

MOD-025-2: Compliance, Best Practices, and Internal Controls

Spring 2025





Agenda

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Purpose

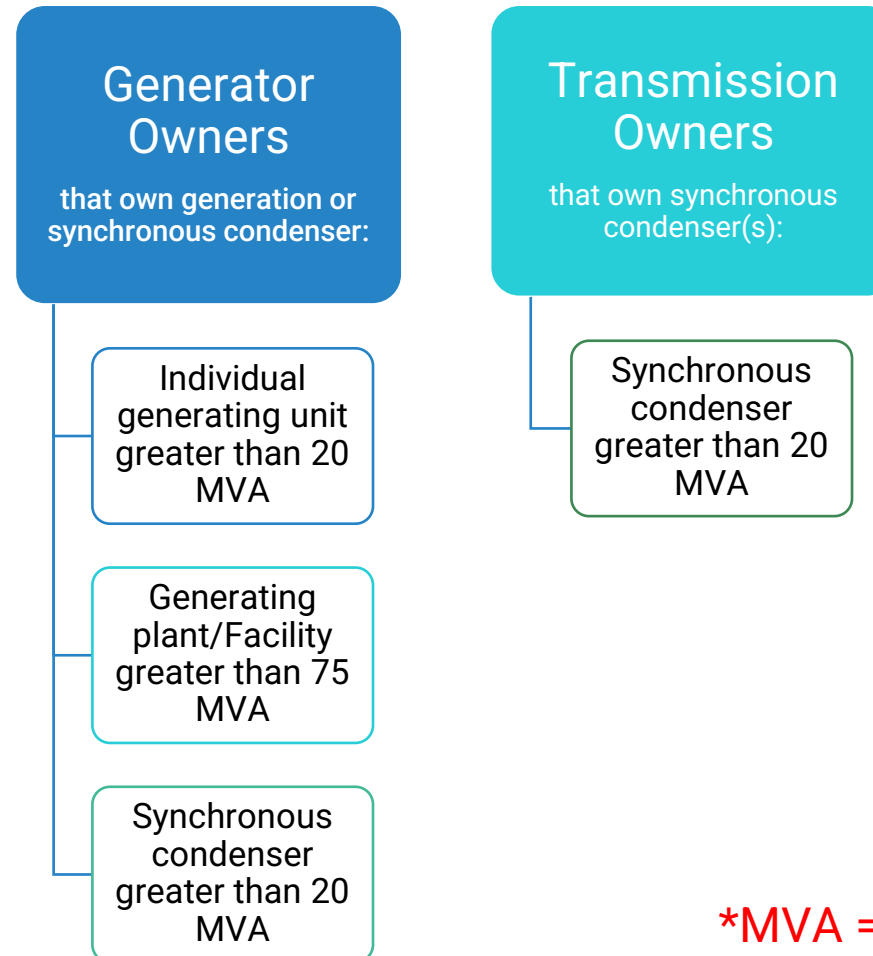
MOD-025-2 -
Verification and Data
Reporting of Generator
Real and Reactive
Power Capability and
Synchronous
Condenser Reactive
Power Capability

- Ensure that information on generators and synchronous condensers is accurate.
- Verify Real and Reactive Power capability information.
- Make the information available for use in planning models.

[MOD-025-2 Standard](#)



Applicable Entities and Facilities



***MVA = Gross nameplate rating**



Summary of Requirements

Requirement	Function	Capability Being Verified	Facilities Applicable
R1	GO	Real Power	Generators
R2	GO	Reactive Power	Generators or Synchronous Condensers
R3	TO	Reactive Power	Synchronous Condensers

- Perform verification in accordance with Attachment 1.
- Record verification in accordance with Attachment 2.
- Submit verification record to Transmission Planner (TP).



Summary of Attachment 1

Verification periodicity (every 5 years, but no more than 66 months between verifications) and specifications.

Verification can be performed with either a staged test or operational data.

First verification must be staged test, new units must be verified within 12 months of commercial operation.

Perform verification **individually** for every generator unit or synchronous condenser greater than 20 MVA.

For generating units 20 MVA or above, verifications are required under the following conditions:

	Real Power	Reactive Power	Duration
1	Max	Max Lagging	Minimum of 1 Hour
2	Min	Max Lagging	@ Reactive Limit
3	Max	Max Leading	@ Reactive Limit
4	Min	Max Leading	@ Reactive Limit

Terms used in MOD-025-2:

Lagging = Over-excited

Leading = Under-excited



Summary of Attachment 1 (continued)

For generating units of 20 MVA or less that are part of a plant greater than 75 MVA in aggregate, record data either on an individual unit basis or as a group.

For variable generating units:

- Perform verifications at the maximum Real Power output the variable resource can provide at the time of the verification.
- Perform verification of Reactive Power capability with at least 90% of the assets at a site on-line.
- If the 90% threshold cannot be met, test must be rescheduled.

For solar and wind generation, the only required verification is the lagging (over-excited) Full Load Reactive Power Verification.

Synchronous Condensers only need to be tested at two points (one over-excited point and one under-excited point) since they have no Real Power output.



Summary of Attachment 1 (continued)

Verification data to be recorded includes:

- Source of verification data: staged test or operational data
- Gross Real and Reactive Power generating capabilities
- Voltage schedule provided by the Transmission Operator
- Voltage at the high and low side of the GSU and/or system interconnection transformer(s)
- Ambient conditions including air and cooling water temperature
- Date and time of the verification period
- GSU and/or system interconnection transformer(s) voltage ratio and tap setting

Develop a simplified one-line diagram per Attachment 2.

Adjustments to verified results must be provided if requested by the TP.



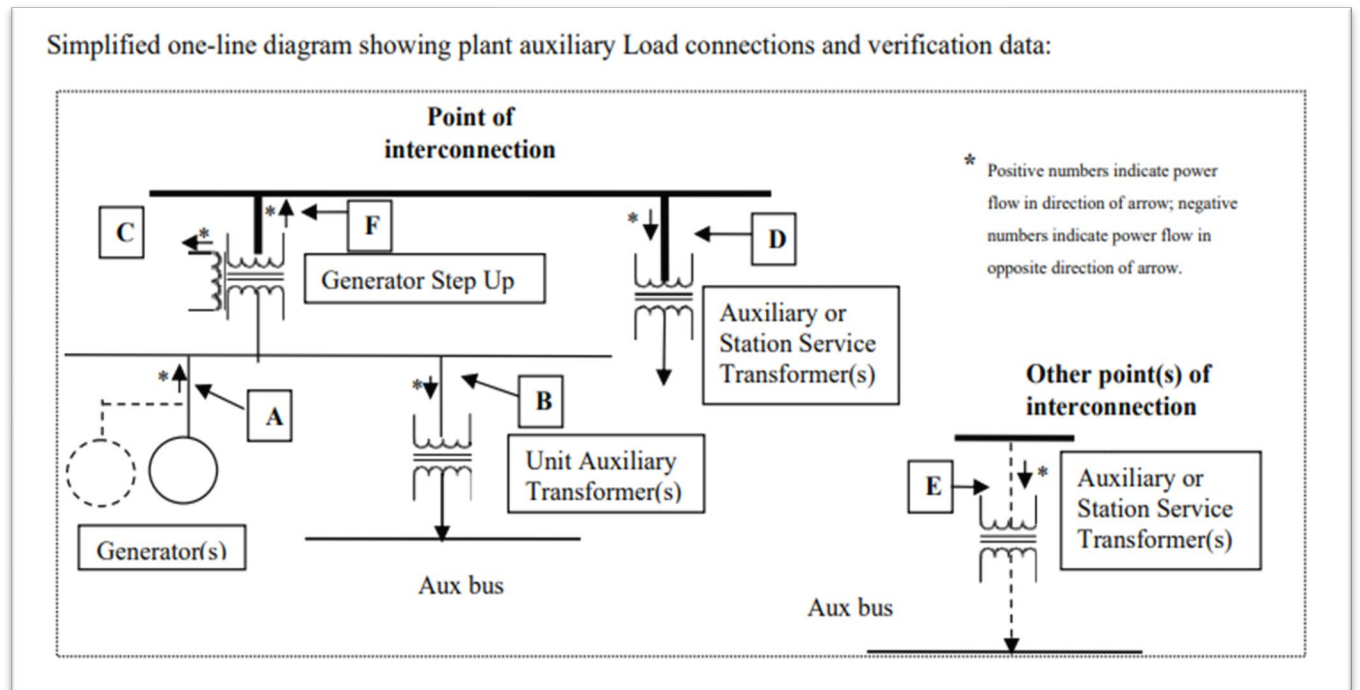
Summary of Attachment 2

Attachment 2 provides a form with a one-line diagram, data table, and summary for verification information reporting.

Changes may be made to the format, provided that all required Attachment 1 & 2 information is reported.

Data from last verification is required.

Reactive power verifications are not required to reach the generator's thermal capability curve (D-curve), however if the curve is not reached, a reason must be provided.



Source: [MOD-025-2](#)



Audit Approaches

Verify that Real and Reactive Power verification documentation is provided for each BES generating unit or synchronous condenser and owned by the entity.

Confirm that all Attachment 1 & 2 data is included in verification reports. Confirm that the reports document if the verification was via a staged test or based on operating data.

Verify that test results were submitted to TP within 90 days of recording or selecting.

Verify that BES units greater than 20 MVA have been tested individually.

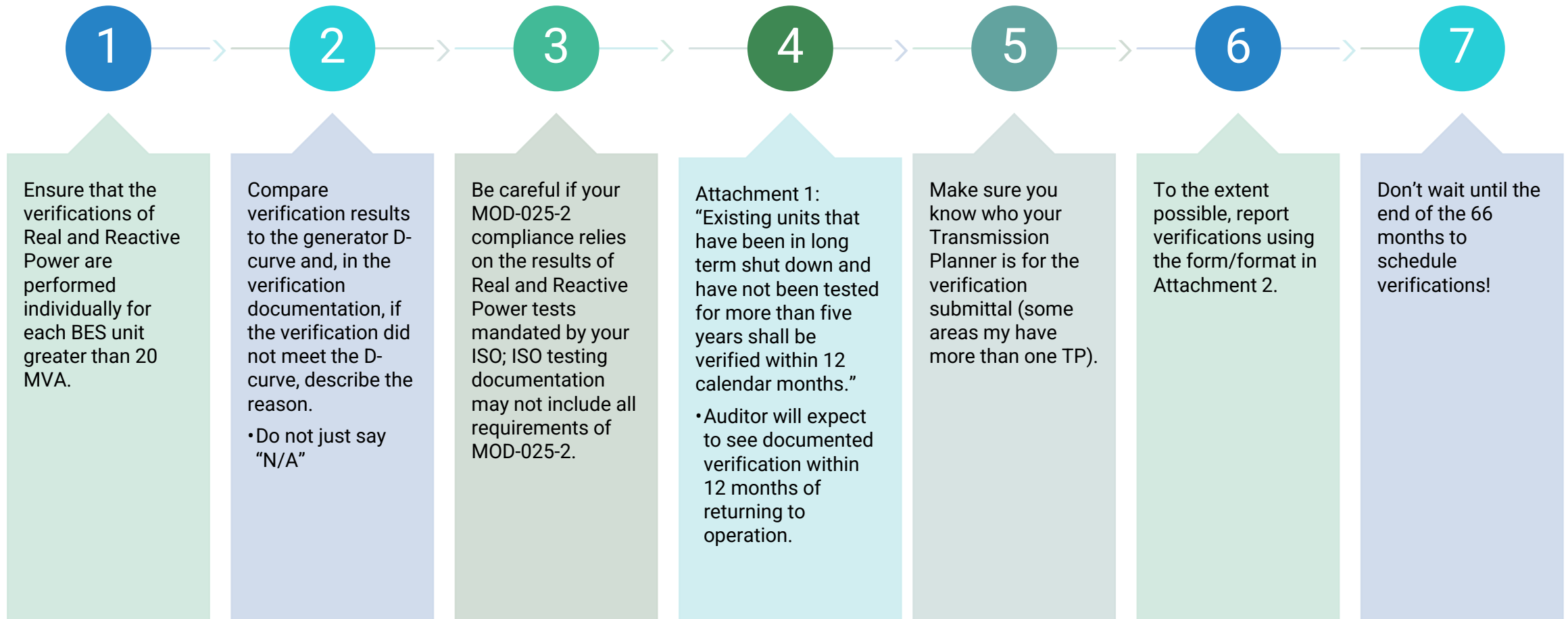
Confirm that verifications were performed and submitted to the Transmission Planner (TP) with a periodicity of 5 years, but no greater than 66 months between verifications.

For generating units, confirm that generator verification data has been provided for four (4) operating states identified in Attachment 1:

- Confirm that the Maximum Real Power output and maximum lagging Reactive Power verification was performed/sustained for at least one hour.
- The other three (3) verifications are only required to be performed until the Reactive Power limit is reached.



Best Practices





Internal Controls

Have a documented test plan for MOD-025-2 verification testing.

For GOs with synchronous generators, the test plan should specify verifications under the following conditions:

	Real Power	Reactive Power	Duration
1	Max	Max Lagging	Minimum of 1 Hour
2	Min	Max Lagging	@ Reactive Limit
3	Max	Max Leading	@ Reactive Limit
4	Min	Max Leading	@ Reactive Limit

The test plan should:

- Describe the option of using operational data for verifications.
- Specify where measurements are to be taken.
- Seek to schedule staged tests to ensure optimal test conditions.



Internal Controls (continued)

Controls to require ongoing monitoring of Real and Reactive Power capability are recommended because under certain conditions, the verifications must be performed within 12 months:

- Following the discovery that Real or Reactive Power capability has changed by more than 10% from the last verified and,
- If the change is expected to last more than 6 months.



Controls should be in place to ensure the verifications are performed within a 66-month period.



Controls should be in place to ensure that any TP-requested adjustments to verifications can be accommodated within 90 days.



NORTHEAST POWER COORDINATING COUNCIL, INC.



Questions
[Contact Us \(npcc.org\)](http://npcc.org)