

WESTERN ELECTRICITY COORDINATING COUNCIL

GENERATING UNIT MODEL VALIDATION POLICY

A. Introduction

A.1. Title: **Generating Unit Model Validation Policy**

A.2. Purpose: Accurate models of generators and associated controls are necessary for realistic simulations of the electric power system of the western interconnection. Baseline testing and periodic performance validation are required to ensure that the dynamic models and databases that are used in the grid simulations are accurate and up to date.

A.3. Applicability:

A.3.1. Facilities Affected: This policy statement applies to generating facilities connected to the Western Electricity Coordinating Council (WECC) transmission grid at 60 kV or higher voltage (both new and existing, synchronous and non-synchronous) with single unit capacity of 10 MVA and larger, or facilities with aggregate capacity of 20 MVA and larger.

A.3.2. Entity Responsible:

- A.3.2.1. Generator Owner
- A.3.2.2. Transmission Planner
- A.3.2.3. Regional Reliability Organization

A.4. References: The following documents referred to in this Policy are posted in the “Generator Testing Program” area on the WECC website at [www.wecc.biz]:

- A.4.1. Generating Facility Data Requirements
- A.4.2. Generating Unit Baseline Test Requirements
- A.4.3. Generating Unit Model Validation Requirements
- A.4.4. List of WECC-Approved Models

A.5. Effective Date: Approved by the Board at the meeting July 26-28, 2006.

B. Requirements

B.1. Generator Owner Responsibilities

B.1.1. Generating Facility Data

- B.1.1.1. The Generator Owner shall provide to the Transmission Planner the information for the Generating Facility as specified in the *Generating Facility Data Requirements* document.
- B.1.1.2. The Generator Owner shall review, verify and update the Generating Facility data when any of the following conditions occur:
 - B.1.1.2.1. No later than 180 days after the new Generating Facility is released for Commercial Operation.
 - B.1.1.2.2. No later than 180 days after an existing generating unit re-starts Commercial Operation with modified equipment, control settings, or software that influences the behavior of the plant with respect to the grid (e.g. excitation retrofit, additional control function within a controller, turbine modification, voltage regulator and power system stabilizer tuning modification, etc.)
 - B.1.1.2.3. At least once every five years.

B.1.2. Baseline Testing

- B.1.2.1. The Generator Owner shall test the generating unit and validate its model data.
- B.1.2.2. The Generator Owner shall provide test and validation reports to its Transmission Planner.
 - B.1.2.2.1. For guidance on the test requirements, refer to the current *Generating Unit Baseline Test Requirements* document.
- B.1.2.3. The testing and associated validation by simulation shall be performed on a generating unit when any of the following conditions have occurred:
 - B.1.2.3.1. If the generating project has not been certified by WECC under Generator Testing Program since January 1997.

- B.1.2.3.2. No later than 180 days after the new Generating Facility is released for Commercial Operation. In the meantime, the Generator Owner will provide the best available model data supplied by the equipment manufacturer using the WECC approved models including commissioning reports.
- B.1.2.3.3. No later than 180 days after an existing generating unit re-starts Commercial Operation with modified equipment, control settings, or software that influences its behavior with respect to the grid (e.g. excitation retrofit, additional control function within a controller, turbine modification, voltage regulator and power system stabilizer tuning modification, etc.), only those portions of the generating unit model that can be influenced by the modifications need to be tested and validated.
- B.1.2.3.4. No later than 180 days after the Generator Owner is notified by WECC that there is evidence that the modeled response of a Generating Facility does not correlate with the actual response, except in instances where the lack of correlation was caused by equipment problems that were subsequently corrected.

B.1.3. Model Data Validation

- B.1.3.1. The Generator Owner shall perform model data validation and provide a report to its Transmission Planner at least once every five years. Schedule of model validation shall be coordinated between the Generator Owner, Transmission Planner and Transmission Operator
 - B.1.3.1.1. The “*Generating Facility Model Data Validation Requirements*” document describes acceptable methods of model data validation by performance comparison.
- B.1.3.2. Generator Owner shall verify that generator control limiters, protection and equipment capabilities are consistent with those reported in the model(s).

B.2. Transmission Planner Responsibilities

B.2.1. Model Data Validation

- B.2.1.1. The Transmission Planner shall maintain a current list of all Generating Facilities in its planning area that are subject to testing and model data validation.

- B.2.1.1.1. This list shall be made available to WECC upon request.
- B.2.1.1.2. For each Generating Facility, the list shall include the status of compliance with this Generating Unit Model Validation Policy, including report dates.

B.2.1.2. The Transmission Planner shall notify Generator Owner when generating unit re-testing and validation are required to maintain compliance with this policy.

B.2.1.3. Disturbance data recorded either at the generator or at the point of interconnection can be used for model data validation.

- B.2.1.3.1. If the Transmission Planner has performance monitoring equipment at the point of interconnection, the data shall be made available to the Generator Owner, upon request.

B.2.2. Facility Data and Validation Reports

B.2.2.1. The Transmission Planner shall collect Generating Facility data and model data validation reports from Generator Owners.

B.2.2.2. The Transmission Planner shall verify that the WECC-approved model parameters provided by the Generator Owner are adequately validated by comparing the simulated response of the unit against either the recorded baseline tests or a disturbance response as the case may be, within 30 calendar days after receipt from the Generator Owner.

- B.2.2.2.1. The Transmission Planner will work with the Generator Owner on resolving the differences between simulated and actual responses of the Generating Facility to grid disturbances. The Transmission Planner will inform WECC if the differences cannot be resolved.

B.2.2.3. The Transmission Planner shall submit the accepted validated models to WECC and shall notify the Generator Owner that the models are accepted.

B.2.2.4. If a model data validation report is rejected, the Transmission Planner shall inform the Generator Owner of the reason(s) for the rejection. The Transmission Planner will work with the Generator Owner to expedite resolution of any issues preventing acceptance of the model data validation report. The Transmission Planner will inform WECC if the issues cannot be resolved.

B.3. WECC Responsibilities

- B.3.1. WECC shall maintain a master data file with the current validated models.
- B.3.2. WECC shall review and approve the generator testing and model validation reports.
- B.3.3. WECC shall verify that the models are stable and that the modeled system responses reasonably match power system performance.
- B.3.4. WECC shall verify compliance with the certification requirements, issue certificates to the Generator Owners and notify Transmission Planner.
- B.3.5. WECC has the final authority to determine the suitability of testing and validation of the models.
- B.3.6. WECC periodically shall audit the Generator Owners and Transmission Planners on the status of generator testing and model validation.
- B.3.7. WECC periodically shall review technical requirements listed in section A4. Any changes in the requirements will go through a WECC "due process."

B.4. Exemptions

- B.4.1. WECC may grant exemptions to the Generator Owners in rare situations where a unique condition or equipment configuration exists that would preclude or delay testing and model data validation.
- B.4.2. The Generator Owner may request an exemption by submittal to WECC through the Transmission Planner. The request shall include justification for the exemption. WECC shall respond to the request within 90 days after receipt.

C. Definitions

Generator Owner is defined in NERC Reliability Functional Model.

Transmission Planner is defined in NERC Reliability Functional Model.

Commercial Operation is defined in FERC 2003-A Standardization of Generator Interconnection Agreements and Procedures.

Generating Facility is defined in FERC 2003-A Standardization of Generator Interconnection Agreements and Procedures.

Validation. Within the context of this policy and associated documents, Validation is used synonymously with verification and refers to the process of selecting parameters for the appropriate WECC-approved models for generating units and demonstrating that the model behavior is consistent with the generating unit behavior by comparison of simulation to test recording.