

### Standard Development Roadmap

*This section is maintained by the drafting team during the development of the standard and will be removed when the standard becomes effective.*

#### Development Steps Completed:

1. SAR posted for comment (April 20–May 21, 2007).
2. Revised SAR and response to comments posted.
3. Revised SAR and response to comments approved by SC (June 14, 2007).
4. SDT appointed on (August 18, 2007).
5. Draft MOD-026-1 was posted for a 45 day comment period from February 17 – April 2, 2009.

#### Proposed Action Plan and Description of Current Draft:

This is the first draft of the this standard including Time Horizons, Data Retention, Violation Risk Factors, and Violation Severity Levels. This second posting is for a 45-day comment period.

#### Future Development Plan:

<b>Anticipated Actions</b>	<b>Anticipated Date</b>
1. Post first draft revision of standard.	April-May 2011
2. Post response to comments and third version draft revision of standard.	July – August 2011
3. Post response to comments and request authorization to ballot the revised standard.	September - October 2011
4. Conduct initial ballot.	November 2011
5. Post response to comments.	December 2011
6. Conduct recirculation ballot.	January 2012
7. BOT adoption.	February 2012
8. File with regulatory authorities.	March 2012

## A. Introduction

1. **Title:** Verification of Models and Data for Generator Excitation Control System and Plant Volt/Var Control Functions
2. **Number:** MOD-026-1
3. **Purpose:** To verify that the generator excitation control system and plant volt/var control<sup>1</sup> model (including the power system stabilizer model and the impedance compensator model), and the model parameters used in dynamic simulations accurately represent the generator excitation control systems and plant volt/var control<sup>1</sup> behavior when assessing Bulk Electric System (BES) reliability.
4. **Applicability:**
  - 4.1. Functional entities
    - 4.1.1 Generator Owner
    - 4.1.2 Transmission Planner
  - 4.2. Facilities:

For the purpose of this standard, the following Facilities are considered, “applicable units.” Units or plants with an average capacity factor<sup>2</sup> greater than 5% over the last three calendar years that meet the following:

- 4.2.1 Generating units connected to the Eastern or Quebec Interconnections with the following characteristics:
  - Each generating unit with a gross nameplate rating greater than 100 MVA, connected at the point of interconnection<sup>3</sup> at greater than or equal to 100 kV.
  - For each plant with a gross aggregate nameplate rating greater than to 100 MVA, connected at the same point of interconnection at greater than or equal to 100 kV:
    - Each unit with a gross nameplate rating greater than 20 MVA; and
    - The remainder of the plant as an aggregate.

---

<sup>1</sup> Excitation control system or plant volt/var control system:

- a. For individual synchronous machines, the generator excitation control system includes the generator, exciter, voltage regulator and power system stabilizer.
- b. For an aggregate generation plant, the volt/var control system includes the voltage regulator & reactive power control system controlling and coordinating plant voltage and associated reactive capable resources.

<sup>2</sup> Once a capacity factor exemption is declared by notifying the Transmission Planner, verification is not required for 10 calendar years from the date eligibility occurs. At the end of this 10 calendar year timeframe, the current average 3 year capacity factor (for years 8, 9, and 10) is examined to determine if the capacity factor exemption can be declared for the next 10 calendar year period. If not eligible for the capacity factor exemption, then model verification must be completed within one year of the date the capacity factor exemption expired with the 10 calendar year periodicity requirement reset based on the verification date.

<sup>3</sup> The common transmission bus voltage level at which the generator step up transformer is connected.

**4.2.2** Generating units connected to the Western Interconnection with the following characteristics:

- Each generating unit with a gross nameplate rating greater than 75 MVA, connected at the point of interconnection<sup>3</sup> at greater than or equal to 100 kV.
- For each plant with a gross aggregate nameplate rating greater than 75 MVA, connected at the same point of interconnection with at greater than or equal to 100 kV:
  - Each unit with a gross nameplate greater than 20 MVA; and
  - The remainder of the plant as an aggregate.

**4.2.3** Generating units connected to the ERCOT Interconnection with the following characteristics:

- Each generating unit with a gross nameplate rating of greater than 50 MVA, connected at the point of interconnection<sup>3</sup> with rating greater than or equal to 100 kV.
- For each plant with a gross aggregate nameplate rating of greater than 75 MVA, connected at the same point of interconnection at greater than or equal to 100 kV:
  - Each unit with a gross nameplate greater than 20 MVA; and
  - The remainder of the plant as an aggregate.

**4.2.4** For all interconnections:

- Any technically justified<sup>4</sup> unit requested by the Planning Coordinator.

**5. Effective Date:**

**5.1.** In those jurisdictions where regulatory approval is required:

**5.1.1** By the first day of the first calendar quarter, four years following applicable regulatory approval:

- Each Generator Owner shall ensure at least 30% of its applicable units per Interconnection on an MVA basis are compliant with Requirement R2.
- Each responsible entity shall ensure compliance with Requirements R1, and R3 through R6.

**5.1.2** By the first day of the first calendar quarter, six years following applicable regulatory approval:

---

<sup>4</sup> A technical justification for verifying each of those units or plant(s) that demonstrates through simulation and/or measured response that the unit or plant affects a stability limit, or evidence that the simulated unit or plant response does not match measured unit or plant response.

- Each Generator Owner shall ensure at least 50% of its applicable units per Interconnection on an MVA basis are compliant with Requirement R2.
- 5.1.3** By the first day of the first calendar quarter, ten years following applicable regulatory approval:
- Each Generator Owner shall ensure 100% of its applicable units are compliant with Requirement R2.
- 5.2.** In those jurisdictions where no regulatory approval is required:
- 5.2.1** By the first day of the first calendar quarter, four years following Board of Trustees adoption:
- Each Generator Owner shall ensure at least 30% of its applicable units per Interconnection on an MVA basis are compliant with Requirement R2.
  - Each responsible entity shall ensure compliance with Requirements R1, and R3 through R6.
- 5.2.2** By the first day of the first calendar quarter, six years following Board of Trustees adoption:
- Each Generator Owner shall ensure at least 50% of its applicable units per Interconnection on an MVA basis are compliant with Requirement R2.
- 5.2.3** By the first day of the first calendar quarter, ten years following Board of Trustees adoption:
- Each Generator Owner shall ensure 100% of its applicable units are compliant with Requirement R2.
- 6. Consideration for Early Compliance**
- 6.1.** Existing excitation control system and plant volt/var control<sup>1</sup> model verification is sufficient for demonstrating compliance for a ten year period from the actual verification date if:
- The Generator Owner has a verified model that is compliant with the applicable regional entity policies, guidelines or criteria existing at the time of model verification (provided the model verification addresses the same unit criteria and the same information as required by this standard), or
  - The Generator Owner has an existing verified model that is compliant with the requirements of this standard.

## **B. Requirements**

- R1.** Each Transmission Planner shall provide the following instructions and data to its Generator Owner within 30 calendar days of receiving the request from its Generator Owner for those instructions and data: *[Violation Risk Factor: Lower] [Time Horizon: Long-term Planning]*

- Instructions on how to obtain the list of acceptable excitation control system and plant volt/var control function model for use in dynamic simulation.
  - Instructions on how to obtain the Transmission Planner's software manufacturer's dynamic excitation control system and plant volt/var control function system model library block diagrams and/or data sheets.
  - Any of the Generator Owner's existing unit or plant specific excitation control system and plant volt/var control model data contained in the Transmission Planner's dynamic database from the current in-use models, including generator MVA base.
- R2.** Each Generator Owner shall provide a verified generator excitation control system and plant volt/var control model (for each of its applicable Facilities) to its Transmission Planner in accordance with the periodicity specified in MOD-026 Attachment 1 to ensure modeling data is accurate for use in simulation software subject to the following: *[Violation Risk Factor: Lower] [Time Horizon: Long-term Planning]*
- 2.1.** Each Generator Owner shall perform its verifications with one or more models acceptable to its Transmission Planner that collectively include the following information:
- 2.1.1.** Documentation demonstrating the unit or plant's model response matches the recorded response for a voltage excursion at the generator or plant point of interconnection from either a staged test or a measured system disturbance.
  - 2.1.2.** Manufacturer, model number (if available), and type of excitation control and plant volt/var control system installed (such as static, ac brushless, dc rotating, volt/var system).
  - 2.1.3.** Generator (or plant equivalent) model structure and data (such as reactance, time constants, saturation factors, rotational inertia, or equivalent data).
  - 2.1.4.** Excitation control system and plant volt/var system model structure and data for the closed loop voltage regulator.
  - 2.1.5.** Compensation settings (such as droop, line drop, differential compensation), if used.
  - 2.1.6.** Model structure and data for power system stabilizer, if so equipped.
- R3.** Each Generator Owner shall provide a written response that contains either the technical basis for maintaining the current model, a list of future model changes, or a plan to perform model verification<sup>5</sup> to its Transmission Planner within 90 calendar days of receiving notice of one of the following: *[Violation Risk Factor: Lower] [Time Horizon: Long-term Planning]*

---

<sup>5</sup> If verification is performed, the 10 year period as outlined in Attachment 1 is reset.

- Written notification, including a technical description from its Transmission Planner of why the excitation control system and plant volt/var control system function model is not “usable” as identified in Requirement R6, Parts 6.1 through 6.3 criteria, or
  - Written comments from its Transmission Planner identifying technical concerns with the verification documentation related to the excitation control system and plant volt/var control system function model, or
  - Written comments and supporting evidence from its Transmission Planner indicating that the predicted excitation control system and plant volt/var control function model response did not match the recorded response to a transmission system event.
- R4.** Each Generator Owner shall provide revised model data or plans to perform model verification to its Transmission Planner within 180 calendar days of making changes to the excitation control system and plant volt/var control system that alter the equipment response<sup>6</sup> characteristic. [*Violation Risk Factor: Lower*] [*Time Horizon: Long-term Planning*]
- R5.** Each Generator Owner shall provide a written response to its Planning Coordinator following receipt of a technically justified request to perform a model review of a unit/plant that meets the following: [*Violation Risk Factor: Lower*] [*Time Horizon: Long-term Planning*]
- 5.1.** Submit within 90 calendar day’s receipt of the technically justified request.
- 5.2.** Either indicate plans to verify the model or identify the source of revised model data such as:
- Discovery of manufacturer test values to replace generic model data.
  - Updating data parameters based on a walk down of the equipment.
- 5.3.** Include corrected excitation control system and plant volt/var control function model data.
- R6.** Each Transmission Planner shall determine if the verified generator excitation control system and plant volt/control model received meets the criteria identified in Requirement R6 Parts 6.1 through 6.3 and provide a written response to the Generator Owner indicating whether the model is useable or not useable; including a technical description if the model is not useable. This written response shall be submitted within 90 calendar days of receiving the excitation control system and plant volt/var control verified model information. [*Violation Risk Factor: Lower*] [*Time Horizon: Long-term Planning*]

---

<sup>6</sup> Exciter, voltage regulator, plant volt/var or power system stabilizer control replacement including software alterations that alter excitation control system equipment response, plant digital control system addition or replacement, plant digital control system software alterations that alter excitation control system equipment response, plant volt/var function equipment addition or replacement (such as static var systems, capacitor banks, individual unit excitation systems, etc), a change in the voltage control mode (such as going from power factor control to automatic voltage control, etc), exciter, voltage regulator, impedance compensator, or power system stabilizer settings change.

- 6.1. The excitation control system and plant volt/var control function model can initialize to compute modeling data without error.
- 6.2. A no-disturbance simulation results in negligible transients.
- 6.3. For an otherwise stable simulation, a disturbance simulation results in the excitation control and plant volt/var control system model exhibiting positive damping.

### C. Measures

- M1. Each Transmission Planner shall have evidence to show that it provided requested instructions and data (such as dated electronic mail messages or mail receipts) within 30 calendar days of receiving a request as specified in Requirement R1.
- M2. Each Generator Owner shall have evidence (such as a dated electronic mail messages or mail receipts) including the verification report to show that it provided the verified generator excitation control system or plant volt/var control model as specified in Requirement R2.
- M3. Each Generator Owner shall have evidence to show that it provided a written response (such as a dated copy of the response, or dated electronic mail messages or mail receipts) containing identified information and submitted within 90 calendar days of receiving any written notification as specified in Requirement R3.
- M4. Each Generator Owner shall have evidence to show that it provided a written response (such as a dated copy of the request, or dated electronic mail messages or mail receipts) submitted within 180 calendar days of making system changes specified in Requirement R4.
- M5. Each Generator Owner shall have evidence to show that it provided a written response (such as dated electronic mail messages or mail receipts) and submitted within 90 calendar days of receiving the request as specified in Requirement R5.
- M6. Each Transmission Planner shall have evidence to show that it provided a written response (such as dated electronic mail messages or mail receipts) within 90 calendar days of receiving the model as specified in Requirement R6.

### D. Compliance

#### 1. Compliance Monitoring Process

##### 1.1. Compliance Enforcement Authority

Regional Entity

##### 1.2. Data Retention

The Generator Owner and Transmission Planner shall each keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation:

- The Transmission Planner shall retain the information/data request and provided response evidence of Requirements R1 and R6, Measures M1 and M6 for 3 calendar years from the date the document was provided.
- The Generator Owner shall retain the latest and previous excitation control system and plant volt/var control system model verification evidence of Requirement R2, Measure M2.
- The Generator Owner shall retain the information/data request and provided response evidence of Requirements R3 through R5, and Measures M3 through M5 for 3 calendar years from the date the document was provided.

If a Generator Owner or Transmission Planner is found non-compliant, it shall keep information related to the non-compliance until found compliant or for the time specified above, whichever is longer.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

### **1.3. Compliance Monitoring and Assessment Processes**

Compliance Audits

Self-Certifications

Spot Checking

Compliance Violation Investigations

Self-Reporting

Complaints

### **1.4. Additional Compliance Information**

None

**2. Violation Severity Levels**

R #	Lower VSL	Moderate VSL	High VSL	Severe VSL
<b>R1</b>	The Transmission Planner provided the instructions and data to the Generator Owner more than 90 calendar days but less than or equal to 120 calendar days of receiving a request.	The Transmission Planner provided the instructions and data to the Generator Owner more than 120 calendar days but less than or equal to 150 calendar days of receiving a request.	The Transmission Planner provided the instructions and data to the Generator Owner more than 150 calendar days but less than or equal to 180 calendar days of receiving a request.	The Transmission Planner failed to provide the instructions and data to the Generator Owner within 181 calendar days of receiving a request.
<b>R2</b>	<p>The Generator Owner provided its verified model(s) to its Transmission Planner after the periodicity timeframe specified in MOD-026 Attachment 1 but less than or equal to 30 calendar days late;</p> <p>OR</p> <p>The Generator Owner provided the Transmission Planner verified model(s) that omitted one of the six Parts identified in Requirement R2, Parts 2.1.1 through 2.1.6.</p>	<p>The Generator Owner provided its verified model(s) to its Transmission Planner more than 30 calendar days but less than or equal to 60 calendar days late as specified by the periodicity timeframe in MOD-026 Attachment 1.</p> <p>OR</p> <p>The Generator Owner provided the Transmission Planner verified model(s) that omitted two of the six Parts identified in Requirement R2, Parts 2.1.1 through 2.1.6.</p>	<p>The Generator Owner provided its verified model(s) to its Transmission Planner more than 60 calendar days but less than or equal to 90 calendar days late as specified by the periodicity timeframe in MOD-026 Attachment 1.</p> <p>OR</p> <p>The Generator Owner provided the Transmission Planner verified model(s) that omitted three of the six Parts identified in Requirement R2, Parts 2.1.1 through 2.1.6.</p>	<p>The Generator Owner failed to provide the verified generator excitation control system or plant volt/var control model(s) or failed to provide the verified model(s) no more than 90 calendar days late to its Transmission Planner in accordance with the periodicity specified in MOD-026 Attachment 1.</p> <p>OR</p> <p>The Generator Owner failed to use model(s) acceptable to the Transmission Planner as specified in Requirement R2, Part 2.1.</p> <p>OR</p> <p>The Generator Owner provided the Transmission Planner verified model(s) that omitted four or more of the six Parts identified in</p>

Standard MOD-026-1 — Verification of Models and Data for Generator Excitation Control System Functions and Plant Volt/Var Control Functions

				Requirement R2, Parts 2.1.1 through 2.1.6.
<b>R3</b>	The Generator Owner provided a written response more than 90 calendar days but less than or equal to 120 calendar days of receiving notice. (R3)	The Generator Owner provided a written response more than 120 calendar days but less than or equal to 150 calendar days of receiving notice. (R3)	The Generator Owner provided a written response more than 150 calendar days but less than or equal to 180 calendar days of receiving notice. (R3)	The Generator Owner failed to provide a written response within 181 calendar days of receiving notice as specified in Requirement R3..  OR  The Generator Owner’s written response was provided within 181 calendar days of receiving written notice however failed to contain either the technical basis for maintaining the current model, or a list of future model changes, or a plan to perform model verification.
<b>R4</b>	The Generator Owner provided revised model data or plans to perform model verification more than 180 calendar days but less than or equal to 210 calendar days of making changes to the excitation control system or plant volt/var control <sup>1</sup> system that altered the equipment response characteristic. (R4)	The Generator Owner provided revised model data or plans to perform model verification more than 210 calendar days but less than or equal to 240 calendar days of making changes to the excitation control system or plant volt/var control <sup>1</sup> system that altered the equipment response characteristic. (R4)	The Generator Owner provided revised model data or plans to perform model verification more than 240 calendar days but less than or equal to 270 calendar days of making changes to the excitation control system or plant volt/var control <sup>1</sup> system that altered the equipment response characteristic. (R4)	The Generator Owner failed to provide revised model data or failed to provide plans to perform model verification within 271 calendar days of making changes to the excitation control system or plant volt/var control <sup>1</sup> system that altered the equipment response characteristic as specified in Requirement R4.
<b>R5</b>	The Generator Owner provided a written response more than 90 calendar days but less than or equal to 120 calendar days to the Planning Coordinator following receipt of a technically justified request to perform a model review	The Generator Owner provided a written response more than 120 calendar days but less than or equal to 150 calendar days to the Planning Coordinator following receipt of a technically justified request to perform a model review of a	The Generator Owner provided a written response more than 150 calendar days but less than or equal to 180 calendar days to the Planning Coordinator following receipt of a technically justified request to perform a model review of a	The Generator Owner failed to provide a written response to the Planning Coordinator following receipt of a technically justified request to perform a model review of a unit/plant as specified in Requirement R5.

Standard MOD-026-1 — Verification of Models and Data for Generator Excitation Control System Functions and Plant Volt/Var Control Functions

	of a unit/plant. (R5)	unit/plant. (R5)	unit/plant. (R5)  OR  The Generator Owner provided a written response within 181 calendar days to the Planning Coordinator following receipt of a technically justified request to perform a model review of a unit/plant however the written response failed to include Requirement R5, Part 5.2 or Part 5.3.	OR  The Generator Owner provided a written response within 181 calendar days to the Planning Coordinator following receipt of a technically justified request to perform a model review of a unit/plant however the written response failed to include Requirement R5, Parts 5.2 and 5.3.
<b>R6</b>	The Transmission Planner provided a written response to the Generator Owner indicating whether the model is useable or not useable; including a technical description if the model is not useable, more than 90 calendar days but less than 120 calendar days of receiving verified model information. (R6)	The Transmission Planner provided a written response to the Generator Owner indicating whether the model is useable or not useable; including a technical description if the model is not useable, more than 120 calendar days but less than 150 calendar days of receiving the verified model information. (R6)  OR  The Transmission Planner provided a written response within 181 calendar days to the Generator Owner however the written response omitted confirmation for one of the specified model criteria listed in Requirement R6, Parts 6.1 through 6.3.	The Transmission Planner provided a written response to the Generator Owner indicating whether the model is useable or not useable; including a technical description if the model is not useable, more than 150 calendar days but less than 180 calendar days of receiving the verified model information. (R6)  OR  The Transmission Planner provided a written response within 181 calendar days to the Generator Owner however the written response omitted confirmation for two of the specified model criteria listed in Requirement R6, Parts 6.1 through 6.3.	The Transmission Planner failed to provide a written response to the Generator Owner within 181 calendar days of receiving the verified model information as specified in Requirement R6.  OR  The Transmission Planner provided a written response within 181 calendar days to the Generator Owner however the written response omitted confirmation for all specified model criteria listed in Requirement R6, Parts 6.1 through 6.3.

E. Regional Variances

None.

F. Associated Documents

Version History

Version	Date	Action	Change Tracking

G. References

The following documents contain technical information beyond the scope of this Standard on excitation control system functionality, modeling, and testing.

1. IEEE 421.1 Definitions for Excitation Systems for Synchronous Machines
2. IEEE 421.2 Guide for Identification, Testing, and Evaluation of the Dynamic Performance of Excitation Control Systems
3. IEEE 421.5 IEEE Recommended Practice for Excitation System Models for Power System Stability Studies
4. K. Clark, R.A. Walling, N.W. Miller, "Solar Photovoltaic (PV) Plant Models in PSLF," IEEE/PES General Meeting, Detroit, MI, July 2011
5. A. Ellis, Y. Kazachkov, E. Muljadi, P. Pourbeik, J.J. Sanchez-Gasca, Working Group Joint Report – WECC Working Group on Dynamic Performance of Wind Power Generation and IEEE Working Group on Dynamic Performance of Wind Power Generation, Description and Technical Specifications for Generic WTG models – A Status Report, IEEE PES General Meeting 2011, Detroit, MI, July 24-28
6. A. Ellis, E. Muljadi, J. Sanchez-Gasca, Y. Kazachkov, “Generic Models for Simulation of Wind Power Plants in Bulk System Planning Studies,” IEEE PES General Meeting 2011, Detroit, MI, July 24-28
7. N.W. Miller, J. J. Sanchez-Gasca, K. Clark, J.M. MacDowell, “Dynamic Modeling of GE Wind Plants for Stability Simulations,” IEEE PES General Meeting 2011, Detroit, MI, July 24-28
8. A. Ellis, Y. Kazachkov, E. Muljadi, P. Pourbeik, J.J. Sanchez-Gasca, Working Group Joint Report – WECC Working Group on Dynamic Performance of Wind Power Generation & IEEE Working Group on Dynamic Performance of Wind Power Generation, “Description and Technical Specifications for Generic WTG Models – A Status Report,” Proc. IEEE PES 2011 Power Systems Conference and Exposition (PSCE), March 2011, Phoenix, AZ

9. K. Clark, N.W. Miller, R.A. Walling, "Modeling of GE Solar Photovoltaic (PV) Plants for Grid Studies," version 1.1, April 2010
10. K. Clark, N.W. Miller, J. J. Sanchez-Gasca, "Modeling of GE Wind Turbine-Generators for Grid Studies," version 4.5, April 16, 2010, Available from GE Energy
11. R.J. Piwko, N.W. Miller, J.M. MacDowell, "Field Testing & Model Validation of Wind Plants," in Proc. IEEE PES General Meeting, Pittsburg, PA, July 2008
12. N. Miller, K. Clark, J. MacDowell and W. Barton, "Experience with Field and Factory Testing for Model Validation of GE Wind Plants," in Proc. Eur. Wind Energy Conf. Exhib., Brussels, Belgium, March/April 2008
13. IEEE Task Force on Generator Model Validation Testing of the Power System Stability Subcommittee, "Guidelines for Generator Stability Model Validation Testing," IEEE PES General Meeting 2007, paper 07GM1307
14. W.W.Price and J. J. Sanchez-Gasca, "Simplified Wind Turbine Generator Aerodynamic Models for Transient Stability Studies," in PROC IEEE PES 2006 Power Systems Conf. Expo. (PSCE), Atlanta, GA, October 1, 2006, p. 986-992
15. J.J. Sanchez-Gasca, R.J. Piwko, N. W. Miller, W. W. Price, "On the Integration of Wind Power Plants in Large Power Systems," Proc. X Symposium of Specialists in Electric and Expansion Planning (SEPOPE), Florianopolis, Brazil, May 2006
16. N. W. Miller, J. J. Sanchez-Gasca, W. W. Price, R. W. Delmerico, "Dynamic Modeling of GE 1.5 and 3.6 MW Wind Turbine-Generators for Stability Simulations," Proc. IEEE Power Engineering Society General Meeting, Toronto, Ontario, July 2003

## OD-026 Attachment 1

### Excitation Control System or Plant Volt/VAr Model Verification Periodicity

Note that local grid codes may specify shorter time frames.

Facility	Condition	Periodicity
Existing Generating Unit	<p>During the eleven calendar year (January - December) transition period and <b>no exceptions</b> apply.</p> <p><b>OR</b></p> <p>During the ten calendar year (January - December) period and <b>no exceptions</b> apply.</p>	<p>A recorded response for a voltage excursion shall be collected during a ten calendar year (January - December) period from the effective date of this standard with the verified model and documentation transmitted to the Transmission Planner no more than 365 days from the date that the recorded response was collected.</p>
Existing Generating Unit	<p>During the eleven calendar year (January - December) transition period.</p> <p><b>OR</b></p> <p>During the ten calendar year (January - December) period.</p> <p><b>AND</b></p> <p>The following exception applies:</p> <ol style="list-style-type: none"> <li>1) Multiple units have the same MVA nameplate rating that are <math>\leq 350</math> MVA <b>AND</b></li> <li>2) The same multiple units have identical applicable components and settings <b>AND</b></li> <li>3) The same multiple units are sited at the same</li> </ol>	<p>Not Required (however, perform verification on a different unit each ten calendar year cycle).</p>

Standard MOD-026-1 — Verification of Models and Data for Generator Excitation Control System Functions and Plant Volt/Var Control Functions

---

Facility	Condition	Periodicity
	<p>physical location <b>AND</b></p> <p>4) The model for one of these equivalent units has been verified.</p>	
Existing Generating Unit	Installation of new excitation control system equipment.	A recorded response for a voltage excursion shall be collected and the verified model and documentation transmitted to the Transmission Planner no more than 180 days from the new equipment commissioning date..
Existing Generating Unit	Subjected to an activity resulting in an alteration of the response of the excitation control system.	A recorded response for a voltage excursion shall be collected within 365 days of settings or software changes with the verified model and documentation transmitted to the Transmission Planner no more than 180 calendar days from the date that the recorded response was collected.
Existing Generating Unit	Receive written comments including dated electronic or hard copy evidence indicating that the recorded excitation control system response to a Transmission System event did not match the predicted excitation control system model response.	A recorded response for a voltage excursion shall be collected within 365 days of a written response by the Generator Owner committing to perform model verification with the verified model and documentation transmitted to the Transmission Planner no more than 180 calendar days from the date that the recorded response was collected.
Existing Generating Unit	A model verification plan submitted as a result of a review requested by the Planning Coordinator for an existing Generating Unit.	A recorded response for a voltage excursion shall be collected within 365 days of the submission of a plan to perform model verification as a result of a request for a review from the Planning Coordinator with the verified model and documentation specified in transmitted to the Transmission Planner no more than 180 calendar days from the date that the recorded response was collected.

Standard MOD-026-1 — Verification of Models and Data for Generator Excitation Control System Functions and Plant Volt/Var Control Functions

---

Facility	Condition	Periodicity
New or Existing Generator Unit	<p>Excitation control system model identified as unusable by the Transmission Planner.</p> <p><b>OR</b></p> <p>Receive written comments detailing technical concerns with the Generator Owner's excitation control system model verification documentation.</p>	<p>A recorded response for a voltage excursion shall be collected within 365 days of a written response by the Generator Owner committing to perform model verification with the verified model and documentation transmitted to the Transmission Planner no more than 180 calendar days from the date that the recorded response was collected.</p>
New Generating Unit	New unit installed	<p>A recorded response for a voltage excursion shall be collected and the verified model and documentation transmitted to the Transmission Planner no more than 180 calendar days of the unit commercial operating date.</p>