

Implementation Plan for Project 2007-03: Real-Time Operations

Prerequisite Approvals

Some changes made in this project are dependent on corresponding changes being approved in Project 2006-06, Reliability Coordination:

- COM-001-1: Telecommunications
- COM-002-2: Communications and Coordination
- IRO-001-1: Reliability Coordination – Responsibilities and Authorities
- IRO-002-1: Reliability Coordination – Facilities
- IRO-014-1: Procedures to Support Coordination between Reliability Coordinators
- IRO-015-1: Notifications and Information Exchange between Reliability Coordinators
- IRO-016-1: Coordination of Real-Time Activities between Reliability Coordinators
- PER-004-1: Reliability Coordination – Staffing
- PRC-001-1: System Protection Coordination

Revision to Sections of Approved Standards and Definitions

There are no new definitions in the proposed set of standards.

Two drafting teams (Project 2006-06 and Project 2007-03) have coordinated on a common definition and agreed that the Reliability Coordination Standards Drafting Team (Project 2006-06) would write the definition and post it for vetting by the industry. The agreed upon definition is included here for ease of reference.

Reliability Directive - A communication initiated by a Reliability Coordinator, Transmission Operator, or Balancing Authority where action by the recipient is necessary to address an actual or expected Emergency.

Compliance with Standard

There are three standards associated with this project for which industry approval will be requested: TOP-001-2: Coordination of Transmission Operations, TOP-002-3: Operations Planning, and TOP-003-1: Operational Reliability Data.

| Standard | Functions that must Comply with the Associated Requirements | | | | | | | |
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| | TOP | BA | GO | GOP | IA | LSE | DP | TO |
| PER-001-0: Operating Personnel Responsibility and Authority | Retired | | | | | | | |
| TOP-001-2: Coordination of Transmission Operations | X | X | | X | | X | X | |
| TOP-002-3: Operations Planning | X | | | | | | | |
| TOP-003-1: Operational Reliability Data | X | X | X | X | X | X | | X |
| TOP-004-2: Real-Time Transmission Operations | Retired | | | | | | | |
| TOP-005-2: Operational Reliability Data | Retired | | | | | | | |

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| TOP-006-1: Monitoring System Conditions | Retired |
| TOP-007-0: Reporting System Operating Limits (SOL) and Interconnection Reliability Operating Limit (IROL) Violations | Retired |
| TOP-008-1: Response to Transmission Limit Violations | Retired |

The effective date is the date entities are expected to meet the performance identified in these standards. Note that entities have been given several months beyond the regulatory approval date (preparation time) to fully comply with new requirements.

Effective Date of Revised Standards

All requirements will become effective the first day of the first calendar quarter twenty-four months following applicable regulatory approval. In those jurisdictions where no regulatory approval is required, the requirements become effective the first day of the first calendar quarter twenty-four months following Board of Trustees adoption.

The twenty-four month period is to allow for entities to update processes, develop data specifications, and train operators on the revised requirements.

Retirement Date for Existing Standards

All requirements will be retired twenty-four months following the first day of the first quarter following regulatory approval. In those jurisdictions where no regulatory approval is required, the requirements will be retired effective the first day of the first calendar quarter twenty-four months following Board of Trustees adoption.

Mapping Table

The following table indicates the disposition of the existing standards requirements related to this project.

| TOP-001-1 | |
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| R1 - Existing | Each Transmission Operator shall have the responsibility and clear decision-making authority to take whatever actions are needed to ensure the reliability of its area and shall exercise specific authority to alleviate operating emergencies. |
| R1 - Resolution | Deleted – Deletion of this requirement doesn’t alleviate responsibility for actions as each individual requirement in the Reliability Standards now specifies an action and a responsible entity. Needed actions required for reliability of the bulk power system have been more clearly laid out in revised standards. (See FERC Order 693a, paragraph 112.) The requirement is also non-specific, ambiguous, and not performance oriented. If an entity doesn’t perform as specified in an individual requirement, then they are held accountable at that level. This is a generic requirement that is no longer necessary since there are now specific requirements that cover all needed reliability actions. All of this makes this requirement redundant. The overall reliability of the bulk power system is not adversely affected by the deletion of this requirement. In FERC Order 693a, paragraph 112, the Commission clarifies that a Reliability Coordinator’s authority to issue directives arises out of the |

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| | Commission’s approval of Reliability Standards that mandate compliance with such directives. The SDT believes that this same logic applies to Transmission Operators and Balancing Authorities and that makes this requirement superfluous and thus it can be deleted. |
| R2 - Existing | Each Transmission Operator shall take immediate actions to alleviate operating emergencies including curtailing transmission service or energy schedules, operating equipment (e.g., generators, phase shifters, breakers), shedding firm load, etc. |
| R2 - Resolution | This has been replaced by proposed TOP-001-2, Requirement R11. The undefined term ‘operating emergencies’ is no longer utilized and the requirement has been made more stringent by not restricting Transmission Operator actions to that undefined condition. The inclusion of the T _v term adds clarity and tends to make the new requirement more stringent than the existing requirement by providing a relevant timeframe. |
| R3 - Existing | Each Transmission Operator, Balancing Authority, and Generator Operator shall comply with reliability directives issued by the Reliability Coordinator, and each Balancing Authority and Generator Operator shall comply with reliability directives issued by the Transmission Operator, unless such actions would violate safety, equipment, regulatory or statutory requirements. Under these circumstances the Transmission Operator, Balancing Authority or Generator Operator shall immediately inform the Reliability Coordinator or Transmission Operator of the inability to perform the directive so that the Reliability Coordinator or Transmission Operator can implement alternate remedial actions. |
| R3 - Resolution | Deleted - This requirement is now covered in the proposed IRO-001-2, Requirements R2 & R3. |
| R4 - Existing | Each Distribution Provider and Load Serving Entity shall comply with all reliability directives issued by the Transmission Operator, including shedding firm load, unless such actions would violate safety, equipment, regulatory or statutory requirements. Under these circumstances, the Distribution Provider or Load Serving Entity shall immediately inform the Transmission Operator of the inability to perform the directive so that the Transmission Operator can implement alternate remedial actions. |
| R4 - Resolution | Retained and moved to proposed TOP-001-2, Requirement R1. |
| R5 - Existing | Each Transmission Operator shall inform its Reliability Coordinator and any other potentially affected Transmission Operators of real time or anticipated emergency conditions, and take actions to avoid, when possible, or mitigate the emergency. |
| R5 - Resolution | Retained and moved to proposed TOP-001-2, Requirement R3. The intent of the “mitigation” phrasing was replaced by proposed TOP-001-2, Requirement R11. (Also, see explanation for R2 above.) |
| R6 - Existing | Each Transmission Operator, Balancing Authority, and Generator Operator shall render all available emergency assistance to others as requested, provided that the requesting entity has implemented its comparable emergency procedures, unless such actions would violate |

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| | safety, equipment, or regulatory or statutory requirements. |
| R6 - Resolution | <p>Retained and moved to proposed TOP-001-2, Requirement R4 for the Transmission Operator.</p> <p>The Generator Operator was removed since they can't be contacted directly by others and will only respond to such requests if they were in the form of a Reliability Directive from its Transmission Operator which is covered in proposed TOP-001-2, Requirement R1.</p> <p>The proposed EOP-001-2, Requirement R1 covers the Balancing Authority so to eliminate a redundancy the Balancing Authority has been removed from this requirement. In addition, the Balancing Authority must still respond to any Reliability Directive from the Transmission Operator as stated in proposed TOP-001-2, Requirement R1.</p> |
| R7 - Existing | <p>Each Transmission Operator and Generator Operator shall not remove Bulk Electric System facilities from service if removing those facilities would burden neighboring systems unless: 7.1 - For a generator outage, the Generator Operator shall notify and coordinate with the Transmission Operator. The Transmission Operator shall notify the Reliability Coordinator and other affected Transmission Operators, and coordinate the impact of removing the Bulk Electric System facility. 7.2 - For a transmission facility, the Transmission Operator shall notify and coordinate with its Reliability Coordinator. The Transmission Operator shall notify other affected Transmission Operators, and coordinate the impact of removing the Bulk Electric System facility. 7.3 - When time does not permit such notifications and coordination, or when immediate action is required to prevent a hazard to the public, lengthy customer service interruption, or damage to facilities, the Generator Operator shall notify the Transmission Operator, and the Transmission Operator shall notify its Reliability Coordinator and adjacent Transmission Operators, at the earliest possible time.</p> |
| R7 - Resolution | <p>Retained but re-worded as part of proposed TOP-001-2, Requirement R5.</p> <p>After the fact notifications have been deleted since those actions will be seen through telemetry as cited in the proposed TOP-003-2 and proposed IRO-001-2.</p> <p>The term 'burden' was considered by the SDT to be vague, ambiguous, unmeasurable, and undefined and has been replaced by a NERC defined term 'Adverse Reliability Impact'.</p> |
| R8 - Existing | <p>During a system emergency, the Balancing Authority and Transmission Operator shall immediately take action to restore the Real and Reactive Power Balance. If the Balancing Authority or Transmission Operator is unable to restore Real and Reactive Power Balance it shall request emergency assistance from the Reliability Coordinator. If corrective action or emergency assistance is not adequate to mitigate the Real and Reactive Power Balance, then the Reliability Coordinator, Balancing Authority, and Transmission Operator shall implement firm load</p> |

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| R8 - Resolution | <p>Real Power Balance and Reactive Power Balance are not defined terms.</p> <p>First sentence – Deleted due to: The Balancing Authority is covered in approved EOP-002-2.1, Requirement R6. Therefore, this portion of the requirement is redundant and can be deleted. The Transmission Operator does not balance real power so that part of the sentence can be deleted per the NERC Functional Model V5. Approved VAR-001-1, Requirement R8 covers reactive power requirements and the meaning of balancing reactive power for the Transmission Operator. The Balancing Authority must be told by the Transmission Operator to take actions regarding reactive power per the NERC Functional Model V5 (see proposed TOP-001-2, Requirement R1) and can therefore be deleted from this part of the requirement.</p> <p>Second sentence – Deleted due to: The Balancing Authority must be told by the Transmission Operator to take actions regarding reactive power (see proposed TOP-001-2, Requirement R1) and can thus be deleted. Transmission Operators are covered under approved VAR-001-1, Requirement R1 thus making this part of the requirement redundant.</p> <p>Third sentence – The Reliability Coordinator is now covered in approved IRO-009-1, Requirements R1 and R2 and can be deleted here. The Transmission Operator and Balancing Authority are covered in approved EOP-003-1, Requirement R1. Therefore, this sentence is redundant and can be deleted.</p> |
| TOP-002-2 | |
| R1 - Existing | Each Balancing Authority and Transmission Operator shall maintain a set of current plans that are designed to evaluate options and set procedures for reliable operation through a reasonable future time period. In addition, each Balancing Authority and Transmission Operator shall be responsible for using available personnel and system equipment to implement these plans to ensure that interconnected system reliability will be maintained. |
| R1 - Resolution | <p>First sentence – Deleted for Balancing Authority, Retained for Transmission Operator - The Balancing Authority is required to balance by approved BAL-001-0.1a and approved BAL-002-0 and the proposed BAL-002-1 and must take action per approved EOP-002-2.1, Requirement R6 and thus can be deleted.</p> <p>Retained for Transmission Operator in proposed TOP-002-3, Requirements R1 through R3. This is patterned after the approved IRO-008-1, Requirement R1 for the Reliability Coordinator.</p> <p>Second sentence – Deleted as superfluous. Use of appropriate personnel and equipment is incumbent to responsible entities as per their certification as NERC registered entities.</p> |
| R2 - Existing | Each Balancing Authority and Transmission Operator shall ensure its |

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| | operating personnel participate in the system planning and design study processes, so that these studies contain the operating personnel perspective and system operating personnel are aware of the planning purpose. |
| R2 - Resolution | The SDT reviewed the purpose of the Reliability Standard and believes that this requirement referred to operations planning. Given the current definition of Transmission Operator in the Glossary and Functional Model v5, operations planning is part of what the Transmission Operator is required to do and as such this requirement is no longer needed and can be deleted. |
| R3 - Existing | Each Load Serving Entity and Generator Operator shall coordinate (where confidentiality agreements allow) its current-day, next-day, and seasonal operations with its Host Balancing Authority and Transmission Service Provider. Each Balancing Authority and Transmission Service Provider shall coordinate its current-day, next-day, and seasonal operations with its Transmission Operator. |
| R3 - Resolution | <p>For all but the Transmission Service Provider, proposed TOP-003-2 requires the transfer of any and all data required for Real-time operations or Operational Planning Analyses regardless of timeframe involved. That makes this requirement redundant and it can be deleted.</p> <p>The Transmission Service Provider provisions are deleted due to:</p> <ul style="list-style-type: none"> • Proposed MOD-001-1a, Requirement R1: Transmission Operators select transfer capability methodology from proposed MOD-028, -029, or -030. • Proposed MOD-030, Requirement R3: Transmission Operator gives transmission model updated at least once per day to Transmission Service Provider • Proposed MOD-001-1a, Requirement R2: Transmission Service Providers use the methodology designated in proposed MOD-001-1a, Requirement R1 by the Transmission Operator. |
| R4 - Existing | Each Balancing Authority and Transmission Operator shall coordinate (where confidentiality agreements allow) its current-day, next-day, and seasonal planning and operations with neighboring Balancing Authorities and Transmission Operators and with its Reliability Coordinator, so that normal Interconnection operation will proceed in an orderly and consistent manner. |
| R4 - Resolution | <p>Proposed TOP-003-2 requires the transfer of any and all data required for Real-time operations or Operational Planning Analyses between and amongst Balancing Authorities and Transmission Operators regardless of timeframe involved. That makes this requirement redundant and it can be deleted for Balancing Authorities and Transmission Operators.</p> <p>Data requirements for Reliability Coordinators are covered in approved IRO-010-1, Requirement R3 making this requirement redundant for Reliability Coordinators so the Reliability Coordinator has been removed.</p> |
| R5 - Existing | Each Balancing Authority and Transmission Operator shall plan to |

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| | <p>meet scheduled system configuration, generation dispatch, interchange scheduling and demand patterns.</p> |
| R5 - Resolution | <p>The Balancing Authority is covered by approved BAL-001-0.1a and thus can be deleted.</p> <p>The Functional Model requires a Balancing Authority to operate under the direction of the Transmission Operator for such matters. It is also a basic tenet of operations and good standards that only one entity should be ‘in charge’. The Balancing Authority can only work within the constraints handed down by the Transmission Operator. Any needed coordination issues are built in to the Functional Model. Therefore, the Transmission Operator should be doing the plan and passing it down to the Balancing Authority.</p> <p>The Balancing Authority gets any needed data to the Transmission Operator through the data specification requirements in proposed TOP-003-2.</p> <p>Transmission Operator - replaced by proposed TOP-002-3, Requirement R1.</p> |
| R6 - Existing | <p>Each Balancing Authority and Transmission Operator shall plan to meet unscheduled changes in system configuration and generation dispatch (at a minimum N-1 Contingency planning) in accordance with NERC, Regional Reliability Organization, subregional, and local reliability requirements.</p> |
| R6 - Resolution | <p>The Balancing Authority is covered by approved BAL-002-0 and proposed BAL-002-1, Requirements R2 through R4 and approved EOP-002-2.1 and the proposed EOP-002-3, Requirement R6 and thus can be deleted.</p> <p>The Functional Model requires a Balancing Authority to operate under the direction of the Transmission Operator for such matters. It is also a basic tenet of operations and good standards that only one entity should be ‘in charge’. The Balancing Authority can only work within the constraints handed down by the Transmission Operator. Any needed coordination issues are built in to the Functional Model. Therefore, the Transmission Operator should be doing the plan and passing it down to the Balancing Authority.</p> <p>The Balancing Authority gets any needed data to the Transmission Operator through the data specification requirements in proposed TOP-003-2.</p> <p>Transmission Operator - replaced by proposed TOP-002-3, Requirement R1. The n-1 contingency planning is ‘built in’ to the Operational Planning Analysis since SOLs are derived according to FAC-010-2.1, FAC-011-2, and FAC-014-2 which includes contingency planning.</p> <p>The SDT does not believe that there is a need for the last part of the</p> |

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| | <p>sentence ‘in accordance with...’ with the advent of the ERO and enforceable reliability standards.</p> <p>As stated in the NERC Functional Model V5: “ the Balancing Authority’s mission is to maintain the balance between loads and resources in real time within its Balancing Authority Area by keeping its actual interchange equal to its scheduled interchange and meeting its frequency bias obligation.” To this end and in accordance with approved NERC Reliability Standards BAL-001-0.1a and BAL-002-0 (and the proposed BAL-002-1), Balancing Authorities are required to meet all control performance and disturbance recovery criteria for any system condition. Balancing Authorities are not responsible for the operation of the transmission system. The Transmission Operator is responsible for the real-time operating reliability of the transmission assets under its purview, and as such has the authority to issue reliability-related directives to entities within its Transmission Operator Area. Balancing Authorities are required to implement directives received from the Transmission Operator or the Reliability Coordinator regarding load, generation and interchange for transmission concerns both predicted (e.g., through Unit Commitment) and actual (e.g., through re-dispatch, Interchange modifications or load shedding). If the Balancing Authorities’ actions do not resolve the transmission issues, it is the Transmission Operators’ or Reliability Coordinators’ responsibility to direct alternative actions.</p> |
| R7 - Existing | Each Balancing Authority shall plan to meet capacity and energy reserve requirements, including the deliverability/capability for any single Contingency. |
| R7 - Resolution | <p>The Balancing Authority is required to always plan to meet and recover from Contingency events as stated in approved BAL-002-0 and the proposed BAL-002-1, Requirement R2 and therefore this requirement is redundant and can be deleted.</p> <p>Deliverability is not in the control of the Balancing Authority; it is a Transmission Operator responsibility and is covered in proposed TOP-002-3, Requirement R1. Operational Planning Analysis includes deliverability considerations since any deliverability problems will appear as limit violations in the analysis.</p> |
| R8 - Existing | Each Balancing Authority shall plan to meet voltage and/or reactive limits, including the deliverability/capability for any single contingency. |
| R8 - Resolution | <p>The Balancing Authority must be told by the Transmission Operator to take actions regarding reactive power (see proposed TOP-001-2, Requirement R1) and thus this requirement can be deleted.</p> <p>Voltage and reactive are the responsibility of the Transmission Operator and are covered under approved VAR-001-1, Requirement R1.</p> <p>Deliverability is not in the control of the Balancing Authority; it is a Transmission Operator responsibility and is covered in proposed TOP-002-3, Requirement R1 since any deliverability problems will appear as limit violations in the analysis.</p> |

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| R9 - Existing | Each Balancing Authority shall plan to meet Interchange Schedules and ramps. |
| R9 - Resolution | This is covered in approved INT-003-2, Requirement R1 and is thus redundant and can be deleted. |
| R10 - Existing | Each Balancing Authority and Transmission Operator shall plan to meet all System Operating Limits (SOLs) and Interconnection Reliability Operating Limits (IROLs). |
| R10 - Resolution | <p>Balancing Authority - deleted as for transmission, the Balancing Authority is only responsible to respond to Reliability Directives as per the definition of Balancing Authority in the Glossary and thus this requirement is not applicable to the Balancing Authority. The SDT position is that SOLs and IROLs are limits for which the Balancing Authority may not have (and is not required to have) the ability to monitor or control. The Transmission Operator, who is required to monitor SOLs, instructs the Balancing Authority as to what to do in these situations.</p> <p>Transmission Operator - covered in proposed TOP-002-3, Requirement R1 (analysis of SOLs) & Requirement R2 (avoid IROLs).</p> <p>As stated in the NERC Functional Model V5, “the Balancing Authority’s mission is to maintain the balance between loads and resources in real time within its Balancing Authority Area by keeping its actual interchange equal to its scheduled interchange and meeting its frequency bias obligation”. The Balancing Authority does not possess the bulk power system information necessary to manage Transmission flows. Therefore, the Balancing Authority can only plan to meet SOLs and IROLs by responding to directions from the Transmission Operator, including scheduling and operating resources within the limits prescribed by the Transmission Operator.</p> |
| R11 - Existing | <p>The Transmission Operator shall perform seasonal, next-day, and current-day Bulk Electric System studies to determine SOLs. Neighboring Transmission Operators shall utilize identical SOLs for common facilities. The Transmission Operator shall update these Bulk Electric System studies as necessary to reflect current system conditions; and shall make the results of Bulk Electric System studies available to the Transmission Operators, Balancing Authorities (subject confidentiality requirements), and to its Reliability Coordinator.</p> |
| R11 - Resolution | <p>Deleted:</p> <p>First sentence – SOLs are determined through the FAC-011-2 and FAC-014-2 processes so this sentence is no longer required.</p> <p>Second sentence - proposed TOP-003-2 requires the transfer of any and all data required for Real-time operations or Operational Planning Analyses.</p> <p>Third sentence – ‘update... as necessary’ is ambiguous and the SDT believes that proposed TOP-003-2 better covers this, so this is redundant and can be deleted.</p> |
| R12 - Existing | The Transmission Service Provider shall include known SOLs or |

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| | IROLs within its area and neighboring areas in the determination of transfer capabilities, in accordance with filed tariffs and/or regional Total Transfer Capability and Available Transfer Capability calculation processes. |
| R12 - Resolution | Deleted as duplicative of proposed MOD-028-2 and MOD-029-2. |
| R13 - Existing | At the request of the Balancing Authority or Transmission Operator, a Generator Operator shall perform generating real and reactive capability verification that shall include, among other variables, weather, ambient air and water conditions, and fuel quality and quantity, and provide the results to the Balancing Authority or Transmission Operator operating personnel as requested. |
| R13 - Resolution | Deleted as duplicative of proposed MOD-024-1 and MOD-025-1. |
| R14 - Existing | Generator Operators shall, without any intentional time delay, notify their Balancing Authority and Transmission Operator of changes in capabilities and characteristics including but not limited to: 14.1 - Changes in real and reactive output capabilities. (Retired August 1, 2007) 14.2 - Changes in real output capabilities. (Effective August 1, 2007) 14.3 - Automatic Voltage Regulator status and mode setting. (Retired August 1, 2007) |
| R14 - Resolution | Deleted – duplicative of proposed TOP-003-2. |
| R15 - Existing | Generation Operators shall, at the request of the Balancing Authority or Transmission Operator, provide a forecast of expected real power output to assist in operations planning (e.g., a seven-day forecast of real output). |
| R15 - Resolution | Deleted – duplicative of proposed TOP-003-2. |
| R16 - Existing | Subject to standards of conduct and confidentiality agreements, Transmission Operators shall, without any intentional time delay, notify their Reliability Coordinator and Balancing Authority of changes in capabilities and characteristics including but not limited to: 16.1 - Changes in transmission facility status. 16.2 - Changes in transmission facility rating. |
| R16 - Resolution | Deleted – duplicative of proposed TOP-003-2 and approved IRO-010-1, Requirement R3. |
| R17 - Existing | Balancing Authorities and Transmission Operators shall, without any intentional time delay, communicate the information described in the requirements R1 to R16 above to their Reliability Coordinator. |
| R17 - Resolution | Deleted - duplicative of approved IRO-010-1, Requirement R3. |
| R18 - Existing | Neighboring Balancing Authorities, Transmission Operators, Generator Operators, Transmission Service Providers and Load Serving Entities shall use uniform line identifiers when referring to transmission facilities of an interconnected network. |
| R18 - Resolution | Deleted - this requirement adds no reliability benefit. Entities have existing processes that handle this issue. There has never been a documented case of the lack of uniform line identifiers contributing to a system reliability issue. This is an administrative item as seen in the |

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| | measure which simply requires a list of line identifiers. The SDT feels that the true reliability issue is not the name of a line but what is happening to it, pointing out the difficulty in assigning compliance responsibility for such a requirement, as well as the near impossibility of coming up with truly unique identifiers on a nation-wide basis. The bottom line is that this situation is handled by the operators as part of their normal responsibilities and no one is aware of a switching error caused by confusion over line identifiers. |
| R19 - Existing | Each Balancing Authority and Transmission Operator shall maintain accurate computer models utilized for analyzing and planning system operations. |
| R19 - Resolution | Deleted - This is part of an entity's certification and is no longer required in standards. Furthermore, accuracy is a relative term that would be difficult to measure and assess compliance with. What is accurate? All calculated line flows are within 5% of actual flows? What if 14,999 lines out of 15,000 had calculated line flows within 5% and the 15,000 th had a 6% error? Do we now call the model inaccurate and not rely on the results? How do you even define actual flows when meters have accuracy errors as well (i.e. no perfect meter exists)? |
| TOP-003-1 | |
| R1 - Existing | Generator Operators and Transmission Operators shall provide planned outage information. 1.1 - Each Generator Operator shall provide outage information daily to its Transmission Operator for scheduled generator outages planned for the next day (any foreseen outage of a generator greater than 50 MW). The Transmission Operator shall establish the outage reporting requirements. 1.2 - Each Transmission Operator shall provide outage information daily to its Reliability Coordinator, and to affected Balancing Authorities and Transmission Operators for scheduled generator and bulk transmission outages planned for the next day (any foreseen outage of a transmission line or transformer greater than 100 kV or generator greater than 50 MW) that may collectively cause or contribute to an SOL or IROL violation or a regional operating area limitation. The Reliability Coordinator shall establish the outage reporting requirements. 1.3 - Such information shall be available by 1200 Central Standard Time for the Eastern Interconnection and 1200 Pacific Standard Time for the Western Interconnection. |
| R1 - Resolution | Deleted as duplicative of proposed TOP-003-2. |
| R2 - Existing | Each Transmission Operator, Balancing Authority, and Generator Operator shall plan and coordinate scheduled outages of system voltage regulating equipment, such as automatic voltage regulators on generators, supplementary excitation control, synchronous condensers, shunt and series capacitors, reactors, etc., among affected Balancing Authorities and Transmission Operators as required. |
| R2 - Resolution | Proposed TOP-001-2, Requirement R5 requires the Transmission Operator to coordinate while proposed TOP-003-2 requires the Transmission Operator to identify the data it needs from the Balancing Authority to coordinate outages of voltage regulation equipment. Further, proposed TOP-003-2 requires the Balancing Authority to provide the data to the Transmission Operator that the Transmission |

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| | Operator identified it needs. |
| R3 - Existing | Each Transmission Operator, Balancing Authority, and Generator Operator shall plan and coordinate scheduled outages of telemetering and control equipment and associated communication channels between the affected areas. |
| R3 - Resolution | Retained as proposed TOP-001-2, Requirement R6. |
| R4 - Existing | Each Reliability Coordinator shall resolve any scheduling of potential reliability conflicts. |
| R4 - Resolution | Deleted – The proposed IRO-001-2, Requirement R2 and IRO-005-4, Requirement R1 give the Reliability Coordinator the authority to resolve the conflict. |
| TOP-004-2 | |
| R1 - Existing | Each Transmission Operator shall operate within the Interconnection Reliability Operating Limits (IROLs) and System Operating Limits (SOLs). |
| R1 - Resolution | Moved to proposed TOP-001-2, Requirements R7 and R9. |
| R2 - Existing | Each Transmission Operator shall operate so that instability, uncontrolled separation, or cascading outages will not occur as a result of the most severe single contingency. |
| R2 - Resolution | Moved to proposed TOP-001-2, Requirements R7 and R9. |
| R3 - Existing | Each Transmission Operator shall operate to protect against instability, uncontrolled separation, or cascading outages resulting from multiple outages, as specified by its Reliability Coordinator. |
| R3 - Resolution | Moved to proposed TOP-001-2, Requirements R7 and R9. These requirements are not limited by single or multiple Contingencies but are based solely on identified IROLs (and selected SOLs) regardless of how they were identified or whether they were identified by the Transmission Operator or Reliability Coordinator. |
| R4 - Existing | If a Transmission Operator enters an unknown operating state (i.e. any state for which valid operating limits have not been determined), it will be considered to be in an emergency and shall restore operations to respect proven reliable power system limits within 30 minutes. |
| R4 - Resolution | Deleted due to the fact that the SDT has determined a better way to handle such a situation is to treat it like an IROL or restoration scenario and to take the same type of actions that you would apply for alleviating those situations. Therefore, it is covered under proposed TOP-001-2, Requirements R7 and R9 and the approved EOP-006-2. This allows the operator sufficient flexibility within a structured environment to take the necessary actions for the reliability of the bulk power system. |
| R5 - Existing | Each Transmission Operator shall make every effort to remain connected to the Interconnection. If the Transmission Operator determines that by remaining interconnected, it is in imminent danger of violating an IROL or SOL, the Transmission Operator may take such actions, as it deems necessary, to protect its area. |
| R5 - Resolution | The Transmission Operator does not have the right to unilaterally separate – that can only be done through the authorization of the |

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| | Reliability Coordinator, thus this requirement is a moot point under the Functional Model definitions and can be deleted. |
| R6 - Existing | Transmission Operators, individually and jointly with other Transmission Operators, shall develop, maintain, and implement formal policies and procedures to provide for transmission reliability. These policies and procedures shall address the execution and coordination of activities that impact inter- and intra-Regional reliability, including: 6.1 - Monitoring and controlling voltage levels and real and reactive power flows. 6.2 - Switching transmission elements. 6.3 - Planned outages of transmission elements. 6.4 - Responding to IROL and SOL violations. |
| R6 - Resolution | <p>The first sentence was deleted as it has been superseded by the NERC Reliability Standards taken as a whole. Examples of such would be the proposed TOP-001-2.</p> <p>The second sentence was deleted as all of the sub-requirements are covered elsewhere:</p> <p>R6.1 is duplicative of approved VAR-001-1, Requirement R1 for reactive. Real power flows are covered in proposed TOP-001-2, Requirements R7 and R9.</p> <p>R6.2 is covered in proposed TOP-001-2, Requirement R5</p> <p>R6.3 – moved to proposed TOP-001-2, Requirement R5;</p> <p>R6.4 – moved to proposed TOP-001-2, Requirement R11.</p> |
| TOP-005-2 | |
| R1 - Existing | 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. 1.1 - Each Reliability Coordinator shall identify the data requirements from the list in Attachment 1-TOP-005-0 “Electric System Reliability Data” and any additional operating information requirements relating to operation of the bulk power system within the Reliability Coordinator Area. |
| R1 - Resolution | <p>Deleted – covered by proposed TOP-003-2. The SDT does not believe it is necessary to develop a minimum list of the data required. Such minimum lists could stifle creativity and innovations as they assume that data needs don’t change. For example, such a list now could not include phasor measurement data, as use of the data is still being explored and is not consistent across industry. However, phasor measurement data might obviate the need for other data in the minimum set. The effect is that resources would still be required to be utilized to gather and maintain the data that is outdated and no longer relevant. These resources would be better used supporting gathering the new data such as phasor measurement data.</p> <p>Furthermore, the NERC certification process provides certainty that the Transmission Operators are capable of identifying the necessary data to comply with the standards. Developing a minimum data set provides no more certainty that Transmission Operators will comply with the standards than having the capability determined in the certification</p> |

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| | process. |
| R2 - Existing | As a condition of receiving data from the Interregional Security Network (ISN), each ISN data recipient shall sign the NERC Confidentiality Agreement for “Electric System Reliability Data.” |
| R2 - Resolution | Confidentiality is not a reliability issue but a market or business issue. Since this is not a reliability issue, it does not belong in the Reliability Standards and can be deleted. |
| R3 - Existing | Upon request, each Balancing Authority and Transmission Operator shall provide to other Balancing Authorities and Transmission Operators with immediate responsibility for operational reliability, the operating data that are necessary to allow these Balancing Authorities and Transmission Operators to perform operational reliability assessments and to coordinate reliable operations. Balancing Authorities and Transmission Operators shall provide the types of data as listed in Attachment 1-TOP-005-0 “Electric System Reliability Data,” unless otherwise agreed to by the Balancing Authorities and Transmission Operators with immediate responsibility for operational reliability. |
| R3 - Resolution | Deleted as redundant with proposed TOP-003-2. |
| R4 - Existing | Each Purchasing-Selling Entity shall provide information as requested by its Host Balancing Authorities and Transmission Operators to enable them to conduct operational reliability assessments and coordinate reliable operations. |
| R4 - Resolution | Deleted as redundant to NAESB standard –All operating data that a Purchasing Selling Entity has that a Transmission Operator or Balancing Authority needs is part of eTag and is acquired through that system. |
| TOP-006-2 | |
| R1 - Existing | Each Transmission Operator and Balancing Authority shall know the status of all generation and transmission resources available for use. 1.1 - Each Generator Operator shall inform its Host Balancing Authority and the Transmission Operator of all generation resources available for use. 1.2 - Each Transmission Operator and Balancing Authority shall inform the Reliability Coordinator and other affected Balancing Authorities and Transmission Operators of all generation and transmission resources available for use. |
| R1 - Resolution | R1 & R1.1 - Deleted – covered as part of the data specification requirements in proposed TOP-003-2. R1.2 - Deleted – covered by approved IRO-010-1, Requirement R3. |
| R2 – Existing | Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall monitor applicable transmission line status, real and reactive power flows, voltage, load-tap-changer settings, and status of rotating and static reactive resources. |
| R2 - Resolution | Deleted – covered as part of the data specification requirements in proposed TOP-003-2 for the Transmission Operator & Balancing Authority. The Reliability Coordinator is covered by approved IRO-010-1, |

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| | Requirement R3 and thus can be removed here. |
| R3 - Existing | Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall provide appropriate technical information concerning protective relays to their operating personnel. |
| R3 - Resolution | Deleted – as duplicative of PER-005-1 (training) and proposed TOP-003-2 (data). |
| R4 - Existing | Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall have information, including weather forecasts and past load patterns, available to predict the system’s near-term load pattern. |
| R4 - Resolution | Deleted – covered as part of the data specification requirements in proposed TOP-003-2 and the requirements to respect SOLs in the proposed TOP-001-2. Balancing Authority’s must forecast their area’s Load to meet control performance standards making this requirement redundant for Balancing Authority’s. |
| R5 - Existing | Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall use monitoring equipment to bring to the attention of operating personnel important deviations in operating conditions and to indicate, if appropriate, the need for corrective action. |
| R5 - Resolution | Deleted – covered in certification process for initial core capabilities. Entities will be in violation of other standards if they don’t maintain their initial certification. For example, approved BAL-005-0.1b for ACE calculations (Balancing Authority); proposed TOP-001-2, for Transmission Operator avoiding IROLs; approved IRO-008-1, Requirement R2 for real-time assessments every 30 minutes for Reliability Coordinators. |
| R6 - Existing | Each Balancing Authority and Transmission Operator shall use sufficient metering of suitable range, accuracy and sampling rate (if applicable) to ensure accurate and timely monitoring of operating conditions under both normal and emergency situations. |
| R6 - Resolution | Deleted – covered in certification process for initial core capabilities. Entities will be in violation of other standards if they don’t maintain their initial certification. For example, approved BAL-005-0.1b for ACE calculations (Balancing Authority); proposed TOP-001-2, for Transmission Operator avoiding IROLs. |
| R7 - Existing | Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall monitor system frequency. |
| R7 - Resolution | Deleted – covered in certification process for initial core capabilities. Entities will be in violation of other standards if they don’t maintain their initial certification. For example, approved BAL-005-0.1b for ACE calculations (Balancing Authority); approved EOP-003-1, for Transmission Operator avoiding underfrequency; approved EOP-006-2, Requirement R8 for resynchronization for Reliability Coordinators. |
| TOP-007-0 | |
| R1 - Existing | A Transmission Operator shall inform its Reliability Coordinator when an IROL or SOL has been exceeded and the actions being taken to return the system to within limits. |
| R1 - Resolution | Moved to proposed TOP-001-2, Requirement R10. |
| R2 - Existing | Following a Contingency or other event that results in an IROL violation, the Transmission Operator shall return its transmission |

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| | system to within IROL as soon as possible, but not longer than 30 minutes. |
| R2 - Resolution | Moved to proposed TOP-001-2, Requirement R7 |
| R3 - Existing | A Transmission Operator shall take all appropriate actions up to and including shedding firm load, or directing the shedding of firm load, in order to comply with Requirement R2. |
| R3 - Resolution | Deleted - Covered in approved EOP-003-1, Requirements R1 And proposed EOP-003-2, Requirement R1, and proposed TOP-001-2, Requirement R11. |
| R4 - Existing | The Reliability Coordinator shall evaluate actions taken to address an IROL or SOL violation and, if the actions taken are not appropriate or sufficient, direct actions required to return the system to within limits. |
| R4 - Resolution | Deleted as duplicative of approved IRO-008-1, Requirement R3 and IRO-002-2, Requirement R5. |
| TOP-008-1 | |
| R1 - Existing | The Transmission Operator experiencing or contributing to an IROL or SOL violation shall take immediate steps to relieve the condition, which may include shedding firm load. |
| R1 - Resolution | Deleted – as duplicative of EOP-003-1, Requirements R1 and proposed TOP-001-2, Requirement R11. |
| R2 - Existing | Each Transmission Operator shall operate to prevent the likelihood that a disturbance, action, or inaction will result in an IROL or SOL violation in its area or another area of the Interconnection. In instances where there is a difference in derived operating limits, the Transmission Operator shall always operate the Bulk Electric System to the most limiting parameter. |
| R2 - Resolution | First sentence - Deleted as duplicative of proposed TOP-001-2, Requirements R7 and R9. Second sentence – deleted as this is now handled by the Reliability Coordinator as cited in approved IRO-009-1, Requirement R5. |
| R3 - Existing | The Transmission Operator shall disconnect the affected facility if the overload on a transmission facility or abnormal voltage or reactive condition persists and equipment is endangered. In doing so, the Transmission Operator shall notify its Reliability Coordinator and all neighboring Transmission Operators impacted by the disconnection prior to switching, if time permits, otherwise, immediately thereafter. |
| R3 - Resolution | Delete first sentence – Placing this procedure in a requirement when it is only one of the possible options for alleviating the condition is bad practice and should not be mandated in standards. The SDT reaffirms that a standard should not be mandating disconnection. This is in conflict with other Reliability Standards where disconnection is dependent on System conditions and coordination with other functional entities. Such actions, taken unilaterally, could make conditions worse. Delete second sentence – no longer needed as first sentence was deleted. |
| R4 - Existing | The Transmission Operator shall have sufficient information and analysis tools to determine the cause(s) of SOL violations. This |

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| | analysis shall be conducted in all operating timeframes. The Transmission Operator shall use the results of these analyses to immediately mitigate the SOL violation. |
| R4 - Resolution | Deleted – information is covered as part of the data specification requirements in proposed TOP-003-2. Analysis tools are covered in the certification process for initial core capabilities. The Transmission Operator will be in violation of other standards if they don't maintain their initial certification. For example, they can't develop their limits without maintaining their tools. Operational Planning Analyses are required in proposed TOP-002-3 while real-time analysis is required for IROL mitigation in proposed TOP-001-2 thus covering the operational timeframes. Proposed TOP-001-2, R11 covers mitigation of limit violations. |
| PER-001-0 | |
| R1 - Existing | Each Transmission Operator and Balancing Authority shall provide operating personnel with the responsibility and authority to implement real-time actions to ensure the stable and reliable operation of the Bulk Electric System. |
| R1 - Resolution | Deleted - In FERC Order 693a, paragraph 112, the Commission clarifies that a Reliability Coordinator's authority to issue directives arises out of the Commission's approval of Reliability Standards that mandate compliance with such directives. The SDT reasonably applied this same logic to Transmission Operators and Balancing Authorities and that makes this requirement superfluous and thus it can be deleted. |