

WECC Intent

The *Controls Guidance and Compliance Failure Points* document guides registered entities in assessing risks associated with their business activities and designing appropriate internal controls in response. WECC's intent is to provide examples supporting the efforts of registered entities to design controls specific to operational risk *and* compliance with the NERC Reliability Standards. The registered entity may use this document as a starting point in assessing risk and designing appropriate internal controls. Each registered entity should perform a risk assessment to identify its entity-specific risks and design appropriate internal controls to mitigate those risks; WECC does not intend for this document to establish a standard or baseline for entity risk assessment or controls objectives.

***Note:** Guidance questions help an entity understand and document controls. Any responses, including lack of affirmative feedback, will have no consequences on an entity's demonstration of compliance during a Compliance Monitoring and Enforcement Program (CMEP) engagement.*

** Please send feedback to internalcontrols@WECC.org with suggestions on controls guidance and potential failure points questions.*

Definitions and Instructions

Control Objective: Aim or purpose of internal control to address identified risk or operational concern.

Control Activities: Policies, procedures, techniques, and mechanisms to achieve control objectives and mitigate related risks.

Internal Control: The plans, methods, policies, and procedures to fulfill a mission, goals, and objectives.

Internal control components include:

- Control Environment
- Risk Assessment
- Control Activities
- Information and Communication
- Monitoring

Quality Assurance/Quality Control (QA/QC): How an entity *verifies* it performed an activity or verifies an activity was performed *correctly* (examples include separation of duties, having a supervisor double-check

TPL-001-5.1 Controls Guidance and Compliance Failure Points

someone's work, etc.).

Risk Category: Type of operational and inherent risks identified by the ERO Enterprise for use in the Compliance Oversight Plan (COP). Entities should use Risk Categories to understand, monitor, and mitigate known and future risks.

Risk Category

Entity Coordination: Coordination, internally and externally, as with third-party suppliers and contractors before making changes to the system or taking any actions with the potential to affect another entity and, in turn, affect bulk power system (BPS) reliability and security. Coordination should address the risk associated with operating horizon, planning horizons and during emergencies. Failure to coordinate may affect BPS reliability and security.

TPL-001-5.1 requires, at a minimum, coordination between the Transmission Planner (TP) and Planning Coordinator (PC) to jointly complete the required studies and assessments and coordination with other registered entities to gather the data required to complete those studies and assessments.

Long-term Studies/Assessments: Long-term studies and assessments evaluate whether the system can reliably operate in real-time, including correct identification and protection of transmission and generation assets, properly designed plans for System Restoration from Blackstart Resources, impact studies for new and revised facilities, correct methods to determine and communicate SOLs and transfer capabilities, analysis of disturbances and misoperations, proper design of underfrequency load shedding (UFLS) and undervoltage load shedding (UVLS) programs, and response to geomagnetic disturbance (GMD) events. Failure will likely result in gaps and may compromise BPS reliability and security.

Modeling Data: Simulation tools model individual components and their control systems, when applicable. The models form the building blocks of power system studies in the planning and operations horizons. Models that entities have verified as accurate are critical to a range of reliability studies, including transmission planning assessments and establishing system operating limits (SOL) and interconnection reliability operating limits (IROL), as well as state estimation for Real-time Assessments (RTA) and Operation Planning Assessments (OPA). The validity of those assessments depends on modeling data, including, but not limited to, correct Facility Ratings, verified generator real and reactive capability, and knowing how control systems respond to dynamic system conditions. Failure to provide data in a timely manner and at intervals to ensure model accuracy during retirements and new construction may compromise BPS reliability and security.

Control Objective(s)

Your entity should perform a risk assessment and identify entity-specific control objectives to mitigate those risks. To help your entity get started, WECC has identified generic control objectives to mitigate the risks



TPL-001-5.1 Controls Guidance and Compliance Failure Points

associated with the risk categories mentioned above and TPL-001-5.1. You may want to consider these four objectives:

Control Objective 1: Obtain data necessary to maintain the base model and perform Planning Assessment (Entity Coordination, Modeling Data).

Control Objective 2: Maintain a model of normal system conditions (Modeling Data).

Control Objective 3: Prepare annual Planning Assessment (Long-term Studies/Assessments).

Control Objective 4: Distribute Planning Assessment to relevant entities (Entity Coordination).

Reliability and Security Control Activities

Control activities are how your entity meets your control objectives. As you design controls, your entity should tailor them to entity-specific control objectives.

Below are examples of control activities based on good practices WECC has observed that are designed to meet the objectives listed above. WECC does not intend for these activities or the associated questions to be prescriptive. Rather, they should help your entity consider how you might meet your objectives in your own unique environment. They also may help your entity identify controls you did not realize you had.

Control Objective 1: Obtain data necessary to maintain the base model and perform Planning Assessment

Control Activity A: Determine the information needed to maintain the base model and perform the Planning Assessment (Relates to risk associated with R1 and R2)

1. How does your entity identify required data (in addition to the data reporting requirements specified in MOD-032-1 – Attachment 1)?
 - a. Who is responsible to identify the additional data required?
 - b. What known outage information do you request?
 - c. What firm transmission service and interchange information do you request?
 - d. Do you collect any additional data relating to existing Corrective Action Plans (CAP)?
2. What process is used to maintain specifications or criteria for the needed data to ensure consistent data across sources?
 - a. How frequently are specifications reviewed?
3. How frequently does your entity request data be updated?
 - a. Is it periodic (e.g., annually) or event-driven?
 - b. Do you identify a point in time when no further changes are incorporated into the system model?

Control Activity B: Determine the best source of the required information (Relates to risk associated with R1 and R2)



TPL-001-5.1 Controls Guidance and Compliance Failure Points

1. How does your entity identify data sources for data that is not explicitly included in MOD-032-1 – Attachment 1?
2. Does your entity use the PC, WECC or another entity to coordinate the collection of information?

Control Activity C: Manage modeling and Planning Assessment data (Relates to risk associated with R1 and R2)

1. How does your entity maintain/track the data received?
 - a. Does your entity use spreadsheets or databases?
 - b. Do you have any alarms or alerts to ensure the timely collection of information?
2. What QA/QC does your entity perform to ensure it obtains valid data? (i.e., steps taken to review submitted data)
3. How does your entity address situations when it does not receive valid data?

Control Objective 2: Maintain a model of normal system conditions

Control Activity A: Ensure all applicable elements for your entity's corresponding area are represented in the System models (Relates to risk associated with R1)

1. Does your entity have a process document, workflow, or checklist that ensures the required elements are included in the System models?
2. How does your entity take system changes into account when modeling normal system conditions?
3. How does your entity account for non-BES facilities that have a significant impact on normal system conditions?

Control Activity B: Verify the quality of the model. (Relates to risk associated with R1)

1. Does your entity perform any QA/QC to confirm the model performs as expected?

Control Objective 3: Prepare annual Planning Assessment

Control Activity A: Conduct studies or determine which studies to use (Relates to risk associated with R2.6, R3, R4)

1. If your entity uses past studies, how do you select the studies to be used?
 - a. How do you determine whether the results of an older study are still valid?
 - b. How do you determine no material changes have occurred to the system?
2. How does your entity identify Planning events and extreme events that are expected to produce more severe system impacts?
3. How does your entity select Contingencies (planning events and extreme events) to be evaluated for System performance?
 - a. How does your entity coordinate with adjacent Planning Coordinators and Transmission Planners to ensure that Contingencies on adjacent Systems that may affect their Systems are included in the Contingency list?



TPL-001-5.1 Controls Guidance and Compliance Failure Points

- b. How and where does your entity document the rationale for those Contingencies (planning events and extreme events) selected?
- 4. What process does your entity have to evaluate mitigations for the risk of Cascading caused by extreme events?
 - a. How does this step integrate with the CAP process?

Control Activity B: Conduct Steady State and Stability Analysis (Relates to risk associated with R2.1, R2.2, and R2.4)

- 1. How do you select an appropriate year for System Load studies?
- 2. How do you determine which variables to use for sensitivity analysis?
 - a. How are Contingency lists developed?
 - b. Are Contingency lists coordinated between internal departments (e.g., protection, planning, operations, and engineering groups)?
 - c. Are Contingency lists developed, maintained, and coordinated between different companies?
- 3. What criteria has your entity established to select known outages for assessment?
 - a. Do you include known outages in an adjacent area?
- 4. What criteria does your entity use to determine whether an entity's spare equipment strategy has an impact on System performance? Does your analysis include:
 - a. Auto-Transformers,
 - b. Generator Step-Up Transformers,
 - c. Phase-Shifting Transformers,
 - d. Gas Insulated Substation Elements,
 - e. Synchronous Condensers,
 - f. HVDC Transformers for HVDC Facilities,
 - g. Interconnection Transformers for FACTS (e.g., SVC) Installations,
 - h. Spare Thyristors/IGBTs for HVDC Facilities/FACTS Installations,
 - i. Series Capacitors/Inductors?

Control Activity C: Conduct short circuit analysis (Relates to risk associated with R2.3)

- 1. How does your entity ensure your short circuit analysis is useful to determine whether circuit breakers have interrupting capability for Faults that they will be expected to interrupt?
- 2. How does your entity coordinate your short circuit models?
- 3. What review does your entity conduct to ensure short circuit models are accurate?
- 4. How frequently does your entity update short circuit models?
 - a. Are reviews and updates on a time-based schedule or are they event driven?

Control Activity D: Establish criteria for CAPs. (Relates to risk associated with R2.7)



TPL-001-5.1 Controls Guidance and Compliance Failure Points

1. What constitutes an inability of the system to meet performance requirements? (i.e., if not a single sensitivity case, which cases or how many?)
2. How do you ensure CAPs address each of the performance deficiencies?

Control Activity E: Document and track CAPs. (Relates to risk associated with R2.7)

1. How are CAPs documented and tracked?
 - a. Do you use a database or spreadsheet?
2. How does your entity ensure CAPs are implemented?
 - a. Are CAPs enforced by any technical means?
 - b. Do you perform any periodic review of implementation?

Control Objective 4: Distribute Planning Assessment to relevant entities

Control Activity A: Ensure Planning Assessment is timely distributed to adjacent Planning Coordinators and adjacent Transmission Planners (Relates to risk associated with R8)

1. How do you identify who your contact is at the relevant Planning Coordinators and Transmission Planners?
 - a. How frequently do you validate the relevant contact information?
2. What method does your entity use to distribute the Planning Assessment?
 - a. Do you follow up to confirm receipt of the assessment?
3. Does your entity use any alerts or alarms to prompt distribution of the Planning Assessment?
4. Does your entity perform any QA/QC to confirm the Planning Assessment was sent?

Control Activity B: Distribute Planning Assessment to entities with a reliability-related need upon written request (Relates to risk associated with R8)

1. How do entities know who to contact to request the Planning Assessment?
2. Does your entity track requests through to fulfillment?
 - a. If so, do you use any technology to do so?
 - b. Do you perform any QA/QC to confirm the Planning Assessment was sent?

Control Activity C: Respond to comments on Planning Assessment results (Relates to risk associated with R8)

1. How do entities know who to contact to submit comments on the Planning Assessment?
 - a. Do you have contact information distributed with the plan?
2. What process is used to respond to comments?
 - a. Do you have a response coordinator?
 - b. Do you have an internal team that drafts responses?
3. Do you track comments and responses?
 - a. If so, do you use any technology to do so?



TPL-001-5.1 Controls Guidance and Compliance Failure Points

- b. Do you perform any QA/QC to confirm the responses were sent?
4. Is there a formal process to incorporate comments into continuous improvement?

Compliance Potential Failure Points

The control activities listed above are specifically targeted at mitigating risk to the reliability and security of the BPS, but also promote compliance with the referenced standard. Your entity should also develop controls specifically to mitigate compliance risk. The following compliance potential failure points relate directly to compliance risk and warrant consideration.

Potential Failure Point (R1): Failure to maintain complete and accurate System models for performing the Planning Assessment.

1. Is your entity's System model data consistent with the data provided with the MOD-032 standard?
2. Is your entity's System model data consistent with the data provided with the FAC-008 process?
3. Does your entity's System model represent all the parts detailed in R1.1?
4. Does your entity's System model include items in your CAPs?

Potential Failure Point (R2): Failure to prepare a sufficient annual Planning Assessment.

1. Is your entity's annual Near-Term Transmission Planning Horizon steady state analysis supported by studies that include:
 - a. System peak Load for either Year One or Year Two, and for Year Five?
 - b. System Off-Peak Load for one of the five years?
 - c. Sensitivity case(s) to demonstrate the impact of changes to the basic assumptions used in the model?
 - d. The impact of planned outage(s) of generation or Transmission Facility(ies) in the Near-Term Planning Horizon?
 - e. The impact of an entity's spare equipment strategy if it could result in the unavailability of major Transmission equipment that has a lead time of one year or more (such as a transformer)?
2. Is your entity's Long-Term Transmission Planning Horizon steady state analysis supported by a current study assessing expected System peak Load conditions for one of the years in the Long-Term Transmission Planning Horizon?
3. Is your entity's Near-Term Transmission Planning Horizon short circuit analysis
 - a. Supported by current or qualified past studies?
 - b. Coordinated and verified with neighboring entities?
4. Is your entity's Near-Term Transmission Planning Horizon Stability analysis supported by current or qualified past studies including:
 - a. System peak Load for one of the five years?



TPL-001-5.1 Controls Guidance and Compliance Failure Points

- b. System Off-Peak Load for one of the five years?
- c. Sensitivity case(s) that demonstrate the impact of changes to the basic assumptions used in the model?
- d. An assessment of the Near-Term Planning Horizon known outages on System performance?
- e. An assessment of the impact of unavailability of major Transmission equipment?
5. Does your entity's Long-Term Transmission Planning Horizon portion of the Stability analysis address the impact of proposed material generation additions or changes?
 - a. Is it supported by current or qualified past studies?
6. Does your entity's Planning Analysis process include a review of CAPs in place?
7. Has your entity documented the rationale for the selection of studies and study assumptions?
 - a. If you use qualified past studies, have you documented the justification for using past studies?

Potential Failure Point (R2): Failure to develop CAPs for identified System deficiencies or Equipment Rating violations.

Potential Failure Point (R3, R4): Failure to perform adequate studies based on computer simulation models for the steady state and stability portions of the analysis.

1. How does your entity verify that the simulations include all the elements of R3.3, R4.1, and R4.3?

Potential Failure Point (R5): Failure to specify criteria for acceptable System steady state voltage limits, post-Contingency voltage deviations, and the transient voltage response for your entity's System.

Potential Failure Point (R6): Failure to define and document the criteria or method used in the analysis to identify System instability for conditions such as Cascading, voltage instability, or uncontrolled islanding.

Potential Failure Point (R7): Failure to document each entity's individual and joint responsibilities for performing the required studies for the Planning Assessment.

Potential Failure Point (R8): Failure to timely distribute your entity's Planning Assessment results to applicable entities including:

1. Adjacent Planning Coordinators and adjacent Transmission Planners within 90 calendar days.
2. An entity that has a reliability-related need and submits a written request for the information within 30 days of such a request.

Potential Failure Point (R8): Failure to provide a documented response to comments on the results within 90 calendar days of receipt of those comments.

