

DRAFT Reliability Standard Audit Worksheet¹

TOP-001-6 – Transmission Operations

This section to be completed by the Compliance Enforcement Authority.

Audit ID:	Audit ID if available; or REG-NCRnnnnn-YYYYMMDD
Registered Entity:	Registered name of entity being audited
NCR Number:	NCRnnnnn
Compliance Enforcement Authority:	Region or NERC performing audit
Compliance Assessment Date(s)²:	Month DD, YYYY, to Month DD, YYYY
Compliance Monitoring Method:	[On-site Audit Off-site Audit Spot Check]
Names of Auditors:	Supplied by CEA

¹ NERC developed this Reliability Standard Audit Worksheet (RSAW) language in order to facilitate NERC's and the Regional Entities' assessment of a registered entity's compliance with this Reliability Standard. The NERC RSAW language is written to specific versions of each NERC Reliability Standard. Entities using this RSAW should choose the version of the RSAW applicable to the Reliability Standard being assessed. While the information included in this RSAW provides some of the methodology that NERC has elected to use to assess compliance with the requirements of the Reliability Standard, this document should not be treated as a substitute for the Reliability Standard or viewed as additional Reliability Standard requirements. In all cases, the Regional Entity should rely on the language contained in the Reliability Standard itself, and not on the language contained in this RSAW, to determine compliance with the Reliability Standard. NERC's Reliability Standards can be found on NERC's website. Additionally, NERC Reliability Standards are updated frequently, and this RSAW may not necessarily be updated with the same frequency. Therefore, it is imperative that entities treat this RSAW as a reference document only, and not as a substitute or replacement for the Reliability Standard. It is the responsibility of the registered entity to verify its compliance with the latest approved version of the Reliability Standards, by the applicable governmental authority, relevant to its registration status.

The RSAW may provide a non-exclusive list, for informational purposes only, of examples of the types of evidence a registered entity may produce or may be asked to produce to demonstrate compliance with the Reliability Standard. A registered entity's adherence to the examples contained within this RSAW does not necessarily constitute compliance with the applicable Reliability Standard, and NERC and the Regional Entity using this RSAW reserve the right to request additional evidence from the registered entity that is not included in this RSAW. This RSAW may include excerpts from FERC Orders and other regulatory references which are provided for ease of reference only, and this document does not necessarily include all applicable Order provisions. In the event of a discrepancy between FERC Orders, and the language included in this document, FERC Orders shall prevail.

² Compliance Assessment Date(s): The date(s) the actual compliance assessment (on-site audit, off-site spot check, etc.) occurs.

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Applicability of Requirements

	BA	DP	GO	GOP	PA/PC	RC	RP	RSG	TO	TOP	TP	TSP
R1										X		
R2	X											
R3	X	X		X								
R4	X	X		X								
R5		X		X						X		
R6		X		X						X		
R7										X		
R8										X		
R9	X									X		
R10										X		
R11	X											
R12										X		
R13										X		
R14										X		
R15										X		
R16										X		
R17	X											
R18										X		
R19												
R20										X		
R21										X		
R22												
R23	X											
R24	X											
R25										X		

Legend:

Text with blue background:	Fixed text – do not edit
Text entry area with Green background:	Entity-supplied information
Text entry area with white background:	Auditor-supplied information

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Findings

(This section to be completed by the Compliance Enforcement Authority)

Req.	Finding	Summary and Documentation	Functions Monitored
R1			
R2			
R3			
R4			
R5			
R6			
R7			
R8			
R9			
R10			
R11			
R12			
R13			
R14			
R15			
R16			
R17			
R18			
R19			
R20			
R21			
R22			
R23			
R24			

Req.	Areas of Concern

Req.	Recommendations

Req.	Positive Observations

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Subject Matter Experts

Identify the Subject Matter Expert(s) responsible for this Reliability Standard.

Registered Entity Response **(Required; Insert additional rows if needed):**

SME Name	Title	Organization	Requirement(s)

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R1 Supporting Evidence and Documentation

- R1.** Each Transmission Operator shall act to maintain the reliability of its Transmission Operator Area via its own actions or by issuing Operating Instructions.
- M1.** Each Transmission Operator shall have and provide evidence which may include but is not limited to dated operator logs, dated records, dated and time-stamped voice recordings or dated transcripts of voice recordings, electronic communications, or equivalent documentation, that will be used to determine that it acted to maintain the reliability of its Transmission Operator Area via its own actions or by issuing Operating Instructions.

Compliance Narrative (Required):

Provide a brief explanation, in your own words, of how you comply with this Requirement. References to supplied evidence, including links to the appropriate page, are recommended.

Evidence Requested: Error! Bookmark not defined.

Provide the following evidence, or other evidence to demonstrate compliance.
Evidence, which may include, but is not limited to, operator logs, dated records, dated and time-stamped voice recordings or dated transcripts of voice recordings, electronic communications, or equivalent documentation that the Transmission Operator acted, or issued Operating Instructions, to maintain reliability within its Transmission Operator Area.

Registered Entity Evidence (Required):

The following information is requested for each document submitted as evidence. Also, evidence submitted should be highlighted and bookmarked, as appropriate, to identify the exact location where evidence of compliance may be found.

File Name	Document Title	Revision or Version	Document Date	Relevant Page(s) or Section(s)	Description of Applicability of Document

Audit Team Evidence Reviewed (This section to be completed by the Compliance Enforcement Authority):

Compliance Assessment Approach Specific to TOP-001-6, R1

This section to be completed by the Compliance Enforcement Authority

	(R1) For an auditor selected sample of operating conditions that required action to maintain reliability,
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	review evidence and verify the entity acted, or issued Operating Instructions, to maintain the reliability of its Transmission Operator Area.
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Note to Auditor:

Auditor Notes:

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R2 Supporting Evidence and Documentation

- R2.** Each Balancing Authority shall act to maintain the reliability of its Balancing Authority Area via its own actions or by issuing Operating Instructions.
- M2.** Each Balancing Authority shall have and provide evidence which may include but is not limited to dated operator logs, dated records, dated and time-stamped voice recordings or dated transcripts of voice recordings, electronic communications, or equivalent documentation, that will be used to determine that it acted to maintain the reliability of its Balancing Authority Area via its own actions or by issuing Operating Instructions

Compliance Narrative (Required):

Provide a brief explanation, in your own words, of how you comply with this Requirement. References to supplied evidence, including links to the appropriate page, are recommended.

Evidence Requested: Error! Bookmark not defined.

Provide the following evidence, or other evidence to demonstrate compliance.

Evidence which may include, but is not limited to, dated operator logs, dated records, dated and time-stamped voice recordings or dated transcripts of voice recordings, electronic communications, or equivalent documentation, that the entity acted, or issued Operating Instructions, to maintain reliability within its Balancing Authority Area.

Registered Entity Evidence (Required):

The following information is requested for each document submitted as evidence. Also, evidence submitted should be highlighted and bookmarked, as appropriate, to identify the exact location where evidence of compliance may be found.

File Name	Document Title	Revision or Version	Document Date	Relevant Page(s) or Section(s)	Description of Applicability of Document

Audit Team Evidence Reviewed (This section to be completed by the Compliance Enforcement Authority):

Compliance Assessment Approach Specific to TOP-001-6, R2

This section to be completed by the Compliance Enforcement Authority

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(R2) For an auditor selected sample of operating conditions that required action to maintain reliability, review evidence and verify the entity acted, or issued Operating Instructions to maintain the reliability of its Balancing Authority Area.

Note to Auditor:

Auditor Notes:

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R3 Supporting Evidence and Documentation

- R3.** Each Balancing Authority, Generator Operator, and Distribution Provider shall comply with each Operating Instruction issued by its Transmission Operator(s), unless such action cannot be physically implemented or it would violate safety, equipment, regulatory, or statutory requirements.
- M3.** Each Balancing Authority, Generator Operator, and Distribution Provider shall make available upon request, evidence that it complied with each Operating Instruction issued by the Transmission Operator(s) unless such action could not be physically implemented or it would have violated safety, equipment, regulatory, or statutory requirements. Such evidence could include but is not limited to dated operator logs, voice recordings or transcripts of voice recordings, electronic communications, or other equivalent evidence in electronic or hard copy format. In such cases, the Balancing Authority, Generator Operator, and Distribution Provider shall have and provide copies of the safety, equipment, regulatory, or statutory requirements as evidence for not complying with the Transmission Operator’s Operating Instruction. If such a situation has not occurred, the Balancing Authority, Generator Operator, or Distribution Provider may provide an attestation.

Compliance Narrative (Required):

Provide a brief explanation, in your own words, of how you comply with this Requirement. References to supplied evidence, including links to the appropriate page, are recommended.

Evidence Requested: .Error! Bookmark not defined.

Provide the following evidence, or other evidence to demonstrate compliance.
Evidence demonstrating the entity complied with each Operating Instruction issued by its Transmission Operator(s), unless such action could not be physically implemented or would have violated safety, equipment, regulatory, or statutory requirements.
If applicable, evidence demonstrating why the entity did not comply with the Transmission Operator’s Operating Instruction.

Registered Entity Evidence (Required):

The following information is requested for each document submitted as evidence. Also, evidence submitted should be highlighted and bookmarked, as appropriate, to identify the exact location where evidence of compliance may be found.					
File Name	Document Title	Revision or Version	Document Date	Relevant Page(s) or Section(s)	Description of Applicability of Document

Audit Team Evidence Reviewed (This section to be completed by the Compliance Enforcement Authority):

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Compliance Assessment Approach Specific to TOP-001-6, R3

This section to be completed by the Compliance Enforcement Authority

(R3) For all, or a sample of Operating Instructions selected by the auditor, review evidence and verify the entity complied with Operating Instructions issued by its Transmission Operator(s) unless such action could not be physically implemented or it would have violated safety, equipment, regulatory, or statutory requirements.

Note to Auditor:

Auditor Notes:

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R4 Supporting Evidence and Documentation

- R4.** Each Balancing Authority, Generator Operator, and Distribution Provider shall inform its Transmission Operator of its inability to comply with an Operating Instruction issued by its Transmission Operator.
- M4.** Each Balancing Authority, Generator Operator, and Distribution Provider shall make available upon request, evidence which may include but is not limited to dated operator logs, voice recordings or transcripts of voice recordings, electronic communications, or equivalent evidence in electronic or hard copy format, that it informed its Transmission Operator of its inability to comply with its Operating Instruction issued. If such a situation has not occurred, the Balancing Authority, Generator Operator, or Distribution Provider may provide an attestation.

Registered Entity Response (Required):

Question: Did the entity receive an Operating Instruction from a Transmission Operator where compliance with the Operating Instruction could not be physically implemented or such actions would violate safety, equipment, regulatory, or statutory requirements during the audit period?

Yes No

If Yes, provide a list of Operating Instructions received from a Transmission Operator that could not be implemented and evidence of compliance with Requirement R4. If No, describe how this was determined in the narrative section below.

[Note: A separate spreadsheet or other document may be used. If so, provide the document reference below.]

Compliance Narrative (Required):

Provide a brief explanation, in your own words, of how you comply with this Requirement. References to supplied evidence, including links to the appropriate page, are recommended.

Evidence Requested: Error! Bookmark not defined.

Provide the following evidence, or other evidence to demonstrate compliance.

Evidence demonstrating the entity informed its Transmission Operator of its inability to comply with its Operating Instruction, if the entity was unable to comply with the Operating Instruction.

Registered Entity Evidence (Required):

The following information is requested for each document submitted as evidence. Also, evidence submitted should be highlighted and bookmarked, as appropriate, to identify the exact location where evidence of compliance may be found.

File Name	Document Title	Revision or Version	Document Date	Relevant Page(s) or Section(s)	Description of Applicability of Document

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Audit Team Evidence Reviewed (This section to be completed by the Compliance Enforcement Authority):

Compliance Assessment Approach Specific to TOP-001-6, R4

This section to be completed by the Compliance Enforcement Authority

<input type="checkbox"/>	(R4) If the entity was unable to comply with the Operating Instruction(s), verify the entity informed the Transmission Operator(s) that it could not comply.
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Note to Auditor:

Auditor Notes:

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R5 Supporting Evidence and Documentation

- R5.** Each Transmission Operator, Generator Operator, and Distribution Provider shall comply with each Operating Instruction issued by its Balancing Authority, unless such action cannot be physically implemented or it would violate safety, equipment, regulatory, or statutory requirements.
- M5.** Each Transmission Operator, Generator Operator, and Distribution Provider shall make available upon request, evidence that it complied with each Operating Instruction issued by the Balancing Authority(s) unless such action could not be physically implemented or it would have violated safety, equipment, regulatory, or statutory requirements. Such evidence could include but is not limited to dated operator logs, voice recordings or transcripts of voice recordings, electronic communications, or other equivalent evidence in electronic or hard copy format. In such cases, the Transmission Operator, Generator Operator, and Distribution Provider shall have and provide copies of the safety, equipment, regulatory, or statutory requirements as evidence for not complying with the Balancing Authority’s Operating Instruction. If such a situation has not occurred, the Transmission Operator, Generator Operator, or Distribution Provider may provide an attestation.

Compliance Narrative (Required):

Provide a brief explanation, in your own words, of how you comply with this Requirement. References to supplied evidence, including links to the appropriate page, are recommended.

Evidence Requested: Error! Bookmark not defined.

Provide the following evidence, or other evidence to demonstrate compliance.
Evidence demonstrating that the entity complied with each Operating Instruction issued by its Balancing Authority, unless such action could not be physically implemented or it would have violated safety, equipment, regulatory, or statutory requirements.
If applicable, evidence demonstrating why the entity did not comply with the Balancing Authority’s Operating Instruction.

Registered Entity Evidence (Required):

The following information is requested for each document submitted as evidence. Also, evidence submitted should be highlighted and bookmarked, as appropriate, to identify the exact location where evidence of compliance may be found.

File Name	Document Title	Revision or Version	Document Date	Relevant Page(s) or Section(s)	Description of Applicability of Document

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Audit Team Evidence Reviewed (This section to be completed by the Compliance Enforcement Authority):

Compliance Assessment Approach Specific to TOP-001-6, R5

This section to be completed by the Compliance Enforcement Authority

(R5) For all, or a sample of Operating Instructions selected by the auditor, review evidence and verify the entity complied with Operating Instructions issued by its Balancing Authority, unless such action could not be physically implemented or it would have violated safety, equipment, regulatory, or statutory requirements.

Note to Auditor:

Auditor Notes:

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R6 Supporting Evidence and Documentation

- R6.** Each Transmission Operator, Generator Operator, and Distribution Provider shall inform its Balancing Authority of its inability to comply with an Operating Instruction issued by its Balancing Authority.
- M6.** Each Transmission Operator, Generator Operator, and Distribution Provider shall make available upon request, evidence which may include but is not limited to dated operator logs, voice recordings or transcripts of voice recordings, electronic communications, or equivalent evidence in electronic or hard copy format, that it informed its Balancing Authority of its inability to comply with its Operating Instruction. If such a situation has not occurred, the Transmission Operator, Generator Operator, or Distribution Provider may provide an attestation.

Registered Entity Response (Required):

Question: Did the entity receive an Operating Instruction from its Balancing Authority where compliance with the Operating Instruction could not be physically implemented or such actions would have violated safety, equipment, regulatory, or statutory requirements during the audit period?

Yes No

Yes, provide a list of Operating Instructions received from a Balancing Authority that could not be implemented and evidence of compliance with Requirement R6. If No, describe how this was determined in the narrative section below.

[Note: A separate spreadsheet or other document may be used. If so, provide the document reference below.]

Compliance Narrative (Required):

Provide a brief explanation, in your own words, of how you comply with this Requirement. References to supplied evidence, including links to the appropriate page, are recommended.

Evidence Requested: Error! Bookmark not defined.

Provide the following evidence, or other evidence to demonstrate compliance.

Evidence demonstrating that an entity informed its Balancing Authority of its inability to comply with its Operating Instruction, if the entity was unable to comply with the Operating Instruction.

Registered Entity Evidence (Required):

The following information is requested for each document submitted as evidence. Also, evidence submitted should be highlighted and bookmarked, as appropriate, to identify the exact location where evidence of compliance may be found.

File Name	Document Title	Revision or Version	Document Date	Relevant Page(s) or Section(s)	Description of Applicability of Document

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Audit Team Evidence Reviewed (This section to be completed by the Compliance Enforcement Authority):

Compliance Assessment Approach Specific to TOP-001-6, R6

This section to be completed by the Compliance Enforcement Authority

	(R6) If the entity was unable to comply with the Operating Instruction(s), verify the entity informed its Balancing Authority that it could not comply.
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Note to Auditor:

Auditor Notes:

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R7 Supporting Evidence and Documentation

- R7.** Each Transmission Operator shall assist other Transmission Operators within its Reliability Coordinator Area, if requested and able, provided that the requesting Transmission Operator has implemented its comparable Emergency procedures, unless such assistance cannot be physically implemented or would violate safety, equipment, regulatory, or statutory requirements.
- M7.** Each Transmission Operator shall make available upon request, evidence that comparable requested assistance, if able, was provided to other Transmission Operators within its Reliability Coordinator Area unless such assistance could not be physically implemented or would have violated safety, equipment, regulatory, or statutory requirements. Such evidence could include but is not limited to dated operator logs, voice recordings or transcripts of voice recordings, electronic communications, or other equivalent evidence in electronic or hard copy format. If no request for assistance was received, the Transmission Operator may provide an attestation.

Registered Entity Response (Required):

Question: Did the entity receive a request to provide assistance to another Transmission Operator during the audit period?

Yes No

If Yes, provide a list such requests and state if the assistance was provided. If assistance was not provided, state the reasons such assistance was not provided. If No, describe how this was determined in the narrative section below.

[Note: A separate spreadsheet or other document may be used. If so, provide the document reference below.]

Compliance Narrative (Required):

Provide a brief explanation, in your own words, of how you comply with this Requirement. References to supplied evidence, including links to the appropriate page, are recommended.

Evidence Requested: Error! Bookmark not defined.

Provide the following evidence, or other evidence to demonstrate compliance.

Evidence that comparable requested assistance, if able, was provided to other Transmission Operators within its Reliability Coordinator Area unless such assistance could not be physically implemented or would have violated safety, equipment, regulatory, or statutory requirements. If no request for assistance was received, an attestation may be provided.

Registered Entity Evidence (Required):

The following information is requested for each document submitted as evidence. Also, evidence submitted should be highlighted and bookmarked, as appropriate, to identify the exact location where evidence of compliance may be found.

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Audit Team Evidence Reviewed (This section to be completed by the Compliance Enforcement Authority):

Compliance Assessment Approach Specific to TOP-001-6, R7

This section to be completed by the Compliance Enforcement Authority

	(R7) For all, or a sample of requests for assistance selected by the auditor, review evidence and verify the entity assisted other Transmission Operators, if requested and able, in accordance with Requirement R7.
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Note to Auditor:

Auditor Notes:

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R8 Supporting Evidence and Documentation

- R8.** Each Transmission Operator shall inform its Reliability Coordinator, known impacted Balancing Authorities, and known impacted Transmission Operators of its actual or expected operations that result in, or could result in, an Emergency.
- M8.** Each Transmission Operator shall make available upon request, evidence that it informed its Reliability Coordinator, known impacted Balancing Authorities, and known impacted Transmission Operators of its actual or expected operations that result in, or could result in, an Emergency. Such evidence could include but is not limited to dated operator logs, voice recordings or transcripts of voice recordings, electronic communications, or other equivalent evidence. If no such situations have occurred, the Transmission Operator may provide an attestation.

Registered Entity Response (Required):

Question: Did the entity encounter any actual or expected operations that could have resulted in an Emergency, or that did result in an Emergency, during the audit period?

Yes No

If Yes, provide a list of such instances and evidence of compliance. If No, describe how this was determined in the narrative section below.

[Note: A separate spreadsheet or other document may be used. If so, provide the document reference below.]

Compliance Narrative (Required):

Provide a brief explanation, in your own words, of how you comply with this Requirement. References to supplied evidence, including links to the appropriate page, are recommended.

Evidence Requested: Error! Bookmark not defined.

Provide the following evidence, or other evidence to demonstrate compliance.

Evidence to demonstrate the entity informed its Reliability Coordinator, known impacted Balancing Authorities, and known impacted Transmission Operators of the actual or expected operations that result in, or could result in, an Emergency.

Registered Entity Evidence (Required):

The following information is requested for each document submitted as evidence. Also, evidence submitted should be highlighted and bookmarked, as appropriate, to identify the exact location where evidence of compliance may be found.

File Name	Document Title	Revision or Version	Document Date	Relevant Page(s)	Description of Applicability of Document
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				or Section(s)	

Audit Team Evidence Reviewed (This section to be completed by the Compliance Enforcement Authority):

Compliance Assessment Approach Specific to TOP-001-6, R8

This section to be completed by the Compliance Enforcement Authority

	(R8) Obtain a list of dates and times when the entity experienced actual or expected operations that resulted in, or could have resulted in, an Emergency.
	(R8) For all, or a sample of actual or expected operations that resulted in, or could have resulted in, an Emergency, review evidence to verify the entity informed its Reliability Coordinator, known impacted Balancing Authorities, and known impacted Transmission Operators.

Note to Auditor:

Auditor Notes:

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R9 Supporting Evidence and Documentation

- 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.
- M9.** Each Balancing Authority and Transmission Operator shall make available upon request, evidence that it notified 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. Such evidence could include but is not limited to dated operator logs, voice recordings or transcripts of voice recordings, electronic communications, or other equivalent evidence. If such a situation has not occurred, the Balancing Authority or Transmission Operator may provide an attestation.

Compliance Narrative (Required):

Provide a brief explanation, in your own words, of how you comply with this Requirement. References to supplied evidence, including links to the appropriate page, are recommended.

Evidence Requested: Error! Bookmark not defined.

Provide the following evidence, or other evidence to demonstrate compliance.
A list 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.
Evidence that demonstrates that the entity notified its Reliability Coordinator and impacted interconnected entities of all planned outages, and unplanned outages of 30 minutes or more, for telemetering and control equipment, telecommunication equipment, monitoring and assessment capabilities, and associated communication channels between affected entities.

Registered Entity Evidence (Required):

The following information is requested for each document submitted as evidence. Also, evidence submitted should be highlighted and bookmarked, as appropriate, to identify the exact location where evidence of compliance may be found.					
File Name	Document Title	Revision or Version	Document Date	Relevant Page(s) or Section(s)	Description of Applicability of Document

Audit Team Evidence Reviewed (This section to be completed by the Compliance Enforcement Authority):

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Compliance Assessment Approach Specific to TOP-001-6, R9

This section to be completed by the Compliance Enforcement Authority

(R9) For all, or a sample of outages selected by the auditor, review evidence and verify the entity notified its Reliability Coordinator and 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..

Note to Auditor:

Auditor Notes:

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R10 Supporting Evidence and Documentation

R10. Each Transmission Operator shall perform the following for determining System Operating Limit (SOL) exceedances within its Transmission Operator Area:

- 10.1.** Monitor Facilities within its Transmission Operator Area;
- 10.2.** Monitor the status of Remedial Action Schemes within its Transmission Operator Area;
- 10.3.** Monitor non-BES facilities within its Transmission Operator Area identified as necessary by the Transmission Operator;
- 10.4.** Obtain and utilize status, voltages, and flow data for Facilities outside its Transmission Operator Area identified as necessary by the Transmission Operator;
- 10.5.** Obtain and utilize the status of Remedial Action Schemes outside its Transmission Operator Area identified as necessary by the Transmission Operator; and
- 10.6.** Obtain and utilize status, voltages, and flow data for non-BES facilities outside its Transmission Operator Area identified as necessary by the Transmission Operator.

M10. Each Transmission Operator shall have, and provide upon request, evidence that could include but is not limited to Energy Management System description documents, computer printouts, Supervisory Control and Data Acquisition (SCADA) data collection, or other equivalent evidence that will be used to confirm that it monitored or obtained and utilized data as required to determine any System Operating Limit (SOL) exceedances within its Transmission Operator Area.

Compliance Narrative (Required):

Provide a brief explanation, in your own words, of how you comply with this Requirement. References to supplied evidence, including links to the appropriate page, are recommended.

Evidence Requested: Error! Bookmark not defined.

Provide the following evidence, or other evidence to demonstrate compliance.
Evidence to demonstrate the entity monitored Facilities within its Transmission Operator Area for determining SOL exceedances within its Transmission Operator Area.
Identification of Remedial Action Schemes within the entity's Transmission Operator Area.
Evidence to demonstrate the entity monitored the status of Remedial Action Schemes within its Transmission Operator Area for determining SOL exceedances within its Transmission Operator Area.
Identification of non-BES facilities within the entity's Transmission Operator Area identified by the entity as necessary for determining SOL exceedances within its Transmission Operator Area.
Evidence to demonstrate the entity monitored non-BES facilities within the entity's Transmission Operator Area identified by the entity as necessary for determining SOL exceedances within its Transmission Operator Area.
Identification of status, voltages, and flow data for Facilities outside the entity's Transmission Operator Area identified by the entity as necessary for determining SOL exceedances within its Transmission Operator Area.

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Area.
Evidence to demonstrate the entity monitored status, voltages, and flow data for Facilities outside the entity's Transmission Operator Area identified by the entity as necessary for determining SOL exceedances within its Transmission Operator Area.
Identification of Remedial Action Schemes statuses outside the entity's Transmission Operator Area identified by the entity as necessary for determining SOL exceedances within its Transmission Operator Area.
Evidence to demonstrate the entity monitored Remedial Action Schemes statuses outside the entity's Transmission Operator Area identified by the entity as necessary for determining SOL exceedances within its Transmission Operator Area.
Identification of status, voltages, and flow data for non-BES facilities outside the entity's Transmission Operator Area identified by the entity as necessary for determining SOL exceedances within its Transmission Operator Area.
Evidence to demonstrate the entity monitored status, voltages, and flow data for non-BES facilities outside the entity's Transmission Operator Area identified by the entity as necessary SOL exceedances within its Transmission Operator Area.

Registered Entity Evidence (Required):

<p>The following information is requested for each document submitted as evidence. Also, evidence submitted should be highlighted and bookmarked, as appropriate, to identify the exact location where evidence of compliance may be found.</p>					
File Name	Document Title	Revision or Version	Document Date	Relevant Page(s) or Section(s)	Description of Applicability of Document

Audit Team Evidence Reviewed (This section to be completed by the Compliance Enforcement Authority):

Compliance Assessment Approach Specific to TOP-001-6, R10

This section to be completed by the Compliance Enforcement Authority

	(10.1) Verify the entity monitored Facilities within its Transmission Operator Area for determining SOL exceedances within its Transmission Operator Area.
	(10.2) Verify the entity monitored the status of Remedial Action Schemes within its Transmission Operator Area for determining SOL exceedances within its Transmission Operator Area.
	(10.3) Verify the entity monitored non-BES facilities within its Transmission Operator Area identified by the entity as necessary for determining SOL exceedances within its Transmission Operator Area.

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	(10.4) Verify the entity obtained and utilized status, voltages, and flow data for Facilities outside its Transmission Operator Area identified by the entity as necessary for determining SOL exceedances within its Transmission Operator Area.
	(10.5) Verify the entity obtained and utilized the status of Remedial Action Schemes outside its Transmission Operator Area identified by the entity as necessary for determining SOL exceedances within its Transmission Operator Area.
	(10.6) Verify the entity obtained and utilized status, voltages, and flow data for non-BES facilities outside its Transmission Operator Area identified by the entity as necessary for determining SOL exceedances within its Transmission Operator Area.
Note to Auditor: TOP-003-3 Requirement R1 specifies that the Transmission Operator shall develop a data specification which includes data and information needed by the Transmission Operator to support its Operation Planning Analyses, Real-time monitoring, and Real-time Assessments. This includes non-BES data and external network data as deemed necessary by the Transmission Operator	

Auditor Notes:

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R11 Supporting Evidence and Documentation

R11. Each Balancing Authority shall monitor its Balancing Authority Area, including the status of Remedial Action Schemes that impact generation or Load, in order to maintain generation-Load-interchange balance within its Balancing Authority Area and support Interconnection frequency.

M11. Each Balancing Authority shall have, and provide upon request, evidence that could include but is not limited to Energy Management System description documents, computer printouts, SCADA data collection, or other equivalent evidence that will be used to confirm that it monitors its Balancing Authority Area, including the status of Remedial Action Schemes that impact generation or Load, in order to maintain generation-Load-interchange balance within its Balancing Authority Area and support Interconnection frequency.

Compliance Narrative (Required):

Provide a brief explanation, in your own words, of how you comply with this Requirement. References to supplied evidence, including links to the appropriate page, are recommended.

Evidence Requested: Error! Bookmark not defined.

Provide the following evidence, or other evidence to demonstrate compliance.
A list of Remedial Action Schemes within the entity’s Balancing Authority Area that impact generation or Load.
Evidence to demonstrate the entity monitors its Balancing Authority Area, including the status of Remedial Action Schemes that impact generation or Load, in order to maintain generation-Load-interchange balance within its Balancing Authority Area and support Interconnection frequency.

Registered Entity Evidence (Required):

The following information is requested for each document submitted as evidence. Also, evidence submitted should be highlighted and bookmarked, as appropriate, to identify the exact location where evidence of compliance may be found.

File Name	Document Title	Revision or Version	Document Date	Relevant Page(s) or Section(s)	Description of Applicability of Document

Audit Team Evidence Reviewed (This section to be completed by the Compliance Enforcement Authority):

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Compliance Assessment Approach Specific to TOP-001-6, R11

This section to be completed by the Compliance Enforcement Authority

(R11) Verify the entity monitored its Balancing Authority Area, including the status of Remedial Action Schemes that impact generation or Load, in order to maintain generation-Load-interchange balance within its Balancing Authority Area and support Interconnection frequency.

Note to Auditor:

Auditor Notes:

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R12 Supporting Evidence and Documentation

R12. Each Transmission Operator shall not operate outside any identified Interconnection Reliability Operating Limit (IROL) for a continuous duration exceeding its associated IROL T_v.

M12. Each Transmission Operator shall make available evidence to show that for any occasion in which it operated outside any identified IROL, the continuous duration did not exceed its associated IROL T_v. Such evidence could include but is not limited to dated computer logs or reports in electronic or hard copy format specifying the date, time, duration, and details of the excursion. If such a situation has not occurred, the Transmission Operator may provide an attestation that an event has not occurred.

Registered Entity Response (Required):

Question: Did the entity exceed an identified IROL for any period of time during the audit period?

Yes No

If Yes, provide a list of IROL exceedances. If No, describe how this was determined in the narrative section below.

[Note: A separate spreadsheet or other document may be used. If so, provide the document reference below.]

Compliance Narrative (Required):

Provide a brief explanation, in your own words, of how you comply with this Requirement. References to supplied evidence, including links to the appropriate page, are recommended.

Evidence Requested: Error! Bookmark not defined.

Provide the following evidence, or other evidence to demonstrate compliance.

A list of IROLs with the associated IROL T_v.

Evidence to demonstrate that for any occasion in which the entity operated outside any identified IROL, the continuous duration did not exceed its associated IROL T_v.

Registered Entity Evidence (Required):

The following information is requested for each document submitted as evidence. Also, evidence submitted should be highlighted and bookmarked, as appropriate, to identify the exact location where evidence of compliance may be found.

File Name	Document Title	Revision or Version	Document Date	Relevant Page(s) or Section(s)	Description of Applicability of Document

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Audit Team Evidence Reviewed (This section to be completed by the Compliance Enforcement Authority):

Compliance Assessment Approach Specific to TOP-001-6, R12

This section to be completed by the Compliance Enforcement Authority

	(R12) For all, or a sample of IROL exceedances selected by the auditor, verify the entity did not operate outside any IROL for a continuous duration exceeding its associated IROL T _v .
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Note to Auditor:

Auditor Notes:

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R13 Supporting Evidence and Documentation

R13. Each Transmission Operator shall ensure that a Real-time Assessment is performed at least once every 30 minutes.

M13. Each Transmission Operator shall have, and make available upon request, evidence to show it ensured that a Real-Time Assessment was performed at least once every 30 minutes. This evidence could include but is not limited to dated computer logs showing times the assessment was conducted, dated checklists, or other evidence.

Registered Entity Response (Required):

Question: During the audit period, did the entity experience a loss in Real-time Assessment capability?

Yes No

If Yes, explain how the entity ensured a Real-time Assessment was performed at least once every 30 minutes during this loss. If No, describe how this was determined in the narrative section below.

[Note: A separate spreadsheet or other document may be used. If so, provide the document reference below.]

Compliance Narrative (Required):

Provide a brief explanation, in your own words, of how you comply with this Requirement. References to supplied evidence, including links to the appropriate page, are recommended.

Evidence Requested: .Error! Bookmark not defined.

Provide the following evidence, or other evidence to demonstrate compliance.

Evidence to demonstrate the entity ensured a Real-time Assessment was performed at least once every 30 minutes.

Registered Entity Evidence (Required):

The following information is requested for each document submitted as evidence. Also, evidence submitted should be highlighted and bookmarked, as appropriate, to identify the exact location where evidence of compliance may be found.

File Name	Document Title	Revision or Version	Document Date	Relevant Page(s) or Section(s)	Description of Applicability of Document

Audit Team Evidence Reviewed (This section to be completed by the Compliance Enforcement Authority):

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Compliance Assessment Approach Specific to TOP-001-6, R13

This section to be completed by the Compliance Enforcement Authority

	(R13) Verify the Transmission Operator ensured a Real-time Assessment was performed at least once every 30 minutes.
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Note to Auditor: See definition of Real-time Assessment in Selected Glossary Terms section of RSAW and the rationale for R13 in the Rationale section of the Standard.

Auditor Notes:

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R14 Supporting Evidence and Documentation

- R14.** Each Transmission Operator shall initiate its Operating Plan to mitigate a SOL exceedance identified as part of its Real-time monitoring or Real-time Assessment.
- M14.** Each Transmission Operator shall have evidence that it initiated its Operating Plan for mitigating SOL exceedances identified as part of its Real-time monitoring or Real-time Assessments. This evidence could include but is not limited to dated computer logs showing times the Operating Plan was initiated, dated checklists, or other evidence. Other evidence could include but is not limited to: system logs/records showing successfully mitigated SOL exceedances in conjunction with Operating Plans (e.g. mutually agreed operating protocols between TOPs and their RC, Operating Procedures, Operating Processes, operating policies, binding constraint logs, equipment settings for automatically switched equipment and reactive power/voltage control devices, switching schedules, etc).

Compliance Narrative (Required):

Provide a brief explanation, in your own words, of how you comply with this Requirement. References to supplied evidence, including links to the appropriate page, are recommended.

Evidence Requested: Error! Bookmark not defined.

Provide the following evidence, or other evidence to demonstrate compliance.
Operating Plans for SOL exceedances as required under TOP-002-4 R2.
Evidence to demonstrate the entity initiated its Operating Plan to mitigate identified SOL exceedances. For SOL exceedances as defined in FAC-011 R7.2 which were successfully mitigated, system logs/records showing the SOL exceedance successfully mitigated in conjunction with general operating policies and procedures can be considered as sufficient evidence. For other categories of exceedances as defined in FAC-011 R7.1 some additional evidences may be required to demonstrate that the Operating Plan was initiated, such as operator logs, phone logs, generation redispatch logs, facility specific standing operating guides, or switching logs.

Registered Entity Evidence (Required):

The following information is requested for each document submitted as evidence. Also, evidence submitted should be highlighted and bookmarked, as appropriate, to identify the exact location where evidence of compliance may be found.

File Name	Document Title	Revision or Version	Document Date	Relevant Page(s) or Section(s)	Description of Applicability of Document

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Audit Team Evidence Reviewed (This section to be completed by the Compliance Enforcement Authority):

Compliance Assessment Approach Specific to TOP-001-6, R14

This section to be completed by the Compliance Enforcement Authority

(R14) For all, or a sample of SOL exceedances identified as part of the entity's Real-time monitoring or Real-time Assessment, verify the entity initiated its Operating Plan to mitigate the SOL exceedance.

Note to Auditor: Transmission Operators are required to have an Operating Plan(s) for next-day operations in TOP-002-4 R2.

Auditor Notes:

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R15 Supporting Evidence and Documentation

- 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.
- M15.** Each Transmission Operator shall make available evidence that it informed its Reliability Coordinator of actions taken to return the System to within limits when a SOL was exceeded in accordance with its Reliability Coordinator’s SOL methodology. Such evidence could include but is not limited to dated operator logs, electronic communications, voice recordings or transcripts of voice recordings, or dated computer printouts. If such a situation has not occurred, the Transmission Operator may provide an attestation.

Compliance Narrative (Required):

Provide a brief explanation, in your own words, of how you comply with this Requirement. References to supplied evidence, including links to the appropriate page, are recommended.

Evidence Requested: Error! Bookmark not defined.

Provide the following evidence, or other evidence to demonstrate compliance.

Evidence to demonstrate the entity informed its Reliability Coordinator of its actions to return the System to within limits when a SOL was exceeded in accordance with its Reliability Coordinator’s SOL methodology.

Registered Entity Evidence (Required):

The following information is requested for each document submitted as evidence. Also, evidence submitted should be highlighted and bookmarked, as appropriate, to identify the exact location where evidence of compliance may be found.

File Name	Document Title	Revision or Version	Document Date	Relevant Page(s) or Section(s)	Description of Applicability of Document

Audit Team Evidence Reviewed (This section to be completed by the Compliance Enforcement Authority):

Compliance Assessment Approach Specific to TOP-001-6, R15

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This section to be completed by the Compliance Enforcement Authority

(R15) For all, or a sample of instances when a SOL was exceeded in accordance with its Reliability Coordinator's SOL methodology, verify the entity informed its Reliability Coordinator of its actions to return the System to within limits.

Note to Auditor:

Auditor Notes:

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R16 Supporting Evidence and Documentation

R16. Each Transmission Operator shall provide its System Operators with the authority to approve planned outages and maintenance of its telemetering and control equipment, monitoring and assessment capabilities, and associated communication channels between affected entities.

M16. Each Transmission Operator shall have, and provide upon request, evidence that could include but is not limited to a documented procedure or equivalent evidence that will be used to confirm that the Transmission Operator has provided its System Operators with the authority to approve planned outages and maintenance of telemetering and control equipment, monitoring and assessment capabilities, and associated communication channels between affected entities.

Compliance Narrative (Required):

Provide a brief explanation, in your own words, of how you comply with this Requirement. References to supplied evidence, including links to the appropriate page, are recommended.

Evidence Requested: Error! Bookmark not defined.

Provide the following evidence, or other evidence to demonstrate compliance.

Evidence to demonstrate the entity provided its System Operators with the authority to approve planned outages of its telemetering and control equipment, monitoring and assessment capabilities, and associated communication channels between affected entities.

Registered Entity Evidence (Required):

The following information is requested for each document submitted as evidence. Also, evidence submitted should be highlighted and bookmarked, as appropriate, to identify the exact location where evidence of compliance may be found.

File Name	Document Title	Revision or Version	Document Date	Relevant Page(s) or Section(s)	Description of Applicability of Document

Audit Team Evidence Reviewed (This section to be completed by the Compliance Enforcement Authority):

Compliance Assessment Approach Specific to TOP-001-6, R16

This section to be completed by the Compliance Enforcement Authority

	(R16) Verify the entity provided its System Operators with the authority to approve planned outages of
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its telemetering and control equipment, monitoring and assessment capabilities, and associated communication channels between affected entities.

Note to Auditor: This authority can also be confirmed during System Operator interview questions.

Auditor Notes:

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R17 Supporting Evidence and Documentation

R17. Each Balancing Authority shall provide its System Operators with the authority to approve planned outages and maintenance of its telemetering and control equipment, monitoring and assessment capabilities and associated communication channels between affected entities.

M17. Each Balancing Authority shall have, and provide upon request, evidence that could include but is not limited to a documented procedure or equivalent evidence that will be used to confirm that the Balancing Authority has provided its System Operators with the authority to approve planned outages and maintenance of its telemetering and control equipment, monitoring and assessment capabilities and associated communication channels between affected entities.

Compliance Narrative (Required):

Provide a brief explanation, in your own words, of how you comply with this Requirement. References to supplied evidence, including links to the appropriate page, are recommended.

Evidence Requested: Error! Bookmark not defined.

Provide the following evidence, or other evidence to demonstrate compliance.

Evidence to demonstrate the entity provided its System Operators with the authority to approve planned outages of its telemetering and control equipment, monitoring and assessment capabilities and associated communication channels between affected entities.

Registered Entity Evidence (Required):

The following information is requested for each document submitted as evidence. Also, evidence submitted should be highlighted and bookmarked, as appropriate, to identify the exact location where evidence of compliance may be found.

File Name	Document Title	Revision or Version	Document Date	Relevant Page(s) or Section(s)	Description of Applicability of Document

Audit Team Evidence Reviewed (This section to be completed by the Compliance Enforcement Authority):

Compliance Assessment Approach Specific to TOP-001-6, R17

This section to be completed by the Compliance Enforcement Authority

	(R17) Verify the entity provided its System Operators with the authority to approve planned outages of its
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	telemetry and control equipment, monitoring and assessment capabilities and associated communication channels between affected entities.
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Note to Auditor: This authority can also be confirmed during System Operator interviews.

Auditor Notes:

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R18 Supporting Evidence and Documentation

R18. Each Transmission Operator shall operate to the most limiting parameter in instances where there is a difference in SOLs.

M18. Each Transmission Operator shall have, and provide upon request, evidence that could include but is not limited to operator logs, voice recordings, electronic communications, or equivalent evidence that will be used to determine if it operated to the most limiting parameter in instances where there is a difference in SOLs.

Registered Entity Response (Required):

Question: Did the entity experience an instance where there was a difference in SOLs during the audit period?

Yes No

If Yes, provide a list of such instances. If No, describe how this was determined in the narrative section below. [Note: A separate spreadsheet or other document may be used. If so, provide the document reference below.]

Compliance Narrative (Required):

Provide a brief explanation, in your own words, of how you comply with this Requirement. References to supplied evidence, including links to the appropriate page, are recommended.

Evidence Requested: .Error! Bookmark not defined.

Provide the following evidence, or other evidence to demonstrate compliance.

Evidence to demonstrate the entity operated to the most limiting parameter in instances where there was a difference in SOLs.

Registered Entity Evidence (Required):

The following information is requested for each document submitted as evidence. Also, evidence submitted should be highlighted and bookmarked, as appropriate, to identify the exact location where evidence of compliance may be found.

File Name	Document Title	Revision or Version	Document Date	Relevant Page(s) or Section(s)	Description of Applicability of Document

Audit Team Evidence Reviewed (This section to be completed by the Compliance Enforcement Authority):

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Compliance Assessment Approach Specific to TOP-001-6, R18

This section to be completed by the Compliance Enforcement Authority

	(R18) For an auditor selected sample of instances where there was a difference in SOLs, verify the entity operated to the most limiting parameter.
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Note to Auditor:

Auditor Notes:

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R19 Supporting Evidence and Documentation

R19. Reserved.

M19. Reserved.

Compliance Narrative (Required):

Provide a brief explanation, in your own words, of how you comply with this Requirement. References to supplied evidence, including links to the appropriate page, are recommended.

Evidence Requested: Error! Bookmark not defined.

Provide the following evidence, or other evidence to demonstrate compliance.

Registered Entity Evidence (Required):

The following information is requested for each document submitted as evidence. Also, evidence submitted should be highlighted and bookmarked, as appropriate, to identify the exact location where evidence of compliance may be found.

File Name	Document Title	Revision or Version	Document Date	Relevant Page(s) or Section(s)	Description of Applicability of Document

Audit Team Evidence Reviewed (This section to be completed by the Compliance Enforcement Authority):

Compliance Assessment Approach Specific to TOP-001-6, R19

This section to be completed by the Compliance Enforcement Authority

	Note to Auditor:
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Auditor Notes:

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R20 Supporting Evidence and Documentation

R20. Each Transmission Operator shall have data exchange capabilities, with redundant and diversely routed data exchange infrastructure within the Transmission Operator's primary Control Center, for the exchange of Real-time data with its Reliability Coordinator, Balancing Authority, and the entities it has identified it needs data from in order for it to perform its Real-time monitoring and Real-time Assessments.

M20. Each Transmission Operator shall have, and provide upon request, evidence that could include, but is not limited to, system specifications, system diagrams, or other documentation that lists its data exchange capabilities, including redundant and diversely routed data exchange infrastructure within the Transmission Operator's primary Control Center, for the exchange of Real-time data with its Reliability Coordinator, Balancing Authority, and the entities it has identified it needs data from in order to perform its Real-time monitoring and Real-time Assessments as specified in the requirement.

Compliance Narrative (Required):

Provide a brief explanation, in your own words, of how you comply with this Requirement. References to supplied evidence, including links to the appropriate page, are recommended.

Evidence Requested: Error! Bookmark not defined.

Provide the following evidence, or other evidence to demonstrate compliance.
Identification of the Reliability Coordinators, Balancing Authorities, and the entities it has identified it needs data from in order for it to perform its Real-time monitoring and Real-time Assessments.
Identification of data exchange capabilities with the Reliability Coordinators, Balancing Authorities, and the entities it has identified it needs data from in order for it to perform its Real-time monitoring and Real-time Assessments.
Evidence that data exchange capabilities include redundant and diversely routed data exchange infrastructure within the entity's primary Control Center for the exchange of Real-time data with its Reliability Coordinator, Balancing Authority, and the entities it has identified it needs data from in order for it to perform its Real-time monitoring and Real-time Assessments.

Registered Entity Evidence (Required):

The following information is requested for each document submitted as evidence. Also, evidence submitted should be highlighted and bookmarked, as appropriate, to identify the exact location where evidence of compliance may be found.					
File Name	Document Title	Revision or Version	Document Date	Relevant Page(s) or Section(s)	Description of Applicability of Document

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Audit Team Evidence Reviewed (This section to be completed by the Compliance Enforcement Authority):

Compliance Assessment Approach Specific to TOP-001-6, R20

This section to be completed by the Compliance Enforcement Authority

	(R20) Verify the entity has data exchange capabilities with the Reliability Coordinators, Balancing Authorities, and other entities it has identified it needs data from in order for it to perform its Real-time monitoring and Real-time Assessments.
	(R20) Verify that data exchange capabilities have redundant and diversely routed data exchange infrastructure within the entity's primary Control Center.

Note to Auditor:

Redundant and diversely routed data exchange capabilities consist of data exchange infrastructure components (e.g. switches, routers, file servers, power supplies, and network cabling and communication paths between these components in the primary Control Center for the exchange of system operating data) that will provide continued functionality despite failure or malfunction of an individual component within the Transmission Operator's primary Control Center. Redundant and diversely routed data exchange capabilities preclude single points of failure in primary Control Center data exchange infrastructure from halting the flow of Real-time data. Requirement R20 does not require automatic or instantaneous fail-over of data exchange capabilities. Redundancy and diverse routing may be achieved in various ways depending on the arrangement of the infrastructure or hardware within the TOP's primary Control Center.

The reliability objective of redundancy is to provide for continued data exchange functionality during outages, maintenance, or testing of data exchange infrastructure. Additional redundant data exchange infrastructure components solely to provide for redundancy during planned or unplanned outages of individual components is not required.

TOP-003-3 requires the Transmission Operator to have a data specification for all the data it needs to perform its Real-time Assessment and Real-time monitoring.

Auditor Notes:

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R21 Supporting Evidence and Documentation

- R21.** Each Transmission Operator shall test its primary Control Center data exchange capabilities specified in Requirement R20 for redundant functionality at least once every 90 calendar days. If the test is unsuccessful, the Transmission Operator shall initiate action within two hours to restore redundant functionality.
- M21.** Each Transmission Operator shall have, and provide upon request, evidence that it tested its primary Control Center data exchange capabilities specified in Requirement R20 for redundant functionality, or experienced an event that demonstrated the redundant functionality; and, if the test was unsuccessful, initiated action within two hours to restore redundant functionality as specified in Requirement R21. Evidence could include, but is not limited to: dated and time-stamped test records, operator logs, voice recordings, or electronic communications.

Registered Entity Response (Required):

Question: Were any of the data exchange capability tests unsuccessful?

Yes No

If Yes, provide a list of such instances and evidence of compliance. If No, describe how this was determined in the narrative section below.

[Note: A separate spreadsheet or other document may be used. If so, provide the document reference below.]

Compliance Narrative (Required):

Provide a brief explanation, in your own words, of how you comply with this Requirement. References to supplied evidence, including links to the appropriate page, are recommended.

Evidence Requested.Error! Bookmark not defined.

Provide the following evidence, or other evidence to demonstrate compliance.

Identification of data exchange capabilities specified in Requirement R20.

Evidence that the entity tested its data exchange capabilities specified in Requirement R20 for redundant functionality, or experienced an event that demonstrated the redundant functionality, at least once every 90 calendar days.

Evidence that for each unsuccessful test, the entity initiated action within two hours to restore redundant functionality.

Registered Entity Evidence (Required):

The following information is requested for each document submitted as evidence. Also, evidence submitted should be highlighted and bookmarked, as appropriate, to identify the exact location where evidence of compliance may be found.

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Audit Team Evidence Reviewed (This section to be completed by the Compliance Enforcement Authority):

Compliance Assessment Approach Specific to TOP-001-6, R21

This section to be completed by the Compliance Enforcement Authority

	(R21) Verify the entity tests its data exchange capabilities specified in Requirement R20 for redundant functionality, or experienced an event that demonstrated the redundant functionality, at least once every 90 calendar days.
	(R21) Verify that for each unsuccessful test, the entity initiated action within two hours to restore redundant functionality.
<p>Note to auditor: A test for redundant functionality demonstrates that data exchange capabilities will continue to operate despite the malfunction or failure of an individual component (e.g., switches, routers, servers, power supplies, and network cabling and communication paths between these components in the primary Control Center for the exchange of system operating data). An entity's testing practices should, over time, examine the various failure modes of its data exchange capabilities. When an actual event successfully exercises the redundant functionality, it can be considered a test for the purposes of the proposed requirement.</p>	

Auditor Notes:

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R22 Supporting Evidence and Documentation

R22. Reserved.

M22. Reserved.

Compliance Narrative (Required):

Provide a brief explanation, in your own words, of how you comply with this Requirement. References to supplied evidence, including links to the appropriate page, are recommended.

Evidence Requested: Error! Bookmark not defined.

Provide the following evidence, or other evidence to demonstrate compliance.

Registered Entity Evidence (Required):

The following information is requested for each document submitted as evidence. Also, evidence submitted should be highlighted and bookmarked, as appropriate, to identify the exact location where evidence of compliance may be found.

File Name	Document Title	Revision or Version	Document Date	Relevant Page(s) or Section(s)	Description of Applicability of Document

Audit Team Evidence Reviewed (This section to be completed by the Compliance Enforcement Authority):

Compliance Assessment Approach Specific to TOP-001-6, R22

This section to be completed by the Compliance Enforcement Authority

Note to Auditor:

Auditor Notes:

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R23 Supporting Evidence and Documentation

- R23.** Each Balancing Authority shall have data exchange capabilities, with redundant and diversely routed data exchange infrastructure within the Balancing Authority's primary Control Center, for the exchange of Real-time data with its Reliability Coordinator, Transmission Operator, and the entities it has identified it needs data from in order for it to perform its Real-time monitoring and analysis functions.
- M23.** Each Balancing Authority shall have, and provide upon request, evidence that could include, but is not limited to, system specifications, system diagrams, or other documentation that lists its data exchange capabilities, including redundant and diversely routed data exchange infrastructure within the Balancing Authority's primary Control Center, for the exchange of Real-time data with its Reliability Coordinator, Transmission Operator, and the entities it has identified it needs data from in order to perform its Real-time monitoring and analysis functions as specified in the requirement.

Compliance Narrative (Required):

Provide a brief explanation, in your own words, of how you comply with this Requirement. References to supplied evidence, including links to the appropriate page, are recommended.

Evidence Requested: Error! Bookmark not defined.

Provide the following evidence, or other evidence to demonstrate compliance.
Identification of the Reliability Coordinators, Transmission Operators, and other entities the entity has identified it needs data from in order for it to perform its Real-time monitoring and analysis functions.
Identification of data exchange capabilities with the Reliability Coordinators, Transmission Operators, and other entities it has identified it needs data from in order for it to perform its Real-time monitoring and analysis functions.
Evidence that data exchange capabilities include redundant and diversely routed data exchange infrastructure within the entity's primary Control Center.

Registered Entity Evidence (Required):

The following information is requested for each document submitted as evidence. Also, evidence submitted should be highlighted and bookmarked, as appropriate, to identify the exact location where evidence of compliance may be found.					
File Name	Document Title	Revision or Version	Document Date	Relevant Page(s) or Section(s)	Description of Applicability of Document

Audit Team Evidence Reviewed (This section to be completed by the Compliance Enforcement Authority):

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Compliance Assessment Approach Specific to TOP-001-6, R23

This section to be completed by the Compliance Enforcement Authority

	(R23) Verify the entity has data exchange capabilities with the Reliability Coordinators, Transmission Operators, and other entities it has identified it needs data from in order for it to perform its Real-time monitoring and analysis functions.
	(R23) Verify that data exchange capabilities have redundant and diversely routed data exchange infrastructure within the entity's primary Control Center.

Note to Auditor:

Redundant and diversely routed data exchange capabilities consist of data exchange infrastructure components (e.g. switches, routers, file servers, power supplies, and network cabling and communication paths between these components in the primary Control Center for the exchange of system operating data) that will provide continued functionality despite failure or malfunction of an individual component within the Balancing Authority's (BA) primary Control Center. Redundant and diversely routed data exchange capabilities preclude single points of failure in primary Control Center data exchange infrastructure from halting the flow of Real-time data. Requirement R23 does not require automatic or instantaneous fail-over of data exchange capabilities. Redundancy and diverse routing may be achieved in various ways depending on the arrangement of the infrastructure or hardware within the BA's primary Control Center.

The reliability objective of redundancy is to provide for continued data exchange functionality during outages, maintenance, or testing of data exchange infrastructure. Additional redundant data exchange infrastructure components solely to provide for redundancy during planned or unplanned outages of individual components is not required.

TOP-003-3 requires the BA to have a data specification for all the data it needs for performing its analysis functions and Real-time monitoring.

Auditor Notes:

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R24 Supporting Evidence and Documentation

- R24.** Each Balancing Authority shall test its primary Control Center data exchange capabilities specified in Requirement R23 for redundant functionality at least once every 90 calendar days. If the test is unsuccessful, the Balancing Authority shall initiate action within two hours to restore redundant functionality.
- M24.** Each Balancing Authority shall have, and provide upon request, evidence that it tested its primary Control Center data exchange capabilities specified in Requirement R23 for redundant functionality, or experienced an event that demonstrated the redundant functionality; and, if the test was unsuccessful, initiated action within two hours to restore redundant functionality as specified in Requirement R24. Evidence could include, but is not limited to: dated and time-stamped test records, operator logs, voice recordings, or electronic communications.

Registered Entity Response (Required):

Question: Were any of the data exchange capability tests unsuccessful?

Yes No

If Yes, provide a list of such instances and evidence of compliance. If No, describe how this was determined in the narrative section below.

[Note: A separate spreadsheet or other document may be used. If so, provide the document reference below.]

Compliance Narrative (Required):

Provide a brief explanation, in your own words, of how you comply with this Requirement. References to supplied evidence, including links to the appropriate page, are recommended.

Evidence Requested: Error! Bookmark not defined.

Provide the following evidence, or other evidence to demonstrate compliance.

Identification of data exchange capabilities specified in Requirement R23.

Evidence that the entity tested its data exchange capabilities specified in Requirement R23 for redundant functionality, or experienced an event that demonstrated the redundant functionality, at least once every 90 calendar days.

Evidence that for each unsuccessful test, the entity initiated action within two hours to restore redundant functionality.

Registered Entity Evidence (Required):

The following information is requested for each document submitted as evidence. Also, evidence submitted should be highlighted and bookmarked, as appropriate, to identify the exact location where evidence of compliance may be found.

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Audit Team Evidence Reviewed (This section to be completed by the Compliance Enforcement Authority):

Compliance Assessment Approach Specific to TOP-001-6, R24

This section to be completed by the Compliance Enforcement Authority

	(R24) Verify the entity tests its data exchange capabilities specified in Requirement R23 for redundant functionality, or experienced an event that demonstrated the redundant functionality, at least once every 90 calendar days.
	(R24) Verify that for each unsuccessful test, the entity initiated action within two hours to restore redundant functionality.

Note to auditor:

A test for redundant functionality demonstrates that data exchange capabilities will continue to operate despite the malfunction or failure of an individual component (e.g., switches, routers, servers, power supplies, and network cabling and communication paths between these components in the primary Control Center for the exchange of system operating data). An entity's testing practices should, over time, examine the various failure modes of its data exchange capabilities. When an actual event successfully exercises the redundant functionality, it can be considered a test for the purposes of the proposed requirement.

Auditor Notes:

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- R25.** Each Transmission Operator shall use the applicable Reliability Coordinator’s SOL methodology when determining SOL exceedances for Real-time Assessments, Real-time Monitoring, and Operational Planning Analysis.
- M25.** Each Transmission Operator shall have, and provide upon request, evidence that it used the applicable Reliability Coordinator’s SOL methodology when determining SOL exceedances for Real-time Assessments, Real-time Monitoring, and Operational Planning Analysis. Evidence could include, but is not limited to: Reliability Coordinator’s SOL methodology , Operating Plans, contingency sets, alarming and study reporting thresholds, operator logs, voice recordings, or electronic communications.

Compliance Narrative (Required):

Provide a brief explanation, in your own words, of how you comply with this Requirement. References to supplied evidence, including links to the appropriate page, are recommended.

Evidence Requested: Error! Bookmark not defined.

Provide the following evidence, or other evidence to demonstrate compliance.
The applicable Reliability Coordinator’s SOL methodology
Evidence that the entity used the applicable Reliability Coordinator’s SOL methodology when determining SOL exceedances for Real-time Assessments, Real-time Monitoring, and Operational Planning Analysis.

Registered Entity Evidence (Required):

The following information is requested for each document submitted as evidence. Also, evidence submitted should be highlighted and bookmarked, as appropriate, to identify the exact location where evidence of compliance may be found.					
File Name	Document Title	Revision or Version	Document Date	Relevant Page(s) or Section(s)	Description of Applicability of Document

Audit Team Evidence Reviewed (This section to be completed by the Compliance Enforcement Authority):

Compliance Assessment Approach Specific to TOP-001-6, R25

This section to be completed by the Compliance Enforcement Authority

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	(R25) Verify that the entity used the applicable Reliability Coordinator's SOL methodology when determining SOL exceedances for Real-time Assessments, Real-time Monitoring, and Operational Planning Analysis.
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Note to auditor:

Auditor Notes:

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Additional Information: Supporting Evidence and Documentation

Reliability Standard (to be included with final posting)

The full text of TOP-001-6 may be found on the NERC Web Site (www.nerc.com) under “Program Areas & Departments”, “Reliability Standards.”

In addition to the Reliability Standard, there is an applicable Implementation Plan available on the NERC Web Site.

Regulatory Language (to be updated before final posting)

[North American Electric Reliability Corp., Unpublished Letter Order in Docket No. RR17-4-000 \(Apr. 17, 2017\).](#)

Proposed Reliability Standard TOP-001-4, Requirement R10 has been revised to require the transmission operator to monitor non-BES facilities for determining system operating limit exceedances within its transmission operator area, as directed by the Commission in Order No. 817. NERC states that this revision helps to ensure that all facilities that can adversely impact reliability are monitored. NERC also revised proposed Reliability Standard TOP-001-4 to require that the operator’s and balancing authority’s data exchange capabilities for the exchange of realtime data needed for real-time monitoring and analysis have redundant and diversely routed data exchange infrastructure within the entity’s primary control center and that these capabilities be tested for redundant functionality on a regular basis. Similar revisions are reflected in Reliability Standard IRO-002-5 to clarify the obligations of the reliability coordinator. NERC states that these modifications help support reliable operations by preventing a single point of failure in primary control center data exchange infrastructure from halting the flow of real-time data used by operators to monitor and control the BES.

NERC’s uncontested petition is hereby approved pursuant to the relevant authority delegated to the Director, Office of Electric Reliability under 18 C.F.R. § 375.303 (2016), effective as of the date of this order.

[Transmission Operations Reliability Standards and Interconnection Reliability Operations and Coordination Reliability Standards, Final Rule, Order No. 817, 153 FERC ¶ 61,178 \(2015\).](#)

5. The Commission approved the initial TOP and IRO Reliability Standards in Order No. 693.³ On April 16, 2013, in Docket No. RM13-14-000, NERC submitted for Commission approval three revised TOP Reliability Standards to replace the eight currently-effective TOP standards.⁴ Additionally, on April 16, 2013, in Docket No. RM13-15-000, NERC submitted for Commission approval four revised IRO Reliability Standards to replace six currently-effective IRO Reliability Standards. On November 21, 2013, the Commission issued the Remand NOPR in which the Commission expressed concern that NERC had “removed critical reliability aspects that are

³ See Mandatory Reliability Standards for the Bulk-Power System, Order No. 693, FERC Stats. & Regs. ¶ 31,242, at P 508, order on reh’g, Order No. 693-A, 120 FERC ¶ 61,053 (2007). In addition, in Order No. 748, the Commission approved revisions to the IRO Reliability Standards. Mandatory Reliability Standards for Interconnection Reliability Operating Limits, Order No. 748, 134 FERC ¶ 61,213 (2011).

⁴ On April 5, 2013, in Docket No. RM13-12-000, NERC proposed revisions to Reliability Standard TOP-006-3 to clarify that transmission operators are responsible for monitoring and reporting available transmission resources and that balancing authorities are responsible for monitoring and reporting available generation resources.

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included in the currently-effective standards without adequately addressing these aspects in the proposed standards.” The Commission identified two main concerns and asked for clarification and comment on a number of other issues. Among other things, the Commission expressed concern that the proposed TOP Reliability Standards did not require transmission operators to plan and operate within all SOLs, which is a requirement in the currently-effective standards. In addition, the Commission expressed concern that the proposed IRO Reliability Standards did not require outage coordination.

14. We also determine that the proposed TOP and IRO Reliability Standards should improve reliability by defining an appropriate division of responsibilities between reliability coordinators and transmission operators. The proposed TOP Reliability Standards will eliminate multiple TOP standards, resulting in a more concise set of standards, reducing redundancy and more clearly delineating responsibilities between applicable entities. In addition, we find that the proposed Reliability Standards provide a comprehensive framework as well as important improvements to ensure that the bulk electric system is operated within pre-established limits while enhancing situational awareness and strengthening operations planning. The TOP and IRO Reliability Standards address the coordinated efforts to plan and reliably operate the bulk electric system under both normal and abnormal conditions.

17. Furthermore, the revised definitions of operational planning analysis and real-time assessment are critical components of the proposed TOP and IRO Reliability Standards and, together with the definitions of SOLs, IROs and operating plans, work to ensure that reliability coordinators, transmission operators and balancing authorities plan and operate the bulk electric system within all SOLs and IROs to prevent instability, uncontrolled separation, or cascading. In addition, the revised definitions of operational planning analysis and real-time assessment address other concerns raised in the Remand NOPR as well as multiple recommendations in the 2011 Southwest Outage Blackout Report.

19. However, as we discuss below we direct NERC to modify the standards to include transmission operator monitoring of non-BES facilities, and to specify that data exchange capabilities include redundancy and diverse routing; as well as testing of the alternate or less frequently used data exchange capability, within 18 months of the effective date of this Final Rule.

35. Indeed, once a non-BES facility is included in the BES definition under the BES exception process, the “non-BES facility” becomes a BES “Facility” under TOP-001-3, Requirement R10, and real-time monitoring is required of “Facilities.” However, we are concerned that in some instances the absence of real-time monitoring of non-BES facilities by the transmission operator within and outside its TOP area as necessary for determining SOL exceedances in proposed TOP-001-3, Requirement R10 creates a reliability gap. As the 2011 Southwest Outage Report indicates, the Regional Entity “should lead other entities, including TOPs and BAs, to ensure that all facilities that can adversely impact BPS reliability are either designated as part of the BES or otherwise incorporated into planning and operations studies and actively monitored and alarmed in [real-time contingency analysis] systems.” Such monitoring of non-BES facilities could provide a “stop gap” during the period where a sub-100 kV facility undergoes analysis as a possible BES facility, allowing for monitoring in the interim until such time the non-bulk electric system facilities become “BES Facilities” or the transmission operator determines that a non-bulk electric system facility is no longer needed for monitoring to determine a system operating limit exceedance in its area. We believe that the operational planning analyses and real-time

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assessments performed by the transmission operators as well as the reliability coordinators will serve as the basis for determining which “non-BES facilities” require monitoring to determine system operating limit and interconnection reliability operating limit exceedances. In addition, we believe that monitoring of certain non-BES facilities that are occasional system operating limit exceedance performers may not qualify as a candidate for inclusion in the BES definition, yet should be monitored for reliability purposes. Accordingly, pursuant to section 215(d)(5) of the FPA, we direct NERC to revise Reliability Standard TOP-001-3, Requirement R10 to require real-time monitoring of non-BES facilities. We believe this is best accomplished by adopting language similar to Reliability Standard IRO-002-4, Requirement R3, which requires reliability coordinators to monitor non-bulk electric system facilities to the extent necessary. NERC can develop an equally efficient and effective alternative that addresses our concerns.

47. We agree with NERC and other commenters that there is a reliability need for the reliability coordinator, transmission operator and balancing authority to have data exchange capabilities that are redundant and diversely routed. However, we are concerned that the TOP and IRO Standards do not clearly address redundancy and diverse routing so that registered entities will unambiguously recognize that they have an obligation to address redundancy and diverse routing as part of their TOP and IRO compliance obligations. NERC’s comprehensive approach to establishing communications capabilities necessary to maintain reliability in the COM standards is applicable to data exchange capabilities at issue here. Therefore, pursuant to section 215(d)(5) of the FPA, we direct NERC to modify Reliability Standards TOP-001-3, Requirements R19 and R20 to include the requirement that the data exchange capabilities of the transmission operators and balancing authorities require redundancy and diverse routing. In addition, we direct NERC to clarify that “redundant infrastructure” for system monitoring in Reliability Standards IRO-002-4, Requirement R4 is equivalent to redundant and diversely routed data exchange capabilities.

55. With regard to clarification of emergencies in Reliability Standard TOP-001-3, Requirement R8, we do not see a need to modify the language...the requirement as written implies that the transmission operator has discretion to determine what could result in an emergency, based on its experience and judgment. In addition, we note that the transmission operators’ required next-day operational planning analysis, real-time assessments and real-time monitoring under the TOP Reliability Standards provide evaluation, assessment and input in determining what “could result” in an emergency.

60. Rather, we believe that, because the reliability coordinator is required to have a coordinated operating plan for the next-day operations, the reliability coordinator will perform its task of developing a coordinated operating plan in good faith, with inputs not only from its transmission operators and balancing authorities, but also from its neighboring reliability coordinators. A reliability coordinator has a wide-area view and bears the ultimate responsibility to maintain the reliability within its footprint, “including the authority to prevent or mitigate emergency operating situations in both next-day analysis and real-time operations.”

65. Reliability Standard TOP-001-3, Requirement R13 requires the transmission operator to ensure the assessment is performed at least once every 30 minutes, but does not state that the transmission operator on its own must perform the assessment and does not specify a system or tool. This gives the transmission operator flexibility to perform its real-time assessment. Further supporting this flexibility, NERC’s definition of real-time assessment states that a real-time assessment “may be provided through internal systems or

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through third-party services.” Therefore, we believe that Reliability Standard TOP-001-3, Requirement R13 does not specify the system or tool a transmission operator must use to perform a real-time assessment. In addition, NERC explains that Reliability Standard TOP-001-3, Requirement R13 and the definition of real-time assessment “do not specify the manner in which an assessment is performed nor do they preclude Reliability Coordinators and Transmission Operators from taking ‘alternative actions’ and developing procedures or off-normal processes to mitigate analysis tool (RTCA) outages and perform the required assessment of their systems. As an example, the Transmission Operator could rely on its Reliability Coordinator to perform a Real-time Assessment or even review its Reliability Coordinator’s Contingency analysis results when its capabilities are unavailable and vice-versa.” Accordingly, we conclude that TOP-001-3 adequately addresses NIPSCO’s concern, namely, if a transmission operators’ tools are unavailable for 30 minutes or more, the transmission operator has the flexibility to meet the requirement to assess system conditions through other means.

69. In its SOL White Paper, NERC stated that the intent of the SOL concept is to bring clarity and consistency for establishing SOLs, exceeding SOLs, and implementing operating plans to mitigate SOL exceedances.⁵⁶ In addition, “transient stability ratings” are included in the SOL definition. Further, in the SOL White Paper, NERC states that the “concept of SOL determination is not complete without looking at the approved NERC FAC standards FAC-008-3, FAC-011-2 and FAC-014-2.”

70. With respect to Reliability Standard TOP-001-3, we agree with NERC that Requirement R13 specifies that transmission operators must perform a real-time assessment at least once every 30 minutes, which by definition is an evaluation of system conditions to assess existing and potential operating conditions. The real-time assessment provides the transmission operator with the necessary knowledge of the system operating state to initiate an operating plan, as specified in Requirement R14, when necessary to mitigate an exceedance of SOLs. In addition, the SOL White Paper provides technical guidance for including timelines in the required operating plans to return the system to within prescribed ratings and limits. Accordingly, we conclude that the establishment of transient stability operating limits is adequately addressed collectively through proposed Reliability Standard TOP-001-3, currently-effective Reliability Standards FAC-011-2 and FAC-014-2 and NERC’s Glossary of Terms definition of SOLs.

Selected Glossary Terms

Real-time Assessment: 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.)

Operation 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.)

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Operating Plan: A document that identifies a group of activities that may be used to achieve some goal. An Operating Plan may contain Operating Procedures and Operating Processes. A company-specific system restoration plan that includes an Operating Procedure for black-starting units, Operating Processes for communicating restoration progress with other entities, etc., is an example of an Operating Plan.

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Revision History for RSAW

Version	Date	Reviewers	Revision Description
1	7/7/2020	NERC Compliance Assurance, RSAW Task Force	New Document for project page

ⁱ Items in the Evidence Requested section are suggested evidence that may, but will not necessarily, demonstrate compliance. These items are not mandatory and other forms and types of evidence may be submitted at the entity's discretion.

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