Electric Reliability and Security for the West

Controls Guidance and Compliance Failure Points

FAC-014-3

Entity Coordination

Long-term Studies/Assessments

Operational Studies/Assessments

Modeling Data

August 2024

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 North American Reliability Corporation (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

Control Objective: The aim or purpose of specified controls; control objectives address the risks related to achieving an entity's larger objectives.

Control Activities: The policies, procedures, techniques, and mechanisms that enforce management's directives to achieve the entity's objectives and address related risks.

Internal Control: The processes, practices, policies or procedures, system applications and technology tools, and skilled human capital that an entity employs to address risks associated with the reliable operation of its business. Internal control components include:

- Control Environment
- Risk Assessment
- Control Activities

- Information and Communication
- Monitoring

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

Risk Category: Type of operational and inherent risks identified by the Electric Reliability Organization (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

The purpose of FAC-014-3 is "To ensure that System Operating Limits (SOLs) used in the reliable operation of the Bulk Electric System (BES) are determined based on an established methodology or methodologies and that Planning Assessment performance criteria are coordinated with these methodologies." The following are risk categories that apply to FAC-014-3, as identified by the Electric Reliability Organization (ERO) Enterprise.

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 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.

FAC-014-3 requires SOLs and Interconnection Reliability Operating Limits (IROL) to be coordinated externally through providing data annually and upon request. Coordination includes using a documented method in accordance with the associated RC method to establish SOLs.

Entities should develop and document Internal Controls and processes to ensure the timely and accurate communication and coordination of SOL and IROL data. Additional related coordination is required by IRO-010, TOP-003, MOD-032, and FAC-008.

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.

FAC-014-3 requires that SOLs and a subset of IROLs are used for near-term Planning Assessment performance criteria and that applicable entities implement a process to use SOLs (including most limiting

Facility Ratings, System steady-state voltage limits, and stability criteria) consistent with the associated RC's method.

Accurate SOLs and IROLs must be used in the planning models necessary to perform long-term system assessments and studies. Entities should implement internal controls and processes to manage system changes, document changes, and peer reviews to ensure SOLs are current, accurate, and reflect system performance.

Other planning standards affected by SOLs include TPL-001, TPL-007, MOD-032, FAC-008, and PRC-023.

Operational Studies/Assessments: Operational studies and assessments in the operations horizon evaluate whether the system can reliably operate in real-time, including correct calculation of Area Control Error (ACE) to ensure proper deployment of Regulating Reserve; correct methods to determine and communicate SOLs; ensuring capture of complete and comprehensive data for Real-time Monitoring and Analysis; proper design, operating plans and response to GMD events; Interpersonal Communication capabilities and protocols between entities to avoid uncontrolled separation or cascading outages. Failure to produce operational studies and assessments used in the operations horizon to understand gaps may compromise BPS reliability and security.

Although not directly addressed in FAC-014-3, having accurate SOLs and IROLs is imperative for near-term, next-day, and real-time assessments; system monitoring; and reliable operations per TOP-001, TOP-002, TOP-003, and TOP-010. System operators must be prepared to mitigate SOL exceedances during normal and emergency conditions per EOP Standards.

Entities must have documented processes in place to ensure operations engineers and operators have accurate SOL data for next-day and real-time assessments and monitoring (via SCADA). Controls should be in place to prioritize SCADA alarming, mitigate SOL exceedances, and make required notifications.

Internal controls should be implemented to ensure that the documented plans and processes to perform assessments, identify potential and actual SOL exceedances, and mitigation plans are developed to ensure timely action to prevent instability, cascading, or islanding.

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 SOLs and IROLs, 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.

Accurate modeling data, including SOLs, is necessary to perform Planning Assessments and studies for

both the planning and operating horizons, and for both normal and emergency system conditions. It is important for entities to understand what data is required to perform the studies and establish a process to collect the required data.

Internal controls should be implemented for change management, peer reviews to ensure accuracy, and a process to verify the contact information of all affected parties for reporting modeling data.

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 associated with the risk categories mentioned above and FAC-014-3. You may want to consider these three objectives:

> **Control Objective 1**: Ensure SOLs, including IROLs, are determined for all applicable Facilities based on an established SOL method. (Long-term Studies/Assessments, Operational Studies/Assessments)
>
> **Control Objective 2**: Provide SOLs and Planning Assessment data to responsible entities. (Entity Coordination, Modeling Data)
>
> **Control Objective 3**: Ensure Planning Assessment performance criteria are equally limiting or more limiting than the RC SOL method. (Long-term Studies/Assessments)

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: Ensure SOLs, including IROLs, are determined for applicable Facilities based on an established SOL method.

Control Activity A: Implement a process for establishing SOLs based on the RC SOL method. (Relates to risk associated with R1, R2)

1. Has your entity assigned roles and responsibilities for establishing SOLs?
2. How does your entity ensure the most current RC SOL method is applied to establishing SOL? (TOP)
    a. Who coordinates with the RC for the SOL method updates?
    b. Does your SOL process include verifying the most current RC SOL method is being used?

3. Does your entity's process specifically address establishing SOLs for new/modified Facilities?
4. Does your entity periodically review the SOL process?
    a. Have you assigned responsibility for periodic review of the SOL process?
    b. How often is the SOL process reviewed for accuracy?
        i. Are there specific triggers for an SOL process review? (e.g., changes to the RC SOL method)

Control Activity B: Establish SOLs in accordance with the RC SOL method (Relates to risk associated with R1, R2)

1. How does your entity ensure it establishes SOLs for all applicable Facilities?
    a. Do you have a managed list of Facilities in your area?
    b. How do you ensure this list is up to date?
2. How does your entity manage SOL values for all types of SOLs?
    a. Where do you store SOL values?
    b. Who has read-write access to SOL values?
3. What training does your entity provide to those who are responsible for establishing SOLs?
4. Has your entity assigned roles and responsibilities for establishing IROLs and stability limits?
5. How does your entity manage the development and application of Contingencies?

Control Activity C: Coordinate SOLs with responsible entities (Relates to risk associated with R1, R2, R4)

1. Does your entity have a process for SOL coordination on affected and jointly owned Facilities?
    a. Have you defined roles and responsibilities for coordination with responsible entities?
    b. What triggers establishing or updating SOLs on the affected or jointly owned Facilities?
    c. How are conflicts resolved?
2. How does your entity identify discrepancies in SOLs submitted for jointly owned Facilities? (RC)
3. How does your entity identify that instability affects adjacent RC Areas or more than one Transmission Operator in your RC Area? (RC)
4. Does your entity have a process to respond to instability affecting only one Transmission Operator? (RC)
5. Does your entity coordinate with responsible entities when identifying critical Contingencies?

Control Activity D: Ensure SOLs are updated when changes occur. (Relates to risk associated with R1, R2, R4)

1. Has your entity defined roles and responsibilities for change management concerning SOL processes and resulting SOLs?
2. Does your entity periodically verify all SOLs are in accordance with the RC SOL method?
    a. If so, how frequently are SOLs verified?
    b. If so, do you also verify SOLs in response to triggering events? Which events?
3. Does your entity have a process to determine when Facility Ratings change, which will impact SOL

changes?

4. Does your entity have a control to alert you to changes in registration or footprint for your area?
5. Does your entity have a control to alert you to changes to the RC SOL method?
6. Does your entity communicate updates to SOLs that occur off-cycle? (i.e., outside of regularly scheduled notifications)
7. How does your entity communicate SOL updates internally to groups that use them?
8. How does your entity manage external communication of SOL updates?

Control Objective 2: Provide SOLs and Planning Assessment data to responsible entities.

Control Activity A: Manage the list of entities to which your entity is required to report information. (Relates to risk associated with R3, R5, R7, R8)

1. How does your entity determine which entities are "impacted?"
    a. How do you determine what type and level of sensitivity analysis is performed (i.e., changes in load, generation, outages, Contingencies, etc.) to determine the affected entities?
    b. How far into your adjacent area are your studies modeled? (TP/PC)
2. Does your entity identify jointly owned Facilities to determine who to notify of IROL? (RC)
3. How does your entity monitor for footprint changes in your area?
4. How does your entity monitor for new registrations in your area?
5. Does your entity maintain a list of entities that may be affected by planning event Contingency(ies) that are outside of your footprint?
    a. How much of your neighbor's footprint is modeled?
    b. How do you recognize or coordinate changes within the area of your neighbor's footprint that is modeled?

Control Activity B: Agree upon a time frame to update SOLs. (Relates to risk associated with R5)

1. How does your entity work with affected TOPs to determine a useful time frame to ensure inclusion within the Operational Planning Analyses, Real-time Monitoring, and Real-time Assessments? (RC)
    a. Do you have multiple TOPs on different schedules?
    b. If so, how do you track these schedules?
2. Does your entity coordinate the time frame for delivery of SOLs with study performance deadlines?
    a. If so, do you do so for both annual requirements and those with "an agreed-upon time frame"?

Control Activity C: Implement a process to provide the required information. (Relates to risk associated with R5, R7, R8)

1. How does your entity delineate the types of SOLs (e.g., IROLs, stability limits) and associated Contingencies?
2. Does your entity provide the source of SOL determination (e.g., internally derived supporting documentation, dated version of RC SOL method)?

3. How does your entity provide the required information? (e.g., posting board, email)
    a. Do you confirm receipt of the information?
4. Does your entity use any automated tools (e.g., workflow, calendar reminder) to ensure the information is provided within the required time frame?
    a. If so, how do you track these schedules?
    b. If the automated tool is unavailable or upgraded, how do you ensure the provision of the data to meet the required time frame?

Control Objective 3: Ensure Planning Assessment performance criteria are equally limiting or more limiting than the RC SOL method.

Control Activity A: Implement a process to ensure performance criteria are equally limiting or more limiting than the RC method. (Relates to risk associated with R6) (PC, TP)

1. How does your entity ensure the most current values for Facility Ratings, system steady-state voltage limits, and stability criteria used in your Planning Assessments are equally limiting or more limiting than the criteria for SOLs as described in the RC SOL method?
    a. How do you track changes to the criteria?
        i. What tools do you use? (e.g., database, spreadsheet)
        ii. Do your tools have version control or another method to confirm criteria are current?
        iii. How do you track changes to the RC SOL method?
    b. Do you have a control or job aid to validate the inputs to the Planning Assessment? (e.g., checklist, workflow)
2. How does your entity document a technical rationale if using less-limiting criteria?
    a. Is the criteria coordinated with other entities in advance?
    b. Do you have an approval process?
3. How do you ensure the technical rationale was communicated to each affected entity?
    a. Do you track each communication and compare it with a master list or other job aid?
    b. Do you follow up with each communication to confirm receipt?

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: Failure to manage all reliability limits that meet the definition of an SOL.

1. How does your entity determine which reliability limits to include in FAC-014-3 processes?

Potential Failure Point (R1): Failure to establish IROLs for your entity's Reliability Coordinator Area in accordance with your SOL method. (RC)

1. Does your entity perform QA/QC to ensure all IROLs are in accordance with your entity's SOL method?

Potential Failure Point (R2): Failure to establish SOLs for your entity's portion of its RC Area in accordance with your RC's SOL method. (TOP)

1. Does your entity perform QA/QC to ensure SOLs are in accordance with your RC's SOL method?

Potential Failure Point (R3): Failure to provide all SOLs to your entity's RC. (TOP)

1. How does your entity ensure all SOLs are provided to your RC?
    a. Do you provide SOLs through an automated system?
    b. Do you use automated controls such as workflows or alerts to ensure all SOLs are provided?
    c. Do you use manual controls such as checklists to ensure all SOLs are provided?
2. Does your entity verify receipt of SOLs sent to the RC?

Potential Failure Point (R4): Failure to establish stability limits when an identified instability affects adjacent RC Areas or more than one TOP in your entity's RC Area. (RC)

1. Does your entity perform QA/QC to ensure acceptable stability limits in accordance with your SOL method?

Potential Failure Point (R5.1, R5.2, R5.6): Failure to provide required information to PCs, TPs, TOs, and GOs at least once every 12 calendar months. (RC)

1. Does your entity have a process to verify that data submissions include all the elements of R5?
2. Does your entity have a process to ensure the receipt of data submissions?

Potential Failure Point (R5.3, R5.4, R5.5): Failure to provide required information to TOPs within an agreed-upon time frame. (RC)

1. Does your entity have a defined process for a TOP to request information?
2. Does your entity have a process to verify data submissions include all the elements of R5?

Potential Failure Point (R6): Failure to implement a documented process to use Facility Ratings, system steady-state voltage limits, and stability criteria in your entity's Planning Assessment of the Near-term Transmission Planning Horizon that are equally limiting or more limiting than the criteria within the RC SOL method. (PC, TP)

1. Does your entity have a process to provide a technical rationale to affected entities if not using equally limiting or more-limiting criteria?

Potential Failure Point (R7): Failure to communicate information for Corrective Action Plans developed to address instability to each affected TOP and RC. (PC, TP)

1. How does your entity determine the need for Corrective Action Plans?
2. Does your entity perform QA/QC to confirm the Corrective Action Plan includes documentation of

all the elements of R7?

3. Does your entity have a communication protocol to ensure Corrective Action Plans are communicated to the affected TOP and RC?

Potential Failure Point (R8): Failure to communicate a list of their Facilities that comprise the planning event Contingencies that would cause instability, Cascading, or uncontrolled separation to each affected TO and GO.

1. How does your entity determine the list of their Facilities that comprise the planning event Contingencies that would cause instability, Cascading, or uncontrolled separation?
    a. Do you have a communication protocol to notify affected entities?
    b. Do you have a method to confirm receipt of the notification?