NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

Project 2014-03

Revisions to the TOP/IRO Reliability Standards

3rd Technical Conference and Second Posting Webinar

August 12, 2014

RELIABILITY | ACCOUNTABILITY




Agenda

- Introductions and Logistics
- NERC Antitrust Compliance Guidelines and Public Meeting Announcement
- SDT Roster
- Project History and Schedule
- Conference Objectives
- Project Inputs
- Second Posting Details
  - Definitions
  - IRO and TOP Standards
  - Data Retention, VRFs, and VSLs
  - SOL Exceedance Whitepaper
  - RSAWs
- Questions and Answers

NERC Antitrust Compliance Guidelines and Public Announcement

- It is NERC's policy and practice to obey the antitrust laws and to avoid all conduct that unreasonably restrains competition. This policy requires the avoidance of any conduct that violates, or that might appear to violate, the antitrust laws. Among other things, the antitrust laws forbid any agreement between or among competitors regarding prices, availability of service, product design, terms of sale, division of markets, allocation of customers or any other activity that unreasonably restrains competition. It is the responsibility of every NERC participant and employee who may in any way affect NERC's compliance with the antitrust laws to carry out this commitment.
- Participants are reminded that this meeting is public. Notice of the meeting was posted on the NERC website and widely distributed. The notice included the number for dial-in participation. Participants should keep in mind that the audience may include members of the press and representatives of various governmental authorities, in addition to the expected participation by industry stakeholders.

SDT Roster

Dave Souder, PJM, Chair

Andy Pankratz, FPL, Vice Chair

David Bueche, Center Point

Jim Case, Entergy

Allen Klassen, Westar

Bruce Larsen, WE Energy

Jason Marshall, ACES

Bert Peters, APS

Robert Rhodes, SPP

Kyle Russell, IESO

Eric Senkowicz, FRCC

Kevin Sherd, MISO

Project History and Schedule

- April 16, 2013: Projects 2006-06 and 2007-03 submitted
- November 21, 2013: Both projects proposed for remand
- December 20, 2013: NERC asked FERC to postpone remand
- January 14, 2014: FERC agreed to postpone until January 31, 2015
- February 12, 2014: Project 2014-03 started
- May 19, 2014 – July 2, 2014: First posting
- August 6, 2014 – September 19, 2014: Second Posting
- October 2014: Final ballot
- November 12, 2014: Presented to NERC Board
- Filed with FERC ASAP after Board approval

Conference Objectives

- First Technical Conference was mid-continent (St. Louis); second Technical Conference was east coast (DC); third Technical Conference is west coast to give those who couldn't travel east a chance for personal interface with SDT
- Present the changes in the second posting and explain the SDT's reasons for the changes
- Or, explain why the SDT didn't make certain changes
- Continue outreach and education
  - If you have a group that you would like to make certain receives a presentation, let one of the SDT members know

Project Inputs

- Projects 2006-06 and 2007-03
  - SARs
  - Directives and Issues
- FERC NOPR
- Independent Experts Report
- SW Outage Report
- Operating Committee Executive Committee Memo
- IRO Five Year Review
- Technical Conferences
  - St. Louis
  - Washington, DC
- First Posting Comments

Second Posting Details

Definitions:

- Added 'applicable' as qualifier to list of inputs to alleviate concerns over an entity not having an input that was listed and being found non-compliant
  - "The assessment shall reflect applicable inputs including …"
- Replaced 'contracted' with 'third-party' to allow for greater flexibility in providing services and to alleviate concerns of smaller entities
  - "… may be provided through internal systems or through ~~contracted~~ third-party services."

Second Posting Details (cont.)

Real-time Assessment (RTA): An evaluation of system conditions using Real-time data to assess existing (pre-Contingency) and potential (post-Contingency) operating conditions. The assessment shall reflect applicable inputs including, but not limited to: load, generation output levels, known Protection System and Special Protection System status or degradation, Transmission outages, generator outages, Interchange, Facility Ratings, and identified phase angle and equipment limitations. (Real-time Assessment may be provided through internal systems or through third-party services.)

Operational Planning Analysis (OPA): An evaluation of projected system conditions to assess anticipated (pre-Contingency) and potential (post-Contingency) conditions for next-day operations. The evaluation shall reflect applicable inputs including, but not limited to, load forecasts; generation output levels; Interchange; known Protection System and Special Protection System status or degradation; Transmission outages; generator outages; Facility Ratings; and identified phase angle and equipment limitations. (Operational Planning Analysis may be provided through internal systems or through third-party services.)

Second Posting Details (cont.)

IRO-001-4

- Applicability – Deleted Transmission Service Provider
  - The Functional Model does not provide for a Reliability Coordinator directing a Transmission Service Provider to act.
- Requirement R1 - Operating Instruction vs. Reliability Directive
  - Operating Instruction definition is inclusive of directive. Operating Instruction allows Reliability Coordinators to address or prevent situations that could lead to an Emergency. The Reliability Directive definition was never approved by FERC (see NOPR) and will eventually be withdrawn. The use of Operation Instruction is consistent with proposed COM-002-4. Therefore, the SDT did not make any changes concerning Operating Instruction.

Second Posting Details (cont.)

IRO-001-4 (cont.)

- Requirement R3 – Deleted "citing one of the reasons shown in Requirement R2" based on industry feedback
  - **R3**. Each Transmission Operator, Balancing Authority, Generator Operator, ~~Transmission Service Provider,~~ and Distribution Provider shall inform its Reliability Coordinator of its inability to perform the Operating Instruction issued by its Reliability Coordinator In Requirement R1~~2~~ ~~citing on of the specific reasons shown in Requirement R2~~.

Second Posting Details (cont.)

IRO-002-4

- Requirement R1 – deleted
  - Voice communication was deemed redundant with proposed COM-001-2
- Requirement R5 (now R4) – deleted 'and highly reliable' from infrastructure as unmeasurable
  - This is a duplication of an existing requirement and compliance efforts should remain the same as today
  - R5 (R4). Each Reliability Coordinator shall have monitoring systems that provide information utilized 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.

Second Posting Details (cont.)

IRO-002-4 (cont.)

- Requirement R2 (now R1) – revised wording from 'data links' to 'data exchange facilities' and re-structured language to allow for exchange to only be with the Transmission Operator and/or Balancing Authority with those entities reaching down to other entities or directly from the Reliability Coordinator to all applicable entities as per real-world practice
  - Requirement is not duplicative of proposed IRO-010-2 as that standard is about data and this requirement is about facilities
  - 'Data exchange capability' is more generic and flexible
  - Method should reflect actual practice
  - **R2** (R1). Each Reliability Coordinator shall have data exchange capabilities with Balancing Authorities and Transmission Operators, and with other entities it deems necessary, for it to perform its Operational Planning Analyses, Real-time Monitoring, and Real-time Assessments.

Second Posting Details (cont.)

IRO-002-4 (cont.)

- Requirement R4 (now R3) - re-structured for clarity
  - List formed at beginning of requirement rather than at the end
  - Sub-100 kV data clarified – 'identified as necessary' added to relieve concerns over reaching for unnecessary data
  - Clarified Reliability Coordinator role for System Operating Limits (SOLs)
  - Special Protection System term retained – if the project on re-defining terms receives approval, all applicable standards will be revised at that time
  - **R4** (R3). Each Reliability Coordinator shall monitor Facilities, the status of Special Protection Systems, and sub-100 kV facilities identified as necessary by the Reliability Coordinator, within its Reliability Coordinator Area and neighboring Reliability Coordinator Areas to identify any System Operating Limit exceedances and to determine any Interconnection Reliability Operating Limit exceedances within its Reliability Coordinator Area.

Second Posting Details (cont.)

IRO-008-2

- Requirement R2 (review plans) – deleted as redundant with Requirement R3
  - Requirement R3 (now R2) requires a coordinated plan which can't be achieved without having reviewed the plans
- Requirement R4 (now R3) – deleted 'NERC registered' as a qualifier for entities
  - **R3.** Each Reliability Coordinator shall notify impacted ~~NERC registered~~ entities identified in the Operating Plan(s) cited in Requirement R2~~3~~ as to their role in those plan(s).
- Requirement R7 (issue Operating Instructions) – deleted as Operating Instructions are already covered in proposed IRO-001-4

Second Posting Details (cont.)

IRO-008-2 (cont.)

- Requirement R5 (now R4) – changed 'performed a Real-time Assessment' to 'ensure that a Real-time Assessment is performed'
  - Allows flexibility for situations where other entities may perform Real-time Assessment under a "Loss of Control Center Functionality" scenario as defined within that entity's Operating Plan.
  - **R4**. Each Reliability Coordinator shall ~~perform~~ ensure that a Real-time Assessment is performed at least once every 30 minutes.

Second Posting Details (cont.)

IRO-010-2

- Applicability – deleted Planning Coordinator and Transmission Planner
  - Data will be exchanged between a Reliability Coordinator and the Planning Coordinator/Transmission Planner but it doesn't fit the data specification concept
- Effective Dates – changed the 10/12 month implementation to a 9/12 month implementation
  - Better alignment with formal approval dates relieving possible overlap which would have erased the staggered implementation

Second Posting Details (cont.)

IRO-014-3

- Requirement R1
  - Added ‘and implement’ to ‘have Operating Processes’ to ensure actions are taken when needed
  - Changed ‘other’ Reliability Coordinators to ‘adjacent’ Reliability Coordinators to avoid possibility of having to communicate with all other Reliability Coordinators
  - R1. Each Reliability Coordinator shall have and implement Operating Procedures, Operating Processes, or Operating Plans, for activities that require notification or coordination of actions that may impact ~~other~~ adjacent Reliability Coordinator Areas, to support Interconnection reliability.
  - Deleted Part 1.5 as duplicative of proposed IRO-001-4, Requirement R1
  - Reworded Part 1.6 to make it more generic as opposed to strictly being weekly conference calls

Ssecond Posting Details (cont.)

IRO-014-3 (cont.)

- Deleted Part 1.5 as duplicative of proposed IRO-001-4, Requirement R1
  - **1.5** ~~Authority to act to prevent and mitigate system conditions which could adversely impact other Reliability Coordinator Areas.~~
- Reworded Part 1.6 to make it more generic as opposed to strictly being weekly conference calls
  - **1.6** Provisions for ~~weekly conference calls~~ periodic communications to support reliable operations

- Requirement R3 – deleted as duplicative of Requirement R1
  - R3. ~~Each reliability Coordinator shall make notifications and exchange reliability-related information with other impacted Reliability Coordinators in accordance with the Operating Procedures, Operating Processes, or Operating Plans identified in Requirement R1.~~

Second Posting Details (cont.)

IRO-014-3 (cont.)

- Requirement R4 – deleted as duplicative of Requirement R1
  - R4. ~~Each Reliability Coordinator shall participate in agreed upon conference calls, at least weekly (per Requirement R1, Part 1.6) with other Reliability Coordinators within the same Interconnection.~~
- Requirement R5 (now R3) – added 'expected or actual' for consistency; clarified that it is only within the Reliability Coordinator Area
  - R3. Each Reliability Coordinator, upon identification of an expected or actual Emergency in its Reliability Coordinator Area, shall notify other impacted Reliability Coordinators.

Second Posting Details (cont.)

IRO-014-3 (cont.)

- Requirement R7 (now R5) – clarified that it is only within the Reliability Coordinator Area and with 'impacted' Reliability Coordinators
  - **R5.** Each Reliability Coordinator that identified an Emergency in its Reliability Coordinator Area shall develop an action plan to resolve the Emergency during those instances where impacted Reliability Coordinators disagree on the existence of an Emergency.
- Requirement R9 (now R7) – replaced 'entity' with 'Reliability Coordinator' and clarified that assistance can only be provided 'if able'
  - **R7.** Each Reliability Coordinator shall assist Reliability Coordinators, if requested and able, provided that the requesting ~~entity~~ Reliability Coordinator has implemented its emergency procedures, unless such actions cannot be physically ~~be~~ implemented or would violate safety, equipment, regulatory, or statutory requirements.

Second Posting Details (cont.)

IRO-017-1

- Purpose – added timeframes of coordination for clarity
  - To ensure that outages are properly coordinated in the Operations Planning time horizon and Near-term Transmission Planning Horizon
- Described intent of Operations Planning time horizon
  - The official definition of the Operations Planning Time Horizon is: "operating and resource plans from day-ahead up to and including seasonal." The SDT equates 'seasonal' as being up to one year out and that these requirements covers the period from day-ahead to one year out
- Part 1.5 – deleted as duplicative of Part 1.3
  - 1.5 ~~Document and maintain the specifications for outage analysis during the operations planning horizon.~~

Second Posting Details (cont.)

IRO-017-1 (cont.)

- Requirement R4 – re-structured to show that the process starts with the Planning Assessments created by the Planning Coordinator and Transmission Planner and then those Planning Assessments are reviewed and reconciled as needed with the Reliability Coordinator
  - **R4.** Each Planning Coordinator and Transmission Planner shall jointly develop solutions with its respective Reliability Coordinator(s) for identified issues or conflicts with planned outages in its Planning Assessment for the Near-Term Planning Horizon

Second Posting Details (cont.)

TOP-001-3

- Requirement R1 – deleted 'within its Transmission Operator Area' as this may have inadvertently omitted some entities; clarified that reliability is the issue and not functions
  - R1. Each Transmission Operator shall act, or direct others ~~within its Transmission Operator Area~~ to act by issuing Operating Instructions, to ~~address~~ ensure ~~it's~~ the reliability ~~functions within~~ of its Transmission Operator Area.
- Requirement R2 – deleted 'within its Balancing Authority Area' as this may have inadvertently omitted some entities; clarified that reliability is the issue and not functions

Second Posting Details (cont.)

TOP-001-3 (cont.)

- Requirement R4 – deleted 'citing one of the specified reasons shown in Requirement R3' since the wording is administrative
  - **R4.** Each Balancing Authority, Generator Operator, Distribution Provider, and Load-Serving Entity shall inform its Transmission Operator of its inability to perform an Operating Instruction issued by its Transmission Operator ~~in Requirement R3 citing one of the specific reasons shown in Requirement R3~~.
- Requirement R7 – deleted Balancing Authority as non-applicable; added 'if able' to provide assistance; changed 'actions' to 'assistance' for consistency
  - **R7**. Each Transmission Operator ~~and Balancing Authority~~ shall assist other Transmission Operators, if requested and able, provided that the requesting entity has implemented its emergency procedures, unless such ~~actions~~ assistance cannot be physically implemented or would violate safety, equipment, regulatory, or statutory requirements.

Second Posting Details (cont.)

TOP-001-3 (cont.)

- Requirement R9 – deleted 'negatively' as a qualifier to impacted and deleted 'telecommunication' as duplicative of proposed COM-001-2, Requirement R3
  - R9. Each Balancing Authority and Transmission Operator shall notify its Reliability Coordinator and ~~negatively~~ impacted interconnected NERC registered entities of outages of telemetering ~~and telecommunication~~ equipment, control equipment, monitoring and assessment capabilities, and associated communication channels between the affected entities.

Second Posting Details (cont.)

TOP-001-3 (cont.)

- Requirement R10 - re-structured for clarity
  - List formed at beginning of requirement rather than at the end
  - Sub-100 kV data clarified – 'identified as necessary' added to relieve concerns over reaching for unnecessary data
  - Clarified that Transmission Operator is responsible for System Operating Limits (SOLs)
  - Special Protection System term retained – if the project on re-defining terms receives approval, all applicable standards will be revised at that time
  - **R10**. Each Transmission Operator shall monitor Facilities, the status of Special Protection Systems, and sub-100 kV facilities identified as necessary by the Transmission Operator, within its Transmission Operator Area and neighboring Transmission Operator Areas to determine any System Operating Limit (SOL) exceedances within its Transmission Operator Area.

Second Posting Details (cont.)

TOP-001-3 (cont.)

- Requirement R13 – changed 'performed a Real-time Assessment' to 'ensure that a Real-time Assessment is performed'
  - **R13.** Each Transmission Operator shall ensure ~~perform~~ that a Real-time Assessment is performed at least once every 30 minutes.
- Requirements R16 (and R17) – added 'maintenance' to 'planned outages' and added 'telecommunication' to list of items
  - **R16**. Each Transmission Operator shall provide its System Operators with the authority to approve planned outages and maintenance of its ~~own~~ monitoring, telecommunication, and Real-time Assessment capabilities.

Second Posting Details (cont.)

TOP-001-3 (cont.)

- Requirement R18 – deleted 'Generator Operator' from list as it does not get involved with limit determinations but simply receives Operating Instructions; changed 'derived limits' to 'SOLs' for clarity as to which limits are involved
  - R18. Each Transmission Operator~~,~~ and Balancing Authority~~, and Generator Operator~~ shall always operate to the most limiting parameter in instances where there is a difference in ~~derived lim~~its SOLs.

Second Posting Details (cont.)

TOP-001-3 (cont.)

- Requirements R19 and R20 – data exchange capabilities requirements for Transmission Operators and balancing Authorities similar to IRO requirement for Reliability Coordinator
  - **R19.** Each Transmission Operator shall have data exchange capabilities with the entities that it has identified that it needs data from in order to maintain reliability in its Transmission Operator Area.
  - **R20**. Each Balancing Authority shall have data exchange capabilities with the entities that it has identified that it needs data from in order to maintain reliability in its Balancing Authority Area.

Second Posting Details (cont.)

TOP-002-3

- Requirements R3 and R5 – deleted 'NERC registered' as qualifier to entities
  - **R3.** Each Transmission Operator shall notify impacted ~~NERC registered~~ entities identified in the Operating Plan(s) cited in Requirement R2 as to their role in those plan(s).
  - **R5**. Each Balancing Authority shall notify impacted ~~NERC registered~~ entities identified in the Operating Plan(s) cited in Requirement R4 as to their role in those plan(s).

Second Posting Details (cont.)

TOP-003-3

- Applicability – deleted 'Interchange Authority' as that entity does not send data to the Transmission Operator or Balancing Authority
- Effective Date - changed the 10/12 month implementation to a 9/12 month implementation
  - Better alignment with formal approval dates relieving possible overlap which would have erased the staggered implementation

Second Posting Details (cont.)

Data Retention

- IRO-008-2 and TOP-002-4: changed data retention for analyses from six months to 90 calendar days to alleviate burden
- IRO-008-2 and TOP-002-4: changed data retention for voice recordings from three months to 90 calendar days for consistency
- IRO-008-2 and TOP-001-3: changed data retention from current calendar year and one previous calendar year to a rolling 30 day period for Real-time Assessments to alleviate burden
- IRO-014-3: added missing item for Requirements R7 (now R5) and R9 (now R7)
- TOP-001-3: changed operator logs to 90 calendar days

Second Posting Details (cont.)

VRFs

- IRO-010-2, Requirements R1 and R2: changed from Medium to Low for consistency with approved IRO-010-1a, Requirement R1 and proposed TOP-003-3, Requirement R1
- IRO-017-1, Requirements R1, R2, and R3: changed from Low to Medium to be consistent with approved IRO-005-3.1a, Requirement R6

Second Posting Details (cont.)

VSLs

- IRO-002-4, Requirement R2 (now R1) – changed from binary (severe) to incremental approach
- IRO-008-2, Requirement R5 (now R4) - changed from binary (severe) to incremental approach
- IRO-017-1, Requirement R1 - changed from binary (severe) to incremental approach
- TOP-001-3, Requirement R8: added an incremental approach to account for differential impacts on smaller entities
- TOP-003-3, Requirement R5: added incremental approach for consistency with approved IRO-010-1a, Requirement R1

Second Posting Details (cont.)

VSLs (cont.)

- The SDT did not change the VSLs associated with Operating Instructions.
  - These VSLs are proposed to be binary (severe).
  - The requirement language is written on a single Operating Instruction basis.
  - Therefore, the entity either does the action or it doesn't.

Second Posting Details (cont.)

SOL Exceedance White Paper

- The Whitepaper is designed to provide the industry with a concise document that highlights existing NERC Standard Requirements and NERC Defined Terms, including examples, in an effort to promote clarity, consistency, and a common understanding of the concepts associated with establishing SOLs, exceeding SOLs, and implementing Operating Plans to prevent and mitigate SOL exceedance.

Second Posting Details (cont.)

SOL Exceedance Whitepaper (cont.)

Technical basis:

- SOL Defined Term includes pre- and post-Contingency Facility Ratings, Transient Stability Ratings, Voltage Stability Ratings, and System Voltage Limits.
  - Summarize approved FAC standards requirements for the clear determination of Facility Ratings and acceptable system performance criteria for the pre- and post-Contingency state.
    - Approved FAC-008-3: Facility Ratings
      - Requirement to develop , at a minimum, both Normal and Emergency Ratings.
    - Approved FAC-011-2: System Operating Limits Methodology for the Operations Horizon
      - Defines acceptable pre- and post-Contingency BES performance and defines applicable Contingencies and study model
    - Approved FAC-014-2: Establish and Communicate System Operating Limits
      - SOLs are established consistent with SOL Methodology
      - Facilitates Reliability Coordinator – Transmission Operator coordination

Second Posting Details (cont.)

SOL Exceedance Whitepaper (cont.)

Technical basis (cont.)

- Proposed TOP-002-4, Requirement R1 requires that each Transmission Operator have an Operational Planning Analysis to assess whether its planned operations for the next-day within its Transmission Operator Area will exceed any of its SOLs.
- Proposed TOP-002-4, Requirement R2 requires that each Transmission Operator have an Operating Plan to address potential SOL exceedances identified as a result of its Operational Planning Analysis.
- Proposed TOP-001-3, Requirement R13 requires that a Transmission Operator ensures that a Real-time Assessment is performed at least once every 30 minutes.
- Proposed TOP-001-3, Requirement R14 requires the Transmission Operator to initiate its Operating Plan(s) to mitigate SOL exceedances

Second Posting Details (cont.)

SOL Exceedance Whitepaper (cont.)

Comment responses:

- Clarity provided for SOL Examples.
- Clarity provided to illustrate most limiting SOL.
- Clarity provided for pre- vs. post-Contingency load shed as per Operating Plan.
- Modified to ensure whitepaper references NERC defined terms

Questions and Answers