

**Compliance Questionnaire and**

**Reliability Standard Audit Worksheet**

**IRO-004-2 — Reliability Coordination ‑ Operations Planning**

**Registered Entity:** *This must be filled out by the (Compliance Enforcement Authority)*

**NCR Number:**  *This must be filled out by the (Compliance Enforcement Authority)*

**Applicable Function(s): BA, TOP, TSP**

**Auditors:**

**Disclaimer**

NERC developed this Reliability Standard Audit Worksheet (RSAW) language in order to facilitate NERC’s and the Regional Entities’ assessment of a registered entity’s compliance with this Reliability Standard. The NERC RSAW language is written to specific versions of each NERC Reliability Standard. Entities using this RSAW should choose the version of the RSAW applicable to the Reliability Standard being assessed. While the information included in this RSAW provides some of the methodology that NERC has elected to use to assess compliance with the requirements of the Reliability Standard, this document should not be treated as a substitute for the Reliability Standard or viewed as additional Reliability Standard requirements. In all cases, the Regional Entity should rely on the language contained in the Reliability Standard itself, and not on the language contained in this RSAW, to determine compliance with the Reliability Standard. NERC’s Reliability Standards can be found on NERC’s website at <http://www.nerc.com/page.php?cid=2|20>. Additionally, NERC Reliability Standards are updated frequently, and this RSAW may not necessarily be updated with the same frequency. Therefore, it is imperative that entities treat this RSAW as a reference document only, and not as a substitute or replacement for the Reliability Standard. It is the responsibility of the registered entity to verify its compliance with the latest approved version of the Reliability Standards, by the applicable governmental authority, relevant to its registration status.

The NERC RSAW language contained within this document provides a non‑exclusive list, for informational purposes only, of examples of the types of evidence a registered entity may produce or may be asked to produce to demonstrate compliance with the Reliability Standard. A registered entity’s adherence to the examples contained within this RSAW does not necessarily constitute compliance with the applicable Reliability Standard, and NERC and the Regional Entity using this RSAW reserves the right to request additional evidence from the registered entity that is not included in this RSAW. Additionally, this RSAW includes excerpts from FERC Orders and other regulatory references. The FERC Order cites are provided for ease of reference only, and this document does not necessarily include all applicable Order provisions. In the event of a discrepancy between FERC Orders, and the language included in this document, FERC Orders shall prevail.

# Subject Matter Experts

Identify your company’s subject matter expert(s) responsible for this Reliability Standard. Include the person's title, organization, and the requirement(s) for which they are responsible. Include additional sheets if necessary.

**Response: *(Registered Entity Response Required)***

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| --- | --- | --- | --- |
| **SME Name** | **Title** | **Organization** | **Requirement** |
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# Reliability Standard Language

**IRO-004-2 — Reliability Coordination ‑ Operations Planning**

**Purpose:**

Each Reliability Coordinator must conduct next-day reliability analyses for its Reliability Coordinator Area to ensure the Bulk Electric System can be operated reliably in anticipated normal and Contingency conditions. System studies must be conducted to highlight potential interface and other operating limits, including overloaded transmission lines and transformers, voltage and stability limits, etc. Plans must be developed to alleviate System Operating Limit (SOL) and Interconnection Reliability Operating Limit (IROL) violations.

**Applicability:**

Balancing Authorities

Transmission Operators

Transmission Service Providers

**NERC BOT Approval Date:**

**FERC Approval Date:**

**Reliability Standard Enforcement Date in the United States:**

**Requirements**:

**R1.** Each Transmission Operator, Balancing Authority, and Transmission Service Provider shall comply with the directives of its Reliability Coordinator based on the next day assessments in the same manner in which it would comply during real time operating events.

**Question:** Did you receive a directive from the Reliability Coordinator based on a next day assessment?

**Describe, in narrative form, how you meet compliance with this requirement:**

***(Registered Entity Response Required)***

# R1 Supporting Evidence and Documentation

**Response: *(Registered Entity Response Required)***

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Provide the following:**  **Document Title and/or File Name, Page & Section, Date & Version** | | |
| **Title** | | **Date** | **Version** | |
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| *Audit Team: Additional Evidence Reviewed:* | |  |  | |
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***This section must be completed by the Compliance Enforcement Authority.***

**Compliance Assessment Approach Specific to IRO-004-2 R1**

\_\_\_ Verify each Transmission Operator, Balancing Authority, and Transmission Service Provider

complied with the directives of its Reliability Coordinator based on the next day assessments in the

same manner in which it would comply during real time operating events.

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**Detailed notes:**

# Supplemental Information

**Other ‑** The list of questions above is not all inclusive of evidence required to show compliance with the Reliability Standard. Provide additional information here**, as necessary that** demonstrates compliance with this Reliability Standard.

**Entity** **Response: *(Registered Entity Response)***

# Compliance Findings Summary (to be filled out by auditor)

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| --- | --- | --- | --- | --- | --- |
| **Req.** | **NF** | **PV** | **OEA** | **NA** | **Statement** |
| **1** |  |  |  |  |  |

**Excerpts from FERC Orders -- For Reference Purposes Only**

**Updated Through March 31, 2009**

**IRO-004-2**

**Order 693**

P 888. The Interconnection Reliability Operations and Coordination (IRO) group of Reliability Standards detail the responsibilities and authorities of a reliability coordinator.The IRO Reliability Standards establish requirements for data, tools and wide-area view, all of which are intended to facilitate a reliability coordinator’s ability to perform its responsibilities and ensure the reliable operation of the interconnected grid.

P 915. The purpose of IRO-004-1 is to require each reliability coordinator to conduct next-day operations reliability analyses to ensure that the system can be operated reliably in anticipated normal and contingency system conditions. Operations plans must be developed to return the system to a secure operating state after contingencies and shared with other operating entities.

P 924. For the reasons stated in the NOPR,the Commission approves proposed Reliability Standard IRO-004-1 as mandatory and enforceable. …

P 925. We agree … that system operators must make their decision to use the most effective control action based on the prevailing system conditions, to return the system to a secure state following a contingency. Therefore, the chosen control action may be different than those identified in next-day operations planning. We reiterate that our intent is to require a comprehensive next-day operations planning study that includes identification of effective solutions to aid system operators in real-time operations.

P 926 We disagree … that day-ahead planning to identify effective control actions would not enhance system reliability because we believe this is also the intent of the ERO for including such a Requirement in this Reliability Standard.Our proposed directive is to augment the Requirement that the plans to alleviate SOL and IROL violations are assessed to ensure that the control actions can be implemented and effective within 30 minutes after a contingency.

P 927. We agree … that state estimators and real-time contingency analyses using real-time operating conditions produce more accurate study results compared to those from next-day operations planning analyses that are based on day-ahead schedules and forecast conditions. However, we remain convinced that a proactive approach that includes identification of effective operating solutions to deal with contingencies is far superior to a reactive approach that identifies solutions when the system conditions prevail in real-time operations. The former can identify solutions that may not be otherwise available to the system operators – e.g. certain planned generation or transmission outages are approved conditional upon re-affirmation prior to their removal from service or a short recall time subject to certain system conditions developing in real-time operations.

P 928. We disagree … that IRO-004-1 should include the day-ahead planning process and reflect activities inherent in a market operation because day-ahead planning includes financial activities that may not occur in real-time. The Commission believes that, for reliability purposes, the simulation should include only what will actually occur.

P 930. … our intent is not to mandate an increase in security from N-1 to N-2, but rather is to ensure there is no reliability gap in the IROL-related Reliability Standards. To do this, the Commission believes it is necessary to provide operators with control actions needed to mitigate an IROL violation while within the 30 minute period after a first contingency. We are not requiring an increase to N-2, which would require planning the system for any two contingencies at all times.

P 931. … we note that it is just as important for day-ahead operation planners to review and derive system operating limits to deal with a myriad of contingencies for different system configurations and generation dispatches, as it is for them to assess the feasibility of returning the system to a secure operating state after these contingencies have occurred. Similar to reviewing and deriving SOLs and IROLs to ascertain that system reliability will be maintained based on the most onerous forecast conditions and critical contingencies, identifying corrective control actions would not encompass each and every contingency and system condition. This is because previous operating experiences and established operating practices would have covered a significant portion of the contingencies and the corresponding control actions already.

P 932. We further note that for those few IROL contingencies under the forecast and most onerous system conditions, if operation planners equipped with a suite of off-line analytical tools, but without any burden, distraction or interference from real-time operations, cannot identify the effective control actions, it can be argued that it would be unrealistic to expect system operators to do so with an additional requirement – i.e. identification and implementation of an effective control action all within 30 minutes. In addition, the control actions identified in the next-day analysis may quite often provide relevant information to the system operators of the control options they have available.

P 935. Accordingly, we approve Reliability Standard IRO-004-1 as mandatory and enforceable. …

**18 CFR Part 40 Mandatory Reliability Standards for Interconnection Reliability Operating Limits, 134 FERC ¶ 61,213 (2011)**

**March 17, 2011**

1. (…) In addition, the Commission approves NERC's proposed revisions to Reliability Standards EOP-001-1, IRO-002-2, IRO-004-2, IRO-005-3, TOP-003-1, TOP-005-2, and TOP-006-2, which remove requirements for the reliability coordinator to monitor and analyze system operating limits (SOL) n4 other than IROLs.

5. With respect to IRO-001-1, the Commission directed the ERO to develop modifications to eliminate the regional reliability organization as an applicable entity. n6 The Commission also directed the ERO to modify IRO-002-1 to require a minimum set of capabilities that must be made available to the reliability coordinator to ensure that a reliability coordinator has the capabilities it needs to perform its functions. n7 With respect to IRO-003-2, the Commission directed the ERO to develop a modification to create criteria to define the term "critical facilities" in a reliability coordinator's area and its adjacent systems. n8 The Commission also directed the ERO to modify IRO-004-1 to require the next-day analysis to identify control actions that can be implemented and effective within 30 minutes after a contingency. In addition, the Commission directed the ERO to consider adding Measures and Levels of Non-Compliance to Reliability Standards IRO-004-1 and IRO-005-1 that are commensurate with the magnitude, duration, frequency and causes of the violations and whether these occur during normal or contingency conditions. n9

21. The Commission hereby adopts its NOPR proposals and approves new Reliability Standards IRO-008-1, IRO-009-1, and IRO-010-1a; revised Reliability Standards EOP-001-1, IRO-002-2, IRO-004-2, IRO-005-3, TOP-003-1, TOP-005-2, and TOP-006-2; and the two new NERC Glossary terms: "Operational Planning Analysis" and "Real-time Assessment." In approving these Reliability Standards, the Commission concludes that they are just, reasonable, not unduly discriminatory or preferential, and in the public interest. These Reliability Standards serve an important reliability purpose in seeking to prevent instability, uncontrolled separation, or cascading outages that adversely impact the reliability of the interconnection by ensuring that the reliability coordinator has the data necessary to assess its reliability coordinator area during the operations horizon and that it takes prompt action to prevent or mitigate instances of exceeding IROLs. Moreover, they clearly identify the entities to which they apply and contain clear and enforceable requirements. Commenters addressed many of the Commission concerns discussed in the NOPR and in some areas the ERO has indicated that it is continuing to study some issues related to the Commission concerns. The Commission encourages the ERO, applying its technical expertise, to continue such reviews and make any necessary changes to applicable Reliability Standards.

74. The Commission approves new Reliability Standards IRO-008-1, IRO-009-1, and [\*\*57] IRO-010-1a; revised Reliability Standards EOP-001-1, IRO-002-2, IRO-004-2, IRO-005-3, TOP-003-1, TOP-005-2, and TOP-006-2; and the two new NERC Glossary terms: "Operational Planning Analysis" and "Real-time Assessment." The three new Reliability Standards (IRO-008-1, IRO-009-1 and IRO-010-1a, governing reliability coordinator analyses, operational actions and data collection) replace parts of the currently-effective Reliability Standards EOP-001-0, IRO-002-1, IRO-004-1, IRO-005-2, TOP-003-0, TOP-005-1 and TOP-006-1 approved by the Commission in Order No. 693.

**18 CFR Part 40 Mandatory Reliability Standards for Interconnection Reliability Operating Limits; System Restoration Reliability Standards, 136 FERC ¶ 61,030 (2011)**

**July 13, 2011**

1. On March 17, 2011, the Commission issued Order Nos. 748 and 749, which approved new and revised Reliability Standards, including IRO-004-2 and EOP-001. In this order, we grant the North American Electric Reliability Corporation's (NERC) request for clarification of certain aspects of Order No. 748 including: (1) the proper effective date language for Reliability Standard IRO-004-2; (2) the correct version identification for the approval of EOP-001 intended by the Commission; and (3) the proper effective date for Reliability Standard EOP-001-2. The Commission also grants NERC's request for clarification of Order No. 749 with respect to the version EOP-001 the Commission intended to approve and its effective date.

5. With respect to Reliability Standard IRO-004-2, NERC states that the effective date provision in Reliability Standard IRO-004-2 is inconsistent with the implementation of the three new IRO standards. NERC explains that it proposed, in its petition, to retire six of the seven requirements in the IRO-004-1 standard, and designated the one remaining requirement as IRO-004-2. The Commission approved IRO-004-2 in the Final Rule, but the effective date provision in IRO-004-2 states that the entire Reliability Standard should be retired, even though one requirement remains in effect with Commission approval of revised Reliability Standard. NERC requests clarification from the Commission that the effective date language in the IRO-004-2 standard should be revised as "the latter of either April 1, 2009 or the first day of the first calendar quarter, three months after applicable regulatory approval."

8. The Commission grants NERC's request for clarification regarding Reliability Standard IRO-004-2. Consistent with our approval of IRO-004-2, the Commission clarifies that the effective date provision in IRO-004-2 should be modified as requested by NERC to reflect the one requirement in IRO-004-2 that was not retired. NERC has included the modified effective date provision for IRO-004-2 as Exhibit A to its request for clarification. This clarification should alleviate confusion implementing Reliability Standard IRO-004-2.

**Revision History**

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| --- | --- | --- | --- |
| **Version** | **Date** | **Reviewers** | **Revision Description** |
| 1 | September 2011 | QRSAW WG | Original Document |
| 1 | October 5, 2011 | NERC Legal | Updated excerpts from FERC orders from March 31, 2009 through and including October 5, 2011. |
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