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Modifications to TOP and IRO Standards

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- FERC issued Order No. 817 in November 2015 approving revised TOP and IRO Standards and directing modifications
 - Revised TOP and IRO standards become effective in 2017
- Modifications address three objectives:
 - Transmission Operator (TOP) monitoring of some non-BES facilities
 - Redundancy and diverse routing of data exchange capabilities
 - Testing for data exchange capabilities used in primary control centers
- Revisions must be filed by July 2017

- The SDT has developed revisions to IRO-002 and TOP-001 addressing all of the SAR objectives
- Proposed **IRO-002-5 – Reliability Coordination – Monitoring and Analysis** contains revised requirements applicable to Reliability Coordinators (RC)
- Proposed **TOP-001-4 – Transmission Operations** contains revised requirements applicable to TOPs and Balancing Authorities (BA)

Standard	Quorum	Approval
IRO-002-5	84.5	67.25
TOP-001-4	85.81	64.59

- Stakeholder support for both proposed standards was relatively high in initial posting
- The Standards Drafting Team (SDT) incorporated many improvements into the 2nd posting

- **Directive:** Modify requirements to address monitoring non-BES facilities within or outside the TOP area as necessary for determining System Operating Limit (SOL) exceedances
 - Addresses potential gap during BES exception processing, or situations where some non-BES facilities should be monitored for reliability purposes
- Proposed TOP-001-4 Requirement R10 addresses the directive

- No changes were made to requirement language
- Rationale includes examples of analyses performed by TOPs to identify non-BES facilities that should be monitored:
 - *OPA;*
 - *Real-time Assessments (RTA);*
 - *Analysis performed by the TOP as part of BES Exception processing for including a facility in the BES; and*
 - *Analysis which may be specified in the RC's outage coordination process that leads to the identification of a non-BES facility that should be temporarily monitored for determining SOL exceedances.*
- The objective is to monitor all facilities necessary for **determining SOL exceedances**

- **Directive:** Modify standards to include requirements for redundancy and diverse routing of data exchange capabilities used by RC, TOP, and BA
- Proposed IRO-002-5 Requirement R2 and TOP-001-4 Requirements R20 and R23 address the directive

- Requirements specifically apply to data exchange infrastructure in the **primary** Control Center
 - Includes switches, routers, file servers, power supplies, and network cabling and communication paths between these components in the primary Control Center for the exchange of system operating data
- Entities are not expected to bring in additional redundant components solely to comply with the requirement during outages

- **Directive:** Modify standards to require testing of alternate data exchange capabilities used by RC, TOP, and BA in primary control centers
- Proposed IRO-002-5 Requirement R3 and TOP-001-4 Requirements R21 and R24 address the directive

- Testing periodicity is changed to **every 90 days** from monthly
- Compliance measures adjusted to clearly indicate that an event demonstrating redundant functionality can be counted as a test
- Requirements specifically apply to data exchange capabilities in the **primary** Control Center

- The implementation plan was not changed in the 2nd draft
- Proposed implementation period for IRO-002 is **3 months**
- Proposed implementation period for TOP-001 **12 months**
 - Longer implementation period is needed for new monitoring requirement of non-BES facilities

- Proposed standards are posted for comment through October 14, 2016
 - Additional ballots and non-binding polls will be conducted October 5 – October 14, 2016
- Draft Reliability Standards Audit Worksheets (RSAWs) are also posted for comment
 - Send feedback to RSAWfeedback@nerc.net
- Revised standards must be filed with FERC by July 2017



Questions and Answers



Additional Slides for Reference

- R10. Each Transmission Operator shall perform the following for determining System Operating Limit (SOL) exceedances within its Transmission Operator Area:
- 10.1 Monitor Facilities within its Transmission Operator Area;
 - 10.2 Monitor the status of Remedial Action Schemes within its Transmission Operator Area;
 - 10.3 **Monitor non-BES facilities within its Transmission Operator Area identified as necessary by the Transmission Operator;**
 - 10.4 Obtain and utilize status, voltages, and flow data for Facilities outside its Transmission Operator Area identified as necessary by the Transmission Operator;
 - 10.5 Obtain and utilize the status of Remedial Action Schemes outside its Transmission Operator Area identified as necessary by the Transmission Operator; and
 - 10.6 **Obtain and utilize status, voltages, and flow data for non-BES facilities outside its Transmission Operator Area identified as necessary by the Transmission Operator.**

Redundant and diversely routed data exchange capabilities consist of data exchange infrastructure **components (e.g. switches, routers, file servers, power supplies, and network cabling and communication paths between these components in the primary Control Center for the exchange of system operating data)** that will provide continued functionality despite failure or malfunction of an individual component within the Reliability Coordinator's (RC) **primary** Control Center. **Redundant and diversely routed data exchange capabilities preclude single points of failure in primary Control Center data exchange infrastructure from halting the flow of Real-time data.**

R2. Each Reliability Coordinator shall have data exchange capabilities, with redundant and diversely routed data exchange infrastructure within the Reliability Coordinator's **primary** Control Center, for the exchange of Real-time data with its Balancing Authorities and Transmission Operators, and with other entities it deems necessary, for it to perform its Real-time monitoring and Real-time Assessments.

R3. Each Reliability Coordinator shall test its **primary Control Center** data exchange capabilities specified in Requirement R2 for redundant functionality at least once **every 90 calendar days**. If the test is unsuccessful, the Reliability Coordinator shall initiate action within two hours to restore redundant functionality.

Rationale:

- *A test for redundant functionality demonstrates that data exchange capabilities will continue to operate despite the malfunction or failure of an individual component. An entity's testing practices should, over time, examine the various failure modes of its data exchange capabilities. When an actual event successfully exercises the redundant functionality, it can be considered a test for the purposes of the proposed requirement.*

- Refer to the [Project 2016-01](#) page for more information
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