

# PJM TO/TOP Matrix of Shared or Assigned Tasks

**Version 17, Effective April 3, 2023**

Finalized by the TO/TOP Matrix Subcommittee: **November 18, 2022**

Approved by the Transmission Owners Agreement-Administrative Committee: **March 2, 2023**

## Governance

1. The PJM TO/TOP Matrix is a cross-reference between PJM Manuals and the NERC Reliability Standards, indicating where the assignment of various reliability tasks is documented in the PJM Manuals. It does not create any new obligations for PJM or its members.
2. The Matrix shall be reviewed and revised, if necessary, by PJM in collaboration with the PJM TO/TOP Matrix Subcommittee at least annually.
3. The Matrix shall be approved for use by the PJM Transmission Owner's Agreement Administrative Committee (TOA-AC).
4. The Matrix will be used as a basis (defines the scope, Member TO<sup>i</sup> assigned and shared tasks) for the PJM TO/TOP Reliability Audit.
5. Information in the Evidence of Compliance and Audit Question columns in the Matrix is suggested evidence and questions to help in compliance and audit preparation. It is not a comprehensive list of acceptable evidence. It is also not a list of the minimum acceptable evidence.
6. Compliance to Assigned or Shared Member TO Tasks is expected starting on the Enforcement Date (the NERC-assigned effective date after FERC approval) as listed in the Matrix for each Requirement. Compliance ends on the Inactive Date (the date that the Standard is retired or is replaced by another Standard). Corresponding to the Enforcement and Inactive Dates for each Requirement in the current version of the Matrix, evidence of compliance is expected to be available back to the Member TO's last PJM TO/TOP Reliability Audit.

## Notes

i: For the purposes of the TO/TOP Matrix, Member TO means a North American Electric Reliability Corporation (NERC) registered Transmission Owner and a signatory to the PJM Consolidated Transmission Owners Agreement.

## NERC Reliability Standards

Category	Standard Number	Requirement Number	Approved BOT/FERC Standards	A/S	Assigned or Shared Member TO Tasks	PJM Tasks	Audit Questions	Evidence of Compliance (What auditors will be looking for)	Reference Documents	Enforcement Date	Inactive Date
COM	COM-001-3	Purpose	To establish Interpersonal Communication capabilities necessary to maintain reliability.								
COM	COM-001-3	R3 (Heading)	Each Transmission Operator shall have Interpersonal Communication capability with the following entities (unless the Transmission Operator detects a failure of its Interpersonal Communication capability in which case Requirement R10 shall apply):								
COM	COM-001-3	R3.1	Its Reliability Coordinator.	S	Each Member TO shall have All Call capability and voice communications capability with PJM.	PJM shall have All Call capability and voice communications capability with each Member TO.	Describe your All Call capability and voice communications capability with PJM.	Provide evidence that you have All Call capability and voice communications capability with PJM.	PJM OA 11.3.1(b) General, 11.6 Membership Requirements  M-1 Control Center and Data Exchange Requirements, Section 4-Interpersonal Communication <del>(Voice Communications)</del> Capability	10/1/2017	None
COM	COM-001-3	R3.2	Each Balancing Authority within its Transmission Operator Area.	S	Each Member TO shall have All Call capability and voice communications capability with PJM.	PJM shall have All Call capability and voice communications capability with each Member TO.	Describe your All Call capability and voice communications capability with PJM.	Provide evidence that you have All Call capability and voice communications capability with PJM.	PJM OA 11.3.1(b) General, 11.6 Membership Requirements  M-1 Control Center and Data Exchange Requirements, Section 4-Interpersonal Communication <del>(Voice Communications)</del> Capability	10/1/2017	None
COM	COM-001-3	R3.3	Each Distribution Provider within its Transmission Operator Area.	A	Each Member TO shall have voice communications capability with each Distribution Provider in its area.		Describe your capability for voice communications with each Distribution Provider in your area.	Provide evidence that you have voice communications capability with each Distribution Provider in your area.	PJM OA 11.3.1(b) General, 11.6 Membership Requirements  M-1 Control Center and Data Exchange Requirements, Section 4-Interpersonal Communication <del>(Voice Communications)</del> Capability	10/1/2017	None
COM	COM-001-3	R3.4	Each Generator Operator within its Transmission Operator Area.	S	Each Member TO shall have voice communications capability with each Generator Operator in its area.	PJM shall have voice communications capability with Generator Operators in its area.	Describe your capability for voice communications with each Generator Operator in your area.	Provide evidence that you have voice communications capability with each Generator Operator in your area.	PJM OA 11.3.1(b) General, 11.6 Membership Requirements  M-1 Control Center and Data Exchange Requirements, Section 4-Interpersonal Communication <del>(Voice Communications)</del> Capability	10/1/2017	None
COM	COM-001-3	R3.5	Each adjacent Transmission Operator synchronously connected.	S	Each Member TO shall have voice communications capability with (i) neighboring Member TOs, internal to PJM. (ii) neighboring TOs/TOPs external to PJM, as appropriate.	PJM shall have voice communications capability with each Transmission Operator synchronously connected to PJM.	Describe your capability for voice communications with (i) neighboring Member TOs, internal to PJM. (ii) neighboring TOs/TOPs external to PJM, as appropriate.	Provide evidence that you have voice communications capability with (i) neighboring Member TOs, internal to PJM. (ii) neighboring TOs/TOPs external to PJM, as appropriate.	PJM OA 11.3.1(b) General, 11.6 Membership Requirements  M-1 Control Center and Data Exchange Requirements, Section 4-Interpersonal Communication <del>(Voice Communications)</del> Capability  PJM Compliance Bulletin CB026 - Coordination with External Transmission Operators (TOPs)	10/1/2017	None
COM	COM-001-3	R4 (Heading)	Each Transmission Operator shall designate an Alternative Interpersonal Communication capability with the following entities:								

## NERC Reliability Standards

Category	Standard Number	Requirement Number	Approved BOT/FERC Standards	A/S	Assigned or Shared Member TO Tasks	PJM Tasks	Audit Questions	Evidence of Compliance (What auditors will be looking for)	Reference Documents	Enforcement Date	Inactive Date
COM	COM-001-3	R4.1	Its Reliability Coordinator.	S	Each Member TO shall designate an Alternative Interpersonal Communication capability for voice communications with PJM.	PJM shall designate an Alternative Interpersonal Communication capability for voice communications with each Member TO.	Describe your Alternative Interpersonal Communications capability for voice communications with PJM.	Provide evidence that you have Alternative Interpersonal Communications capability for voice communications with PJM.	PJM OA 11.3.1(b) General, 11.6 Membership Requirements  M-1 Control Center and Data Exchange Requirements, Section 4-Interpersonal Communication <del>(Voice Communications)</del> Capability	10/1/2017	None
COM	COM-001-3	R4.2	Each Balancing Authority within its Transmission Operator Area.	S	Each Member TO shall designate an Alternative Interpersonal Communication capability for voice communications with PJM.	PJM shall designate an Alternative Interpersonal Communication capability for voice communications with each Member TO.	Describe your Alternative Interpersonal Communications capability for voice communications with PJM.	Provide evidence that you have Alternative Interpersonal Communications capability for voice communications with PJM.	PJM OA 11.3.1(b) General, 11.6 Membership Requirements  M-1 Control Center and Data Exchange Requirements, Section 4-Interpersonal Communication <del>(Voice Communications)</del> Capability	10/1/2017	None
COM	COM-001-3	R4.3	Each adjacent Transmission Operator synchronously connected.	S	Each Member TO shall designate an Alternative Interpersonal Communication capability for voice communications with neighboring Member TOs or neighboring TOs or TOPs external to PJM, as appropriate.	PJM shall designate an Alternative Interpersonal Communication capability for voice communications with each Transmission Operator synchronously connected to PJM.	Describe your Alternative Interpersonal Communications capability for voice communications with neighboring Member TOs or neighboring TOs or TOPs external to PJM, as appropriate.	Provide evidence that you have Alternative Interpersonal Communication capability for voice communications with neighboring Member TOs or neighboring TOs or TOPs external to PJM, as appropriate.	PJM OA 11.3.1(b) General, 11.6 Membership Requirements  M-1 Control Center and Data Exchange Requirements, Section 4-Interpersonal Communication <del>(Voice Communications)</del> Capability  PJM Compliance Bulletin CB026 - Coordination with External Transmission Operators (TOPs)	10/1/2017	None
COM	COM-001-3	R9	Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall test its Alternative Interpersonal Communication capability at least once each calendar month. If the test is unsuccessful, the responsible entity shall initiate action to repair or designate a replacement Alternative Interpersonal Communication capability within 2 hours.	S	Each Member TO shall test its Alternative Interpersonal Communication capability for voice communications at least once each calendar month. If the test is unsuccessful, each Member TO shall initiate action to repair or designate a replacement Alternative Interpersonal Communication capability for voice communications within 2 hours.	PJM shall test its Alternative Interpersonal Communication capability for voice communications at least once each calendar month. If the test is unsuccessful, PJM shall initiate action to repair or designate a replacement Alternative Interpersonal Communication capability for voice communications within 2 hours.	Did you test your Alternative Interpersonal Communication capability for voice communications at least once each calendar month? If the test was unsuccessful, did you initiate action to repair or designate a replacement Alternative Interpersonal Communication capability for voice communications within 2 hours?	Provide evidence (e.g., test results, etc.) that you tested your Alternative Interpersonal Communication capability for voice communications at least once each calendar month. If the test was unsuccessful, provide evidence that you initiated repair or designated a replacement Alternative Interpersonal Communication capability for voice communications within 2 hours.	PJM OA 11.3.1(b) General, 11.6 Membership Requirements  M-1 Control Center and Data Exchange Requirements, Section 4-Interpersonal Communication <del>(Voice Communications)</del> Capability	10/1/2017	None
COM	COM-001-3	R10	Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall notify entities as identified in Requirements R1, R3, and R5, respectively within 60 minutes of the detection of a failure of its Interpersonal Communication capability that lasts 30 minutes or longer.	S	1. Each Member TO shall notify PJM and, where applicable, TOs external to PJM, within 60 minutes of the detection of a failure of its Interpersonal Communication capability for voice communications that lasts 30 minutes or longer. 2. Each Member TO shall notify Distribution Providers and Generator Operators within its area within 60 minutes of the detection of a failure of its Interpersonal Communication capability for voice communications that lasts 30 minutes or longer.	PJM shall notify Member TOs and Generator Operators within its area and adjacent Reliability Coordinators, Balancing Authorities, and synchronously connected Transmission Operators within 60 minutes of the detection of a failure of its Interpersonal Communication capability for voice communications that lasts 30 minutes or longer.	1. Did you detect a failure of your Interpersonal Communication capability for voice communications that lasted 30 minutes or longer during the audit period? 2. Did you notify PJM and, if applicable, TOs external to PJM within 60 minutes of the detection of the failure of your Interpersonal Communication capability for voice communications that lasted 30 minutes or longer? 3. Did you notify Distribution Providers and Generator Operators within your area within 60 minutes of the detection of the failure of your Interpersonal Communication capability for voice communications that lasted 30 minutes or longer.	1. Provide evidence (e.g., test records, operator logs, voice recordings, electronic communications, etc.) that you notified PJM and, if applicable, TOs external to PJM, within 60 minutes of the detection of the failure of your Interpersonal Communication capability for voice communications that lasted 30 minutes or longer. 2. Provide evidence that you notified Distribution Providers and Generator Operators within your area within 60 minutes of the detection of the failure of your Interpersonal Communication capability for voice communications that lasted 30 minutes or longer.	PJM OA 11.3.1(b) General, 11.6 Membership Requirements  M-1 Control Center and Data Exchange Requirements, Section 4-Interpersonal Communication <del>(Voice Communications)</del> Capability	10/1/2017	None

## NERC Reliability Standards

Category	Standard Number	Requirement Number	Approved BOT/FERC Standards	A/S	Assigned or Shared Member TO Tasks	PJM Tasks	Audit Questions	Evidence of Compliance (What auditors will be looking for)	Reference Documents	Enforcement Date	Inactive Date
COM	COM-001-3	R12	Each Reliability Coordinator, Transmission Operator, Generator Operator, and Balancing Authority shall have internal Interpersonal Communication capabilities for the exchange of information necessary for the Reliable Operation of the BES. This includes communication capabilities between Control Centers within the same functional entity, and/or between a Control Center and field personnel.	S	1. Where applicable, Each Member TO shall have internal Interpersonal Communication capabilities for the exchange of information necessary for the Reliable Operation of the BES between two or more Control Centers actively monitoring their Member TO system within the same functional entity. 2. Each Member TO shall have internal Interpersonal Communication capabilities for the exchange of information necessary for the Reliable Operation of the BES between each Member TO Control Center and field personnel.	1. PJM shall have internal Interpersonal Communication capabilities for the exchange of information necessary for the Reliable Operation of the BES. This includes communication capabilities between the PJM Control Centers. 2. PJM shall have Interpersonal Communication capabilities for the exchange of information necessary for the Reliable Operation of the BES between PJM and every Member TO Control Center.	1. Do you have two or more Control Centers that are actively monitoring your system within the same functional entity? If yes, do you have internal Interpersonal Communication capabilities for the exchange of information necessary for the Reliable Operation of the BES between such Control Centers? 2. Do you have internal Interpersonal Communication capabilities for the exchange of information necessary for the Reliable Operation of the BES between each Control Center and field personnel?	1. If you have two or more Control Centers that are actively monitoring your system within the same functional entity, provide evidence that you have internal Interpersonal Communication capabilities for the exchange of information necessary for the Reliable Operation of the BES between such Control Centers. 2. Provide evidence that you have internal Interpersonal Communication capabilities for the exchange of information necessary for the Reliable Operation of the BES between each Control Center and field personnel.	PJM OA 11.3.1(b) General, 11.6 Membership Requirements  M-1 Control Center and Data Exchange Requirements, Section 4-Interpersonal Communication <del>(Voice Communications)</del> Capability, Section 4.1-Dispatch Voice & Facsimile Communications	10/1/2017	None
COM	COM-002-4	Purpose	To improve communications for the issuance of Operating Instructions with predefined communications protocols to reduce the possibility of miscommunication that could lead to action or inaction harmful to the reliability of the Bulk Electric System (BES).								
COM	COM-002-4	R2	Each Balancing Authority, Reliability Coordinator, and Transmission Operator shall conduct initial training for each of its operating personnel responsible for the Real-time operation of the interconnected Bulk Electric System on the documented communications protocols developed in Requirement R1 prior to that individual operator issuing an Operating Instruction.	S	Each Member TO shall conduct initial training for each of its Member TO System Operators responsible for the Real-time operation of the interconnected Bulk Electric System on the documented communications protocols developed in Manual 1 Section 4 prior to that individual Member TO System Operator issuing an Operating Instruction.	Offer initial training for Member TO operating personnel responsible for the Real-time operation of the interconnected Bulk Electric System on the documented communications protocols developed in Manual 1 Section 4.	Did you conduct initial training for each of your System Operators responsible for the Real-time operation of the interconnected Bulk Electric System on the documented communications protocols developed in Manual 1 Section 4 prior to that individual operator issuing an Operating Instruction?	Initial training records for each certified System Operator showing training on the documented communications protocols developed in Manual 1 Section 4 prior to that individual operator issuing an Operating Instruction.	M-1 Control Center and Data Exchange Requirements, Section 4-Interpersonal Communication <del>(Voice Communications)</del> Capability	7/1/2016	None
COM	COM-002-4	R4	Each Balancing Authority, Reliability Coordinator, and Transmission Operator shall at least once every twelve (12) calendar months:								
COM	COM-002-4	R4.1	Assess adherence to the documented communications protocols in Requirement R1 by its operating personnel that issue and receive Operating Instructions, provide feedback to those operating personnel and take corrective action, as deemed appropriate by the entity, to address deviations from the documented protocols.	A	At least once every 12 calendar months each Member TO shall adhere to the documented communications protocols in Manual 1 Section 4 by assessing each of its operating personnel that issue and receive Operating Instructions, provide feedback to those operating personnel and take corrective action, as deemed appropriate by the entity, to address deviations from the documented protocols.		Did you at least once every 12 calendar months assess adherence to the documented communications protocols in Manual 1 Section 4 by each of your operating personnel that issue and receive Operating Instructions, provide feedback to those operating personnel and take corrective action, as deemed appropriate by the entity, to address deviations from the documented protocols?	Records that show that at least once every 12 calendar months an assessment of adherence to the documented communications protocols in Manual 1 Section 4 by each of your operating personnel that issue and receive Operating Instructions, provide feedback to those operating personnel and take corrective action, as deemed appropriate by the entity, to address deviations from the documented protocols.	M-1 Control Center and Data Exchange Requirements, Section 4-Interpersonal Communication <del>(Voice Communications)</del> Capability	7/1/2016	None

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COM	COM-002-4	R6	Each Balancing Authority, Distribution Provider, Generator Operator, and Transmission Operator that receives an oral two-party, person-to-person Operating Instruction during an Emergency, excluding written or oral single-party to multiple-party burst Operating Instructions, shall either: <ul style="list-style-type: none"> <li>Repeat, not necessarily verbatim, the Operating Instruction and receive confirmation from the issuer that the response was correct, or</li> <li>Request that the issuer reissue the Operating Instruction.</li> </ul>	A	Each Member TO operator that receives an oral two-party, person-to-person Operating Instruction during an Emergency, excluding written or PJM All Call (oral single-party to multiple-party burst Operating Instructions), shall either: <ul style="list-style-type: none"> <li>Repeat, not necessarily verbatim, the Operating Instruction and receive confirmation from the issuer that the response was correct, or</li> <li>Request that the issuer reissue the Operating Instruction.</li> </ul>		Did your operators that receives an oral two-party, person-to-person Operating Instruction during an Emergency, excluding written or oral single-party to multiple-party burst Operating Instructions: <ul style="list-style-type: none"> <li>Repeat, not necessarily verbatim, the Operating Instruction and receive confirmation from the issuer that the response was correct, or</li> <li>Request that the issuer reissue the Operating Instruction?</li> </ul>	Examples of your operators that receives an oral two-party, person-to-person Operating Instruction during an Emergency, excluding written or oral single-party to multiple-party burst Operating Instructions: <ul style="list-style-type: none"> <li>Repeating, not necessarily verbatim, the Operating Instruction and receiving confirmation from the issuer that the response was correct, or</li> <li>Requesting that the issuer reissue the Operating Instruction.</li> </ul>	M-1 Control Center and Data Exchange Requirements, Section 4-Interpersonal Communication <del>(Voice Communications)</del> Capability	7/1/2016	None
EOP	EOP-004-4	Purpose	<b>To improve the reliability of the Bulk Electric System by requiring the reporting of events by Responsible Entities.</b>								
EOP	EOP-004-4	R2	Each Responsible Entity shall report events specified in EOP-004-4 Attachment 1 to the entities specified per their event reporting Operating Plan by the later of 24 hours of recognition of meeting an event type threshold for reporting or by the end of the Responsible Entity's next business day (4 p.m. local time will be considered the end of the business day). <i>[Violation Risk Factor: Medium] [Time Horizon: Operations Assessment]</i>	S	The Member TO experiencing a disturbance applicable to PJM as the Transmission Operator shall supply sufficient information to PJM to allow PJM to meet its 24 hour reporting requirement.	PJM has the responsibility to file the report required for the Transmission Operator with NERC and RF or SERC within 24 hours. PJM shall also file the report with the Member TO experiencing a disturbance.	1. Have you had a reportable disturbance since your last audit? 2. Did you supply sufficient information to PJM in a time adequate to meet R2?	Evidence that shows that you supplied PJM sufficient information in a timely manner.	M-13 Emergency Operations, Section 6 - Reporting Emergencies; Attachment J: Disturbance Reporting—US Department of Energy	4/1/2019	None
EOP	EOP-005-3	Purpose	<b>Ensure plans, Facilities, and personnel are prepared to enable System restoration from Blackstart Resources to ensure reliability is maintained during restoration and priority is placed on restoring the Interconnection.</b>								
EOP	EOP-005-3	R1	Each Transmission Operator shall develop and implement a restoration plan approved by its Reliability Coordinator. The restoration plan shall be implemented to restore the Transmission Operator's System following a Disturbance in which one or more areas of the Bulk Electric System (BES) shuts down and the use of Blackstart Resources is required to restore the shutdown area, to a state whereby the choice of the next Load to be restored is not driven by the need to control frequency or voltage regardless of whether the Blackstart Resource is located within the Transmission Operator's System. The restoration plan shall include: <i>[Violation Risk Factor = High] [Time Horizon =Operations Planning, Real-time Operations]</i>	S	1. Each Member TO shall develop a restoration plan that supports restoring the Transmission Operator's System following a Disturbance in which one or more areas of the Member TO's BES shuts down. 2. The Member TO shall submit the Member TO restoration plan to PJM for approval using the eDART application. 3. Each Member TO shall, when required, implement its restoration plan to restore the System and coordinate with PJM if any deviations from the plan are required.	PJM will review, recommend revision, and/or approve submitted Member TO Restoration Plans.	1. Did you develop and implement have a restoration plan that supports restoring the Transmission Operator's System following a Disturbance in which one or more areas of your BES shuts down? 2. Did you submit your System restoration plan to PJM and was it approved by PJM? 3. Did you experience a Disturbance in which one or more areas of your BES shut down? If yes, did you implement your restoration plan and coordinate with PJM if any deviations from the plan were required?	1. Exhibit your System restoration plan and show that it covers a plan to reestablish its electric system in a stable and orderly manner in the event of a partial or total shutdown of its system, including necessary operating instructions and procedures to cover emergency conditions. 2. Show evidence of submitting your System restoration plan to PJM and approval by PJM. 3. If you have had a Disturbance in which one or more areas of your BES shut down requiring you to implement your restoration plan, since the last audit, provide evidence that you used implemented your restoration plan and coordinated with PJM if any deviations from your restoration plan were required.	M-36 System Restoration, Section 1.1-Policy Statements, PJM Member Actions, Section 8-System Restoration Plan Guidelines, Attachment G: Coordination of Restoration Plan with PJM Internal and External Neighboring Entities - PJM Approval Process for TO Restoration Plans	4/1/2019	None
EOP	EOP-005-3	R1.1	Strategies for System restoration that are coordinated with its Reliability Coordinator's high level strategy for restoring the Interconnection.	S	Each Member TO's restoration plan must state the high level strategy of restoring the integrity of the Interconnection.	PJM's restoration plan states that the high level strategy of restoring the integrity of the Interconnection.	Does your restoration plan clearly emphasize the high level strategy of restoring the integrity of the Interconnection?	Show that your restoration plan has a high level strategy of restoring the integrity of the Interconnection.	M-36 System Restoration, Section 1.1-Policy Statements	4/1/2019	None

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EOP	EOP-005-3	R1.2.	A description of how all Agreements or mutually-agreed upon procedures or protocols for off-site power requirements of nuclear power plants, including priority of restoration, will be fulfilled during System restoration.	A	The Member TO's restoration plan shall, if applicable, have a description of how all Agreements or mutually-agreed upon procedures or protocols for off-site power requirements of nuclear power plants, including priority of restoration, will be fulfilled during System restoration.		1. Do you have agreements for off-site power for a nuclear plant? 2. Does your restoration plan have a description of how all Agreements or mutually-agreed upon procedures or protocols for off-site power requirements of nuclear power plants, including priority of restoration, will be fulfilled during System restoration?	If applicable, exhibit the parts of your restoration plan that have a description of how all Agreements or mutually-agreed upon procedures or protocols for off-site power requirements of nuclear power plants, including priority of restoration, will be fulfilled during System restoration.	M-36 System Restoration, Section 3.1-Restoration Process, Section 3.1.5-Implement Restoration Procedure, A.1.2-Minimum Critical Black Start Requirement  M-39 Nuclear Plant Interface Coordination, Section 2.6-System Restoration	4/1/2019	None
EOP	EOP-005-3	R1.4.	Identification of each Blackstart Resource and its characteristics including but not limited to the following: the name of the Blackstart Resource, location, megawatt and megavar capacity, and type of unit.	S	The Member TO restoration plan shall list each critical Blackstart Resource, if applicable, and its characteristics including but not limited to the following: the name of the Blackstart Resource, location, megawatt and megavar capacity, and type of unit.	PJM will supply the details about critical blackstart units upon a request from a Member TO.	Do you list in your restoration plan each critical Blackstart Resource, if applicable, and its characteristics including but not limited to the following: the name of the Blackstart Resource, location, megawatt and megavar capacity, and type of unit?	In your restoration plan, exhibit the list of critical Blackstart Resource, if applicable, and their characteristics including but not limited to the following: the name of the Blackstart Resources, location, megawatt and megavar capacity, and type of unit.	M-36 System Restoration, Section 1.1 Policy Statements; PJM Member Actions; Attachment A-Minimum Critical Black Start Requirement  M-12 Balancing Operations, Section 4.6.5-Objectives of Determining Black Start Criticality  M-14D Generator Operational Requirements, Section 10-Black Start Generation Procurement	4/1/2019	None
EOP	EOP-005-3	R1.5	Identification of Cranking Paths and initial switching requirements between each Blackstart Resource and the unit(s) to be started.	A	Each Member TO shall document the Cranking Paths, including initial switching requirements, between each Blackstart generating unit and the unit(s) to be started in the restoration plan.		1. Have you documented initial switching requirements between each Blackstart generating unit and the unit(s) to be started in the restoration plan? 2. Do you have cranking path descriptions or diagrams in your restoration plan?	Exhibit documentation of initial switching requirements and cranking paths in your restoration plan.	M-36 System Restoration, Section 1.1-Policy Statements; Section 6.2-Cranking Power- <del>Attachment F-Transmission Owner Special Procedures</del>	4/1/2019	None
EOP	EOP-005-3	R1.6	Identification of acceptable operating voltage and frequency limits during restoration.	S	Each Member TO shall, in their restoration plan, identify acceptable operating voltage and frequency limits during restoration.	M-36 requires regulation of the frequency to between 59.75 Hz and 61.0 Hz. M-36 also says reasonable voltage profiles shall be maintained (generally 90% to 105% of nominal)	Do you identify acceptable operating voltage and frequency limits during restoration in your restoration plan?	Exhibit the acceptable operating voltage and frequency limits used during restoration in the restoration plan.	M-36 System Restoration, Section 3.1.5 Implement Restoration Procedure-Frequency Control; Attachment G: Coordination of Restoration Plan with PJM Internal and External Neighboring Entities - PJM Approval for TO Restoration Plans, G-2 #4	4/1/2019	None
EOP	EOP-005-3	R2	Each Transmission Operator shall provide the entities identified in its approved restoration plan with a description of any changes to their roles and specific tasks prior to the effective date of the plan. [Violation Risk Factor = Medium] [Time Horizon = Operations Planning]	S	1. Each Member TO shall provide the entities (neighboring TOs, Distribution Providers, Blackstart GOs and Cranked Unit GOs) identified in its approved restoration plan with a description of any changes to their roles and specific tasks prior to the effective date of the plan. 2. Submit the restoration plan to PJM through eDART application according to the schedule in PJM Manual 36: System Restoration, Attachment G.	1. PJM shall provide the entities identified in its approved restoration plan with a description of any changes to their roles and specific tasks prior to the effective date of the plan. 2. Maintain the eDART application for Member TO to submit its restoration plan to PJM.	1. Did you provide the entities (neighboring TOs, Distribution Providers, Blackstart GOs and Cranked Unit GOs) identified in its approved restoration plan with a description of any changes to their roles and specific tasks prior to the effective date of the plan? 2. Did you submit the modified restoration plan to PJM through eDART according to the schedule in PJM Manual 36: System Restoration, Attachment G.	1. Exhibit emails, logs, or routing logs demonstrating that you provided the entities (neighboring TOs, Distribution Providers, Blackstart GOs, and Cranked Unit GOs) identified in your approved restoration plan with a description of any changes to their roles and specific tasks prior to the effective date of the plan. 2. Show evidence that you submitted the modified restoration plan to PJM through eDART according to the schedule in PJM Manual 36: System Restoration Attachment G.	M-36 System Restoration, Section 1.1-Policy Statements; Section 6.2-Cranking Power- <del>Attachment F-Transmission Owner Special Procedures</del> , Attachment G: Coordination of Restoration Plan with PJM Internal and External Neighboring Entities - PJM Approval Process for TO Restoration Plans.	4/1/2019	None

## NERC Reliability Standards

Category	Standard Number	Requirement Number	Approved BOT/FERC Standards	A/S	Assigned or Shared Member TO Tasks	PJM Tasks	Audit Questions	Evidence of Compliance (What auditors will be looking for)	Reference Documents	Enforcement Date	Inactive Date
EOP	EOP-005-3	R3	Each Transmission Operator shall review its restoration plan and submit it to its Reliability Coordinator annually on a mutually-agreed predetermined schedule. <i>[Violation Risk Factor = Medium] [Time Horizon = Operations Planning]</i>	S	Each Member TO shall annually review its restoration plan and submit the reviewed restoration plan to PJM for review and approval as described in PJM Manual 36: System Restoration, Attachment G: Coordination of Restoration Plan with PJM Internal and External Neighboring Entities - PJM Approval Process for TO Restoration Plans, G-3 Annual Coordination Timeline.	PJM shall conduct an annual review of PJM Manual 36: System Restoration.	Did you annually review your restoration plan and submit the reviewed restoration plan to PJM for review and approval as described in PJM Manual 36: System Restoration, Attachment G: Coordination of Restoration Plan with PJM Internal and External Neighboring Entities - PJM Approval Process for TO Restoration Plans, G-3 Annual Coordination Timeline?	Exhibit emails, screen shots, or other documentation showing that you annually reviewed your restoration plan and submitted the reviewed restoration plan to PJM for review and approval as described in PJM Manual 36: System Restoration, Attachment G: Coordination of Restoration Plan with PJM Internal and External Neighboring Entities - PJM Approval Process for TO Restoration Plans, G-3 Annual Coordination Timeline.	M-36: System Restoration, Section 1.1 Policy Statements, PJM Member Actions; Attachment G: Coordination of Restoration Plan with PJM Internal and External Neighboring Entities - PJM Approval Process for TO Restoration Plans, G-3 Annual Coordination Timeline, Table 1 - Annual Restoration Plan Review Deadlines	4/1/2019	None
EOP	EOP-005-3	R4	Each Transmission Operator shall submit its revised restoration plan to its Reliability Coordinator for approval, when the revision would change its ability to implement its restoration plan, as follows: <i>[Violation Risk Factor = Medium] [Time Horizon = Operations Planning]</i>	S	Each Member TO shall submit its revised System restoration plan to PJM for approval, when the revision would change the Member TO's ability to implement its System restoration plan, as follows:	1. Receive the submitted Member TO restoration plans and consider for approval. 2. Notify Member TO of disposition of submitted restoration plans.	Did you submit your revised restoration plan to PJM for approval, when the revision would change your ability to implement your System restoration plan, as follows?	1. Exhibit dated documents showing revision(s) that would change your ability to implement your System restoration plan. 2. Exhibit the revision log of your restoration plan and note the applicable revisions.	M-36 System Restoration, Attachment G: Coordination of Restoration Plan with PJM Internal and External Neighboring Entities - PJM Approval Process for TO Restoration Plans	4/1/2019	None
EOP	EOP-005-3	R4.1	Within 90 calendar days after identifying any unplanned permanent BES modifications.	S	Each Member TO shall submit its revised System restoration plan to PJM for approval when the revision would change the Member TO's ability to implement its System restoration plan within 90 calendar days after identifying any unplanned permanent BES modifications.	1. Receive the submitted Member TO restoration plans and consider for approval. 2. Notify Member TO of disposition of submitted restoration plans.	Did you submit your revised restoration plan to PJM for approval within 90 calendar days after you identified any unplanned permanent BES modifications?	Exhibit evidence such as, emails, screenshots, etc., showing that you submitted your revised restoration plan to PJM for approval within 90 calendar days after you identified any unplanned BES modifications.	M-36 System Restoration, Attachment G: Coordination of Restoration Plan with PJM Internal and External Neighboring Entities - PJM Approval Process for TO Restoration Plans	4/1/2019	None
EOP	EOP-005-3	R4.2	Prior to implementing a planned permanent BES modification subject to its Reliability Coordinator approval requirements per EOP-006.	S	Each Member TO shall submit its revised System restoration plan to PJM for approval when the revision would change the Member TO's ability to implement its System restoration plan prior to implementing a planned permanent BES modification.	1. Receive the submitted Member TO restoration plans and consider for approval. 2. Notify Member TO of disposition of submitted restoration plans.	Did you submit your revised restoration plan to PJM for approval prior to implementing a planned permanent BES modification.	Exhibit evidence such as, emails, screenshots, etc., showing that you submitted your revised restoration plan to PJM for approval prior to implementing a planned permanent BES modification.	M-36 System Restoration, Attachment G: Coordination of Restoration Plan with PJM Internal and External Neighboring Entities - PJM Approval Process for TO Restoration Plans	4/1/2019	None
EOP	EOP-005-3	R5	Each Transmission Operator shall have a copy of its latest Reliability Coordinator approved restoration plan within its primary and backup control rooms so that it is available to all of its System Operators prior to its effective date. <i>[Violation Risk Factor = Lower] [Time Horizon = Operations Planning]</i>	S	1. Each Member TO shall have a copy of its latest PJM approved restoration plan within its primary and backup control rooms so that it is available to all of its System Operators prior to its effective date. 2. Have a copy of the latest PJM Manual 36 - System Restoration within your primary and backup control rooms so that it is available to all of your system operators prior to PJM Manual 36 - System Restoration effective date.	Provide a copy of Manual 36 - System Restoration to each Member TO so that it can be placed within the Member TO's primary and backup control rooms so that it is available to all of its System Operators prior to its effective date.	1. Did you have a copy of your latest PJM approved restoration plan within your primary and backup control rooms prior to its effective date? 2. Did you have a copy of the latest PJM Manual 36 - System Restoration within your primary and backup control rooms prior to its effective date?	1. Exhibit evidence, such as, logs, procedures, time stamps, or trackers, etc., demonstrating that each of your PJM approved restoration plans were within your primary and backup control rooms prior to their effective dates during the audit period. 2. Exhibit a copy of the latest PJM approved restoration plan within your primary and backup control rooms.	M-36 System Restoration, Section 1.1-Policy Statements, Attachment G: Coordination of Restoration Plan with PJM Internal and External Neighboring Entities - PJM Approval for TO Restoration Plans, G-2 #6	4/1/2019	None

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Category	Standard Number	Requirement Number	Approved BOT/FERC Standards	A/S	Assigned or Shared Member TO Tasks	PJM Tasks	Audit Questions	Evidence of Compliance (What auditors will be looking for)	Reference Documents	Enforcement Date	Inactive Date
EOP	EOP-005-3	R6	Each Transmission Operator shall verify through analysis of actual events, a combination of steady state and dynamic simulations, or testing that its restoration plan accomplishes its intended function. This shall be completed at least once every five years. Such analysis, simulations or testing shall verify: <i>[Violation Risk Factor = Medium] [Time Horizon = Long-term Planning]</i>	S	1. Each Member TO shall participate in the simulation exercises (PJM Restoration Drills) of system restoration at least annually. 2. Each member TO shall provide PJM requested information to support analysis of Blackstart Resources to meet the Real and Reactive Power requirements of the Cranking Paths and the dynamic capability to supply initial Loads.	1. PJM shall offer simulation exercises (PJM Restoration Drills) of System restoration at least annually. 2. PJM shall have analysis of Blackstart Resources to meet the Real and Reactive Power requirements of the Cranking Paths and the dynamic capability to supply initial Loads at least once every five years.	1. Did you participate in the simulation exercises (PJM Restoration Drills) of System restoration at least annually? 2. Did you provide to PJM requested information to support analysis of Blackstart Resources to meet the Real and Reactive Power requirements of the Cranking Paths and the dynamic capability to supply initial Loads?	1. Exhibit documentation (drill logs, participation records, attendance records, etc.) that you participated in the simulation exercises (PJM Restoration Drills) of System restoration at least annually. 2. Exhibit evidence such as, emails, screenshots, etc., showing that you provided PJM requested information to support the analysis of Blackstart Resources to meet the Real and Reactive Power requirements of the Cranking Paths and the dynamic capability to supply initial Loads.	M-14D Generator Operational Requirements, Section 10.1.2 Selection Process, E: Verify Feasibility of Blackstart Units Selected  M-36 System Restoration, Attachment D: Restoration Drill Guide  M-40 Training and Certification Requirements, Section 1.5.3 Continuing Training Program, Section 1.6 Implementation of Program Activities, Section 3.2.1 Entity Training and Certification Requirements - Transmission Owner Operator	4/1/2019	None
EOP	EOP-005-3	R6.1	The capability of Blackstart Resources to meet the Real and Reactive Power requirements of the Cranking Paths and the dynamic capability to supply initial Loads.	S	Each member TO shall provide PJM requested information to support analysis of Blackstart Resources to meet the Real and Reactive Power requirements of the Cranking Paths and the dynamic capability to supply initial Loads.	PJM shall have analysis of Blackstart Resources to meet the Real and Reactive Power requirements of the Cranking Paths and the dynamic capability to supply initial Loads at least once every five years.	Did you provide to PJM requested information to support analysis of Blackstart Resources to meet the Real and Reactive Power requirements of the Cranking Paths and the dynamic capability to supply initial Loads?	Exhibit evidence such as, emails, screenshots, etc., showing that you provided PJM requested information to PJM to support the analysis of Blackstart Resources to meet the Real and Reactive Power requirements of the Cranking Paths and the dynamic capability to supply initial Loads.	PJM OA Tariff; Schedule 6A-Black Start Service  M-12 Balancing Operations, Section 4.6-Black Start Service  M-14D Generation Operational Requirements, Section 7.1.6-Black Start, Section 10.1.2 Selection Process, E: Verify Feasibility of Blackstart Units Selected	4/1/2019	None
EOP	EOP-005-3	R6.2	The location and magnitude of Loads required to control voltages and frequency within acceptable operating limits.	S	Each member TO shall provide PJM requested information to support analysis of Blackstart Resources to meet the Real and Reactive Power requirements of the Cranking Paths and the dynamic capability to supply initial Loads.	PJM shall have analysis of Blackstart Resources to meet the Real and Reactive Power requirements of the Cranking Paths and the dynamic capability to supply initial Loads at least once every five years.	Did you provide to PJM requested information to support analysis of Blackstart Resources to meet the Real and Reactive Power requirements of the Cranking Paths and the dynamic capability to supply initial Loads?	Exhibit evidence such as, emails, screenshots, etc., showing that you provided PJM requested information to PJM to support the analysis of Blackstart Resources to meet the Real and Reactive Power requirements of the Cranking Paths and the dynamic capability to supply initial Loads.	PJM OA Tariff; Schedule 6A-Black Start Service  M-12 Balancing Operations, Section 4.6-Black Start Service  M-14D Generation Operational Requirements, Section 7.1.6-Black Start, Section 10.1.2 Selection Process, E: Verify Feasibility of Blackstart Units Selected	4/1/2019	None
EOP	EOP-005-3	R6.3	The capability of generating resources required to control voltages and frequency within acceptable operating limits.	S	Each member TO shall provide PJM requested information to support analysis of Blackstart Resources to meet the Real and Reactive Power requirements of the Cranking Paths and the dynamic capability to supply initial Loads.	PJM shall have analysis of Blackstart Resources to meet the Real and Reactive Power requirements of the Cranking Paths and the dynamic capability to supply initial Loads at least once every five years.	Did you provide to PJM requested information to support analysis of Blackstart Resources to meet the Real and Reactive Power requirements of the Cranking Paths and the dynamic capability to supply initial Loads?	Exhibit evidence such as, emails, screenshots, etc., showing that you provided PJM requested information to PJM to support the analysis of Blackstart Resources to meet the Real and Reactive Power requirements of the Cranking Paths and the dynamic capability to supply initial Loads.	PJM OA Tariff; Schedule 6A-Black Start Service  M-12 Balancing Operations, Section 4.6-Black Start Service  M-14D Generation Operational Requirements, Section 7.1.6-Black Start, Section 10.1.2 Selection Process, E: Verify Feasibility of Blackstart Units Selected	4/1/2019	None
EOP	EOP-005-3	R8	Each Transmission Operator shall include within its operations training program, annual System restoration training for its System Operators. This training program shall include training on the following: <i>[Violation Risk Factor = Medium] [Time Horizon = Operations Planning]</i>	S	Each Member TO shall include within its operations training program, annual System restoration training for its System Operators to assure the proper execution of its restoration plan.	Annually provide the PJM System Operator Seminar. The PJM Annual System Operator Seminar partially meets these requirements.	Does your operations training program have a requirement that all of your System Operators have annual training in system restoration?	Exhibit the section of the operations training program that requires annual training in system restoration.	M-40 Training and Certification Requirements, Section 1.5.3 Continuing Training Program, Section 1.6 Implementation of Program Activities, Section 3.2.1 -Entity Training and Certification Requirements - Transmission Owner Operator	4/1/2019	None
EOP	EOP-005-3	R8.1	System restoration plan including coordination with its Reliability Coordinator and Generator Operators included in the restoration plan.	S	Each Member TO operations training program shall include training on its restoration plan including how and when to coordinate with PJM and Generator Operators included in your restoration plan.	Annually provide the PJM System Operator Seminar. The PJM Annual System Operator Seminar partially meets these requirements.	Does your operations training program include training on your restoration plan including how and when to coordinate with PJM and Generator Operators included in your restoration plan?	Exhibit the section of your operations training program that includes training on your restoration plan including how and when to coordinate with PJM and Generator Operators included in your restoration plan.	M-40 Training and Certification Requirements, Section 1.1- Training Overview, Section 1.4.2 - Task Lists, Section 1.4.3 Reliability-Related Tasks, Section 3 - Member Training and Certification Requirements	4/1/2019	None



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Category	Standard Number	Requirement Number	Approved BOT/FERC Standards	A/S	Assigned or Shared Member TO Tasks	PJM Tasks	Audit Questions	Evidence of Compliance (What auditors will be looking for)	Reference Documents	Enforcement Date	Inactive Date
EOP	EOP-005-3	R8.2	Restoration priorities.	S	Each Member TO operations training program shall include training on restoration priorities.	Annually provide the PJM System Operator Seminar. The PJM Annual System Operator Seminar partially meets this requirement.	Does your operations training program have a requirement that all of your System Operators have annual training in System restoration including restoration priorities?	Exhibit the section of your operations training program that has a requirement that all of your System Operators have annual training in system restoration including restoration priorities.	M-40 Training and Certification Requirements, Section 1.1- Training Overview, Section 1.4.2 - Task Lists, Section 1.4.3 Reliability-Related Tasks, Section 3 - Member Training and Certification Requirements  M-36 System Restoration, Attachment D: Restoration Drill Guide	4/1/2019	None
EOP	EOP-005-3	R8.3	Building of cranking paths.	S	Each Member TO operations training program shall include training on building of cranking paths.	Annually provide the PJM System Operator Seminar. The PJM Annual System Operator Seminar partially meets these requirements.	Does your operations training program have a requirement that all of your System Operators have annual training in System restoration including building of cranking paths?	Exhibit the section of your operations training program that has a requirement that all of your System Operators have annual training in system restoration including building of cranking paths.	M-40 Training and Certification Requirements, Section 1.1- Training Overview, Section 1.4.2 - Task Lists, Section 1.4.3 Reliability-Related Tasks, Section 3 - Member Training and Certification Requirements  M-36 System Restoration, Attachment D: Restoration Drill Guide	4/1/2019	None
EOP	EOP-005-3	R8.4	Synchronizing (re-energized sections of the System).	S	Each Member TO operations training program shall include training on synchronizing (re-energized sections of the System) under the direction of PJM.	Annually provide the PJM System Operator Seminar. The PJM Annual System Operator Seminar partially meets these requirements.	Does your operations training program have a requirement that all of your System Operators have annual training in System restoration including synchronizing?	Exhibit the section of your operations training program that has a requirement that all of your System Operators have annual training in System restoration including synchronizing.	M-40 Training and Certification Requirements, Section 1.1- Training Overview, Section 1.4.2 - Task Lists, Section 1.4.3 Reliability-Related Tasks, Section 3 - Member Training and Certification Requirements  M-36 System Restoration, Attachment D: Restoration Drill Guide	4/1/2019	None
EOP	EOP-005-3	R8.5	Transition of Demand and resource balance within its area to the Balancing Authority.	S	Each Member TO operations training program shall include training on transition of Demand and resource balance within its area to the PJM as the Balancing Authority.	Annually provide the PJM System Operator Seminar, which covers this training.	Does your operations training program include training on transition of Demand and resource balance within your area to PJM as the Balancing Authority?	Exhibit the section of your operations training program that requires your System Operators to be trained on transition of Demand and resource balance within your area to PJM as the Balancing Authority.	M-40 Training and Certification Requirements, Section 1.1- Training Overview, Section 1.4.2 - Task Lists, Section 1.4.3 Reliability-Related Tasks, Section 3 - Member Training and Certification Requirements	4/1/2019	None
EOP	EOP-005-3	R10	Each Transmission Operator shall participate in its Reliability Coordinator's restoration drills, exercises, or simulations as requested by its Reliability Coordinator. <i>[Violation Risk Factor = Medium] [Time Horizon = Operations Planning]</i>	S	Each Member TO shall participate in PJM's restoration drills, exercises, or simulations as mentioned in Manual 40.	1. Keep Manual 40 up to date. 2. Run restoration drills, exercises or simulations.	Do you meet PJM's restoration drill requirements mentioned in Manual 40?	Exhibit training records that show that you meet PJM's restoration drill requirements mentioned in Manual 40.	M-40 Training and Certification Requirements, Section 1.1- Training Overview, Section 1.4.2 - Task Lists, Section 1.4.3 Reliability-Related Tasks, Section 3 - Member Training and Certification Requirements	4/1/2019	None
EOP	EOP-008-2	<b>Purpose</b>	<b>Ensure continued reliable operations of the Bulk Electric System (BES) in the event that a control center becomes inoperable.</b>								
EOP	EOP-008-2	R1	Each Reliability Coordinator, Balancing Authority, and Transmission Operator shall have a current Operating Plan describing the manner in which it continues to meet its functional obligations with regard to the reliable operations of the BES in the event that its primary control center functionality is lost. This Operating Plan for backup functionality shall include: <i>[Violation Risk Factor = Medium] [Time Horizon = Operations Planning]</i>	A	Each Member TO shall have a current Operating Plan describing the manner in which the Member TO will continue to meet functional obligations with regard to the reliable operations of the BES in the event that the Member TO's primary control center functionality is lost.		Do you have a current Operating Plan describing the manner in which you will continue to meet your functional obligations with regard to the reliable operations of the BES in the event that your primary control center functionality is lost?	Exhibit the current Operating Plan describing the manner in which you will continue to meet your functional obligations with regard to the reliable operations of the BES in the event that your primary control center functionality is lost.	M-1 Control Center and Data Exchange Requirements, Section 2.5.6-Recovery Procedures	4/1/2019	None
EOP	EOP-008-2	R1.1	The location and method of implementation for providing backup functionality.	A	The Member TO plan for the loss of primary control center functionality shall include the location and method of implementation for providing backup functionality.		Does your plan for the loss of primary control center functionality include the location and method of implementation for providing backup functionality?	Exhibit your plan for the loss of primary control center functionality that includes the location and method of implementation for providing backup functionality.	M-1 Control Center and Data Exchange Requirements, Section 2.5.6-Recovery Procedures	4/1/2019	None
EOP	EOP-008-2	<b>R1.2 (Heading)</b>	<b>A summary description of the elements required to support the backup functionality. These elements shall include:</b>								

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Category	Standard Number	Requirement Number	Approved BOT/FERC Standards	A/S	Assigned or Shared Member TO Tasks	PJM Tasks	Audit Questions	Evidence of Compliance (What auditors will be looking for)	Reference Documents	Enforcement Date	Inactive Date
EOP	EOP-008-2	R1.2.1	Tools and applications to ensure that System Operators have situational awareness of the BES.	A	The Member TO plan for the loss of primary control center functionality shall include a summary description of tools and applications to ensure that System Operators have situational awareness of the BES.		Does your plan for the loss of primary control center functionality include a summary description of tools and applications to ensure that System Operators have situational awareness of the BES?	Exhibit your plan for the loss of primary control center functionality that includes a summary description of tools and applications to ensure that System Operators have situational awareness of the BES.	M-1 Control Center and Data Exchange Requirements, Section 2.3.1-Transmission Monitoring Capability	4/1/2019	None
EOP	EOP-008-2	R1.2.2	Data exchange capabilities.	A	The Member TO plan for the loss of primary control center functionality shall include a summary description of data exchange capabilities including a description of how PJMnet is used.		Does your plan for the loss of primary control center functionality include a summary description of data exchange capabilities including a description of how PJMnet is used?	Exhibit your plan for the loss of primary control center functionality that includes a summary description of data exchange capabilities including a description of how PJMnet is used.	M-1 Control Center and Data Exchange Requirements, Section 2.3.1-Transmission Monitoring Capability	4/1/2019	None
EOP	EOP-008-2	R1.2.3	Interpersonal Communications.	A	The Member TO plan for the loss of primary control center functionality shall include a summary description of Interpersonal Communications.		Does your plan for the loss of primary control center functionality include a summary description of Interpersonal Communications?	Exhibit your plan for the loss of primary control center functionality that includes a summary description of Interpersonal Communications.	M-1 Control Center and Data Exchange Requirements, Section 4- Interpersonal communication ( <del>Voice communication</del> - Capability)	4/1/2019	None
EOP	EOP-008-2	R1.2.4	Power source(s).	A	The Member TO plan for the loss of primary control center functionality shall include a summary description of power sources.		Does your plan for the loss of primary control center functionality include a summary description of power sources?	Exhibit your plan for the loss of primary control center functionality that includes a summary description of power sources.	M-1 Control Center and Data Exchange Requirements, Section 2.3.1-Transmission Monitoring Capability	4/1/2019	None
EOP	EOP-008-2	R1.2.5	Physical and cyber security.	A	The Member TO plan for the loss of primary control center functionality shall include a summary description of physical and cyber security.		Does your plan for the loss of primary control center functionality include a summary description of physical and cyber security?	Exhibit your plan for the loss of primary control center functionality that includes a summary description of physical and cyber security.	M-1 Control Center and Data Exchange Requirements, Section 2.3.1-Transmission Monitoring Capability	4/1/2019	None
EOP	EOP-008-2	R1.3.	An Operating Process for keeping the backup functionality consistent with the primary control center.	A	The Member TO plan for the loss of primary control center functionality shall include an Operating Process for keeping the backup functionality consistent with the primary control center.		Does your plan for the loss of primary control center functionality include an Operating Process for keeping the backup functionality consistent with the primary control center?	Exhibit your plan for the loss of primary control center functionality that includes an Operating Process for keeping the backup functionality consistent with the primary control center.	M-1 Control Center and Data Exchange Requirements, Section 2.3.1-Transmission Monitoring Capability	4/1/2019	None
EOP	EOP-008-2	R1.4.	Operating Procedures, including decision authority, for use in determining when to implement the Operating Plan for backup functionality.	A	The Member TO plan for the loss of primary control center functionality shall include Operating Procedures, including decision authority, for use in determining when to implement the Operating Plan for backup functionality.		Does your plan for the loss of primary control center functionality include Operating Procedures, including decision authority, for use in determining when to implement the Operating Plan for backup functionality?	Exhibit your plan for the loss of primary control center functionality that includes Operating Procedures, including decision authority, for use in determining when to implement the Operating Plan for backup functionality.	M-1 Control Center and Data Exchange Requirements, Section 2.3.1-Transmission Monitoring Capability	4/1/2019	None
EOP	EOP-008-2	R1.5	A transition period between the loss of primary control center functionality and the time to fully implement the backup functionality that is less than or equal to two hours.	A	The Member TO plan for the loss of primary control center functionality shall include a transition period between the loss of primary control center functionality and the time to fully implement the backup functionality that is less than or equal to two hours.		Does your plan for the loss of primary control center functionality include a transition period between the loss of primary control center functionality and the time to fully implement the backup functionality that is less than or equal to two hours?	Exhibit your plan for the loss of primary control center functionality with a transition period between the loss of primary control center functionality and the time to fully implement the backup functionality that is less than or equal to two hours.	M-1 Control Center and Data Exchange Requirements, Section 2.3.1-Transmission Monitoring Capability	4/1/2019	None
EOP	EOP-008-2	R1.6	An Operating Process describing the actions to be taken during the transition period between the loss of primary control center functionality and the time to fully implement backup functionality elements identified in Requirement R1, Part 1.2. The Operating Process shall include:	A	The Member TO plan for the loss of primary control center functionality shall include an Operating Process describing the actions to be taken during the transition period between the loss of primary control center functionality and the time to fully implement backup functionality elements identified in Requirement R1, Part 1.2.		Does your plan for the loss of primary control center functionality include an Operating Process describing the actions to be taken during the transition period between the loss of primary control center functionality and the time to fully implement backup functionality elements identified in Requirement R1, Part 1.2?	Exhibit your plan for the loss of primary control center functionality that includes an Operating Process describing the actions to be taken during the transition period between the loss of primary control center functionality and the time to fully implement backup functionality elements identified in Requirement R1, Part 1.2.	M-1 Control Center and Data Exchange Requirements, Section 2.3.1-Transmission Monitoring Capability	4/1/2019	None

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Category	Standard Number	Requirement Number	Approved BOT/FERC Standards	A/S	Assigned or Shared Member TO Tasks	PJM Tasks	Audit Questions	Evidence of Compliance (What auditors will be looking for)	Reference Documents	Enforcement Date	Inactive Date
EOP	EOP-008-2	R1.6.1	A list of all entities to notify when there is a change in operating locations.	S	The Member TO Operating Process describing the actions to be taken during the transition period between the loss of primary control center functionality and the time to fully implement backup functionality elements identified in Requirement R1, Part 1.2 shall include a list of all entities, including PJM, to notify when there is a change in operating locations.	PJM, at the request of the Member TO, shall monitor a Member TO's system during the change of operating locations.	Does your Operating Process describe the actions to be taken during the transition period between the loss of primary control center functionality and the time to fully implement backup functionality elements identified in Requirement R1, Part 1.2 include a list of all entities, including PJM, to notify when there is a change in operating locations?	Exhibit your Operating Process describing the actions to be taken during the transition period between the loss of primary control center functionality and the time to fully implement backup functionality elements identified in Requirement R1, Part 1.2 that includes a list of all entities, including PJM, to notify when there is a change in operating locations.	M-1 Control Center and Data Exchange Requirements, 2.6.1 Staffing Upon Loss of an EMS or a 765 kV, 500 kV, or 345 kV RTU	4/1/2019	None
EOP	EOP-008-2	R1.6.2	Actions to manage the risk to the BES during the transition from primary to backup functionality as well as during outages of the primary or backup functionality.	S	The Member TO Operating Process describing the actions to be taken during the transition period between the loss of primary control center functionality and the time to fully implement backup functionality elements identified in Requirement R1, Part 1.2 shall include actions to manage the risk to the BES during the transition from primary to backup functionality as well as during outages of the primary or backup functionality.	PJM will monitor all lines available for monitoring and ties and direct appropriate actions.	Does your Operating Process describe the actions to be taken during the transition period between the loss of primary control center functionality and the time to fully implement backup functionality elements identified in Requirement R1, Part 1.2 include actions to manage the risk to the BES during the transition from primary to backup functionality as well as during outages of the primary or backup functionality?	Exhibit your Operating Process describing the actions to be taken during the transition period between the loss of primary control center functionality and the time to fully implement backup functionality elements identified in Requirement R1, Part 1.2 that includes actions to manage the risk to the BES during the transition from primary to backup functionality as well as during outages of the primary or backup functionality.	M-1 Control Center and Data Exchange Requirements, 2.6.1 Staffing Upon Loss of an EMS or a 765 kV, 500 kV, or 345 kV RTU	4/1/2019	None
EOP	EOP-008-2	R1.6.3	Identification of the roles for personnel involved during the initiation and implementation of the Operating Plan for backup functionality.	A	The Member TO Operating Process describing the actions to be taken during the transition period between the loss of primary control center functionality and the time to fully implement backup functionality elements identified in Requirement R1, Part 1.2 shall include an identification of the roles for personnel involved during the initiation and implementation of the Operating Plan for backup functionality.		Does your Operating Process describing the actions to be taken during the transition period between the loss of primary control center functionality and the time to fully implement backup functionality elements identified in Requirement R1, Part 1.2 include an identification of the roles for personnel involved during the initiation and implementation of the Operating Plan for backup functionality?	Exhibit your Operating Process describing the actions to be taken during the transition period between the loss of primary control center functionality and the time to fully implement backup functionality elements identified in Requirement R1, Part 1.2 that includes an identification of the roles for personnel involved during the initiation and implementation of the Operating Plan for backup functionality.	M-1 Control Center and Data Exchange Requirements, Section 2.6.1 Staffing Upon Loss of an EMS or a 765 kV, 500 kV, or 345 kV RTU	4/1/2019	None
EOP	EOP-008-2	R2	Each Reliability Coordinator, Balancing Authority, and Transmission Operator shall have a copy of its current Operating Plan for backup functionality available at its primary control center and at the location providing backup functionality. <i>[Violation Risk Factor = Lower] [Time Horizon = Operations Planning]</i>	A	Each Member TO shall have a copy of its current Operating Plan for backup functionality available at its primary control center and at the location providing backup functionality.		Do you have a copy of your current Operating Plan for backup functionality available at your primary control center and at the location providing backup functionality?	Exhibit a copy of your current Operating Plan for backup functionality available at your primary control center and at the location providing backup functionality.	M-1 Control Center and Data Exchange Requirements, Section 2.7 PJM Member Back Up Capability Required to Support PJM in its TOP Role	4/1/2019	None

## NERC Reliability Standards

Category	Standard Number	Requirement Number	Approved BOT/FERC Standards	A/S	Assigned or Shared Member TO Tasks	PJM Tasks	Audit Questions	Evidence of Compliance (What auditors will be looking for)	Reference Documents	Enforcement Date	Inactive Date
EOP	EOP-008-2	R4	Each Balancing Authority and Transmission Operator shall have backup functionality (provided either through a facility or contracted services staffed by applicable certified operators when control has been transferred to the backup functionality location) that includes monitoring, control, logging, and alarming sufficient for maintaining compliance with all Reliability Standards that are applicable to a Balancing Authority's and Transmission Operator's primary control center functionality. To avoid requiring tertiary functionality, backup functionality is not required during: <i>[Violation Risk Factor = High] [Time Horizon = Operations Planning]</i>  <ul style="list-style-type: none"> <li>Planned outages of the primary or backup functionality of two weeks or less</li> <li>Unplanned outages of the primary or backup functionality</li> </ul>	A	Each Member TO shall have backup functionality (provided either through a facility or contracted services staffed by applicable certified operators when control has been transferred to the backup functionality location) that includes monitoring, control, logging, and alarming sufficient for maintaining compliance with all Reliability Standards that depend on a Member TO's primary control center functionality. To avoid requiring tertiary functionality, backup functionality is not required during:  <ul style="list-style-type: none"> <li>Planned outages of the primary or backup functionality of two weeks or less</li> <li>Unplanned outages of the primary or backup functionality</li> </ul>		Do you have backup functionality (provided either through a facility or contracted services staffed by applicable certified operators when control has been transferred to the backup functionality location) that includes monitoring, control, logging, and alarming sufficient for maintaining compliance with all Reliability Standards that depend on your primary control center functionality.	A tour of the backup functionality (provided either through a facility or contracted services staffed by applicable certified operators when control has been transferred to the backup functionality location) that includes monitoring, control, logging, and alarming sufficient for maintaining compliance with all Reliability Standards that depend on your primary control center functionality.	M-1 Control Center and Data Exchange Requirements, Section 2.7 PJM Member Back Up Capability Required to Support PJM in its TOP Role	4/1/2019	None
EOP	EOP-008-2	R5	Each Reliability Coordinator, Balancing Authority, and Transmission Operator, shall annually review and approve its Operating Plan for backup functionality. <i>[Violation Risk Factor = Medium] [Time Horizon = Operations Planning]</i>	A	Each Member TO shall annually review and approve its Operating Plan for backup functionality.		Do you annually review and approve your Operating Plan for backup functionality?	Exhibit your Operating Plan for backup functionality showing in the revision history the annual review and approval.	M-1 Control Center and Data Exchange Requirements, Attachment B: Schedule of Data Submittals	4/1/2019	None
EOP	EOP-008-2	R5.1	An update and approval of the Operating Plan for backup functionality shall take place within sixty calendar days of any changes to any part of the Operating Plan described in Requirement R1.	A	1. Each Member TO shall update their Operating Plan for backup functionality within sixty calendar days of any changes to any part of the Operating Plan described in Requirement R1. 2. Submit certification to PJM of changes to the Operating Plan described in Requirement R1 through the PERCS secure website within 60 calendar days of any changes to any part of the Operating Plan described in Requirement R1.		1. Did you update your Operating Plan for backup functionality within sixty calendar days of any changes to any part of the Operating Plan described in Requirement R1? 2. Did you submit to PJM certification of changes to the Operating Plan described in Requirement R1 through the PERCS secure website?	1. Exhibit your Operating Plan for backup functionality showing in the revision history any changes to any part of the Operating Plan described in Requirement R1 were done within sixty calendar days. 2. Exhibit evidence of submitting to PJM the certification of changes to the Operating Plan described in Requirement R1 through the PERCS secure website.	M-1 Control Center and Data Exchange Requirements, Attachment B: Schedule of Data Submittals.	4/1/2019	None
EOP	EOP-008-2	R6	Each Reliability Coordinator, Balancing Authority, and Transmission Operator shall have primary and backup functionality that do not depend on each other for the control center functionality required to maintain compliance with Reliability Standards. <i>[Violation Risk Factor = Medium] [Time Horizon = Operations Planning]</i>	A	Each Member TO shall have primary and backup functionality that do not depend on each other for the control center functionality required to maintain compliance with Reliability Standards.		Do you have primary and backup functionality that do not depend on each other for the control center functionality required to maintain compliance with Reliability Standards?	Show evidence that the primary and backup functionality do not depend on each other for the control center functionality required to maintain compliance with Reliability Standards such as drawings showing their independence.	M-1 Control Center and Data Exchange Requirements, Section 2.7 PJM Member Back Up Capability Required to Support PJM in its TOP Role	4/1/2019	None
EOP	EOP-008-2	R7	Each Reliability Coordinator, Balancing Authority, and Transmission Operator shall conduct and document results of an annual test of its Operating Plan that demonstrates: <i>[Violation Risk Factor = Medium] [Time Horizon = Operations Planning]</i>	A	1. Each Member TO shall conduct and document results of a test of its Operating Plan for backup functionality at least annually. 2. The Member TO shall provide PJM documentation of the test and the test results indicating performance.		1. Did you conduct and document results of a test of your Operating Plan at least annually? 2. Did you provide PJM documentation of the test and the test results indicating performance?	Exhibit evidence such as, logs, test records, or reports of tests of your Operating Plan for backup functionality demonstrating that a test was performed at least annually and indicating performance.	M-1 Control Center and Data Exchange Requirements, <b>Section 2.7 PJM Member Back Up Capability Required to Support PJM in its TOP Role Attachment B: Schedule of Data-Submittals</b>	4/1/2019	None

## NERC Reliability Standards

Category	Standard Number	Requirement Number	Approved BOT/FERC Standards	A/S	Assigned or Shared Member TO Tasks	PJM Tasks	Audit Questions	Evidence of Compliance (What auditors will be looking for)	Reference Documents	Enforcement Date	Inactive Date
EOP	EOP-008-2	R7.1	The transition time between the simulated loss of primary control center functionality and the time to fully implement the backup functionality.	S	During the test of the Member TO's Operating Plan, account for the transition time between the simulated loss of primary control center functionality and the time to fully implement the backup functionality.	PJM, at the request of the Member TO, shall monitor a Member TO's system during the change of operating locations.	Have you, during the test of the Member TO's Operating Plan, demonstrated the transition time between the simulated loss of primary control center functionality and the time to fully implement the backup functionality?	Reports of the test of your Operating Plan noting the time between the simulated loss of primary control center functionality and the time to fully implement the backup functionality.	M-1 Control Center and Data Exchange Requirements, <a href="#">Section 2.7 PJM Member Back Up Capability Required to Support PJM in its TOP Role Attachment B: Schedule of Data Submittals</a>	4/1/2019	None
EOP	EOP-008-2	R7.2	The backup functionality for a minimum of two continuous hours.	A	During the test of the Member TO's Operating Plan, demonstrate backup functionality for a minimum of two continuous hours.		Have you, during the test of the Member TO's Operating Plan, demonstrated backup functionality for a minimum of two continuous hours?	Reports showing that you, during the test of the Member TO's Operating Plan, demonstrated backup functionality for a minimum of two continuous hours.	M-1 Control Center and Data Exchange Requirements, Section 2.7 PJM Member Back Up Capability Required to Support PJM in its TOP Role	4/1/2019	None
EOP	EOP-008-2	R8	Each Reliability Coordinator, Balancing Authority, and Transmission Operator that has experienced a loss of its primary or backup functionality and that anticipates that the loss of primary or backup functionality will last for more than six calendar months shall provide a plan to its Regional Entity within six calendar months of the date when the functionality is lost, showing how it will re-establish primary or backup functionality. <i>[Violation Risk Factor = Medium] [Time Horizon = Operations Planning]</i>	S	Each Member TO that has experienced a loss of its primary or backup functionality and that anticipates that the loss of primary or backup functionality will last for more than six calendar months shall provide a plan showing how it will re-establish primary or backup functionality to PJM so that PJM can meet its reporting requirements.	PJM will provide a plan to RFC or SERC, as necessary, within six calendar months of the date when the functionality is lost, showing how the Member TO will re-establish primary or backup functionality.	1. Have you experienced a loss of your primary or backup functionality that you anticipated would last for more than six calendar months? 2. Did you report the anticipated six-month loss showing how you re-established primary or backup functionality to PJM within 5 months?	1. Reports such as emails, voice recording or other documentation of the loss of your primary or backup functionality that you anticipated would last for more than six calendar months. 2. Notification of PJM showing how you re-established primary or backup functionality to PJM within 5 months.	M-1 Control Center and Data Exchange Requirements, Section 2.7 PJM Member Back Up Capability Required to Support PJM in its TOP Role	4/1/2019	None
EOP	EOP-010-1	Purpose	To mitigate the effects of geomagnetic disturbance (GMD) events by implementing Operating Plans, Processes, and Procedures.								
EOP	EOP-010-1	R1 (Heading)	Each Reliability Coordinator shall develop, maintain, and implement a GMD Operating Plan that coordinates GMD Operating Procedures or Operating Processes within its Reliability Coordinator Area. At a minimum, the GMD Operating Plan shall include:								
EOP	EOP-010-1	R1.2	A process for the Reliability Coordinator to review the GMD Operating Procedures or Operating Processes of Transmission Operators within its Reliability Coordinator Area.	S	Where applicable, the Member TO shall submit its GMD Operating Procedures or Operating Processes for its area to PJM annually or within 30 days of a change.	1. PJM is responsible for developing, maintaining, and implementing its GMD Operating Procedures or Operating Processes located in PJM Manual 13: Emergency Operations, Section 3.7 Geo-Magnetic Disturbances. 2. PJM shall review GMD Operating Procedures or Operating Plans submitted by Member TOs.	1. Do you have GMD Operating Procedures or Operating Processes for your area? 2. If yes, do you submit your GMD Operating Procedures or Operating Processes to PJM annually or within 30 days of a change?	1. If applicable, exhibit your GMD Operating Procedures or Operating Processes. 2. If applicable, exhibit emails, screen shots, etc., showing that you submitted your GMD Operating Procedures or Operating Processes to PJM for review annually or within 30 days of a change.	PJM OA 11.3, Schedule 1, 1.9.9  TOA  M-1 Control Center and Data Exchange Requirements, Section 4-Interpersonal Communication ( <del>Voice Communications</del> ) Capability  M-3 Transmission Operations, Section 1.2-Responsibilities for Transmission Owner's Operating Entity  M-37 Reliability Coordination, Section 1-Roles and Responsibilities  M-13 Emergency Operations, Section 3.8 Geo-Magnetic Disturbances (GMD) Operating Plan (EOP-010-1)	4/1/2015	None
EOP	EOP-010-1	R3 (Heading)	Each Transmission Operator shall develop, maintain, and implement a GMD Operating Procedure or Operating Process to mitigate the effects of GMD events on the reliable operation of its respective system. At a minimum, the Operating Procedure or Operating Process shall include:								

## NERC Reliability Standards

Category	Standard Number	Requirement Number	Approved BOT/FERC Standards	A/S	Assigned or Shared Member TO Tasks	PJM Tasks	Audit Questions	Evidence of Compliance (What auditors will be looking for)	Reference Documents	Enforcement Date	Inactive Date
EOP	EOP-010-1	R3.2	System Operator actions to be initiated based on predetermined conditions.	S	The Member TO shall comply with Operating Instructions to mitigate the effects of GMD events.	1. PJM is responsible for developing, maintaining, and implementing its GMD Operating Procedure located in PJM Manual 13: Emergency Operations, Section 3.7 Geo-Magnetic Disturbances. 2. PJM shall issue Operating Instructions to implement its GMD Operating Procedure to ensure mitigation of GMD events on its system.	Have you had any incidents when you were not able to comply with Operating Instructions to mitigate the effects of GMD events?	1. Documentation of procedures that requires the Member TO System Operators to comply with Operating Instructions to mitigate the effects of GMD events. 2. Examples of the Member TO system operator following Operating Instructions to mitigate the effects of GMD events in the form of logs, voice recordings or transcripts of voice recordings, or other equivalent evidence.	PJM OA 11.3, Schedule 1, 1.9.9  TOA  M-1 Control Center and Data Exchange Requirements, Section 4-Interpersonal Communication ( <del>Voice Communications</del> ) Capability  M-3 Transmission Operations, Section 1.2-Responsibilities for Transmission Owner's Operating Entity  M-37 Reliability Coordination, Section 1-Roles and Responsibilities  M-13 Emergency Operations, Section 3.8 Geo-Magnetic Disturbances (GMD) Operating Plan (EOP-010-1)	4/1/2015	None
EOP	EOP-010-1	R3.3	The conditions for terminating the Operating Procedure or Operating Process.	S	The Member TO shall comply with Operating Instructions to mitigate the effects of GMD events.	1. PJM is responsible for developing, maintaining, and implementing its GMD Operating Procedure located in PJM Manual 13: Emergency Operations, Section 3.7 Geo-Magnetic Disturbances. 2. PJM shall issue Operating Instructions to implement its GMD Operating Procedure to ensure mitigation of GMD events on its system.	Have you had any incidents when you were not able to comply with Operating Instructions to mitigate the effects of GMD events?	1. Documentation of procedures that requires the Member TO System Operators to comply with Operating Instructions to mitigate the effects of GMD events. 2. Examples of the Member TO system operator following Operating Instructions to mitigate the effects of GMD events in the form of logs, voice recordings or transcripts of voice recordings, or other equivalent evidence.	PJM OA 11.3, Schedule 1, 1.9.9  TOA  M-1 Control Center and Data Exchange Requirements, Section 4-Interpersonal Communication ( <del>Voice Communications</del> ) Capability  M-3 Transmission Operations, Section 1.2-Responsibilities for Transmission Owner's Operating Entity  M-37 Reliability Coordination, Section 1-Roles and Responsibilities  M-13 Emergency Operations, Section 3.8 Geo-Magnetic Disturbances (GMD) Operating Plan (EOP-010-1)	4/1/2015	None
FAC	FAC-014-2	Purpose	To ensure that System Operating Limits (SOLs) used in the reliable planning and operation of the Bulk Electric System (BES) are determined based on an established methodology or methodologies.								

## NERC Reliability Standards

Category	Standard Number	Requirement Number	Approved BOT/FERC Standards	A/S	Assigned or Shared Member TO Tasks	PJM Tasks	Audit Questions	Evidence of Compliance (What auditors will be looking for)	Reference Documents	Enforcement Date	Inactive Date
FAC	FAC-014-2	R2	The Transmission Operator shall establish SOLs (as directed by its Reliability Coordinator) for its portion of the Reliability Coordinator Area that are consistent with its Reliability Coordinator's SOL Methodology.	S	Each Member TO shall establish facility ratings for its portion of PJM.	PJM shall maintain its SOL methodology. PJM shall create SOLs from the Member TO facility ratings using the PJM manual.	Have you established ratings for your portion of PJM?	Exhibit example evidence establishing your ratings.	PJM OA , Section 11.3.1e- Member Responsibilities, General  Transmission Owners Agreement, Section 4.5  M-3 Transmission Operations, Sections 1.2- Responsibilities for Transmission Owner's Operating Entity, 1.3-Transmission Operating Guidelines, 3.5-Voltage Control Actions  M-37 Reliability Coordination, Sections 1.1- Policy Statements, 3-SOL and IROL Limits  M-13 Emergency Operations, Section 5.5- Interconnection Reliability Operating Limits (IROL) Manual Load Dump Warning/Action  M-12 Balancing Operations, Section 3.1.3- PJM Member Control Implementation, Section 5-Transmission Facility Control	4/29/2009	None
IRO	IRO-001-4	Purpose	To establish the responsibility of Reliability Coordinators to act or direct other entities to act.								
IRO	IRO-001-4	R2	Each Transmission Operator, Balancing Authority, Generator Operator, and Distribution Provider shall comply with its Reliability Coordinator's Operating Instructions unless compliance with the Operating Instructions cannot be physically implemented or unless such actions would violate safety, equipment, regulatory, or statutory requirements.	S	1. The Member TO System Operators shall comply with PJM Operating Instructions unless compliance with the Operating Instructions cannot be physically implemented or unless such actions would violate safety, equipment, regulatory, or statutory requirements.	PJM shall have remedial plans if the Member TO cannot follow the Operating Instruction.	1. Do you have documented procedures that require your System Operators to comply with PJM Operating Instructions? 2. Have you had any incidents when your System Operators were not able to comply with PJM Operating Instructions because compliance with the Operating Instructions could not be physically implemented or unless such actions would have violated safety, equipment, regulatory, or statutory requirements?	1. Documentation of procedures that requires the Member TO System Operators to comply with PJM Operating Instructions. 2. Examples of the Member TO System Operator following PJM Operating Instructions in the form of logs, voice recordings or transcripts of voice recordings, or other equivalent evidence.	PJM OA 11.3, Schedule 1, 1.9.9  TOA  M-3 Transmission Operations, Section 1.2- Responsibilities for Transmission Owner's Operating Entity  M-37 Reliability Coordination, Section 1- Roles and Responsibilities  M-1 Control Center and Data Exchange Requirements, Section 4-Interpersonal Communication ( <del>Voice Communications</del> ) Capability	4/1/2017	None

## NERC Reliability Standards

Category	Standard Number	Requirement Number	Approved BOT/FERC Standards	A/S	Assigned or Shared Member TO Tasks	PJM Tasks	Audit Questions	Evidence of Compliance (What auditors will be looking for)	Reference Documents	Enforcement Date	Inactive Date
IRO	IRO-001-4	R3	Each Transmission Operator, Balancing Authority, Generator Operator, and Distribution Provider shall inform its Reliability Coordinator of its inability to perform the Operating Instruction issued by its Reliability Coordinator in Requirement R1.	S	If the PJM Operating Instructions cannot be complied with because compliance with Operating Instructions could not be physically implemented or because such actions would have violated safety, equipment, regulatory, or statutory requirements, the Member TO System Operators shall inform PJM as soon as possible.	PJM shall have the responsibility and clear decision-making authority to issue Operating Instructions to ensure the reliability of its area and shall exercise specific authority to alleviate operating emergencies.	1. Have you had any incidents when your System Operators were not able to comply with PJM Operating Instructions because compliance with the Operating Instructions could not be physically implemented or unless such actions would have violated safety, equipment, regulatory, or statutory requirements? 2. If because of the reasons mentioned above, your System Operators could not comply with PJM Operating Instructions, did your System Operators inform PJM as soon as possible?	Exhibit evidence, if applicable, of any instances when your System Operators did not comply with PJM Operating Instructions because compliance with the Operating Instructions could not be physically implemented or unless such actions would have violated safety, equipment, regulatory, or statutory requirements and that your System Operators informed PJM as soon as possible.	PJM OA, Section 11.3 Member Responsibilities, 11.3.1 General (e)  M-3 Transmission Operations, Section 1.2-Responsibilities for Transmission Owner's Entity, Section 1.3-Transmission Operating Guidelines  M-13 Emergency Operations, Section 1.1-Policy Statements  M-37 Reliability Coordination, Section 1.1-Policy Statements  RAA - Schedule 2-Standards for Integrating an Entity into the PJM Region-B.3, Schedule 6 Procedures for Demand Resources ILR, and Energy Efficiency-A.5.  Open Access Tariff, Section 1.7.4-General Obligations of the Market Participants (b), Section 5.3 Outage Authority and Coordination, 13.6A-Load Shedding, III-Network Integration Transmission Service Section 33-Load Shedding and Curtailments	4/1/2017	None
PER	PER-003-2	Purpose	To ensure that System Operators performing the reliability-related tasks of the Reliability Coordinator, Balancing Authority and Transmission Operator are certified through the NERC System Operator Certification Program when filling a Real-time operating position responsible for control of the Bulk Electric System.		Change from PER-003-1 to PER-003-2: clarifying footnote added to ensure that stakeholders (now and in the future) understand (i) the connection between the Standard and the Program Manual; and (ii) that the certifications referenced under PER-003-1 are those under the NERC System Operator Certification Program						
PER	PER-003-2	R2	Each Transmission Operator shall staff its Real-time operating positions performing Transmission Operator reliability-related tasks with System Operators who have demonstrated minimum competency in the areas listed by obtaining and maintaining one of the following valid NERC certificates 2.1. Areas of Competency 2.1.1. Transmission operations 2.1.2. Emergency preparedness and operations 2.1.3. System operations 2.1.4. Protection and control 2.1.5. Voltage and reactive 2.2. Certificates • Reliability Operator • Balancing, Interchange and Transmission Operator • Transmission Operator	A	All Member TO system operators must be: * PJM Transmission certified and * NERC Transmission Operator or * Balancing, Interchange and Transmission Operator or * Reliability Operator Certified		1. Are all your current System operators PJM and NERC certified? 2. Were all your system operators PJM and NERC certified since the last audit?	Exhibit a list of TO system operators that have operated your system since the last audit. The list should include PJM and NERC certification numbers and dates when certifications were renewed and when they need to be renewed in the future.	M-40 Training and Certification Requirements, Section 2-Certification Overview, Section 3 - Member Training and Certification Requirements  M-1 Control Center and Data Exchange Requirements, Section 2.6-Control Center Staffing  M-3 Transmission Operations, Section 1.2-Responsibilities for Transmission Owner's Operating Entity	7/1/2019	None
PER	PER-005-2	Purpose	To ensure that personnel performing or supporting Real-time operations on the Bulk Electric System are trained using a systematic approach.								



## NERC Reliability Standards

Category	Standard Number	Requirement Number	Approved BOT/FERC Standards	A/S	Assigned or Shared Member TO Tasks	PJM Tasks	Audit Questions	Evidence of Compliance (What auditors will be looking for)	Reference Documents	Enforcement Date	Inactive Date
PER	PER-005-2	R1	Each Reliability Coordinator, Balancing Authority, and Transmission Operator shall use a systematic approach to develop and implement a training program for its System Operators as follows:	S	1. Each Member TO shall establish a training program for Member TO Operators that meets the training requirements outlined in PJM Manual 40, which includes requirements to use a systematic approach to training. 2. Each Member TO shall implement the training program.	Keep Manual 40 up to date.	1. Have you developed and implemented a training program that meets the requirements outlined in PJM Manual 40, which requires the use of a systematic approach to training?	1. Evidence of using the PJM/Member SAT outlined in PJM Manual 40 or description/documentation of a SAT that meets the requirements of Manual 40. 2. Sample company training modules. 3. Training records showing implementation of the training program.	PJM OA Section 10.4-Duties and Responsibilities (v), Section 11.3.1 General (c)  M-40 Training and Certification Requirements; Section 1.1.2 - Training for Member Operating/Dispatch Personnel; Section 1.2 - Member Systematic Approach to Training (SAT); Section 1.4.2 - Task Lists Section; 1.4.3 - Reliability-Related Tasks; Section 1.5 - Development of Training Programs; Section 1.5.2 - Initial Training Program; 1.5.3 - Continuing Training Program; 1.6 Implementation of Program Activities  M-1 Control Center and Data Exchange Requirements, Section 2.6-Control Center Staffing; <del>Attachment B Schedule of Data Submittals</del>  M-3 Transmission Operations, Section 1.2- Responsibilities for Transmission Owner's Operating Entity  M-36 System Restoration, Section 1.1-Policy Statements; Attachment D-Restoration Drill Guide; <del>Attachment F Transmission Owner Special Procedures</del>	7/1/2016	None
PER	PER-005-2	R1.1.	Each Reliability Coordinator, Balancing Authority, and Transmission Operator shall create a list of Bulk Electric System (BES) company-specific Real-time reliability-related tasks based on a defined and documented methodology.	S	Each Member TO, in coordination with PJM, shall create a list of BES common and company-specific reliability-related tasks performed by its TO Operators.	PJM, in coordination with each member TO, shall create a list of BES common reliability-related tasks and common objectives performed by its operators.	Have you, in coordination with PJM, created a list of BES company-specific reliability-related tasks performed by your TO Operators?	1. Exhibit the list of BES company-specific Real-time reliability-related tasks performed by your TO Operators. 2. Show evidence of coordination with PJM such as emails, minutes of meetings, or reports from company Dispatcher Training Subcommittee (DTS) account in the PJM Learning Management System (LMS).	M-40 Training and Certification Requirements, - Section 1.4.2 Task Lists; Section 1.4.3 - Reliability-Related Tasks	7/1/2016	None
PER	PER-005-2	R1.1.1.	Each Reliability Coordinator, Balancing Authority, and Transmission Operator shall review, and update if necessary, its list of BES company-specific Real-time reliability-related tasks identified in part 1.1 each calendar year.	S	In coordination with PJM, review, and update if necessary, the list created in R1.1 each calendar year.	In coordination with each Member TO, review, and update if necessary, the list created in R1.1 each calendar year	Have you, in coordination with PJM, reviewed, and updated if necessary, the list created in R1.1 each calendar year?	1. Show evidence of reviewing, and updating if necessary, the list created in R1.1 each year. 2. Show evidence of coordination with PJM such as emails, minutes of meetings, or reports from company Dispatcher Training Subcommittee (DTS) account in the PJM Learning Management System (LMS).	M-40 Training and Certification Requirements, - Section 1.4.4 Task List Maintenance; Section 1.4.5 Task Modification	7/1/2016	None
PER	PER-005-2	R1.2.	Each Reliability Coordinator, Balancing Authority, and Transmission Operator shall design and develop training materials according to its training program, based on the BES company-specific Real-time reliability-related task list created in part 1.1.	S	Each Member TO shall, in accordance with PJM Manual 40, design and develop training materials based on its company-specific tasks.	In coordination with each Member TO, PJM shall design and develop training materials based on the common task list created in R1.1.	Have you, in accordance with PJM Manual 40, designed and developed training materials based on your company-specific tasks?	Show evidence of training materials based on your company-specific tasks that meet the design, development, and documentation requirements of PJM Manual 40.	M-40 Training and Certification Requirements, Section 1.2 - Member Systematic Approach to Training; Section 1.5 - Development of Training Programs; Section 1.5.2 - Initial Training Program; 1.5.3 - Continuing Training Program; Section 1.6 Implementation of Program Activities	7/1/2016	None

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Category	Standard Number	Requirement Number	Approved BOT/FERC Standards	A/S	Assigned or Shared Member TO Tasks	PJM Tasks	Audit Questions	Evidence of Compliance (What auditors will be looking for)	Reference Documents	Enforcement Date	Inactive Date
PER	PER-005-2	R1.3.	Each Reliability Coordinator, Balancing Authority, and Transmission Operator shall deliver training to its System Operators according to its training program.	S	1. Each Member TO will provide training to its TO Operators on its company-specific tasks that meets the requirements of R1.2. 2. Each Member TO will ensure that company operators are in compliance with PJM training requirements in accordance with PJM M-40	PJM will offer training that meets the requirements of R1.2 for all common tasks.	1. Did you deliver training on your company-specific tasks that meets the requirements of R1.2 to your TO Operators? 2. Did you confirm that your operators have met the requirements outlined in PJM M-40 Section 3.2.1	1. Provide evidence that shows training on company-specific tasks, meeting the requirements of R1.2, was delivered. 2. Training Activity submission forms or Learning Management System (LMS) training records with task linkages.	M-40 Training and Certification Requirements, Section 1.2 - Member Systematic Approach to Training; Section 1.3.2, Member Training Liason; Section 1.5 - Development of Training Programs; Section 1.5.2 - Initial Training Program; 1.5.3 - Continuing Training Program; Section 1.6 Implementation of Program Activities, Section 3.2.1 Transmission Owner Operators Training Requirements.	7/1/2016	None
PER	PER-005-2	R1.4.	Each Reliability Coordinator, Balancing Authority, and Transmission Operator shall conduct an evaluation each calendar year of the training program established in Requirement R1 to identify any needed changes to the training program and shall implement the changes identified.	S	1. Each Member TO shall participate in evaluations of the PJM training program established in R1, each calendar year, to identify any needed changes to the PJM training program. 2. Each Member TO shall conduct an evaluation of its training program established in R1, each calendar year, to identify any needed changes to the training program and shall implement the changes identified.	PJM shall conduct an evaluation, in coordination with the Member TOs, of the training program established in R1 each calendar year, to identify any needed changes to the training program and shall implement the changes identified.	1. Have you participated in evaluations of the PJM training program each calendar year? 2. Have you conducted an evaluation of your training program established in R1, each calendar year, to identify any needed changes to your training program and implemented the changes identified?	1. Show evidence of participation in the PJM training program evaluation each calendar year, such as emails, minutes of meetings, reports from company Dispatcher Training Subcommittee (DTS) account in the PJM Learning Management System (LMS). 2. Show evidence of an evaluation of your training program established in R1 each calendar year, to identify any needed changes to the training program, and any changes that have been implemented. Evidence may include evaluation completion records in the company Dispatcher Training Subcommittee (DTS) account of the PJM Learning Management System (LMS).	M-40 Training and Certification Requirements, Section 1.7 Evaluation of Program Activities	7/1/2016	None
PER	PER-005-2	R3	Each Reliability Coordinator, Balancing Authority, Transmission Operator, and Transmission Owner shall verify, at least once, the capabilities of its personnel, identified in Requirement R1 or Requirement R2, assigned to perform each of the BES company-specific Real-time reliability-related tasks identified under Requirement R1 part 1.1 or Requirement R2 part 2.1.	A	Each Member TO shall verify the capabilities of its personnel, identified in Requirement R1, assigned to perform each of the applicable BES common and company-specific Real-time reliability-related tasks identified under Requirement R1 part R1.1 at least one time.		Have you verified the capabilities of your personnel, identified in Requirement R1, assigned to perform each of the applicable BES common and company-specific Real-time reliability-related tasks identified under Requirement R1 part R1.1 at least one time?	Show records of verification of capabilities for each of your personnel, identified in Requirement R1, assigned to perform each of the applicable BES common and company-specific Real-time reliability-related tasks identified under Requirement R1 part R1.1. Evidence may include operator records in the Task Tracking Module (TTM) of the PJM Learning Management System (LMS).	M-40 Training and Certification Requirements, Section 1.5.4 - Task Verification; Section 3.2.1 - Transmission Owner Operators	7/1/2016	None
PER	PER-005-2	R3.1.	Within six months of a modification or addition of a BES company-specific Real-time reliability-related task, each Reliability Coordinator, Balancing Authority, Transmission Operator, and Transmission Owner shall verify the capabilities of each of its personnel identified in Requirement R1 or Requirement R2 to perform the new or modified BES company-specific Real-time reliability-related tasks identified in Requirement R1 part 1.1 or Requirement R2 part 2.1.	A	Within six months of a modification or addition of an applicable BES common or company-specific Real-time reliability-related task, each Member TO shall verify the capabilities of each of its personnel identified in Requirement R1 to perform the new or modified BES common or company-specific Real-time reliability-related tasks identified in Requirement R1 part R1.1		Within six months of a modification or addition of an applicable BES common or company-specific Real-time reliability-related task, did you verify that each of your personnel identified in Requirement R1 was capable of performing the new or modified BES common or company-specific Real-time reliability-related task?	Show records that exhibit that the capabilities of each of your personnel identified in Requirement R1 were verified within six months of a modification or addition of an applicable BES common or company-specific Real-time reliability-related task. Evidence may include operator records in the Task Tracking Module (TTM) of the PJM Learning Management System (LMS).	M-40 Training and Certification Requirements, Section 1.5.4 - Task Verification	7/1/2016	None

## NERC Reliability Standards

Category	Standard Number	Requirement Number	Approved BOT/FERC Standards	A/S	Assigned or Shared Member TO Tasks	PJM Tasks	Audit Questions	Evidence of Compliance (What auditors will be looking for)	Reference Documents	Enforcement Date	Inactive Date
PER	PER-005-2	R4.	Each Reliability Coordinator, Balancing Authority, Transmission Operator, and Transmission Owner that (1) has operational authority or control over Facilities with established Interconnection Reliability Operating Limits (IROLs), or (2) has established protection systems or operating guides to mitigate IROL violations, shall provide its personnel identified in Requirement R1 or Requirement R2 with emergency operations training using simulation technology such as a simulator, virtual technology, or other technology that replicates the operational behavior of the BES.	S	Each Member TO shall provide its personnel identified in Requirement R1 with emergency operations training using simulation technology such as a simulator, virtual technology, or other technology that replicates the operational behavior of the BES through participation in PJM training or an equivalent as required by Manual 40.	PJM shall offer emergency operations training using simulation technology such as a simulator, virtual technology, or other technology that replicates the operational behavior of the BES.	Have you provided your personnel identified in Requirement R1 with emergency operations training using simulation technology such as a simulator, virtual technology, or other technology that replicates the operational behavior of the BES through participation in PJM training or an equivalent as required by Manual 40?	Exhibit evidence that you provided your personnel identified in Requirement R1 with emergency operations training using simulation technology such as a simulator, virtual technology, or other technology that replicates the operational behavior of the BES through participation in PJM training or an equivalent as required by Manual 40.	M-40 Training and Certification Requirements, Section 3.2.1 - Transmission Owner Operators, Annual continuing Training	7/1/2016	None
TOP	TOP-001-5	Purpose	<b>To prevent instability, uncontrolled separation, or Cascading outages that adversely impact the reliability of the Interconnection by ensuring prompt action to prevent or mitigate such occurrences.</b>								
TOP	TOP-001-5	R1	Each Transmission Operator shall act to maintain the reliability of its Transmission Operator Area via its own actions or by issuing Operating Instructions.	S	1. The Member TO System Operators shall comply with PJM Operating Instructions unless compliance with the Operating Instructions cannot be physically implemented or unless such actions would violate safety, equipment, regulatory, or statutory requirements.	1. PJM shall issue Operating Instructions to maintain the reliability of its Transmission Operator Area. 2. PJM shall be prepared to implement alternate remedial actions when the Member TO cannot comply with PJM issued Operating Instructions because the Operating Instructions could not be physically implemented or unless such actions would have violated safety, equipment, regulatory, or statutory requirements.	1. Do you have documented procedures that require your System Operators to comply with PJM Operating Instructions?	1. Documentation of procedures that requires the Member TO System Operators to comply with PJM Operating Instructions. 2. Examples of the Member TO System Operator following PJM Operating Instructions in the form of logs, voice recordings or transcripts of voice recordings, or other equivalent evidence.	PJM OA, Section 11.3 Member Responsibilities, 11.3.1 General (e)  M-3 Transmission Operations, Section 1.2- Responsibilities for Transmission Owner's Entity, Section 1.3-Transmission Operating Guidelines  M-13 Emergency Operations, Section 1.1- Policy Statements  M-37 Reliability Coordination, Section 1.1- Policy Statements  RAA - Schedule 2-Standards for Integrating an Entity into the PJM Region-B.3, Schedule 6 Procedures for Demand Resources ILR, and Energy Efficiency-A.5.  Open Access Transmission Tariff, Section 1.7.4-General Obligations of the Market Participants (b), Section 5.3 Outage Authority and Coordination, 13.6A-Load Shedding, III-Network Integration Transmission Service Section 33-Load Shedding and Curtailments	4/1/2021	None

## NERC Reliability Standards

Category	Standard Number	Requirement Number	Approved BOT/FERC Standards	A/S	Assigned or Shared Member TO Tasks	PJM Tasks	Audit Questions	Evidence of Compliance (What auditors will be looking for)	Reference Documents	Enforcement Date	Inactive Date
TOP	TOP-001-5	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.	S	1. The Member TO System Operators shall comply with PJM Operating Instructions unless compliance with the Operating Instructions cannot be physically implemented or unless such actions would violate safety, equipment, regulatory, or statutory requirements.	1. PJM shall issue Operating Instructions to ensure the stable and reliable operation of the Bulk Electric System. 2. PJM shall be prepared to implement alternate remedial actions when the Member TO cannot comply with PJM issued Operating Instructions because the Operating Instructions could not be physically implemented or unless such actions would have violated safety, equipment, regulatory, or statutory requirements.	1. Do you have documented procedures that require your System Operators to comply with PJM Operating Instructions?	1. Documentation of procedures that requires the Member TO System Operators to comply with PJM Operating Instructions. 2. Examples of the Member TO System Operator following PJM Operating Instructions in the form of logs, voice recordings or transcripts of voice recordings, or other equivalent evidence.	PJM OA, Section 11.3 Member Responsibilities, 11.3.1 General (e)  M-3 Transmission Operations, Section 1.2- Responsibilities for Transmission Owner's Entity, Section 1.3-Transmission Operating Guidelines  M-13 Emergency Operations, Section 1.1- Policy Statements  M-37 Reliability Coordination, Section 1.1- Policy Statements  RAA - Schedule 2-Standards for Integrating an Entity into the PJM Region-B.3, Schedule 6 Procedures for Demand Resources ILR, and Energy Efficiency-A.5.  Open Access Tariff, Section 1.7.4-General Obligations of the Market Participants (b), Section 5.3 Outage Authority and Coordination, 13.6A-Load Shedding, III- Network Integration Transmission Service Section 33-Load Shedding and Curtailments	4/1/2021	None
TOP	TOP-001-5	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.	S	If the PJM Operating Instructions cannot be complied with because compliance with Operating Instructions could not be physically implemented or because such actions would have violated safety, equipment, regulatory, or statutory requirements, the Member TO System Operators shall inform PJM as soon as possible.	1. PJM shall be prepared to implement alternate remedial actions when the Member TO cannot comply with PJM issued Operating Instructions because the Operating Instructions could not be physically implemented or unless such actions would have violated safety, equipment, regulatory, or statutory requirements. 2. PJM shall have the responsibility and clear decision-making authority to issue Operating Instructions to ensure the reliability of its area and shall exercise specific authority to alleviate operating emergencies.	1. Have you had any incidents when your System Operators were not able to comply with PJM Operating Instructions because compliance with the Operating Instructions could not be physically implemented or unless such actions would have violated safety, equipment, regulatory, or statutory requirements? 2. If because of the reasons mentioned above, your System Operators could not comply with PJM Operating Instructions, did your System Operators inform PJM as soon as possible?	Exhibit evidence, if applicable, of any instances when your System Operators did not comply with PJM Operating Instructions because compliance with the Operating Instructions could not be physically implemented or unless such actions would have violated safety, equipment, regulatory, or statutory requirements and that your System Operators informed PJM as soon as possible.	PJM OA, Section 11.3 Member Responsibilities, 11.3.1 General (e)  M-3 Transmission Operations, Section 1.2- Responsibilities for Transmission Owner's Entity, Section 1.3-Transmission Operating Guidelines  M-13 Emergency Operations, Section 1.1- Policy Statements  M-37 Reliability Coordination, Section 1.1- Policy Statements  RAA - Schedule 2-Standards for Integrating an Entity into the PJM Region-B.3, Schedule 6 Procedures for Demand Resources ILR, and Energy Efficiency-A.5.  Open Access Tariff, Section 1.7.4-General Obligations of the Market Participants (b), Section 5.3 Outage Authority and Coordination, 13.6A-Load Shedding, III- Network Integration Transmission Service Section 33-Load Shedding and Curtailments	4/1/2021	None

## NERC Reliability Standards

Category	Standard Number	Requirement Number	Approved BOT/FERC Standards	A/S	Assigned or Shared Member TO Tasks	PJM Tasks	Audit Questions	Evidence of Compliance (What auditors will be looking for)	Reference Documents	Enforcement Date	Inactive Date
TOP	TOP-001-5	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.	S	Each Member TO shall inform PJM of its actual or expected operations that result in, or could result in, an Emergency.	PJM will inform any other potentially impacted Transmission Operators or Balancing Authorities.	Have you informed PJM of any actual or expected operations that result in, or could result in, an Emergency?	Exhibit evidence such as system operator logs or voice recordings of any actual or expected operations that resulted in, or could have resulted in, an Emergency.	M-37 Reliability Coordination, Attachment A-PJM Reliability Plan  PJM OA 11.3-Member Responsibilities  M-12 Balancing Operations; Attachment B-Transmission Constraint Control Guidelines, B.3.5-Maintaining System Reliability  M-13 Emergency Operations, Section 1.1-Policy Statements  TOA Article 4.7-Actions in Emergency  M-3 Transmission Operations, Section 1.2-Responsibilities for Transmission Owner's Operating Entity	4/1/2021	None
TOP	TOP-001-5	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.	S	Each Member TO shall inform PJM of all planned outages and unplanned outages of 30 minutes or more before the outage occurs for planned outages and within one hour of recognition of an unplanned outage of its data communication channels (e.g., ICCP link) between the following affected entities: (i) Member TO and PJM (ii) Where applicable, Member TO and a Member TO (iii) Where applicable, Member TO and an entity external to PJM	PJM shall inform known impacted interconnected entities of all planned outages and unplanned outages of 30 minutes or more, of data communication channels (e.g., ICCP link) between the following affected entities: (i) Member TO and PJM (ii) Where applicable, Member TO and a Member TO (iii) Where applicable, Member TO and an entity external to PJM	Have you informed PJM of all planned outages and unplanned outages of 30 minutes or more, of your data communication channels (e.g., ICCP link) between the following affected entities? (i) Member TO and PJM (ii) Where applicable, Member TO and a Member TO (iii) Where applicable, Member TO and an entity external to PJM	Exhibit examples where you informed PJM of planned outages and unplanned outages of 30 minutes or more, of your data communication channels (e.g., ICCP link) between the following affected entities: (i) Member TO and PJM (ii) Where applicable, Member TO and a Member TO (iii) Where applicable, Member TO and an entity external to PJM	PJM OA, 10.4-Duties and Responsibilities  M-1 Control Center and Data Exchange Requirements, Section 2.5.4-Information Flow to Control Room Personnel; Section 3.2.3-EMS Data Exchange, Section 3.8: Planning, Coordination and Notification of System Changes and Events	4/1/2021	None
TOP	TOP-001-5	<b>R10 (Heading)</b>	<b>Each Transmission Operator shall perform the following for determining System Operating Limit (SOL) exceedances within its Transmission Operator Area:</b>		<b>TOP-001-4 R10 has split TOP-001-3 R10.1 into two subrequirements (10.1 &amp; 10.2). 10.1-monitor facilities, 10.2 - monitor RASs. R10 also adds 4 more subrequirements. R10.3 - monitoring of non BES facilities deemed necessary by TOP. R10.4-R10.6 deal with the TOP obtaining and utilizing information from outside the TOP area as necessary.</b>						
TOP	TOP-001-5	R10.1	Monitor Facilities within its Transmission Operator Area;	S	1. Each Member TO shall monitor Transmission Facilities, identified in PJM Manual 3: Transmission Operations, Section 1.5.6: Monitored Transmission Facility, within its area. 2. Each Member TO shall notify PJM of changes in status of Facilities identified in PJM Manual 3: Transmission Operations, Section 1.5.6: Monitored Transmission Facility, within its area.	PJM shall monitor the status of all Transmission Facilities, identified in PJM Manual 3: Transmission Operations, Section 1.5.6: Monitored Transmission Facility, for determining System Operating Limit (SOL) exceedances within its Transmission Operator Area.	1. Do you monitor the status of each Facility identified in PJM Manual 3: Transmission Operations, Section 1.5.6: Monitored Transmission Facility in your TO area? 2. Do you notify PJM of changes in status of your Facilities identified in PJM Manual 3: Transmission Operations, Section 1.5.6: Monitored Transmission Facility?	1. Exhibit evidence, such as, screenshots, logs, etc., that you monitor the status of each Facility identified in PJM Manual 3: Transmission Operations, Section 1.5.6: Monitored Transmission Facility in your TO area. 2. Show evidence, such as, logs, emails, recordings, etc., that you notify PJM of changes in status of your Facilities identified above.	M-3 Transmission Operations; Section 1.2-Responsibilities for Transmission Owner's Operating Entity, Section 1.3-Transmission Operating Guidelines, Section 1.5.4-Reportable Transmission Facility, Section 1.5.6-Monitored Transmission Facility  M-14C Generation and Transmission Interconnection Facility Construction  M-14D Generator Operational Requirements, Section 4.2.1-Data Management and Security  M-37 Reliability Coordination, Section 3.2-Monitoring of SOL and IROL Limits, Attachment A-PJM Reliability Plan, Section C.2-Common Tasks for Next-Day and Current-Day Operations	4/1/2021	None

## NERC Reliability Standards

Category	Standard Number	Requirement Number	Approved BOT/FERC Standards	A/S	Assigned or Shared Member TO Tasks	PJM Tasks	Audit Questions	Evidence of Compliance (What auditors will be looking for)	Reference Documents	Enforcement Date	Inactive Date
TOP	TOP-001-5	R10.2	Monitor the status of Remedial Action Schemes within its Transmission Operator Area;	S	1. Each Member TO shall monitor the status of Remedial Action Schemes within its area. 2. Each Member TO shall notify PJM of changes in the status of the Remedial Action Schemes within its area.	PJM shall monitor the status of all Remedial Action Schemes within its Transmission Operator Area.	1. Do you monitor the status of Remedial Action Schemes in your TO area? 2. Do you notify PJM of changes in the status of the Remedial Action Schemes in your TO area?	1. Exhibit evidence, such as, screenshots, logs, etc., that you monitor the status of Remedial Action Schemes in your TO area. 2. Show evidence, such as, logs, emails, recordings, etc., that you notify PJM of changes in the status of Remedial Action Schemes in your TO area.	M-3 Transmission Operations; Section 1.2- Responsibilities for Transmission Owner's Operating Entity, <del>Section 5- Index &amp; Operating Procedures for PJM RTO- Operations</del>  M-03B Transmission Operating Procedure (CEI); Section 1 Index and Operating Procedure for PJM RTO Operation  M-14C Generation and Transmission Interconnection Facility Construction  M-14D Generator Operational Requirements, Section 4.2.1-Data Management and Security  M-37 Reliability Coordination; Attachment A- PJM Reliability Plan	4/1/2021	None
TOP	TOP-001-5	R10.3	Monitor non-BES facilities within its Transmission Operator Area identified as necessary by the Transmission Operator;	S	1. Each Member TO shall identify non-BES facilities in its TO area that may affect BES in a significant manner resulting in coordination with PJM to determine if additional modeling is required. 2. Each Member TO shall provide PJM appropriate information (e.g., status and loading information - Digital and Analog Telemetry) for the identified non-BES facilities to be included in PJM's model and monitored by PJM. 3. Each Member TO shall monitor the non-BES facilities Member TO has identified in its TO area and coordinated with PJM to be included in PJM's model.	1. PJM shall coordinate with Member TOs to include non-BES facilities identified by Member TOs in the PJM model. 2. PJM shall monitor all non-BES facilities identified by PJM Member TOs within its Transmission Operator Area.	1. Did you identify non-BES facilities in your area that may affect BES in a significant manner resulting in coordination with PJM to determine if additional modeling is required? 2. Do you provide PJM appropriate information (e.g., status and loading information - Digital and Analog Telemetry) for the non-BES facilities you have identified to be included in PJM's model and monitored by PJM? 3. Do you monitor the non-BES facilities you have identified in your TO area and coordinated with PJM to be included in PJM's model?	1. Exhibit evidence, such as, reports, analyses, etc., that you identified non-BES facilities in your area that may affect BES in a significant manner resulting in coordination with PJM to determine if additional modeling is required. 2. Exhibit evidence that you provide PJM appropriate information (e.g., status and loading information - Digital and Analog Telemetry) for the non-BES facilities you have identified to be included in PJM's model and monitored by PJM. 3. Exhibit evidence that you monitor the non-BES facilities you have identified in your TO area and coordinated with PJM to be included in PJM's model.	M-3 Transmission Operations; Section 1.2- Responsibilities for Transmission Owner's Operating Entity  M-3A Energy Management System (EMS) Model Updates and Quality Assurance (QA), Section 1.3 Electrical Model Responsibilities for Transmission Owner's Operating Entity, Section 2.2.1.2 Sub-transmission Modeling 4.9 Sub-Transmission Modeling Overview, Section 4.9.1 BES Sub-Transmission Facilities, Section 3.2.1 4.9.3 TO and PJM Staff Responsibilities, Appendix G Section 4.9.4 Examples of EMS Sub-Transmission Modeling	4/1/2021	None
TOP	TOP-001-5	R10.4	Obtain and utilize status, voltages, and flow data for Facilities outside its Transmission Operator Area identified as necessary by the Transmission Operator;	S	Each Member TO, in coordination with PJM as appropriate, shall obtain and utilize status, voltages, and flow data for Facilities outside its TO area as necessary to determine System Operating Limit (SOL) exceedances within its TO area.	1. PJM shall obtain and utilize status, voltages, and flow data for Facilities outside its Transmission Operator Area that PJM identified as necessary for determining System Operating Limit (SOL) exceedances within its Transmission Operator Area. 2. PJM will assist the Member TOs, as needed and within PJM's legal authority, in obtaining and maintaining model information for Facilities external to the Member TO areas.	Do you, in coordination with PJM as appropriate, obtain and utilize status, voltages, and flow data for Facilities outside your TO area as necessary to determine System Operating Limit (SOL) exceedances within your TO area?	Exhibit evidence that you, in coordination with PJM as appropriate, obtain and utilize status, voltages, and flow data for Facilities outside your TO area as necessary to determine System Operating Limit (SOL) exceedances within your TO area.	M-3 Transmission Operations, Section 1.3- Transmission Operating Guidelines  M-3A Energy Management System (EMS) Model Updates and Quality Assurance (QA), Section 2.2.3.1 3.2.1 Explanation of Consideration for External Modeling in the PJM EMS Model	4/1/2021	None

## NERC Reliability Standards

Category	Standard Number	Requirement Number	Approved BOT/FERC Standards	A/S	Assigned or Shared Member TO Tasks	PJM Tasks	Audit Questions	Evidence of Compliance (What auditors will be looking for)	Reference Documents	Enforcement Date	Inactive Date
TOP	TOP-001-5	R10.5	Obtain and utilize the status of Remedial Action Schemes outside its Transmission Operator Area identified as necessary by the Transmission Operator; and	S	Each Member TO, in coordination with PJM as appropriate, shall obtain and utilize status of Remedial Action Schemes outside its TO area as necessary to determine System Operating Limit (SOL) exceedances within its TO area.	1. PJM shall obtain and utilize status of Remedial Action Schemes outside its Transmission Operator Area that PJM identified as necessary for determining System Operating Limit (SOL) exceedances within its Transmission Operator Area. 2. PJM shall assist the Member TOs, as necessary, in obtaining and utilizing the status of Remedial Action Schemes external to the Member TO areas.	Do you, in coordination with PJM as appropriate, obtain and utilize status of Remedial Action Schemes outside your TO area as necessary to determine System Operating Limit (SOL) exceedances within your TO area?	Exhibit evidence that you, in coordination with PJM as appropriate, obtain and utilize status of Remedial Action Schemes outside your TO area as necessary to determine System Operating Limit (SOL) exceedances within your TO area.	M-3 Transmission Operations, Section 1.3-Transmission Operating Guidelines, Section 5- <del>Index and Operating Procedures for PJM RTO Operation, Attachment A-RAS/SPS Listing</del>  M-03B Transmission Operating Procedure (CEII); Section 1 Index and Operating Procedure for PJM RTO Operation	4/1/2021	None
TOP	TOP-001-5	R10.6	Obtain and utilize status, voltages, and flow data for non-BES facilities outside its Transmission Operator Area identified as necessary by the Transmission Operator.	S	Each Member TO, in coordination with PJM as appropriate, shall obtain and utilize status, voltages, and flow data for non-BES facilities outside its TO area as necessary to determine System Operating Limit (SOL) exceedances within its TO area.	PJM shall, in coordination with Member TOs as appropriate, obtain and utilize status, voltages, and flow data for non-BES facilities outside its Transmission Operator Area that PJM identified as necessary for determining System Operating Limit (SOL) exceedances within its Transmission Operator Area.	Do you, in coordination with PJM as appropriate, obtain and utilize status, voltages, and flow data for non-BES facilities outside your TO area as necessary to determine System Operating Limit (SOL) exceedances within your TO area?	Exhibit evidence that you, in coordination with PJM as appropriate, obtain and utilize status, voltages, and flow data for Facilities outside your TO area as necessary to determine System Operating Limit (SOL) exceedances within your TO area.	M-3A Energy Management System (EMS) Model Updates and Quality Assurance (QA), Section 1.3 Electrical Model Responsibilities for Transmission Owner's Operating Entity, Section 2.2.1.2 Sub-transmission Modeling 4.9 Sub-Transmission Modeling Overview, Section 4.9.1-BES Sub-Transmission Facilities, Section 3.2.1 4.9.3-TO and PJM Staff Responsibilities, Appendix G Section 4.9.4-Examples of EMS Sub-Transmission Modeling	4/1/2021	None
TOP	TOP-001-5	R12	Each Transmission Operator shall not operate outside any identified Interconnection Reliability Operating Limit (IROL) for a continuous duration exceeding its associated IROL Tv. Tv=30 Minutes	S	The Member TO System Operators shall comply with PJM Operating Instructions of an Interconnection Reliability Operating Limit (IROL) unless compliance with the Operating Instructions cannot be physically implemented or unless such actions would violate safety, equipment, regulatory, or statutory requirements- 2. If because of the reasons mentioned above the Member TO System Operators cannot comply with PJM Operating Instructions of an IROL, the Member TO System Operators shall inform PJM as soon as possible.	1. PJM shall issue Operating Instructions so that following a Contingency or other event that results in an IROL violation, PJM shall return its transmission system to within the IROL as soon as possible, but no longer than 30 minutes. 2. PJM shall be prepared to implement alternate remedial actions if Member TOs cannot comply with Operating Instructions for the listed reasons.	1. Do you have documented procedures that require your System Operators to comply with PJM Operating Instructions? 2. Have you had any incidents when your System Operators were not able to comply with PJM Operating Instructions of an IROL because compliance with the Operating Instructions could not be physically implemented or unless such actions would have violated safety, equipment, regulatory, or statutory requirements? 3. If because of the reasons mentioned above, your System Operators could not comply with PJM Operating Instructions, did your System Operators inform PJM as soon as possible?	1. Documentation of procedures that requires the Member TO System Operators to comply with PJM Operating Instructions of an Interconnection Reliability Operating Limit (IROL). 2. Examples of the Member TO System Operator of following PJM Operating Instructions of an IROL in the form of logs, voice recordings or transcripts of voice recordings, or other equivalent evidence. 3. If the Member TO System Operators could not comply with PJM Operating Instructions of an IROL, evidence that they could not comply because compliance with Operating Instructions could not be physically implemented or because such actions would have violated safety, equipment, regulatory, or statutory requirements and that the Member TO System Operators informed PJM as soon as possible.	PJM OA Section 11.3.1e- Member Responsibilities, General  Transmission Owners Agreement, Section 4.5  M-3 Transmission Operations, Sections 1.2-Responsibilities for Transmission Owner's Operating Entity, 1.3-Transmission Operating Guidelines, 3.5-Voltage Control Actions  M-37 Reliability Coordination, Sections 1.1-Policy Statements, Section 3-SOL and IROL Limits  M-13 Emergency Operations, Section 5.5-Interconnection Reliability Operating Limits (IROL) Manual Load Dump Warning/Action  M-12 Balancing Operations, Section 3.1.3-PJM Member Control Implementation, Section 5-Transmission Facility Control	4/1/2021	None

## NERC Reliability Standards

Category	Standard Number	Requirement Number	Approved BOT/FERC Standards	A/S	Assigned or Shared Member TO Tasks	PJM Tasks	Audit Questions	Evidence of Compliance (What auditors will be looking for)	Reference Documents	Enforcement Date	Inactive Date
TOP	TOP-001-5	R13	Each Transmission Operator shall ensure that a Real-time Assessment is performed at least once every 30 minutes.	S	1. If PJM experiences a failure of its Real-time Assessment capability that lasts longer than 15 minutes, PJM will rely on the Member TOs, where applicable, to perform a Real-Time Assessment at least once every 20 minutes until PJM informs the Member TOs that PJM's Real-time Assessment capability is restored.	1. PJM shall ensure that a Real-time Assessment is performed at least once every 30 minutes. If PJM experiences a failure of its Real-time Assessment capability that lasts longer than 15 minutes, PJM shall rely on the Member TOs, where applicable, to perform a Real-time Assessment at least once every 20 minutes until PJM's Real-time Assessment capability is restored.	1. Have you had an instance when PJM informed you that PJM experienced a failure of its Real-time Assessment capability that lasted longer than 15 minutes? 2. If applicable, did you perform a Real-time Assessment at least once every 20 minutes until PJM's Real-time Assessment capability is restored?	1. Evidence, such as, system operator logs, voice recordings, etc., of instances when PJM informed you that PJM experienced a failure of its Real-time Assessment capability that lasted longer than 15 minutes. 2. If applicable, evidence that you performed a Real-time Assessment at least once every 20 minutes until PJM's Real-time Assessment capability is restored.	PJM OA, Section 11.3.1e- Member Responsibilities, General  Transmission Owners Agreement, Section 4.5  M-1 Control Center and Data Exchange Requirements, Section 2.3.1- Transmission Monitoring Capability  M-3 Transmission Operations, Sections 1.2- Responsibilities for Transmission Owner's Operating Entity, 1.3-Transmission Operating Guidelines, 3.5-Voltage Control Actions  M-37 Reliability Coordination, Sections 1.1- Policy Statements, Section 3-SOL and IROL Limits  M-12 Balancing Operations, Section 3.1.3- PJM Member Control Implementation, Section 5-Transmission Facility Control  M-39 Nuclear Plant Interface Coordination, Section 2.3-Notification for Loss of Calculation Capability	4/1/2021	None
TOP	TOP-001-5	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.	S	1. The Member TO System Operators shall comply with PJM Operating Instructions to mitigate a SOL unless compliance with the Operating Instructions cannot be physically implemented or unless such actions would violate safety, equipment, regulatory, or statutory requirements. 2. If because of the reasons mentioned above the Member TO System Operators cannot comply with PJM Operating Instructions to mitigate a SOL, the Member TO System Operators shall inform PJM as soon as possible.	1. PJM shall issue Operating Instructions so that following a Contingency or other event that results in an SOL exceedance PJM is able to mitigate the SOL exceedance. 2. PJM shall be prepared to implement alternate remedial actions when the Member TO cannot comply with PJM issued Operating Instructions because the Operating Instructions could not be physically implemented or unless such actions would have violated safety, equipment, regulatory, or statutory requirements.	1. Have you had any incidents when your System Operators were not able to comply with PJM Operating Instructions to mitigate a SOL because compliance with the Operating Instructions could not be physically implemented or unless such actions would have violated safety, equipment, regulatory, or statutory requirements? 2. If because of the reasons mentioned above, your System Operators could not comply with PJM Operating Instructions to mitigate a SOL, did your System Operators inform PJM as soon as possible?	1. Examples of the Member TO System Operator following PJM Operating Instructions to mitigate a SOL in the form of logs, voice recordings or transcripts of voice recordings, or other equivalent evidence. 2. If the Member TO System Operators could not comply with PJM Operating Instructions to mitigate a SOL, evidence that they could not comply because compliance with Operating Instructions could not be physically implemented or because such actions would have violated safety, equipment, regulatory, or statutory requirements and that the Member TO System Operators informed PJM as soon as possible.	PJM OA, Section 11.3.1e- Member Responsibilities, General  Transmission Owners Agreement, Section 4.5  M-3 Transmission Operations, Sections 1.2- Responsibilities for Transmission Owner's Operating Entity, 1.3-Transmission Operating Guidelines, 3.5-Voltage Control Actions  M-37 Reliability Coordination, Sections 1.1- Policy Statements, Section 3-SOL and IROL Limits  M-13 Emergency Operations, Section 5.5- Interconnection Reliability Operating Limits (IROL) Manual Load Dump Warning/Action  M-12 Balancing Operations, Section 3.1.3- PJM Member Control Implementation, Section 5-Transmission Facility Control	4/1/2021	None



## NERC Reliability Standards

Category	Standard Number	Requirement Number	Approved BOT/FERC Standards	A/S	Assigned or Shared Member TO Tasks	PJM Tasks	Audit Questions	Evidence of Compliance (What auditors will be looking for)	Reference Documents	Enforcement Date	Inactive Date
TOP	TOP-001-5	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.	S	Member TO System Operators shall comply with PJM Operating Instructions to approve or deny planned outages and maintenance of data communication channels (e.g., ICCP link) between the following affected entities: (i) Member TO and PJM (ii) Where applicable, Member TO and a Member TO (iii) Where applicable, Member TO and an entity external to PJM	PJM shall issue Operating Instructions to approve or deny planned outages and maintenance of data communication channels (e.g., ICCP link) between the following affected entities: (i) Member TO and PJM (ii) Where applicable, Member TO and a Member TO (iii) Where applicable, Member TO and an entity external to PJM	Have you complied with PJM Operating Instructions to approve or deny planned outages and maintenance of data communication channels (e.g., ICCP link) between the following affected entities? (i) Member TO and PJM (ii) Where applicable, Member TO and a Member TO (iii) Where applicable, Member TO and an entity external to PJM	Exhibit evidence, such as, system operator logs, voice recordings, incident reports, emails, etc., demonstrating that you complied with any PJM Operating Instructions to approve or deny planned outages and maintenance of data communication channels (e.g., ICCP link) between the following affected entities: (i) Member TO and PJM (ii) Where applicable, Member TO and a Member TO (iii) Where applicable, Member TO and an entity external to PJM	PJM OA, Section 11.3.1e- Member Responsibilities, General  Transmission Owners Agreement, Section 4.5  M-1 Control Center and Data Exchange Requirements, Section 3.8: Planning, Coordination and Notification of System Changes and Events  M-3 Transmission Operations, Sections 1.2- Responsibilities for Transmission Owner's Operating Entity, 1.3-Transmission Operating Guidelines, 3.5-Voltage Control Actions  M-37 Reliability Coordination, Sections 1.1- Policy Statements, Section 3-SOL and IROL Limits  M-13 Emergency Operations, Section 5.5- Interconnection Reliability Operating Limits (IROL) Manual Load Dump Warning/Action  M-12 Balancing Operations, Section 3.1.3- PJM Member Control Implementation, Section 5-Transmission Facility Control	4/1/2021	None
TOP	TOP-001-5	R18	Each Transmission Operator shall operate to the most limiting parameter in instances where there is a difference in SOLs.	S	The Member TO System Operators shall always operate the Bulk Electric System to the most limiting parameter where there is a difference in SOLs.	In instances where there is a difference in SOLs between the Member TO and PJM, PJM shall always operate the Bulk Electric System to the most limiting parameter.	1. Have you had to coordinate with PJM because of a difference in SOLs between you and PJM? 2. Did you then operate to the most limiting parameter?	1. Exhibit evidence of instances, if applicable, where you had to coordinate with PJM because of a difference in SOLs between you and PJM. 2. Exhibit evidence that you then operated to the most limiting parameter.	M-3 Transmission Operations, Section 1.3- Transmission Operating Guidelines  M-37 Reliability Coordination, Section 5.3- Mitigating Operational Problems, Attachment A-PJM Reliability Plan, Section C.2-Common Tasks for Next-Day and Current-Day Operations	4/1/2021	None
TOP	TOP-001-5	R20	Each Transmission Operator shall have data exchange capabilities, with redundant and diversely routed 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.	S	Each Member TO shall have data exchange capabilities, with redundant and diversely routed exchange infrastructure within the Member TO's primary Control Center, for the exchange of Real-time data with PJM and, if applicable, those entities where the Member TO exchanges Real-time data directly with another entity, to allow the Member TO and PJM to perform Real-time monitoring and Real-time Assessments.	PJM shall have data exchange capabilities, with redundant and diversely routed exchange infrastructure within PJM's primary Control Centers, for the exchange of Real-time data with PJM Member TOs and entities that PJM has identified PJM needs data from in order to perform Real-time monitoring and Real-time Assessments.	Do you have data exchange capabilities, with redundant and diversely routed exchange infrastructure within your primary Control Center, for the exchange of Real-time data with PJM and, if applicable, those entities where the Member TO exchanges Real-time data directly with another entity, to allow you and PJM to perform Real-time monitoring and Real-time Assessments?	Exhibit evidence, such as, lists and/or diagrams of data communication facilities or other data exchange infrastructure, demonstrating that you have data exchange capabilities, with redundant and diversely routed exchange infrastructure within your primary Control Center, for the exchange of Real-time data with PJM and, if applicable, those entities where the Member TO exchanges Real-time data directly with the another entity, to allow you and PJM to perform Real-time monitoring and Real-time Assessments.	M-1 Control Center and Data Exchange Requirements; Section 3.2-Energy Management System (EMS) Data Exchange, Section 3.5-EMS Backup Communications	4/1/2021	None

## NERC Reliability Standards

Category	Standard Number	Requirement Number	Approved BOT/FERC Standards	A/S	Assigned or Shared Member TO Tasks	PJM Tasks	Audit Questions	Evidence of Compliance (What auditors will be looking for)	Reference Documents	Enforcement Date	Inactive Date
TOP	TOP-001-5	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.	S	Each Member TO 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, each Member TO shall initiate action within two hours to restore redundant functionality.	PJM 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, PJM shall initiate action within two hours to restore redundant functionality.	Do you test your 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, do you initiate action within two hours to restore redundant functionality?	Exhibit evidence such as, testing logs, records, or documentation, that you tested your primary Control Center data exchange capabilities specified in Requirement R20 for redundant functionality at least once every 90 calendar days. Exhibit evidence that demonstrates that you initiated action within two hours to restore redundant functionality when the test was unsuccessful.	M-1 Control Center and Data Exchange Requirements; Section 3.2-Energy Management System (EMS) Data Exchange NERC Operating Committee Compliance Implementation Guidance Data Exchange Infrastructure and Testing Requirements ( <a href="https://www.nerc.com/pa/comp/guidance/DraftImplementationGuidanceDL/TOP-001-4%20and%20IRO-002-5%20Data%20Exchange%20Infrastructure%20and%20Testing%20(OC).pdf">https://www.nerc.com/pa/comp/guidance/DraftImplementationGuidanceDL/TOP-001-4%20and%20IRO-002-5%20Data%20Exchange%20Infrastructure%20and%20Testing%20(OC).pdf</a> )	4/1/2021	None
TOP	TOP-010-1(i)	Purpose	<b>Establish requirements for Real-time monitoring and analysis capabilities to support reliable System operations.</b>								
TOP	TOP-010-1(i)	R1.	Each Transmission Operator shall implement an Operating Process or Operating Procedure to address the quality of the Real-time data necessary to perform its Real-time monitoring and Real-time Assessments. The Operating Process or Operating Procedure shall include:	S	Each Member TO shall determine data quality indicators for all data presented to its operators and transmitted to PJM through different methods (e.g., ICCP, DNP, etc.).	PJM shall keep Manual 1 Quality Codes definitions and procedures up to date.	Have you determined data quality indicators for all data presented to your operators and transmitted to PJM through different methods (e.g., ICCP, DNP, etc.)?	Exhibit evidence, such as, screenshots or other evidence, indicating the quality of all data presented to your operators and transmitted to PJM through different methods (e.g., ICCP, DNP, etc.). Quality indicators, such as, color codes, data quality flags, or other such indicators as found in Real-time monitoring specifications may be used as evidence.	M-1 Control Center and Data Exchange Requirements, Section 2.3.1 Transmission Monitoring Capability, 2.3.6-Data Integrity, 3.2.3-EMS Data Exchange, 3.3.2-Synchrophasor Data Exchange, 3.6-Real-Time Analysis Monitoring Requirements for System Security	4/1/2018	None
TOP	TOP-010-1(i)	R1.2	Provisions to indicate the quality of Real-time data to the System Operator; and	S	1. Each Member TO shall indicate the quality of Real-time data to their System Operators. 2. Each Member TO shall indicate the quality of Real-time data to PJM.	Using Member TO quality of Real-time data, PJM shall indicate the quality of Real-time data to PJM System Operators.	1. Do you indicate the quality of Real-time data to your System Operators? 2. Do you indicate the quality of Real-time data to PJM?	1. Exhibit evidence, such as, screenshots or other evidence, demonstrating that you indicated the quality of Real-time data to your System Operators. 2. Evidence showing you indicated the quality of Real-time data to PJM.	M-1 Control Center and Data Exchange Requirements, Section 2.3.1 Transmission Monitoring Capability, 2.3.6-Data Integrity, 3.2.3-EMS Data Exchange, 3.3.2-Synchrophasor Data Exchange, 3.6-Real-Time Analysis Monitoring Requirements for System Security	4/1/2018	None
TOP	TOP-010-1(i)	R1.3.	Actions to address Real-time data quality issues with the entity(ies) responsible for providing the data when data quality affects Real-time Assessments.	S	The Member TO's Operating Process or Operating Procedure shall include actions to address Real-time data quality issues.	PJM shall use data provided to perform state estimations and Real-time assessments.	1. Do you perform Real-time Assessments? 2. Does your Operating Process or Operating Procedure include actions to address Real-time data quality issues?	If you perform Real-time Assessments, exhibit your Operating Process or Operating Procedure that includes actions to address Real-time data quality issues.	M-1 Control Center and Data Exchange Requirements, Section 2.3.1 Transmission Monitoring Capability, 2.3.6-Data Integrity, 3.2.3-EMS Data Exchange, 3.3.2-Synchrophasor Data Exchange, 3.6-Real-Time Analysis Monitoring Requirements for System Security	4/1/2018	None
TOP	TOP-010-1(i)	R3	Each Transmission Operator shall implement an Operating Process or Operating Procedure to address the quality of analysis used in its Real-time Assessments. The Operating Process or Operating Procedure shall include:	S	If a Member TO performs Real-time Assessments, the Member TO shall implement an Operating Process or Operating Procedure to continuously review and notify the Member TO operator of the quality of analysis used in its Real-time Assessments.	PJM shall maintain PJM's Operating Process to address the quality of State Estimator and Contingency Analysis in Manual 3A.	1. Do you perform Real-time Assessments? 2. If yes, have you implemented an Operating Process or Operating Procedure to continuously review and notify your operator of the quality of analysis used in your Real-time Assessments?	1. If you perform Real-time Assessments, exhibit an Operating Process or Operating Procedure to continuously review and notify your operator of the quality of analysis used in your Real-time Assessments. Examples of the types of criteria used to evaluate the quality of analysis used in Real-time Assessments may include solution tolerances, mismatches with Real-time data, convergences, etc. 2. If you perform Real-time Assessments, show examples of implementation of the Operating Process or Operating Procedure to address the quality of analysis used in your Real-time Assessments, if performed.	M-1 Control Center and Data Exchange Requirements, Section 2.3.1 Transmission Monitoring Capability, 2.3.6-Data Integrity, 3.2.3-EMS Data Exchange, 3.3.2-Synchrophasor Data Exchange, 3.6-Real-Time Analysis Monitoring Requirements for System Security  Manual 3A: Energy Management System (EMS) Model Updates and Quality Assurance (QA), Section 5.2 State Estimator (SE) Solution Quality and ICCP Links, Section 5.3.15 RTCA Solution Quality, Section 5.56- Quality of Analysis Used in Real-time Assessments	4/1/2018	None

## NERC Reliability Standards

Category	Standard Number	Requirement Number	Approved BOT/FERC Standards	A/S	Assigned or Shared Member TO Tasks	PJM Tasks	Audit Questions	Evidence of Compliance (What auditors will be looking for)	Reference Documents	Enforcement Date	Inactive Date
TOP	TOP-010-1(i)	R3.2	Provisions to indicate the quality of analysis used in its Real-time Assessments; and	S	1. If a Member TO performs Real-time Assessments, the Member TO's Operating Process or Operating Procedure to address the quality of analysis used in its Real-time Assessments shall include: (i) criteria for evaluating the quality of analysis used in its Real-time Assessments (ii) Provisions to indicate the quality of analysis used in its Real-time Assessments 2. If a Member TO performs Real-time Assessments, the Member TO shall notify PJM when analysis quality issues affecting the Member TO's Real-time Assessment have existed for 30 minutes and when the Member TO Real-time Assessment quality is back to normal.	PJM shall maintain PJM's Operating Process to address the quality of analysis used in its Real-time Assessment identified in Manual 3A.	1. If you perform Real-time Assessments, does your Operating Process or Operating Procedure to address the quality of analysis used in your Real-time Assessments include the following? (i) criteria for evaluating the quality of analysis used in your Real-time Assessments (ii) Provisions to indicate the quality of analysis used in your Real-time Assessments 2. If you perform Real-time Assessments, have you notified PJM when analysis quality issues affecting your Real-time Assessment have existed for 30 minutes and when your Real-time Assessment quality was back to normal.	1. If you perform Real-time Assessments, exhibit evidence that your Operating Process or Operating Procedure to address the quality of analysis used in your Real-time Assessments includes the following: (i) criteria for evaluating the quality of analysis used in your Real-time Assessments (ii) Provisions to indicate the quality of analysis used in your Real-time Assessments 2. If you perform Real-time Assessments, exhibit evidence, such as, logs, screenshots, or recordings that you notified PJM when analysis quality issues affecting your Real-time Assessment existed for 30 minutes and when your Real-time Assessment quality was back to normal.	M-1 Control Center and Data Exchange Requirements, Section 2.3.1 Transmission Monitoring Capability, 2.3.6-Data Integrity, 3.2.3-EMS Data Exchange, 3.3.2-Synchrophasor Data Exchange, 3.6-Real-Time Analysis Monitoring Requirements for System Security  Manual 3A: Energy Management System (EMS) Model Updates and Quality Assurance (QA), Section 5.2 State Estimator (SE) Solution Quality and ICCP Links, Section 5.5 Quality of Analysis Used in Real-time Assessments	4/1/2018	None
TOP	TOP-010-1(i)	R3.3	Actions to address analysis quality issues affecting its Real-time Assessments.	A	If a Member TO performs Real-time Assessments, the Member TO's Operating Process or Operating Procedure shall include actions to address analysis quality issues affecting its Real-time Assessments.		1. Do you perform Real-time Assessments? 2. If yes, does your Operating Process or Operating Procedure include actions to address analysis quality issues affecting your Real-time Assessments?	If you perform Real-time Assessments, exhibit an Operating Process or Operating Procedure that includes actions to address analysis quality issues in your Real-time Assessments.	M-1 Control Center and Data Exchange Requirements, Section 2.3.1 Transmission Monitoring Capability, 2.3.6-Data Integrity, 3.2.3-EMS Data Exchange, 3.3.2-Synchrophasor Data Exchange, 3.6-Real-Time Analysis Monitoring Requirements for System Security  Manual 3A: Energy Management System (EMS) Model Updates and Quality Assurance (QA), Section 5.2 State Estimator (SE) Solution Quality and ICCP Links, Section 5.3.15 RTCA Solution Quality, Section 5.56- Quality of Analysis Used in Real-time Assessments	4/1/2018	None
TOP	TOP-010-1(i)	R4	Each Transmission Operator and Balancing Authority shall have an alarm process monitor that provides notification(s) to its System Operators when a failure of its Real-time monitoring alarm processor has occurred.	A	Each Member TO shall have an alarm process monitor that provides notification(s) to its System Operators when a failure of its Real-time monitoring alarm processor has occurred.		Do you have an alarm process monitor that provides notification(s) to your System Operators when a failure of your Real-time monitoring alarm processor has occurred?	Exhibit evidence like logs or screen shots of an alarm process monitor that provides notification(s) to your System Operators when a failure of your Real-time monitoring alarm processor has occurred.	M-1 Control Center and Data Exchange Requirements, Section 2.3.1 Transmission Monitoring Capability, 3.2.3-EMS Data Exchange  Manual 3A: Energy Management System (EMS) Model Updates and Quality Assurance (QA), Section 5.2 State Estimator (SE) Solution Quality and ICCP Links, Section 5.3.15 RTCA Solution Quality, Section 5.56- Quality of Analysis Used in Real-time Assessments	4/1/2018	None
VAR	VAR-001-5	Purpose	To ensure that voltage levels, reactive flows, and reactive resources are monitored, controlled, and maintained within limits in Real-time to protect equipment and the reliable operation of the Interconnection.		Changes from VAR-001-4.2 to VAR-001-5 include WECC variance edits. No change to any requirements in the standard. Changes from VAR-001-4.1 to VAR-001-4.2 include only errata changes. No change to R3 or R5. Change from VAR-001-4 to VAR-001-4.1 includes adding "or" to R5.3 to read: schedules or Reactive Power						

## NERC Reliability Standards

Category	Standard Number	Requirement Number	Approved BOT/FERC Standards	A/S	Assigned or Shared Member TO Tasks	PJM Tasks	Audit Questions	Evidence of Compliance (What auditors will be looking for)	Reference Documents	Enforcement Date	Inactive Date
VAR	VAR-001-5	R3	Each Transmission Operator shall operate or direct the Real-time operation of devices to regulate transmission voltage and reactive flow as necessary.	S	When PJM issues an Operating Instruction the Member TO shall be able to operate the devices under its control necessary to regulate transmission voltage and reactive flow. (On transformers with low side voltage of 138 kV or lower, the Member TO can operate the tap changers without notifying PJM)	PJM shall issue an Operating Instruction to operate devices to regulate Transmission voltage and reactive flow.	Do you have the capability to operate or instruct the operation of devices when PJM issues an Operating Instruction necessary to regulate transmission voltage and reactive flow within your area?	Provide documented evidence that you can operate the devices necessary to regulate transmission voltage and reactive flow when PJM issues an Operating Instruction.	PJM OA, Section 11.3.3d-Electric Distributors, 1.7.20b-Communication and Operating Requirements  M-3 Transmission Operations; Section 3.3-Voltage Limits, Section 3.5- Voltage Control Actions	1/1/2019	None
VAR	VAR-001-5	R5	Each Transmission Operator shall specify a voltage or Reactive Power schedule (which is either a range or a target value with an associated tolerance band) at either the high voltage side or low voltage side of the generator step-up transformer at the Transmission Operator's discretion.	S	Each Member TO shall use PJM default generator voltage schedules specified in Manual 3, Section 3.11 or establish and coordinate voltage schedules for all BES generators within its zone with PJM.	1. Keep PJM Manual 3 Section 3.11 up to date. 2. Maintain eDART.	Do you use PJM default generator voltage schedules specified in Manual 3, Section 3.11 or establish and coordinate voltage schedules for all BES generators within your zone with PJM?	Exhibit documentation that you use PJM default generator voltage schedules specified in Manual 3, Section 3.11 or establish and coordinate voltage schedules for all BES generators within your zone with PJM.	PJM OA, Section 11.3.3d-Electric Distributors, 1.7.20b-Communication and Operating Requirements  M-3 Transmission Operations; Section 3.3-Voltage Limits, Section 3.5- Voltage Control Actions, Section 3.11 Generator Voltage Schedules  M-14D Generator Operational Requirements, Section 7.1.2-Voltage and Reactive Control	1/1/2019	None
VAR	VAR-001-5	R5.1	The Transmission Operator shall provide the voltage or Reactive Power schedule (which is either a range or a target value with an associated tolerance band) to the associated Generator Operator and direct the Generator Operator to comply with the schedule in automatic voltage control mode (the AVR is in service and controlling voltage).	S	Each Member TO shall notify PJM of the specified voltage schedule (PJM default schedule as specified in PJM Manual 3, Section 3.11 or Member TO voltage schedule) using communication methods established in PJM Manual 3, Section 3.11.	1. Keep PJM Manual 3 Section 3.11 up to date. 2. Maintain eDART.	Did you notify PJM of the specified voltage schedule (PJM default schedule as specified in PJM Manual 3, Section 3.11 or your voltage schedule) using communication methods established in PJM Manual 3, Section 3.11?	1. Exhibit eDART voltage schedule tickets, screen shot showing posted voltage schedules, etc.	PJM OA, Section 11.3.3d-Electric Distributors, 1.7.20b-Communication and Operating Requirements  M-3 Transmission Operations; Section 3.3-Voltage Limits, Section 3.5- Voltage Control Actions, Section 3.11 Generator Voltage Schedules  M-14D Generator Operational Requirements, Section 7.1.2-Voltage and Reactive Control	1/1/2019	None
VAR	VAR-001-5	R5.3	The Transmission Operator shall provide the criteria used to develop voltage schedules or Reactive Power schedule (which is either a range or a target value with an associated tolerance band) to the Generator Operator within 30 days of receiving a request.	S	1. Each Member TO shall provide the criteria used to develop Member TO voltage schedules, if applicable, or Member TO Reactive Power schedule, if applicable, (which is either a range or a target value with an associated tolerance band) to PJM as defined in PJM Manual 3, Section 3.11.	1. PJM shall keep PJM Manual 3, Section 3.11 up to date. 2. If the Member TO is not able to provide the criteria used to develop the Member TO voltage schedule to the Generator Operator in its area and notifies PJM, PJM shall provide the criteria used to develop the default voltage schedule as specified in PJM Manual 3, Section 3.11 to Generator Operator within 30 days of receiving a request.	1. Did you provide the criteria used to develop Member TO voltage schedules, if applicable, or Member TO Reactive Power schedule, if applicable, (which is either a range or a target value with an associated tolerance band) to PJM as defined in PJM Manual 3, Section 3.11.	1. Exhibit evidence (logs, emails, or other form of communication) that you provided the criteria used to develop Member TO voltage, if applicable, schedules or Member TO Reactive Power schedule (which is either a range or a target value with an associated tolerance band) to PJM as defined in PJM Manual 3, Section 3.11.	PJM OA, Section 11.3.3d-Electric Distributors, 1.7.20b-Communication and Operating Requirements  M-3 Transmission Operations; Section 3.3-Voltage Limits, Section 3.5- Voltage Control Actions, Section 3.11 Generator Voltage Schedules  M-14D Generator Operational Requirements, Section 7.1.2-Voltage and Reactive Control	1/1/2019	None

## Reference Documents

The following Reference Documents are utilized in the TO/TOP Matrix:

Manual 1, *Control Center and Data Exchange Requirements*, ~~Rev. 43 (Effective Date: November 17, 2021)~~

Manual 3, *Transmission Operations*, ~~Rev. 60 (Effective Date: November 17, 2021)~~

Manual 3A, *Energy Management System (EMS) Model Updates and Quality Assurance (QA)*, ~~Rev. 20 (Effective Date: August 25, 2021)~~

~~Manual 3B Transmission Operating Procedure (CEII)~~

Manual 13, *Emergency Operations*, ~~Rev. 81 (Effective Date: November 17, 2021)~~

~~Manual 14C Generation & Transmission Interconnection Facility Construction~~

Manual 14D, *Generator Operational Requirements*, ~~Rev. 57 (Effective Date: October 20, 2021)~~

Manual 36, *System Restoration*, ~~Rev. 29 (Effective Date: June 15, 2021)~~

Manual 37, *Reliability Coordination*, ~~Rev. 18 (Effective Date: March 29, 2021)~~

Manual 40, *Training and Certification Requirements*, ~~Rev. 23 (Effective Date: February 24, 2021)~~

[Link to the PJM Manuals](#)

[Reliability Assurance Agreement Among Load Serving Entities in the PJM Region \(Effective Date: September 17, 2010\)](#)

[Consolidated Transmission Owners Agreement Rate Schedule FERC No. 42 referenced as TOA in the TO/TOP Matrix](#)

[Amended And Restated Operating Agreement of PJM Interconnection, L.L.C referenced as PJM OA in the TO/TOP Matrix](#)

[PJM Open Access Transmission Tariff](#)

[PJM Compliance Bulletin CB026 Coordination with External Transmission Operators \(TOPs\)](#)

# Revision History

## Version 17

Effective: April 3, 2023

Finalized by TO/TOP Matrix Subcommittee: November 18, 2022

Approved by the Transmission Owners Agreement-Administrative Committee: March 2, 2023

1 None **New NERC Reliability Standard Additions**

1 VAR-001-5 **Assigned or Shared Task Updates**  
R5.3 Added PJM M3 reference

1 VAR-001-5 **Evidence of Compliance Updates**  
R5.3 Added PJM M3 reference

1 None **Standards Exiting Matrix**

1 None **PJM Task**

1 VAR-001-5 **Audit Question Updates**  
R5.3 Added PJM M3 reference

**Reference Changes**  
1 Updated all Reference Documents to current titles, versions, and sections

1 None **Administrative Changes**

## Version 16

Effective: April 1, 2022

Finalized by TO/TOP Matrix Subcommittee: 11, 19, 2021

Approved by the Transmission Owners Agreement-Administrative Committee: March, 7, 2022

1 None **New NERC Reliability Standard Additions**

**Assigned or Shared Task Updates**

1	COM-002-4	R4.1	Revised to clarify communication assessment for each operator
2	EOP-005-3	R1	Added eDART application
3	EOP-010-1	R3.2	Added GMD events to better align with NERC standard
4	EOP-010-1	R3.3	Added GMD events to better align with NERC standard
5	IRO-001-4	R2	Removed Task #2 to avoid duplication in R3
6	PER-005-2	R1.3	Added Task #2 for Operator Training Requirements
7	TOP-001-5	R1	Removed Task #2 to avoid duplication listed in R6
8	TOP-001-5	R5	Removed Task #2 to avoid duplication listed in R6
9	TOP-001-5	R12	Added IROL events to better align with NERC standard
10	TOP-001-5	R13	Removed Task #2 and Task #3 to avoid duplication listed in R1, R5, and R6
11	TOP-001-5	R14	Added SOL events to better align with NERC standard
12	TOP-010-1(i)	R1	Revised to include Operators
13	TOP-010-1(i)	R1.3	Revised from Assigned to Share Task. Removed "when" factor.
14	TOP-010-1(i)	R3	Revised to include Operators
15	TOP-010-1(i)	R3.2	Removed PJM Manual Reference from Task

**Evidence of Compliance Updates**

1	COM-002-4	R4.1	Match changes in Assigned or Shared Task
2	EOP-005-3	R1	Match changes in Assigned or Shared Task
3	EOP-010-1	R3.2	Match changes in Assigned or Shared Task
4	EOP-010-1	R3.3	Match changes in Assigned or Shared Task
5	IRO-001-4	R2	Match changes in Assigned or Shared Task
6	TOP-001-5	R1	Match changes in Assigned or Shared Task
7	TOP-001-5	R5	Match changes in Assigned or Shared Task
8	TOP-001-5	R12	Match changes in Assigned or Shared Task
9	TOP-001-5	R13	Match changes in Assigned or Shared Task
10	TOP-001-5	R14	Match changes in Assigned or Shared Task
11	TOP-010-1(i)	R1	Match changes in Assigned or Shared Task
12	TOP-010-1(i)	R1.3	Match changes in Assigned or Shared Task
13	TOP-010-1(i)	R3	Match changes in Assigned or Shared Task
14	TOP-010-1(i)	R3.2	Match changes in Assigned or Shared Task

1 None **Standards Exiting Matrix**

**PJM Task**

1	TOP-001-5	R6	Added Task #1 to better align with Assigned / Shared Task
2	TOP-001-5	R13	Match changes in Assigned or Shared Task
3	TOP-010-1(i)	R1.3	Added Task for PJM responsibility

**Audit Question Updates**

1	COM-002-4	R4.1	Match changes in Assigned or Shared Task
2	EOP-005-3	R1	Match changes in Assigned or Shared Task
3	IRO-001-4	R2	Match changes in Assigned or Shared Task
4	PER-005-2	R1.3	Match changes in Assigned or Shared Task
5	TOP-001-5	R1	Match changes in Assigned or Shared Task
6	TOP-001-5	R5	Match changes in Assigned or Shared Task
7	TOP-001-5	R12	Match changes in Assigned or Shared Task
8	TOP-001-5	R13	Match changes in Assigned or Shared Task
9	TOP-001-5	R14	Match changes in Assigned or Shared Task
10	TOP-010-1(i)	R1	Match changes in Assigned or Shared Task
11	TOP-010-1(i)	R1.3	Match changes in Assigned or Shared Task
12	TOP-010-1(i)	R3	Match changes in Assigned or Shared Task
13	TOP-010-1(i)	R3.2	Match changes in Assigned or Shared Task

**Reference Changes**

1	PER-005-2	R1.3	
2	TOP-001-5	R21	

**Administrative Changes**

1	COM-002-4	R4.1	Revised from "assess adherence" to "adhere"
2	EOP-005-3	R1	Revised from "send" to "submit"
3	Updated all Reference Documents to current versions		
4	Alligned abriviations		

# Revision History

## Version 15

Effective: April 1, 2021

Finalized by TO/TOP Matrix Subcommittee: December 18, 2020

Approved by the Transmission Owners Agreement-Administrative Committee: March 5, 2021

Standards Exiting Matrix				Assigned Task Updates			Reference Changes		
1 BAL-005-0.2b		7 PRC-001-1.1(ii)		1 COM-001-3	R4.3	Revised to match format of R3.5 as per RF request	1 TOP-001-5	R13	
2 COM-001-2.1		8 TOP-001-3		2 TOP-001-5	R9.	Added timeframes for submittal of outage information	2 TOP-001-5	R20	
3 EOP-004-3		9 TOP-001-4		3 VAR-001-5	R5	Remove need for TO to send GO voltage schedule	3 TOP-010-1(i)	R3.2	
4 EOP-005-2		10 VAR-001-4.1		4 VAR-001-5	R5.1	Revised to reflect new eDART procedure for handling voltage schedules			
5 EOP-008-1		11 VAR-001-4.2		5 VAR-001-5	R5.2	Deleted due to new eDART procedure			
6 PER-003-1				6 VAR-001-5	R5.3	Revised to reflect new eDART procedure for handling voltage schedules			
				Audit Question Updates					
				1 COM-001-3	R4.3	Match changes in Shared Task			
				2 VAR-001-5	R5	Match changes in Shared Task			
				3 VAR-001-5	R5.1	Match changes in Shared Task			
				4 VAR-001-5	R5.2	Match changes in Shared Task			
				5 VAR-001-5	R5.3	Match changes in Shared Task			

## Version 14

Effective: April 1, 2020

Finalized by TO/TOP Matrix Subcommittee: December 13, 2019

Approved by the Transmission Owners Agreement-Administrative Committee: March 11, 2020

Standards Exiting Matrix (3 Years Past Enforcement)				Audit Question Updates			Reference Changes				
1 COM-001-1.4	#####	12 PRC-010-0	3/31/2017	1 EOP-005-3	R4.1	Updated audit question to better align with parent requirement	1 EOP-005-2	R8	14 PER-005-2	R1	
2 COM-002-2	#####	13 PRC-022-1	3/31/2017	2 EOP-005-3	R4.2	Updated audit question to better align with parent requirement	2 EOP-005-3	R1.5	15 PER-005-2	R1.1	
3 EOP-001-2.1b	#####	14 TOP-001-1a	3/31/2017	3 EOP-005-3	R5	Added a question mark for audit question	3 EOP-005-3	R2	16 PER-005-2	R1.1.1	
4 EOP-003-2	#####	15 TOP-002-2.1b	3/31/2017				4 EOP-005-3	R6	17 PER-005-2	R1.2	
5 EOP-004-2	#####	16 TOP-003-1	3/31/2017	Administrative Changes			5 EOP-005-3	R8	18 PER-005-2	R1.3	
6 IRO-001-1.1	#####	17 TOP-004-2	3/31/2017	1 Updated all Reference Documents to current versions				6 EOP-005-3	R8.1	19 PER-005-2	R1.4
7 IRO-004-1	#####	18 TOP-006-2	3/31/2017	2 Spelling and Grammar updates where needed				7 EOP-005-3	R8.2	20 PER-005-2	R3
8 IRO-005-3.1a	#####	19 TOP-007-0	3/31/2017	3 Added a footnote to the governance page of the TO/TOP Matrix explaining who a Member TO is for the purposes of the TO/TOP Matrix				8 EOP-005-3	R8.3	21 PER-005-2	R3.1
9 PER-001-0.2	#####	20 TOP-008-1	3/31/2017				9 EOP-005-3	R8.4	22 PER-005-2	R4	
10 PER-005-1	#####							10 EOP-005-3	R8.5	23 TOP-001-4	R1
11 PRC-001-1.1(ii)	#####							11 EOP-005-3	R10	34 TOP-001-4	R5
R2, R2.2, R5.2, R6	#####							12 IRO-001-4	R3	25 TOP-001-4	R6
							13 PER-003-2	R2	26 TOP-001-4	R9	

## Version 13

Effective: April 1, 2019

Finalized by TO/TOP Matrix Subcommittee: December 14, 2018

Approved by the Transmission Owners Agreement-Administrative Committee: March 12, 2019

New NERC Reliability Standard Additions				Standards Exiting Matrix (3 Years Past Enforcement)		Assigned Task Updates			Reference Changes						
1 EOP-004-4	R2	###		1 COM-001-1.1	9/30/2015	1 COM-001-3	R3.5	Clarified assigned task to identify entities Member TOs need to have voice communications c	1 EOP-00 R2.:	14 PRC-001-1.1(ii)	R3.2	27 TOP-001-1a	R6		
2 EOP-005-3	Revision s to existing	###		2 COM-001-2	11/12/2015	2 TOP-001-4	R10.2	Added an assigned task (#2) - notify PJM of change of status in RAS schemes	2 EOP-00 R2.:	15 PRC-001-1.1(ii)	R4	28 TOP-001-4	R1		
3 EOP-005-3	R4	###		3 FAC-001-1	12/31/2015	3 TOP-001-4	R19	Updated assigned task to reflect the correct part of PJM Manual 1 Attachment B	3 EOP-00 R4	16 PRC-001-1.1(ii)	R5.2	29 TOP-001-4	R8		
4 EOP-005-3	R4.1	###		4 VAR-001-4	11/12/2015	4 TOP-001-4	R10.1	Added an assigned task (#2) - notify PJM of change of status for monitored facilities	4 EOP-00 R2	17 PRC-022-1	R1	30 TOP-001-4	R10.4		
5 EOP-005-3	R4.2	###		<b>Inactive Date Changes</b>			5 VAR-001-5	R5.1	Updated assigned task to reflect process change in communication of voltage schedules	5 EOP-00 R7	18 PRC-022-1	R1.1	31 TOP-001-4	R16	
6 EOP-005-3	R8.5	###								6 EOP-00 R1	19 PRC-022-1	R1.2	32 TOP-001-4	R19	
7 EOP-008-2	Revision s to existing	###		1 EOP-004-2	3/31/2017	<b>Evidence of Compliance Updates</b>			7 EOP-01 <sup>R1.</sup> <sub>2</sub>	20 PRC-022-1	R1.3	33 TOP-004-2	R3		
										8 EOP-010-1	R3.:	21 PRC-022-1	R1.4	34 TOP-008-1	R3

## Revision History

8 PER-003-2	No revisions to R20	###	2 EOP-004-3	3/31/2019	1 EOP-005-3	R1.2	6 EOP-0 R4	1 M-001-001-	9 EOP-01 R3.:	22 PRC-022-1	R1.5	35 TOP-010-1(i)	R3
9 TOP-001-4	R21	###	3 EOP-005-2	3/31/2019	2 EOP-005-3	R6	7 TOP-0 R10.3	2 EO	10 PER-00 R1	23 TOP-001-1a	R1	36 TOP-010-1(i)	R3.2
10 TOP-001-4	No revisions to	###	4 EOP-008-1	3/31/2019	3 EOP-005-3	R6.1	8 VAR-0 R5.1	3 EO	11 PRC-0C R1	24 TOP-001-1a	R2	37 TOP-010-1(i)	R3.3
11 VAR-001-5		###	5 PER-003-2	6/30/2019	4 EOP-005-3	R6.2	9 VAR-0 R5.2	Upd	12 PRC-0C R2.:	25 TOP-001-1a	R3	38 TOP-010-1(i)	R4
			6 PRC-001-1.1(ii)	3/31/2017 9/30/2020	5 EOP-005-3	R6.3	10 VAR-0 R5.3	all	13 PRC-0C R3	26 TOP-001-1a	R5		
			7 VAR-001-4.2	12/31/2018				5 Spelling					

### Version 12

Effective: July 1, 2018

Finalized by TO/TOP Matrix Subcommittee: March 16, 2018

Approved by the Transmission Owners Agreement-Administrative Committee: June 12, 2018

New NERC Reliability Standard Additions	Standards Exiting Matrix (3 Years Past Enforcement)	As sig	Reference Changes
1 TOP-001-4 R10	1 PRC-001-1.1 5/28/2015	1 BAL-005-0.2b R1.2 Facilities	1 BAL-00 R1.:
2 TOP-001-4 R10.1	2 VAR-001-3 9/30/2014	2 EOP-008-1 R7 Added	2 EOP-0C R2.:
3 TOP-001-4 R10.2		3 TOP-010-1(i) R1 Added	3 EOP-0C R2.:
4 TOP-001-4 R10.3	<b>Inactive Date Changes</b>	4 TOP-010-1(i) R3 Clarified	4 EOP-0C R3.:
5 TOP-001-4 R10.4	1 BAL-005-00.2b 6/30/2018	5 TOP-010-1(i) R3.2 Revised	5 EOP-0C R4
6 TOP-001-4 R10.5	2 TOP-001-3 6/30/2018	6 VAR-001-4.2 R5.1 Revised	6 EOP-0C R1
7 TOP-001-4 R10.6	3 VAR-001-4.1 9/25/2017		7 EOP-0C R5
8 VAR-001-4.2 Errata			8 EOP-0C R6
			9 EOP-0C R8
			10 EOP-0C R6
			11 EOP-0C R6.:
			12 EOP-0C R6.:
			13 EOP-0C R6.:
			14 EOP-0C R7
			15 EOP-005-2 R8
			16 EOP-005-2 R10
			17 EOP-008-1 R5
			18 EOP-008-1 R5.1
			19 EOP-008-1 R7
			20 EOP-008-1 R7.1
			21 IRO-001-4 R3
			22 IRO-005-3.1a R9
			23 PRC-001-1.1(ii) R1
			24 PRC-001-1.1(ii) R2
			25 PRC-001-1.1(ii) R2.2
			26 PRC-001-1.1(ii) R4
			27 PRC-001-1.1(ii) R5.2
			28 TOP-001-4 R1
			29 TOP-001-4 R5
			30 TOP-001-4 R6
			31 TOP-001-4 R10.1
			32 TOP-002-2.1b R16.2
			33 TOP-004-2 R3
			34 TOP-008-1 R2
			35 TOP-008-1 R3
			36 TOP-008-1 R4
			37 TOP-010-1(i) R3
			38 TOP-010-1(i) R3.2
			39 TOP-010-1(i) R3.3
			40 TOP-010-1(i) R4

#### Administrative Changes

- 1 Updated all Reference Documents to current versions
- 2 Spelling and Grammar updates where needed

#### Removal of Attestations from Evidence

- 1 BAL-005-0.2b R1.2
- 2 EOP-005-2 R5
- 3 EOP-008-1 R6
- 4 TOP-002-2.1b R17

#### PJM Task Updates

- 1 BAL-005-0.2b R1.2 Added a PJM task to update list of Transmission
- 2 TOP-001-4 R19 Added a PJM task to perform Operational
- 3 TOP-010-1(i) R1.2 Revised PJM task to indicate PJM shall use
- 4 TOP-010-1(i) R3.2 Revised PJM task to indicate that PJM shall maintain

### Version 11

Effective: October 1, 2017

Finalized by TO/TOP Matrix Subcommittee: June 16, 2017

Approved by the Transmission Owners Agreement-Administrative Committee: September 20, 2017

New NERC Reliability Standard Additions	Standards Inactive Since V10	ReliabilityFirst Annual Review of TO/TOP Matrix V10 Related Updates	Reference Changes
1 COM-001-3 R12	1 IRO-004-2 3/31/2017	Reference Updates	1 BAL-005-0.2b R1.2
2 TOP-010-1(i) R1	2 IRO-005-3.1a 3/31/2017	1 EOP-003-2 R2	2 COM-001-3 R3.1
3 TOP-010-1(i) R1.2	3 PER-001-0.2 3/31/2017	2 EOP-003-2 R4	3 COM-001-3 R3.2
4 TOP-010-1(i) R1.3	4 TOP-004-2 3/31/2017	3 EOP-003-2 R7	4 COM-001-3 R3.3
5 TOP-010-1(i) R3	5 TOP-006-2 3/31/2017	4 EOP-005-2 R1.6	5 COM-001-3 R3.4
6 TOP-010-1(i) R3.2	6 TOP-007-0 3/31/2017	5 EOP-005-2 R5	6 COM-001-3 R4.1
7 TOP-010-1(i) R3.3	7 TOP-008-1 3/31/2017		7 COM-001-3 R4.2
8 TOP-010-1(i) R4			8 COM-001-3 R4.3
			9 COM-001-3 R9
			10 COM-001-3 R10
			11 COM-002-2 R2.
			12 COM-002-4 R2
			13 COM-002-4 R4
			14 COM-002-4 R4.1
			15 COM-002-4 R6
			16 EOP-001-2.1b R2.3
			17 EOP-001-2.1b R4
			18 EOP-005-2 R1
			19 EOP-005-2 R4
			20 EOP-005-2 R4.1
			21 IRO-001-1.1 R8
			22 IRO-001-4 R2
			23 IRO-004-2 R1.
			24 PER-005-1 R1.
			25 PER-005-2 R1
			26 PRC-010-0 R1
			27 PRC-010-0 R1.1.1
			28 PRC-010-0 R1.1.2
			29 PRC-010-0 R1.1.3
			30 TOP-001-3 R8
			31 TOP-001-3 R10.1
			32 TOP-001-3 R13
			33 TOP-006-2 R5.
			34 TOP-006-2 R6.
			35 TOP-006-2 R7.
			36 VAR-001-3 R4.
			37 VAR-001-3 R6.
			38 VAR-001-3 R6.1.
			39 VAR-001-3 R7.
			40 VAR-001-4.1 R5
			41 VAR-001-4.1 R5.1
			42 VAR-001-4.1 R5.2
			43 VAR-001-4.1 R5.3

#### Assigned Task Updates

- 1 COM-001-3 3.5 Now includes communication with neighboring TOPs external to PJM
- 2 COM-001-3 R4.3 Now includes communication with neighboring TOPs external to PJM
- 3 EOP-005-2 R1 Evidence of Compliance section updated
- 4 TOP-001-3 R9 Clarified that assigned tasks deal with data communication channels
- 5 TOP-001-3 R16 Clarified that assigned tasks deal with data communication channels
- 6 TOP-006-2 R6 Updated Manual 1 reference in the assigned task
- 7 VAR-001-3 R4 Updated Manual 3 reference in the assigned task
- 8 VAR-001-4.1 R5 Updated Manual 3 reference in the assigned task
- 9 VAR-001-4.1 R5.1 Updated Manual 3 reference in the assigned task
- 10 VAR-001-4.1 R5.2 Updated Manual 3 reference in the assigned task
- 11 VAR-001-4.1 R5.3 Updated Manual 3 reference in the assigned task

#### Administrative Changes

- 1 Updated all Reference Documents to current versions
- 2 Added Reference Documents
- 3 Spelling and Grammar updates where needed



# Revision History

## Version 10

- Effective: January 1, 2017
- Approved by TO/TOP Matrix Subcommittee: September 16, 2016
- Approved by the Transmission Owners Agreement-Administrative Committee: November 9, 2016

<p><b>New NERC Reliability</b></p> <p>1 EOP-004-3 R2 2 IRO-001-4 R2 3 IRO-001-4 R3 4 TOP-001-3 R1 5 TOP-001-3 R5 6 TOP-001-3 R6 7 TOP-001-3 R8 8 TOP-001-3 R9 9 TOP-001-3 R10 10 TOP-001-3 R10.1 11 TOP-001-3 R12 12 TOP-001-3 R13 13 TOP-001-3 R14 14 TOP-001-3 R16 15 TOP-001-3 R18 16 TOP-001-3 R19</p> <p><b>Inactive Date Changes</b></p> <p>1 EOP-001-2.1b ##### 2 EOP-003-2 ##### 3 EOP-004-2 ##### 4 PRC-010-0 ##### 5 PRC-022-1 ##### 6 TOP-001-1a ##### 7 TOP-002-2.1b ##### 8 TOP-003-1 #####</p>	<p><b>COM-002-4 Operating</b></p> <p>1 COM-002-2 R2 2 EOP-001-2.1b R2.2 3 EOP-001-2.1b R2.3 4 EOP-010-1 R3.2 5 EOP-010-1 R3.3 6 IRO-001-1.1 R8 7 IRO-004-2 R1 8 IRO-005-3.1a R5 9 IRO-005-3.1a R6 10 TOP-001-1a R1 11 TOP-001-1a R2 12 TOP-001-1a R3 13 TOP-001-1a R5 14 TOP-001-1a R8 15 TOP-004-2 R1 16 TOP-004-2 R2 17 TOP-004-2 R3 18 TOP-004-2 R4 19 TOP-004-2 R5 20 TOP-007-0 R2 21 TOP-007-0 R3 22 TOP-008-1 R1 23 TOP-008-1 R2 24 TOP-008-1 R3 25 TOP-008-1 R4 26 VAR-001-3 R7 27 VAR-001-3 R8 28 VAR-001-3 R10 29 VAR-001-3 R12 30 VAR-001-4.1 R3</p>	<p><b>Rel</b></p> <p>PJM Shared Task Additions to Existing Requirements</p> <p>1 EOP-001-21.b R2.2 2 EOP-001-21.b R2.3 3 EOP-003-2 R1 4 EOP-003-2 R5 5 EOP-003-2 R6 6 EOP-003-2 R8</p> <p>TO Assigned Task Additions to Existing Requirements</p> <p>1 IRO-001-1.1 R8</p> <p>Addition of Assigned/Shared Tasks for New Requirements</p> <p>1 EOP-005-2 R3 2 EOP-005-2 R8 3 TOP-001-1a R6</p> <p><b>nce Document Updates</b></p> <p>1 BAL-005-0.2b R1.2. 2 COM-001-1.1 R 2. 3 EOP-010-1 R1.2 4 EOP-010-1 R3.2 5 EOP-010-1 R3.3 6 PER-005-1 R1. 7 PER-005-1 R1.3. 8 PER-005-1 R2 9 PER-005-1 R3 10 PER-005-2 R1 11 PER-005-2 R1.3. 12 PER-005-2 R3 13 PER-005-2 R4. 14 PRC-001-1.1(ii) R2.2. 15 PRC-010-0 R1 16 PRC-010-0 R1.1.1 17 PRC-010-0 R1.1.2 18 PRC-010-0 R1.1.3 19 PRC-022-1 R1. 20 PRC-022-1 R1.1. 21 PRC-022-1 R1.2. 22 PRC-022-1 R1.3.</p>	<p><b>Dele</b></p> <p>1 CIP-001-2a 12/31/2013 2 EOP-001-0.1b 6/30/2013 3 EOP-003-1 9/30/2013 4 EOP-004-1 12/31/2013 5 EOP-005-1 6/30/2013 6 EOP-008-0 6/30/2013 7 FAC-001-0 11/24/2013 8 PER-002-0 3/31/2013 9 PRC-001-1 3/31/2013 10 VAR-001-2 12/31/2013</p> <p><b>Administrative</b></p> <p>Font consistency throughout the Matrix Spelling/Grammar Check Deletion of extraneous text in the following instances EOP-001-2.1b R3 TOP-006-2 Purpose</p> <p>Updated Assigned Task</p> <p>23 PRC-0 R1.4. 24 PRC-0 R1.5. 25 TOP-0 R1. 26 TOP-0 R1. 27 TOP-0 R1.2. 28 TOP-0 R1.3. 29 TOP-0 R2. 30 TOP-0 R3. 31 TOP-0 R7. 32 TOP-0 R3. 33 TOP-0 R4.</p>
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## Version 9.1

- Effective: January 26, 2016
- Approved by TO/TOP Matrix Subcommittee: December 18, 2015
- Approved by the Transmission Owners Agreement-Administrative Committee: January 26, 2016

### Changes Incorporated in Version 9.1

1. COM-001-1.1: Inactive Date 9/30/2015. R4 Inactive Date 6/30/2016. Errata fix to a missing "Inactive Date" in Version 9.
2. COM-002-2: Inactive Date 6/30/2016. Errata fix to a missing "Inactive Date" in Version 9.
3. PER-005-1: Inactive Date 6/30/2016. Errata fix to a missing "Inactive Date" in Version 9.
4. COM-001-2.1: Enforceable 11/13/2015. FERC Letter Order approved errata to COM-001-2.1. Docket RD15-6-000
5. VAR-001-4.1: Enforceable 11/13/2015. FERC Letter Order approved errata to VAR-001-4.1. Docket RD15-6-000
6. Added "Purpose" rows for EOP-004-1, FAC-014-2, IRO-004-2, and VAR-001-4.1

## Version 9

- Effective: October 1, 2015
- Approved by TO/TOP Matrix Subcommittee: August 20, 2015
- Approved by the Transmission Owners Agreement-Administrative Committee: September 15, 2015