WECC

WECC Modeling and Validation Subcommittee (MVS) Model Approval Procedure

MVS

January 22, 2026

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1 Introduction

The WECC MVS Model Approval Procedure establishes a consistent and transparent process for reviewing and approving dynamic models used in WECC system studies. As model complexity and system needs continue to increase, a clearly defined approval process is necessary to ensure that models are technically sound, well-documented, and suitable for planning and operational applications.

The business goal of this procedure is to support reliable and efficient WECC studies by reducing model-related risk, improving consistency across studies, and providing clarity to model developers, reviewers, and system planners.

2 Purpose

This procedure defines the steps and responsibilities for the review and approval of models within the WECC Modeling and Validation Subcommittee (MVS). It establishes a two-stage approval process: Model Specification Approval and Model Approval (based on implementation and validation evidence), to ensure technical rigor, transparency, traceability, and due diligence.

3 Scope

This procedure applies to all dynamic models proposed for use in WECC system studies and base cases. It covers new model developments, modifications to existing models, and retirements where applicable.

Categories of models include:

- Synchronous machine models (generators, motors, exciters, governors, PSS, OEL, UEL, etc.)
- Inverter-based resource (IBR) models (renewable and storage, both grid-forming and grid-following)
- HVDC and FACTS device models
- Load and composite load models
- Other specialized dynamic models as identified by MVS

This procedure applies regardless of the proposer (utilities, vendors, original equipment manufacturers (OEM), national laboratories, academic researchers, or other stakeholders).

4 Principles

Technical Rigor	No model is approved without a thorough review of theory, structure, and validation.
Transparency	Findings, concerns, and decisions must be shared openly in MVS.
Staged Process	Model Specification and Model Implementation/Validation are approved separately.
Collaboration	Proposers, OEMs, software vendors, and MVS members all have roles.

Independence	Model proposals are subject to MVS review. MVS consideration of model approval will occur once the proposer has submitted a complete model package that meets the technical quality requirements defined in the WECC Criteria for Acceptance of New Dynamic Models (as determined by the MVS) and has completed the review steps outlined in this Model Approval Procedure.
Traceability	Technical details of a dynamic model must be clearly documented for users' understanding and reference for further investigation.

5 Roles and Responsibilities

- Proposer is responsible for:
  - Entity (utility, vendor, OEM, national laboratories, academic researcher, etc.) initiating and/or supporting the development of a new dynamic model or an enhancement to an existing model
- MVS chair is responsible for:
  - Facilitating meetings and providing guidance on adherence to the approval procedure
- WECC staff liaison is responsible for:
  - Coordinating documentation, agenda posting, and record-keeping
- MVS members are responsible for:
  - Reviewing submissions, participating in task forces, overseeing adherence to the approval procedure, and voting on approval motions. Through its vote, the MVS serves as the final authority on whether the steps of this procedure have been adequately followed.
- Task force, a temporary group chartered by the chair if deemed necessary by the MVS, is responsible for:
  - Conducting the technical review and support development of the model specification. The task force should consist of the model proposer and, as appropriate, representatives from OEMs, laboratories, researchers, and utilities with relevant expertise. Software vendors are engaged once a preliminary specification is developed, primarily to assess implementability, numerical considerations, and platform compatibility. The MVS may make changes to the task force chartered by the chair.

6 Approval Procedure

Voting to approve a model will occur only after the MVS determines that the steps of this procedure have been satisfied.

6.1 Stage A. Model Specification Approval

6.1.1 Proposal: The proposer submits a request for a new model or model enhancement

6.1.2 Formation of task force: A task force may be proposed by the chair or any MVS member. If deemed necessary by the MVS, the task force is then chartered by the chair to support the development and technical review of the proposed model. A task force is not required, but it is often helpful when a new model is not yet fully developed.

6.1.3 Specification development: task force/proposer conducts literature review and theoretical analysis, and drafts model structure and control equations.

6.1.4 OEM consultation: task force/proposer engages relevant OEMs, whenever possible, to review the specification for theoretical soundness, practical feasibility, and alignment with field-observed behavior.

6.1.5 Preliminary data check: Where applicable, reference test data, OEM studies, or field measurement trends should be reviewed to ensure the proposed model structure and expected performance envelopes are credible prior to advancing to Stage B.

6.1.5.1 Formal benchmarking against field/event data remains part of Stage B model validation.

6.1.6 Software vendor engagement: Specification draft circulated to vendors for feedback on implementability.

6.1.7 Draft specification circulation: After incorporating OEM (when available) and software-vendor feedback as practicable, the task force/proposer circulates the drafted model specification to the full MVS membership. Members are invited to review the draft and submit written comments or technical questions within the comment window.

6.1.8 Standard Review Timelines:

6.1.8.1 Public (MVS) comment period: 45 calendar days

6.1.8.2 Comment resolution and draft revision by task force/proposer: 30 calendar days

6.1.8.3 Timelines may be adjusted by the chair based on model complexity, urgency, or OEM/vendor availability, provided adequate review opportunity is maintained. The MVS change any timeline adjustments by the chair.

6.1.9 Comment participation: Participation in the comment period is voluntary. Failure to submit comments during the designated review period will be interpreted as “no comment.” The approval process will continue unless a formal request for additional review time is submitted and approved by the chair, which shall be subject to change by the MVS.

6.1.10 Comment resolution and revision: At the close of the comment period, the task force/proposer consolidates all feedback, documents responses in a comment–response matrix, and revises the draft specification as appropriate.

6.1.10.1 Comments are assessed by the task force/proposer based on technical merit and their potential to materially affect model fidelity, validation quality, system reliability, or alignment with applicable NERC/WECC modeling and validation requirements.

6.1.10.2 Substantive issues are resolved through collaborative technical review with documented rationale.

6.1.10.3 After comment resolution has been completed and documented, any MVS member may request MVS review of the disposition of comments prior to advancement of the draft.

6.1.10.4 All substantive comments must be addressed through the comment-resolution process, and the task force/proposer will document how each substantive issue was resolved before the draft is placed on an MVS agenda.

6.1.11 MVS interim updates: Task force/proposer may present progress reports at MVS meetings to share progress and gather feedback before the specification is finalized.

6.1.12 Final specification approval: MVS members will approve the final specification by voting. If the vote passes, the specification is approved and may be used for model development.

6.2 Stage B. Model Approval

6.2.1 Implementation in multiple platforms: The model should be implemented and benchmarked in at least two major commercial software tools. Implementation in PSLF, PowerWorld, and PSS®E is expected whenever practicable. Where full implementation across all primary WECC study platforms is not yet complete, but is underway, the remaining vendor(s) are encouraged to share their implementation plan and anticipated timeline prior to final approval.

6.2.2 Validation with data: The model is validated against field test results, OEM studies, or equivalent reference data.

6.2.3 Usability with WECC case: The model is tested using a WECC full-loop case.

6.2.4 Final presentation to MVS: Proposer presents implementation and validation results, including cross-platform benchmarking results.

6.2.5 Final model approval: MVS members will approve the final model by voting. If the vote passes, then MVS accepts that the model met the necessary requirements, and the Model is approved for WECC use.

7 Procedural Safeguards

The MVS model approval process is designed with safeguards to ensure fairness, transparency, and technical rigor. These include:

7.1 Chair's role: The chair provides guidance on adherence to the approval procedure and strives to ensure that MVS members have sufficient information for informed decision-making. The chair is also responsible for appointing and dissolving task forces, subject to a task force change by the MVS.

7.2 Task forces: Task forces provide a structured, in-depth technical review, including consultation with OEMs and software vendors, when possible.

7.3 Stakeholder engagement: This procedure provides all relevant parties (utilities, OEMs (when available), software vendors, and MVS members) with opportunities to provide input during the approval process.

7.4 MVS approval: The MVS, through their vote on a model, is the final decision maker on whether the steps of this procedure have been adequately followed.

These safeguards ensure that the approval of any model is the result of a robust, staged review process.

8 Change History

Date	Version	Owner	Reviewer	Approver	Revision Description
01/22/2026	1.0	MVS			

This process supersedes and revokes all past policies and practices, oral and written representations, or statements regarding terms and conditions of employment concerning the subject matter covered herein. WECC reserves the right to add to, delete, change, or revoke this process at any time, with or without notice. This process does not create a contract between WECC and any employee or contractor, nor does it create any entitlement to employment or any benefit provided by WECC to its employees or contractors.

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