by ISO New England (ISO) if it determines a need.

- The MP, Lead MP, or TO shall provide models as described in Sections a through c below:

  a. The MP, Lead MP, or TO shall only use PSS/E standard library models unless they are for equipment covered by section I.b or I.c below. The PSS/E standard library models used shall not be identified by NERC to be prohibited or discouraged for use in interconnection-wide cases.

  b. For equipment installed with a new type of technology[3] that cannot be represented by PSS/E standard library models that is first brought in service after October 12, 2021, user-written (i.e. user-written, user or user-defined) models will be allowed on a temporary basis, provided there is a written commitment from the equipment owner, with written acknowledgement from Siemens PTI, to develop an appropriate standard library model in PSS/E at the earliest opportunity in the software development cycle.

  c. For equipment installed and first brought into service before October 12,

[1] An increasing number of reactive resources are being used to provide the same essential reliability services (ERS) as generation resources to ensure reliability of the BPS such as voltage control, frequency control, and ramping/balancing capability. Applicability of relevant equipment to consider as Dynamic Reactive Resources for MOD-032 can be seen in the Table 1 of the Transmission Connected Dynamic Reactive Resources and HVDC Equipment – Assessment of Applicability in Reliability Standards NERC SAMS White Paper, February 2019

[2] Bulk Electric System (BES) as defined in Glossary of Terms Used in NERC Reliability Standards

[3] For the purposes of this provision, a new type of technology is one which has never been represented in the PSS/E standard library. For example, at the time of the addition of this provision, the PSS/E standard library did not contain any model that represented grid forming inverter technology and so this is considered a new type of technology for the purposes of this provision. An enhancement to a technology that is already captured in the standard library, such as an upgrade to a static excitation system or a newer version of grid-following inverter controls used to connect a wind or solar project do not constitute a new type of technology for this provision.

2021, for which a standard library file has never been provided, user-written models are acceptable, though the equipment owner is encouraged to transition to an appropriate PSS/E standard library model as soon as possible.

For a new or modified facility with an associated System Impact Study (SIS) or Proposed Plan Application (PPA), the models used for the SIS or PPA shall be considered the data submittal for dynamic equipment modeling. For equipment owned by generators, the ISO will perform the initial upload of this model into the Dynamics Data Management System (DDMS). TOs and Qualified Transmission Project Sponsors shall perform the initial upload of the model into DDMS for equipment that they own. TOs, Lead MPs, or Interconnection Customers for planned equipment installations shall provide subsequent recertifications prior to initial energization using the DDMS, when requested by ISO. Prior to energizing the facility, TOs, Lead MPs or Interconnection Customers shall provide documentation using DDMS to support the dynamic models representing facilities as-built including but not limited to manufacturer models, test reports verifying models and nameplate data and shall include updated PSS®/E files such as .dyr, .dll and .raw files.

System load dynamic demand characteristics were developed by ISO and Transmission Planners in conjunction with subject matter experts. Each Transmission Customer, TO or Distribution Provider (DP) shall review the dynamic load model characteristics and provide an update as required per an ISO data request and provide the response as described with the data request.

II. GENERAL DATA INSTRUCTIONS

- The MP, Lead MP, or TO shall provide equipment data models, as described and defined in the Compliance Bulletin – MOD-032 and ISO New England's Model Data Requirements and Reporting Procedures in the requested PSS®/E version format.

- Questions regarding ISO-specific dynamic data and dynamic demand data requirements should reference "MOD-032 and OP-16 Appendix J" and should be directed to the ISO Participant Support department.

III. DYNAMICS DATA SUBMITTAL SCHEDULE

The applicable MP, Lead MP or TO shall submit dynamics data for a new facility and modification to an existing facility consistent with the schedules defined in Section I.3.9 of the ISO New England Inc. Transmission, Markets, and Services Tariff (Tariff). Prior to energizing the facility, the applicable MP, Lead MP or TO shall provide updates to represent the facility as-built.

The MP, Lead MP or TO shall verify the accuracy of existing system load dynamic demand characteristics and/or submit updated characteristics within 45 calendar days or longer if defined in the ISO data request. Data shall be provided using the Dynamics Data Management System (DDMS) or in the manner as otherwise

described in the ISO data request.

ISO shall review all submitted data to verify that it is complete, reasonable and consistent with the related data and with the reason for the revision. ISO shall notify the MP, Lead MP, or TO of any discrepancies. The MP, Lead MP, or TO shall provide corrections to the data within 90 calendar days of the notification of the discrepancies, as defined in MOD-032.

IV. EXPLANATION OF DATA CHANGES

When dynamics model data changes, the MP, Lead MP, or TO shall include with all DDMS submittals the updated PSS®/E files such as .dyr, .dll and .raw files needed to model the facility as configured. A copy of the manufacturer nameplate either by document (.pdf format) or digital photograph (.tif or .jpg formats) if changed, and the equipment test report document verifying dynamic model and parameters (.pdf format) shall be submitted to support the dynamic model changes (this is not required for component replacements that do not alter capability or dynamic performance). The MP, Lead MP, or TO shall include a brief description of the reason(s) for the change any time that dynamics data is modified. This shall provide a written record of the change and clearly identify the equipment changes made in the field and/or other reasons that necessitated the update.

V. ANNUAL DYNAMICS DATA CERTIFICATION

ISO shall initiate recertification of models for existing transmission equipment annually in the first quarter of each calendar year in accordance with MOD-032 and this OP-16J, but with **not** more than 13 calendar months between requests. The ISO certification initiation communication shall include the existing dynamics data model and prior supporting dynamic model information. This process requires that the MP, Lead MP, or TO certify or revise the dynamics model and characteristics supplied by ISO with the certification request.

MPs, Lead MPs, or TOs shall respond within 45 calendar days or longer if defined in the request. Either one of the following is an acceptable response:

- Confirmation that the dynamics model supplied by ISO with the certification request is defined correctly and is consistent with the equipment in the field.
- Revisions to the dynamics model supplied by ISO with the certification request with such revision are attached to the MP, Lead MP, or TO response. ISO shall review all submitted data as defined in Section III of this OP-16J.

VI. OP-16 APPENDIX J REVISION HISTORY

Document History: (This document created with content from ISO MOD-032 Compliance Bulletin)

Rev. No.	Date	Reason
Rev 0	11/06/15	Initial document
Rev 1	08/05/16	Globally all footers, added the required corporate document identity; Update equipment requirements to include BES equipment;
Rev 1.1	11/03/17	Periodic review performed requiring no changes;
Rev 2	11/01/19	Periodic review performed; Globally, added language clarifying and specifying when data certification is required;
Rev 3	10/12/21	Periodic review performed; Globally, added language for references and current applicable device definitions. Added language to clarify that user models for dynamics equipment commissioned after the date this version of the OP is approved shall not be used, and that only standard models per NERC guidelines shall be allowed.
Rev 3.1	05/05/22	Corrected date in Section I.b.
Rev 3.2	05/01/24	Biennial review performed by procedure owner requiring no intent changes; Minor formatting changes; Updated NERC Glossary of Terms hyperlink; Made administrative changes required to publish a Minor Revision.