

NERC

NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

White Paper

Project 2021-06 Modifications to TOP-003 and
IRO-010

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RELIABILITY | RESILIENCE | SECURITY



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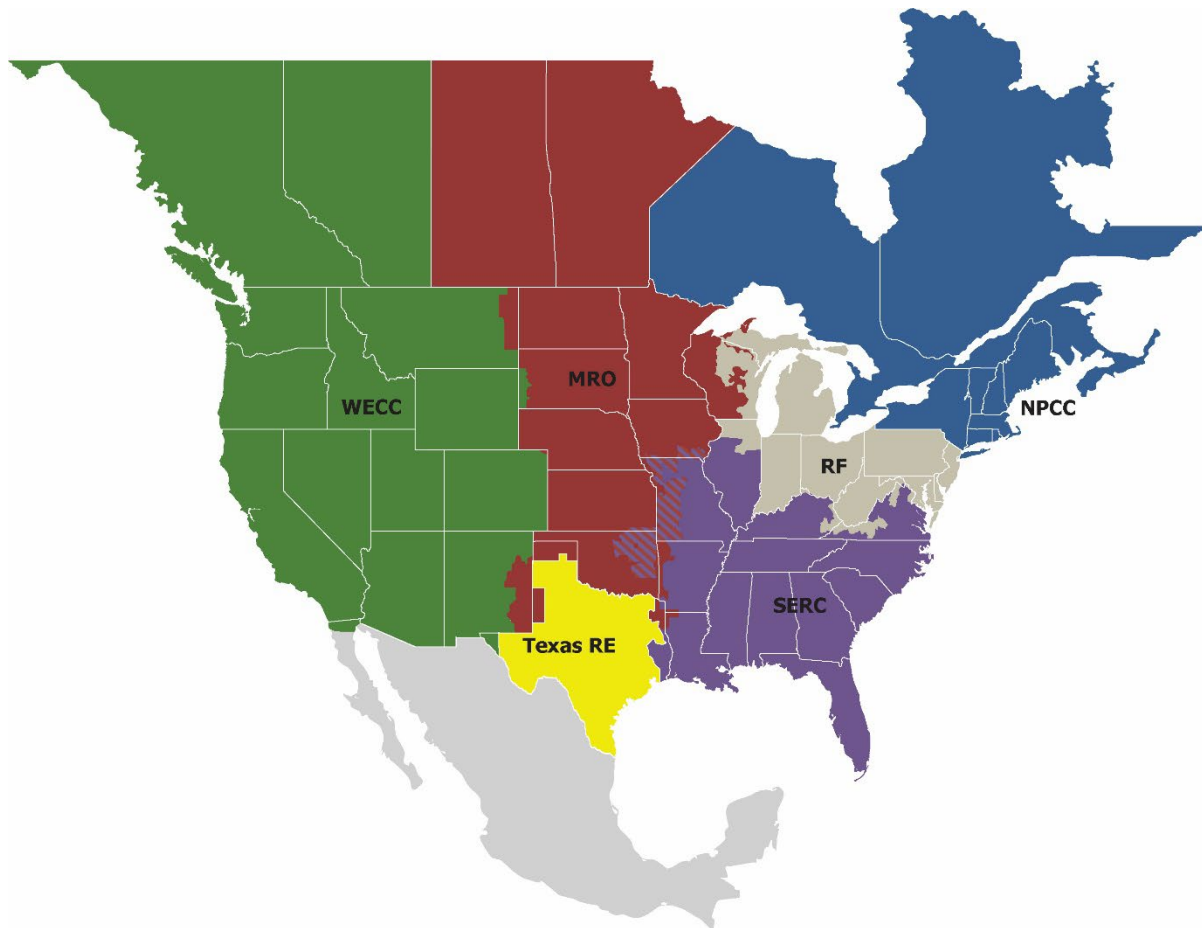
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Preface

Electricity is a key component of the fabric of modern society and the Electric Reliability Organization (ERO) Enterprise serves to strengthen that fabric. The vision for the ERO Enterprise, which is comprised of NERC and the six Regional Entities, is a highly reliable, resilient, and secure North American bulk power system (BPS). Our mission is to assure the effective and efficient reduction of risks to the reliability and security of the grid.

Reliability | Resilience | Security
Because nearly 400 million citizens in North America are counting on us

The North American BPS is made up of six Regional Entity boundaries as shown in the map and corresponding table below. The multicolored area denotes overlap as some load-serving entities participate in one Regional Entity while associated Transmission Owners/Operators participate in another.



MRO	Midwest Reliability Organization
NPCC	Northeast Power Coordinating Council
RF	ReliabilityFirst
SERC	SERC Reliability Corporation
Texas RE	Texas Reliability Entity
WECC	WECC

Introduction

This White Paper was created to provide further clarity, with more detailed explanation and guidance to aid industry in its review of the proposed changes to Reliability Standards IRO-010 and TOP-003 pursuant to Project 2021-06 Modifications to IRO-010 and TOP-003.

The reader will review a short history regarding the scope of the project contained in the Standard Authorization Request (SAR) and reasons the standard drafting team (SDT) did or did not make certain revisions or take action with respect to the SAR's scope. The justification for the SDT actions are explained based on the expertise of the SDT and decisions made by consensus of the team. The SDT will review the results of the balloted standards and the comments submitted by industry to assess the status of the project and determine the next steps to fulfill its responsibilities in order to close out the project in a timely and effective manner.

Background

Reliability Standards IRO-010 and TOP-003 address data and information requests from Reliability Coordinators (RCs), Transmission Operators (TOPs) and Balancing Authorities (BAs) to allow these entities to perform the four reliability tasks identified in the respective standards. The four reliability tasks identified in the respective standards and SAR are:

1. Operational Planning Analysis
2. Real-time Assessments
3. Real-time monitoring
4. Balancing Authority analysis functions

The Project 2021-06 Modifications to IRO-010 and TOP-003 SDT prepared edits to the referenced standards based on five major purposes or goals identified in the SAR, summarized as follows:

- Simplify administrative burdens identified by the Standards Efficiency Review (SER)¹ Phase 2 Team associated with the current IRO-010-4 and TOP-003-5 standards
- Limit unnecessary data retention requirements that do not contribute to BES reliability and resiliency
- Reduce administrative burden associated with a zero-defect compliance expectation, including excessive data retention
- Clarify expectations for the “data specification” with a broader definition or scope description
- Evaluate removing and consolidating within IRO-010 or TOP-003 other data exchange requirements dispersed in other standards that are related to the four reliability tasks

The Project 2021-06 SDT assessed the requirements identified by the SER Phase 2 team for removal, but ultimately decided against removing any requirements. After the initial ballots, the SDT confirmed that there is greater need to clarify how the proposed edits would benefit industry and why these proposed changes would address the questions and concerns raised by stakeholders. The SDT also realized it should document its assessment and rationale for its decision to not remove any of the SER Phase 2 cited requirements or other any other requirements. The major substantive difference between the initial drafts and the revised proposal for the two standards is that the concept of “intermediaries” has been removed, as requested by several commenters.

Another significant request identified in the SAR was to address potential duplications found in other standards, perceived redundancies that add to administrative burden or that may create unnecessary risks. In the SAR for this project, aspects of the SER Phase 2 were considered. The SDT reviewed the identified standards noted in the SAR, and assessed whether IRO-010 and TOP-003 could address data requirements of those standards effectively.

The SDT concluded that the requirements for data and information within those standards served a greater purpose in their existing locations, and that removing or relocating to IRO-010 and TOP-003 risked misalignment or misunderstanding without extensive referencing. In this assessment it appears that IRO-010 and TOP-003 are effective standards that allow an RC, BA, and TOP to request and receive the necessary data and information to perform the four reliability tasks identified. However, there is a clear need to maintain other requirements in the NERC Reliability Standards that identify clear bright line requirements supporting reliability that would otherwise be lost or lose effectiveness if completely removed or relocated in IRO-010 or TOP-003 without carrying over the same specificity and bright line requirements that exist in its existing location. This did not appear to “reduce administrative

¹ Information regarding the Standards Efficiency Review Project can be found on NERC’s website at <https://www.nerc.com/pa/Stand/Pages/Standards-Efficiency-Review.aspx>.

burden” rather than seem to be a matter of locational preference with the stated impact of lost context when not housed with other similar requirements of subject.

In order to address administrative burden, the SDT members considered how industry perceives data and information, noting there were differences of opinion on the two terms. However, the SDT agreed that both terms were important, and that clarification is needed to aid industry’s assessment of the proposed changes.

It was recognized that the requirements should not be prescriptive, but rather, they should allow for requestors together with respondents to identify and agree on methods to address security methods, communication methods, error correction and conflict resolution. To eliminate the assumption of zero-defect compliance, the focus on methods in the requirements permits requestors and respondents to address issues through processes they establish, including performance expectations, as well as error and conflict resolution processes when problems arise. The establishment of processes does not reduce the right of the requestor to ask for data it needs, but rather allows the parties to collaborate to make the data provision successful. The SDT reviewed that previous version relocated the “mutually agreed” language from the data specification requirements (e.g., IRO-010 R1) to the Respondent requirements (e.g., IRO-010 R3). The SDT believes this may have enhanced issues with a zero-defect expectation since there was no requirement to document what was agreed-upon. The SDT has attempted to rectify this by requiring the data specification to document mutually agreed-upon expectations so that compliance entities clearly see data expectations.

This White Paper will address each of these issues in detail.

SER Findings

The scope of the data specification should reflect the information necessary to cover the scope of the applicable tasks identified in IRO-010-4 or TOP-003-5 for the individual Registered Entity. To restate, the four reliability tasks identified in these standards are:

1. Operational Planning Analysis
2. Real-time Assessments
3. Real-time monitoring
4. Balancing Authority analysis functions

The SDT reviewed standards listed in the SAR's Detailed Description to determine whether additional changes could be proposed to address potential redundancy of requirements related to the four reliability tasks identified in IRO-010-4 and TOP-003-5. The SDT took exceptional care to consider whether removal or relocation could be reasonably justified and not have an adverse impact to the entities involved and or who utilizes such information. In general, the SDT assessed if the existing data and information requirements were better suited in a "must provide" construct or a "request and provide" construct (e.g., IRO-010 or TOP-003 are generally a "request and provide" context). The SDT considered if lost context could create additional confusion or degradation in reliability, and reviewed the results of the SER initiative.

The SDT utilized guidance in the SAR as part of this assessment. The guidance included the following:

- *"enhance the "data specification" approach to reduce the administrative burdens of excessive data retention, while ensuring Registered Entities with operational responsibilities continue, as under the current standards, to request and receive the data necessary to support the four tasks identified in IRO-010-4 and TOP-003-5 (and described in the Detailed Description section below), while protecting public disclosure of commercially sensitive information and providing a dispute resolution process.*
- *"flexibility for differences in operational environments and emerging technology must be maintained."*
- *"creating a minimum list of items to include in a data specification is not desired."*
- *"The drafting team would need to evaluate those requirements after proposed changes to the IRO-010 and TOP-003 are developed to determine if they are within the scope of the four tasks and consequently within the scope of IRO-010 and TOP-003."*
- *The intent of the project is not to do away with specific requirements in other Reliability Standards under the assumption that the same data will be requested per a data exchange under IRO-010-4 and TOP-003-5; and the Standard Drafting Team should evaluate any potential reliability risk incurred by removing a perceived redundant requirement prior to recommending changes to requirements in other Reliability Standards.*
- *The SDT should not revise requirements that are not directly related to the four reliability tasks identified above.*
- *The evaluation at a minimum should consider the following questions:*
 - *Is the purpose of the activity currently within the scope of one or more of the tasks identified in IRO-010-4 and TOP-003-5? If so, then consider revising due to redundancy.*
 - *If minor modifications were made to IRO-010-4, TOP-003-5 and/or associated definitions (especially Real-time monitoring and Balancing Authority analysis functions), then would the activity be within the scope of those standards? If so, then consider revising due to redundancy.*

- The drafting team *should reference precedence from past projects to support this effort*, including background materials developed during Project 2014-03 that describe the “data specification” concept including the petition to the FERC and the Project 2014-03 Mapping Document.

Due to the criticality of the tasks and functions identified in the SAR’s Detailed Description, the SDT determined there is insufficient justification(s) for the retirement of these requirements and is not proposing changes to the reviewed standards.

As it was a purpose of this project to evaluate removing other data exchange requirements dispersed in other standards, the drafting team considered and evaluated each of those requirements to determine if they are within the scope of the four tasks and consequently within the scope of IRO-010 and TOP-003. In addition, the SDT did not identify any new requirements necessary to perform the tasks identified in IRO-010-4 and TOP-003-5. The intent of the project is not to do away with specific requirements in other Reliability Standards under the assumption that the same data will be requested per a data exchange under IRO-010-4 and TOP-003-5. Rather, the review was to identify whether those requirements should be moved to IRO-010-4 and TOP-003-5. The SDT concluded there was also a greater potential reliability risk incurred by removing a perceived redundant requirement or by recommending changes to requirements in other Reliability Standards.

The data required in each of the standards is essential to meeting the requirements of the specific standard, beyond the scope of the core reliability tasks.

In the SAR, the following standards were identified for review:

Standard And Requirement Number	Standard Title
• BAL-005-1 R2	Balancing Authority Control
• EOP-005-3	System Restoration from Blackstart Resources
• FAC-014-3	Establish and Communicate System Operating Limits
• IRO-008-3 R5 • IRO-008-3 R6	Reliability Coordinator Operational Analyses and Real-time Assessments
• IRO-017-1 R3	Outage Coordination
• TOP-001-6 R9 • TOP-001-6 R15	Transmission Operations
• VAR-002-4.1 R3 • VAR-002-4.1 R4	Generator Operation for Maintaining Network Voltage Schedules

BAL -005-1

BAL-005-1 establishes a detailed specification of requirements for calculating Reporting Area Control Error (Reporting ACE). The standard provides detailed requirements for scan rate, metering requirements, availability requirements, reporting quality flags to operators, processes for mitigating errors, etc.

“R2. A Balancing Authority that is unable to calculate Reporting ACE for more than 30- consecutive minutes shall notify its Reliability Coordinator within 45 minutes of the beginning of the inability to calculate Reporting ACE.”

The SER Phase 2 team recommended the following: “Recommend for Periodic Review and if other modifications are needed, consider removing BAL-005-1 Requirement R2 and associated Measure M2 and placing it in BAL-001-2 as new Requirement R3 and Measure M3 as these requirements are closely related. Keep Violation Severity Limit the same.”

The focus of R2 is on notification of the RC when an entity is unable to calculate ACE for a period of time. As the focus of this requirement is strictly a bright line communication for a BA to a RC for times when the required data is not available, context is lost if a specific requirement is placed in IRO-010 and TOP-003 on its own rather than in a standard devoted to a BA’s ACE. For example, an RC may require, quality flags and other information necessary for operators, are not part of this requirement. Error mitigation is also not included in this requirement but as another requirement in the BAL-005-1 standard.

In the language of IRO-010, the RC may request a greater frequency of notification or include other relevant data necessary for its assessments, including such information as quality flags. The language of IRO-010 provides flexibility where it may be required. If relocated to IRO-010, the bright line (not to exceed) timing requirement may be lost if not specifically called out. Creating a specific list where the bright line criteria could be maintained in IRO-010 but appeared to oppose the SAR guidance, *“creating a minimum list of items to include in a data specification is not desired.”*

By retaining the base requirement in BAL-005, the standard provides all requirements for Reporting ACE (including specifying a minimum periodicity, accuracy, and availability requirement for acquisition of the data, and for providing the information to the System Operator for carrying out their responsibilities). These responsibilities include notification of the RC with a minimum time.

Thus, the SDT recommended no changes to BAL-005 R2 for this project.

EOP -005-3

The purpose of EOP-005-3 is to ensure plans, Facilities, and personnel are prepared to enable System restoration from Blackstart Resources to ensure reliability is maintained during restoration and priority is placed on restoring the Interconnection.

R13. Each Generator Operator with a Blackstart Resource shall notify its Transmission Operator of any known changes to the capabilities of that Blackstart Resource affecting the ability to meet the Transmission Operator’s restoration plan within 24 hours following such change

R14. Each Generator Operator with a Blackstart Resource shall perform Blackstart Resource tests, and maintain records of such testing, in accordance with the testing requirements set by the Transmission Operator to verify that the Blackstart Resource can perform as specified in the restoration plan

14.2. Each Generator Operator shall provide the blackstart test results within 30 calendar days following a request from its Reliability Coordinator or Transmission Operator

EOP-005-3 is one of the Reliability Standards for emergency operations. The SDT assessed that R13 or R14.2 would not fall under the four reliability tasks identified in TOP-003. The R13 requirement is not necessary for meeting the core reliability requirements that TOP-003 is intended to address and is more of a situational awareness requirement

so that the TOP can create alternate blackstart plans if necessary. Further, R14.2 has a reporting requirement that is long past the time horizon envisioned to effectively support the core reliability tasks.

The scope of the EOP-005-3 standard addresses the greater need for restoration plans (using Blackstart Resources), for which these reporting requirements would be expected to be documented with in. This documentation is communicated as a coordinated and comprehensive plan, for which personnel are trained for and plans that are practiced. As such retaining these communication requirements allows for entities to find all the compliance requirements within one documented standard.

This assessment in considering the guidance from the 2021-06 project's SAR, "Is the purpose of the activity currently within the scope of one or more of the tasks identified in IRO-010-4 and TOP-003-5? If so, then consider revising due to redundancy." appears to not be within the scope of one or more of the tasks identified in IRO-010-4 and TOP-003-5.

Thus, the SDT recommended no changes to EOP-005-3 R13 and EOP-005 R14.2 for this project.

FAC-014-3

FAC-014-3 is approved and will become mandatory and effective on April 1, 2024. While the cited requirements in the SAR appear to be incorrect or older references, the SDT still reviewed FAC-014-3 comprehensively. Additionally, in review of the SER Phase 2 recommendation for FAC-014-2 R5, the following was noted "No action. Deferring to the team of Project 2015-09."

Communication of SOLs between the appropriate reliability entities is a critical component for Operational Planning Analysis, Realtime Assessment and Real-time monitoring for the RC and TOP. The Technical Rationale for establishing Reliability Standard FAC-014-3 (Project 2015-09 Establish and Communicate System Operating Limits, April 2021) provided insight that R3 and R5 were "complementary" to IRO-010 and TOP-003 and not redundant.

For R3, the Project 2015-09 SDT wrote: "The SDT recognizes that the provision of SOL information from the TOP to the RC may also be addressed via IRO-010-2. However, *the proposed requirement may also be utilized for SOL information other than what is utilized for Operational Planning Analysis (OPA), Real-time Assessment (RTA) and Real-time monitoring.* In such instances, the timing requirements should be coordinated between the data specification document and the RC's SOL methodology. *Requirement R3 sets a common expectation across industry of the minimum actions any TOP must take when communicating SOLs to their RC. It's important for this requirement to remain within FAC-014-3 to ensure SOLs are communicated from the TOP to the RC in case IRO-010-2 is modified or removed in future revisions to the standards.*"

For R5, the Project 2015-09 SDT wrote in its FAC-014-3 rationale document: The requirement addresses varying needs in terms of both the content and the frequency at which the information is provided. *This requirement also complements existing NERC requirements that provide a construct for communication of SOLs and SOL-related information (e.g., TOP-003-3, IRO010-2, IRO-014-2) to prevent redundancies in requirements. TOP-to-TOP SOL information communication is addressed in TOP-003-3. RC-to-RC SOL information communication is addressed in IRO-014-2. TOP-to-RC information communication is addressed in Requirement R3 and may be addressed in IRO-010-2.*

In response to comments for Q4 and Q5 from, the Project 2015-09 SDT wrote: "R5.3 R5.4: The rationale documentation around R5.3 and R5.4 describes the importance of this requirement is to ensure that the TOP has the value of the corresponding IROL or stability limit for each Operations time horizon. This information is critical to ensuring the TOP and the RC are working together to ensure cascading and uncontrolled separation do not occur. *TOP-003-3 is a very non-specific requirement for the TOP and doesn't require the RC to fulfill the obligation to send the TOP IROL/stability information which is key to maintaining reliable operation across our interconnections.*"

Additionally, the SDT considered that Attachment 1-TOP-005 Electric System Reliability Data from previously effective TOP-005 (precursor to TOP-003) identified SOLs specifically in item 2.1.

In drafting the current requirements in FAC-014-3, the respective SDT considered the establishment of the requirement to communicate SOLs as necessary, and the frequency and timing could be addressed within an RC's SOL methodology. The SDT recognized, however that IRO-010 serves as an existing mechanism to communicate those SOLs on a frequency or with timing requirements established in the data specification, and as such this consideration is not a duplication or redundancy, but rather complimentary. FAC-014-3 requires the communication of SOLs from TOPs to RCs and other TOPs. IRO-010 and TOP-003 identify "how" and specific details of the SOL data and information necessary to fulfill the reliability tasks.

The SDT also notes that provision of SOL related data and information from the RC to a TOP is solely addressed in FAC-014-3 and not in TOP-003 as the RC is not a recipient of the TOP data specification and is not required to provide data and information accordingly. FAC-014-3 sufficiently meets the necessary requirements for the TOP.

These requirements appeared to adhere to a principle surrounding certain NERC Reliability Standard requirements that were critical in nature that rise to a level of requiring an entity to "provide" notification, data, or information in addition to, or rather than, a "request and provide" construct housed solely in IRO-010 and TOP-003. Creating a specific list where the requirement for SOL information to be included in the data specification be maintained in IRO-010 and TOP-003 not only risked losing the context in FAC-014-3 but appeared to oppose the SAR guidance, "*creating a minimum list of items to include in a data specification is not desired.*"

Thus, the SDT recommended no changes to FAC-014-3 R3 and FAC-014-3 R5 for this project.

IRO-008-3

The purpose of IRO-008-3 is to perform analyses and assessments to prevent instability, uncontrolled separation, or Cascading. Requirements R5 and R6 require the following:

R5: Each Reliability Coordinator shall notify impacted Transmission Operators and Balancing Authorities within its Reliability Coordinator Area, and other impacted Reliability Coordinators as indicated in its Operating Plan, when the results of a Real-time Assessment indicate an actual or expected condition that results in, or could result in, a System Operating Limit (SOL) or Interconnection Reliability Operating Limit (IROL) exceedance within its Wide Area.

R6: Each Reliability Coordinator shall notify, in accordance with SOL methodology, impacted Transmission Operators and Balancing Authorities within its Reliability Coordinator Area, and other impacted Reliability Coordinators as indicated in its Operating Plan, when the System Operating Limit (SOL) exceedance or an Interconnection Reliability Operating Limit (IROL) exceedance identified in Requirement R5 has been prevented or mitigated. [Violation Risk Factor: Medium] [Time Horizon: Same-Day Operations, Real-time Operations]

The SER Phase 2 team stated no recommendations for R5 and R6.

The two requirements identified, R5 and R6, were put into place to ensure that the RC notifies impacted entities when an SOL has been exceeded and then when it has been mitigated. There are no current requirement in TOP-003 for the RC to provide information to a BA or TOP, therefore there is no redundancy. RC would have to be added to list of applicable entities in TOP-003 and in R5. This communication was modified to include SOLs in addition to IROLs as part of the remand Notice of Proposed Rulemaking associated with Project 2014-03.

Thus, the SDT recommended no changes to IRO-008-3 R5 and IRO-008-3 R6 for this project.

IRO-017-1

The purpose of IRO-017-1 is to ensure that outages are properly coordinated in the Operations Planning time horizon and Near-Term Transmission Planning Horizon. Requirement R3 requires the following:

“Each Planning Coordinator and Transmission Planner shall provide its Planning Assessment to impacted Reliability Coordinators.”

The SER Phase 2 recommendations stated the following:

“Requirement R3 could retired be to similar language in TPL-001-4, R8, regarding distribution of the report of the results of the analysis. TPL-001-4, R8, could be modified to include “Reliability Coordinator” in the list of entities in the distribution list. [Leave as is, IRO-017 relates to the Operations Planning time frame and TPL-001 is based on a Long Term Planning time frame]”

The noted requirement is not specifically identified as being related to the four reliability tasks identified in IRO-010 and TOP-003. Additionally the SER Phase 2 recommendations are to leave as-is. Therefore, the SDT did not find any necessary changes. IRO-010 and TOP-003 may still serve a means of communication of outage information, however that is not specifically identified in IRO-017. The SDT identified no redundancies or duplication of purpose.

Thus, the SDT recommended no changes to IRO-017-1 for this project.

TOP-001-6

The purpose of TOP-001-6 is to prevent instability, uncontrolled separation, or Cascading outages that adversely impact the reliability of the Interconnection by ensuring prompt action to prevent or mitigate such occurrences. R9 and R15 require the following:

R9: “Each Balancing Authority and Transmission Operator shall notify its Reliability Coordinator and known impacted interconnected entities of all planned outages, and unplanned outages of 30 minutes or more, for telemetering and control equipment, monitoring and assessment capabilities, and associated communication channels between the affected entities.”

R15: “Each Transmission Operator shall inform its Reliability Coordinator of actions taken to return the System to within limits when a SOL has been exceeded in accordance with its Reliability Coordinator’s SOL methodology.”

The focus of TOP-001-6 R9 is notification of the RC when a BA or TOP has a planned or unplanned outage of 30 minutes or more for capabilities, equipment, and communication channels that could affect the provision of data and information required as part of IRO-010 and TOP-003. The SER Phase 2 recommendation was to consider relocation to IRO-017. The information identified in R9 was different than normal outage coordination related to transmission and generation facilities. The SDT assessed this to be different than the data and information required in a data specification but rather notification for situational awareness so that alternative actions can be taken by impacted entities. This could include the RC and TOP but could also include other entities not subject to a data specification. This requirement also identifies a bright line criterion of 30 minutes or more that could be lost if not specifically called out or listed in IRO-010 and TOP-003. It could also potentially affect processes outside of the four reliability tasks.

TOP-001-6 R15 is critical and necessary for situational awareness for verifying the implementation of an Operating Plan and or Operating Instruction was successful in mitigating an SOL exceedance. This informing may aid in the RC's next Real-time Assessment or its Real-time monitoring, however this information may vary greatly from SOL exceedance to SOL exceedance. The SER Phase 2 recommendation was no action. The SDT assessed that this requirement was specific and necessary enough to be specifically called out in IRO-010 if relocated, although the context of the requirement would be lost as well if relocated as R13 and R14 highlight the sequence of events.

Thus, the SDT recommended no changes to TOP-001-6 R9 and R15 for this project.

VAR-002-4.1

The purpose of VAR-002-4.1 is to ensure generators provide reactive support and voltage control, within generating Facility capabilities, in order to protect equipment and maintain reliable operation of the Interconnection. R3 and R4 requires the following:

R3. Each Generator Operator shall notify its associated Transmission Operator of a status change on the AVR, power system stabilizer, or alternative voltage controlling device within 30 minutes of the change. If the status has been restored within 30 minutes of such change, then the Generator Operator is not required to notify the Transmission Operator of the status change.

R4. Each Generator Operator shall notify its associated Transmission Operator within 30 minutes of becoming aware of a change in reactive capability due to factors other than a status change described in Requirement R3. If the capability has been restored within 30 minutes of the Generator Operator becoming aware of such change, then the Generator Operator is not required to notify the Transmission Operator of the change in reactive capability.

VAR-002-4.1 R3 provides critical generator information to a TOP and RC regarding status changes on the AVR, power system stabilizer, or alternative voltage controlling device. VAR-002-4.1 also establishes a bright line timeline of 30 minutes which would be lost if relocated to IRO-010 and TOP-003. The SER Phase 2 recommendation is blank. The SER Phase 1 recommendation questioned both the reliability need and the minimum the 30-minute notification requirement. There was no recommendation to remove due to redundancy with TOP-003. While IRO-010 and TOP-003 offers the RC and TOP flexibility to specify the methods of notification (i.e., SCADA telemetry, verbal notifications) and more stringent timelines to support its reliability processes, relocating would lose the bright line 30-minute criteria which aligns with the 30-minute RTA requirement for RCs and TOPs.

VAR-002-4.1 R4 is a critical piece of information for providing to a TOP (and RC) and which identified a not to exceed timeline of 30 minutes which would be lost if assumed if relocated to IRO-010 and TOP-003. While IRO-010 and TOP-003 offers the flexibility to specify how to notify (i.e., SCADA telemetry, verbal notifications) and more stringent timelines to support its reliability processes. The SER Phase 2 recommendation is blank. The SER Phase 1 recommendation questioned the reliability need entirely or at a minimum the 30-minute requirement. There was no recommendation to remove due to redundancy with TOP-003. While in 2016, the EPRT stated that the RC may get the information under IRO-010, the EPRT did not recommend its retirement, relocating would lose the bright line 30-minute criteria which aligns with the 30-minute RTA requirement for RCs and TOPs.

It may be worth noting that RCs and TOPs utilize contingency and stability analysis tools as part of R3 and R4, for determining accurate stability limits and SOL exceedances. Accurate communication of this information is critical to ensure that instability, Cascading, or uncontrolled separation do not occur. These requirements were put in place with the Version 0 standards as a result of recommendations related to the 2003 Northeast Blackout.

Thus, the SDT recommended no changes to VAR-002-4.1 R3 and R4 for this project.

Data and Information

The SDT considered the feedback from the SER Phase 2 effort and also the SAR.

Industry participants have suggested that they think of data as being the “bits and bytes” which are normally how we perceive telemetry and statuses in SCADA and provide to others via ICCP. Others may also consider data as being such things as RAS arming statuses and quantities of load or generation shedding. The scope of a data specification, however, should contain more than routine real time operating data used in real time monitoring. For example, RAS Arming statuses may need context information such as the descriptions of the RAS and its actions. In order to perform its required assessments, the RC, BA, and TOP data specifications may need to also include information that provides insights for the four reliability tasks: Operational Planning Analysis, Real- Time Assessments, Real-time monitoring, and Balancing Authority analysis functions.

One would only have to consider the definition of OPA and RTA to see how extensive the data and information necessary to conduct such activities would be. This information could be used to address Operating Plans to resolve problems in these assessments and provide context for the use of data. Typically, this information are types of documentation such as Operating Procedures that address the manual actions that may or may not be modeled in study tools. This information can be the supporting documentation such as a Remedial Action Scheme’s detail, Outage Request dates/times or other details, must run operations requests, emergency procedures, modeling information, etc. The NERC Glossary of Terms definitions for OPA and RTA can be seen below:

Operational Planning Analysis: 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.)

Real Time Assessments: 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.)

Additionally, the terms Real-time monitoring and Balancing Authority analysis functions are broad. The Guidelines and Technical Basis section of IRO-018 offers the below guidance:

Real-time monitoring, or monitoring the Bulk Electric System (BES) in Real-time, is a primary function of Reliability Coordinators (RCs), Transmission Operators (TOPs), and Balancing Authorities (BAs) as required by TOP and IRO Reliability Standards. As used in TOP and IRO Reliability Standards, monitoring involves observing operating status and operating values in Real-time for awareness of system conditions. Real-time monitoring may include the following activities performed in Real-time:

- Acquisition of operating data;
- Display of operating data as needed for visualization of system conditions;
- Audible or visual alerting when warranted by system conditions; and
- Audible or visual alerting when monitoring and analysis capabilities degrade or become unavailable.

As can be seen, the data specification requirements encompass activities that are very detailed and very broad so that RCs, BAs, and TOPs can acquire the necessary data and information to ensure the four reliability tasks can be adequately performed. This includes evolving system data and information that comes about by an ever-changing system (e.g., system inertia, distributed energy resource data, dynamic facility ratings, sub-synchronous resonance alerts, and oscillations).

The use of both data and information as terms aids our understanding of the broader scope of requirements that an entity deems necessary to perform the four reliability tasks. This suggests that context be given for issues of security, errors, timing and communication mechanisms which may be different from that of “data”. Specifications should have flexibility to request data and information recognizing that alternate methods of communication such as phone, instant messaging, internet-based systems, may be appropriate. For example, a Web based extranet may be a suitable repository for such information. The security methods and transfer considerations for the requestor and the provider may be very different from that of SCADA.

The SDT considered adding a provision for confidentiality to the Standard. The provision would apply to all data requests, and would likely add unnecessary administrative burden. By requiring parties to demonstrate agreements, mechanisms and controls potentially for all data/information, the burden and compliance risk would increase dramatically. However, a general or overarching requirement can be avoided considering other requirements that were proposed for the standard. The SDT members identified that a requirement that suggesting a requestor establish a conflict resolution process, for managing error corrections and conflicts of disputes provides a means to address specific confidentiality issues. By establishing a method of collaboration, requests can better address requestors and respondents needs, while having a mechanism to address problems in the provision of data and information.

For example, in the case that some data or information has confidentiality risks that a respondent needs to protect, the existence of processes or methods for resolution of errors or conflicts implies that the requestors and respondents should consider resolving problems in the creation of the data request. The use of this resolution mechanism can provide a means for the parties to address the specific confidentiality issues and or security requirements, and come to agreement on mechanisms, controls, protections to address the confidentiality for the specific data or information that had a confidentiality or security need. Such a mechanism suggests then that an overarching compliance requirement for confidentiality should not be necessary. Rather, there is flexibility for the requestor and respondent to determine which data or information need this greater level of protections and the best way to accommodate such protections.

Methods and Mitigation of Zero-defect Expectations

Methods

Industry believes the standards should avoid being overly prescriptive, as doing so would add to the administrative burden. Requirement 1.5 was drafted with the intent of focusing on methods; establishing processes, and specifying methods to address provision of data and information. The intent of the SDT is to alleviate strict criterion for each specified data or information requirement.

The current approved standards IRO-010-3 and TOP-003-4, have requirements R1.2 and R1.3, which are prescriptive of some expected content. However, this aspect of the SAR was intended to reduce the potential administrative burden of the data request specification (format, protocol, security) which may not be required for a specific data or information type. Therefore these terms may create unnecessary burdens.

To address these concerns, the SDT reviewed the sub-requirements for respondents to demonstrate compliance (IRO-010 -3 R3, TOP-003-4 R5), that include:

- A mutually agreeable format
- A mutually agreeable process for resolving data conflicts
- A mutually agreeable security protocol

The SDT concluded that these sub-requirements were best addressed by building them into the specification itself. With these sub-requirements brought into R1, the requirements for the specification are better delineated, as they are all collected together. This is accomplished by establishing R1.5 and its sub-requirements to address the characteristics of the data request. Previous versions of IRO-010 and TOP-003 took a similar approach before removal of the requirements, which exacerbated the noted issue of zero-defect expectations. By clarifying that some level of accuracy and availability deviation is acceptable, a zero-defect compliance would no longer be expected.

The repeated use of the term “mutual agreed upon” is intentional to facilitate collaboration between requestors and respondents in preparing the data specification to ensure the specification is feasible, reasonable, and sufficient. The retention of the word mutual for these requirements suggests that a data specification should be developed collaboratively, to address issues and concerns around the provision and protection of content of the respondent data can be addressed in the specification itself.

The SDT concluded that mutual collaboration does not diminish the authority of the requestor to request data and information it requires. R1 clearly provides this authority in IRO-010-3. The proposed R.1.5 establishes collaboration on the methods used within the data request, to achieve the desired provision of data to the requestor.

Similarly, R1 and R2 of TOP-003 provide the authority of the requestor to request data and information it requires. The proposed R1.5 and R2.55 establishes collaboration on the methods used within the data request, to achieve the desired provision of data to the requestor.

The proposed content for R1.5 of IRO-010 and R1.5 for TOP-003 (and similarly in R2.5 of TOP-003) is:

- 1.5.** Methods for the entity identified in Part 1.1 to provide data and information that includes, but is not limited to:
 - 1.5.1** Specific deadlines or periodicity in which data and information is to be provided;
 - 1.5.2** Performance criteria for the availability and accuracy of data and information, as applicable;
 - 1.5.3** Provisions to update or correct data and information, as applicable or necessary.

1.5.4 A mutually agreeable format.

1.5.5 A mutually agreeable methods for securely transferring data and information.

The emphasis of the requirement is on “method” to provide data and information. It is intended to focus on establishing appropriate processes and procedures where necessary or applicable. Every method designated in a sub-bullet is intended to address the issues in a manner that allows the Requester to continue to receive information necessary to perform reliability tasks. It also allows the responder to agree to the manner in which data is provided (namely format of data and information and provision of the secure transfer of data and information).

Zero-defect Expectations

Data has errors. Invariably, no data set is 100% accurate. Information documents have errors and may occasionally have omissions. A standard that assumes a zero-defect expectation will not recognize these variances. The SDT has heard industry members indicate there are problems with a lack of clarity about performance expectations for data and information.

Not all data requires strict performance criterion. While for some data, high degrees of accuracy is critical. Occasionally, errors and omissions in documentation requires clarification. These errors or omissions may be discovered by the requestor or the provider. An assumed data accuracy of zero-defect does not facilitate reliability but creates significant administrative burden. Does an entity need to prove their accuracy and hold large amounts of data to demonstrate compliance? By establishing performance criterion in the specification itself, the parties can identify what is reasonable and high quality for meeting the intended use of the requestor.

The provision in 1.5.2 facilitates the inclusion performance criterion in the data request for the parties to identify which data or information is critical with respect to accuracy or availability. The SDT considered the establishment of methods to encompass the parties identifying the critical performance expectations within the specification for requested items that may require a specific performance criterion, in addition to more general performance expectations. Adding another requirement to establish provisions for correcting or updating data, and information for errors encountered, further alleviates strict zero-defect compliance.

Responders may need to have exceptions for legitimate problems with supplying accurate data or information. Proposed R1.5.3 requires the data specification to establish provisions for error correction in the data request which, in turn, will allow the parties to agree to processes that will facilitate improvements. With this provision, respondents would be more likely to actively identify potential problems, and work collaboratively with the requestor for quicker resolution. Effectively, Requirement 1.5.3 facilitates data information quality improvements.

The establishment of a conflict resolution process allows for compliance to be supported by processes, for resolving problems with data provision. This also implies the establishment of collaborative processes for the creation of the specification is beneficial, to avoid conflicts. The SDT suggests that developing collaborative processes to resolve problems as a requirement further entrenches this perspective. For example, when there are problems with meeting performance criterion of a specific requested data or information item in the specification, it may be mutually beneficial to address by using a confliction resolution process, leading to the satisfaction of the requestor, and avoiding an assessment of non-compliance for the provider.

In summary, the SDT has proposed revisions to the standards with the intent to alleviate and mitigate some of the concerns with data availability, data efficacy, and zero-defect assumptions. To that end, the proposed revisions establish performance criterion, when necessary, for requirements in the specification that require a high level of accuracy. Retention of assessments of performance and attestations on the successful use of error correction and conflict resolution processes may eliminate the retention of large quantities of data itself and mitigate the zero-defect assumptions implied by the standards.