NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

Implementation Plan
IRO-002-3 – Reliability Coordination – Analysis Tools

Approvals Required

IRO-002-3 – Reliability Coordination – Analysis Tools

Prerequisite Approvals

None

Revisions to Glossary Terms

None

Applicable Entities

Reliability Coordinator

Conforming Changes to Other Standards

None

Effective Dates

IRO-002-3 shall become effective on the first day of the first calendar quarter after applicable regulatory approval. In those jurisdictions where no regulatory approval is required, this standard shall become effective on the first day of the first calendar quarter after Board of Trustees approval.

Retirements

IRO-002-2 should be retired at midnight of the day immediately prior to the Effective Date of IRO-002-3 in the particular jurisdiction in which the new standard is becoming effective.

Summary of Changes

The RCSDT revised the standard and is proposing retiring several requirements (R1, R3, R4, R5, R6, R7 and R8). Changes were made to eliminate redundancies between standards (existing and proposed), align with NERCs Rules of Procedure, and to address the FERC Order 693 directive for IRO-002:

> In addition we direct the ERO to develop a modification to IRO-002-1 through the Reliability Standards development process that requires a minimum set of tools that should be made available to reliability coordinators.

RCSDT response: The development of a minimum set of tools should be addressed through the work of the Real-Time Tools Best Practices Task Force. Their charge was to develop a list of tools required to perform real time operations functions and submit SARs based on their work. As requirements for these tools are developed, appropriate standards projects will be initiated to incorporate the tools within the NERC Organization Registration and Certification Process, and the applicable reliability standards. The RCSDT submits that this directive be addressed in that effort. This action is accommodated by the Standards Development Work Plan.

The following table identifies the sections of approved standards that shall be retired or revised when this standard is implemented.

Already Approved Standard	Proposed Replacement Requirement(s)
IRO-002-2 **R1.** Each Reliability Coordinator shall have adequate communications facilities (voice and data links) to appropriate entities within its Reliability Coordinator Area. These communications facilities shall be staffed and available to act in addressing a real-time emergency condition. [*Violation Risk Factor: High*]	The first sentence of this requirement should be retired because it is a basic facility issue that should be addressed in certification. The second sentence is redundant with PER-004, R1 which requires the RC to be staffed 24x7. **PER-004-1** **R1.** Each Reliability Coordinator shall be staffed with adequately trained and NERC-certified Reliability Coordinator operators, 24 hours per day, seven days per week.

Already Approved Standard	Proposed Replacement Requirement(s)
IRO-002-2 R2. Each Reliability Coordinator — or its Transmission Operators and Balancing Authorities — shall provide, or arrange provisions for, data exchange to other Reliability Coordinators or Transmission Operators and Balancing Authorities via a secure network. [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]	None. Retire requirement as it is redundant with: **TOP-005-1** **R1.** Each Transmission Operator and Balancing Authority shall provide its Reliability Coordinator with the operating data that the Reliability Coordinator requires to perform operational reliability assessments and to coordinate reliable operations within the Reliability Coordinator Area. (This requirement will be retired upon the implementation of IRO-010-1) **IRO-014-1** **R1.** Each Reliability Coordinator shall have Operating Procedures, Operating Processes, or Operating Plans for activities that require notification, exchange of information or coordination of actions that may impact other Reliability Coordinator Areas to support Interconnection reliability. These Operating Procedures, Processes, or Plans shall collectively address the following: *[Violation Risk Factor: Medium] [Time Horizon: Same Day Operations and Operations Planning]* **R1.1.** Communications and notifications, including the mutually agreed to conditions under which one Reliability Coordinator notifies other Reliability Coordinators; the process to follow in making those notifications; and the data and information to be exchanged with other Reliability Coordinators. **R1.2.** Energy and capacity shortages. **R1.3.** Planned or unplanned outage information. **R1.4.** Control of voltage, including the coordination of reactive resources. **R1.5.** Coordination of information exchange to support reliability assessments. **R1.6.** Authority to act to prevent and mitigate system **conditions which could cause Adverse Reliability Impacts to other Reliability Coordinator Areas.** **R1.7.** **Weekly conference calls**

Already Approved Standard	Proposed Replacement Requirement(s)
Notes: The "secure network" provisions of IRO-002-2 R2 are covered under the NERC Rules of Procedure, Section 1002 which states: *NERC will provide tools and other support services for the benefit of reliability coordinators and other system operators, including the Area Control Error (ACE) and Frequency Monitoring System, NERC Hotline, Real-time Flows, System Data Exchange (SDX), Reliability Coordinator Information System (RCIS), Transmission Services Information Network (TSIN), Interchange Distribution Calculator (IDC), Interregional Security Network (ISN), and Central Repository for Security Events (CRC). To accomplish this goal, NERC will:* *1. Maintain the reliability and effectiveness of all mission-critical operating reliability support systems and services;* *2. Continue to support maintenance of a transmission provider curtailment report on the CRC site in response to Federal Energy Regulatory Commission Order 605;* *3. Investigate and analyze the use of high-speed real-time system measurements, including phasors, in predicting the behavior and performance of the Eastern Interconnection; and* *4. Facilitate real-time voice and data exchange services among reliability coordinators (e.g., Hotline, Interregional Security Network, NERCnet, System Data Exchange, etc.).*	
IRO-002-2 **R3.** Each Reliability Coordinator shall have multi-directional communications capabilities with its Transmission Operators and Balancing Authorities, and with neighboring Reliability Coordinators, for both voice and data exchange as required to meet reliability needs of the Interconnection. *[Violation Risk Factor: Medium]*	None. Retire this requirement. R3 is addressed in COM-001-1, R1 as well as the proposed revisions to COM-001-2, R1-R8.

Already Approved Standard	Proposed Replacement Requirement(s)
IRO-002-2 **R4**. Each Reliability Coordinator shall have detailed real-time monitoring capability of its Reliability Coordinator Area and sufficient monitoring capability of its surrounding Reliability Coordinator Areas to ensure that potential or actual System Operating Limit or Interconnection Reliability Operating Limit violations are identified. Each Reliability Coordinator shall have monitoring systems that provide information that can be easily understood and interpreted by the Reliability Coordinator's operating personnel, giving particular emphasis to alarm management and awareness systems, automated data transfers, and synchronized information systems, over a redundant and highly reliable infrastructure. **R5.** Each Reliability Coordinator shall monitor Bulk Electric System elements (generators, transmission lines, buses, transformers, breakers, etc.) that could result in SOL or IROL violations within its Reliability Coordinator Area. Each Reliability Coordinator shall monitor both real and reactive power system flows, and operating reserves, and the status of Bulk Electric System elements that are or could be critical to SOLs and IROLs and system restoration requirements within its Reliability Coordinator Area.	None. Both should be retired based on the notes below.
Notes: R4 is a basic facility requirement that should be addressed in certification. For R5, real-time monitoring is a supporting activity and is only one of several processes used to support operation within SOLs or IROLs. It is not practical to measure real-time monitoring, nor is this necessary. The real reliability objective is to operate within identified parameters, not to monitor.	
IRO-002-2 **R6.** Each Reliability Coordinator shall have adequate analysis tools such as state estimation, pre- and post-contingency analysis capabilities (thermal, stability, and voltage), and wide-area overview displays. *[Violation Risk Factor: High]*	None. Retire this requirement. R7 is a basic facility requirement that should be addressed in certification.

Already Approved Standard	Proposed Replacement Requirement(s)
IRO-002-2 **R7.** Each Reliability Coordinator shall continuously monitor its Reliability Coordinator Area. Each Reliability Coordinator shall have provisions for backup facilities that shall be exercised if the main monitoring system is unavailable. Each Reliability Coordinator shall ensure SOL and IROL monitoring and derivations continue if the main monitoring system is unavailable. *[Violation Risk Factor: High]*	None. This requirement should be retired because it is redundant with: **EOP-008-0** **R1.** Each Reliability Coordinator, Transmission Operator and Balancing Authority shall have a plan to continue reliability operations in the event its control center becomes inoperable. The contingency plan must meet the following requirements: The contingency plan shall not rely on data or voice communication from the primary control facility to be viable. **R1.2.** The plan shall include procedures and responsibilities for providing basic tie line control and procedures and for maintaining the status of all inter-area schedules, such that there is an hourly accounting of all schedules. **R1.3**. The contingency plan must address monitoring and control of critical transmission facilities, generation control, voltage control, time and frequency control, control of critical substation devices, and logging of significant power system events. The plan shall list the critical facilities. **R1.4**. The plan shall include procedures and responsibilities for maintaining basic voice communication capabilities with other areas. **R1.5**. The plan shall include procedures and responsibilities for conducting periodic tests, at least annually, to ensure viability of the plan. **R1.6**. The plan shall include procedures and responsibilities for providing annual training to ensure that operating personnel are able to implement the contingency plans. **R1.7.** The plan shall be reviewed and updated annually. **R1.8.** Interim provisions must be included if it is expected to take more than one hour to implement the contingency plan for loss of primary control facility.

Already Approved Standard	Proposed Replacement Requirement(s)
Notes: Real-time monitoring is a supporting activity and is only one of several processes used to support operation within SOLs or IROLs. It is not practical to measure real-time monitoring, nor is this necessary. The real reliability objective is to operate within SOLs and IROLs, not to monitor. The proposed revisions to EOP-008 require the RC to have specific backup capabilities sufficient to, among other things, provide visualization capabilities that ensure that operating personnel have situational awareness of the BES.	
IRO-002-2 **R8.** Each Reliability Coordinator shall control its Reliability Coordinator analysis tools, including approvals for planned maintenance. Each Reliability Coordinator shall have procedures in place to mitigate the effects of analysis tool outages. *[Violation Risk Factor: Medium]*	**IRO-002-2** **R2.** Each Reliability Coordinator shall provide its System Operators with the authority to approve, deny or cancel planned outages of its own analysis tools ~~control its Reliability Coordinator analysis tools, including approvals for planned maintenance~~. *[Violation Risk Factor: Medium] [Time Horizon: Real-time Operations, Same Day Operations and Operations Planning]* **R3.** Each Reliability Coordinator shall have procedures in place to mitigate the effects of analysis tool outages. *[Violation Risk Factor: Medium] [Time Horizon: Real-time Operations, Same Day Operations and Operations Planning]*