

PJM TO/TOP Matrix of Shared or Assigned Tasks

Draft Version 10, As of October 3, 2016

Approved by the TO/TOP Matrix Subcommittee: September 16, 2016

Approved by the Transmission Owners Agreement-Administrative Committee:

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's NERC and Regional Coordination Department with guidance from 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 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. The Matrix may be used as an audit tool by RFC and SERC.
7. 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 Audit.

Version History

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~~

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. GOM-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, FAG-014-2, IRO-004-2, and VAR-001-4.1~~

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 |
|----------|-----------------|--------------------|---|-----|--|---|--|--|--|-------------------------------------|--------------------------------------|
| BAL | BAL-005-0.2b | Purpose | This standard establishes requirements for Balancing Authority Automatic Generation Control (AGC) necessary to calculate Area Control Error (ACE) and to routinely deploy the Regulating Reserve. The standard also ensures that all facilities and load electrically synchronized to the Interconnection are included within the metered boundary of a Balancing Area so that balancing of resources and demand can be achieved. | | | | | | | | |
| BAL | BAL-005-0.2b | R1.2. | Each Transmission Operator with transmission facilities operating in an Interconnection shall ensure that those transmission facilities are included within the metered boundaries of a Balancing Authority Area. | A | All of the Member TO's BES facilities shall be within metered boundaries. | | Are all of your BES facilities within metered boundaries? | 1. Provide list of metered BES tie lines with other PJM Member TOs. 2. Provide a list of metered tie lines with TOs external to PJM, if applicable. 3. Provide an attestation that all remaining owned transmission facilities are within the metered ties lines from above. | M-1 Control Center and Data Exchange Requirements, Section 5.3.5 Balancing Authority Tie Circuits Tie Line Telemetry Specification Reliability Assurance Agreement, Schedule 2, Section B, item 1 | BAL-005-0.2b 09/13/2012 | BAL-005-0.2b None |
| CIP | CIP-001-2a | Purpose | Disturbances or unusual occurrences, suspected or determined to be caused by sabotage, shall be reported to the appropriate systems, governmental agencies, and regulatory bodies. | | No changes necessary for interpretation | | | | | | |
| CIP | CIP-001-2a | R1. | Each Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator, and Load Serving Entity shall have procedures for the recognition of and for making their operating personnel aware of sabotage events on its facilities and multi-site sabotage affecting larger portions of the Interconnection. | S | Each Member TO shall have procedures for the recognition of and for making their operating personnel aware of sabotage events on its facilities. | PJM shall have procedures for the recognition of and for making their operating personnel aware of sabotage events on its facilities and multi-site sabotage affecting larger portions of the Interconnection. | Do you have procedures for the recognition of and for making your operating personnel aware of sabotage events on your facilities? | Exhibit required procedures. | M-13 Emergency Operations; Section 1.2— Governmental Notifications & Public Appeals Procedures M-39 Nuclear Plant Interface Coordination; Attachment A Nuclear Plant Communications Protocol | CIP-001-2a 10/1/2011 | CIP-001-2a 12/31/2013 |
| CIP | CIP-001-2a | R2. | Each Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator, and Load Serving Entity shall have procedures for the communication of information concerning sabotage events to appropriate parties in the Interconnection. | S | Each Member TO shall have procedures for the communication of information concerning sabotage events to PJM. | PJM shall have procedures for the communication of information concerning sabotage events to Member TOs, RFC, SERC and NERC as appropriate. | Do you have procedures in place to communicate information concerning sabotage events to PJM? | Exhibit required procedures. | M-13 Emergency Operations; Section 1.3- Communications, Attachment J: Disturbance Reporting—US Department of Energy | CIP-001-2a 10/1/2011 | CIP-001-2a 12/31/2013 |
| CIP | CIP-001-2a | R3. | Each Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator, and Load Serving Entity shall provide its operating personnel with sabotage response guidelines, including personnel to contact, for reporting disturbances due to sabotage events. | S | Each Member TO shall provide its operating personnel with sabotage response guidelines, including personnel to contact for reporting disturbances due to sabotage events. | PJM shall provide its operating personnel with sabotage response guidelines, including personnel to contact for reporting disturbances due to sabotage events. | Do you provide your operating personnel with sabotage response guidelines, including a list of personnel to contact for reporting disturbances due to sabotage events? | Exhibit required response guidelines. | M-13 Emergency Operations; Section 1— Overview, Section 4 Sabotage/Terrorism Emergencies, Attachment J: Disturbance Reporting—US Department of Energy | CIP-001-2a 10/1/2011 | CIP-001-2a 12/31/2013 |
| CIP | CIP-001-2a | R4. | Each Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator, and Load Serving Entity shall establish communications contacts, as applicable, with local Federal Bureau of Investigation (FBI) or Royal Canadian Mounted Police (RCMP) officials and develop reporting procedures as appropriate to their circumstances. | S | Each Member TO shall establish communications contacts, as applicable, with local Federal Bureau of Investigation (FBI) or Royal Canadian Mounted Police (RCMP) officials and develop reporting procedures as appropriate to their circumstances. | PJM shall establish communications contacts, as applicable, with local Federal Bureau of Investigation (FBI) officials and develop reporting procedures as appropriate to their circumstances. | Have you established communication contacts, as applicable, with local Federal Bureau of Investigation (FBI) officials and developed procedures as appropriate to your circumstances to report sabotage events? | Evidence that can be used to verify that you have established a list identifying, as applicable, of communications contacts with local Federal Bureau of Investigation (FBI) and have developed reporting procedures. | M-13 Emergency Operations, Section 4.2— Communications Plan | CIP-001-2a 10/1/2011 | CIP-001-2a 12/31/2013 |

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-001-1.1 | Purpose | Each Reliability Coordinator, Transmission Operator and Balancing Authority needs adequate and reliable telecommunications facilities internally and with others for the exchange of Interconnection and operating information necessary to maintain reliability. | | | | | | | | |
| COM | COM-001-1.1 | R1 (Heading) | Each Reliability Coordinator, Transmission Operator and Balancing Authority shall provide adequate and reliable telecommunications facilities for the exchange of Interconnection and operating information: | | | | | | | | |
| COM | COM-001-1.1 | R 1.1. | Internally. | S | 1. Member TO shall have All Call equipment, ring down circuits (or simulated ring down), normal dial circuits, satellite telephone and a facsimile machine. Member TO shall provide appropriate power supply, appropriate environmental conditions and dial up modem lines for out of band router access for the PJMnet connection provided by PJM. 2. The Member TO shall make EMS information available to PJM via PJMnet. PJMnet is a dual redundant frame relay network using the Inter-control Center Communications Protocol (ICCP). | 1. PJM shall have All Call equipment, ring down circuits (or simulated ring down), normal dial circuits, satellite telephone and a facsimile machine. PJM shall provide appropriate power supply, appropriate environmental conditions and dial up modem lines for out of band router access for the PJMnet. 2. PJM shall make EMS information available to the Member TO via PJMnet. PJMnet is a dual redundant frame relay network using the Inter-control Center Communications Protocol (ICCP). | Describe your communication systems for voice and data communication with PJM. | 1. Provide evidence that Member TO has All Call system, ring down (or simulated ring down) circuits, manual dial, facsimile communications, alternate voice communications and/or satellite phones. 2. Show diagrams that show the Member TOs EMS connection to PJMnet. | TOA, 4.9 Data, Information and Metering PJM OA 11.3.1(b) General, 11.6 Membership Requirements M-1 Control Center and Data Exchange Requirements, Section 3.2-Energy Management System (EMS) Data Exchange, Section 4-Voice Communications | 5/13/2009 | 9/30/2015 |
| COM | COM-001-1.1 | R 1.3. | With other Reliability Coordinators, Transmission Operators, and Balancing Authorities as necessary to maintain reliability. | S | 1. Each Member TO with ties external to PJM shall have voice communications with its adjacent TOs external to PJM. 2. Each Member TO with ties external to PJM shall exchange EMS data on tie lines and other data as necessary to maintain reliability with its adjacent TOs external to PJM. | 1. PJM has no Shared Task for voice communications between neighboring TOs. 2. PJM shall exchange external TO EMS information with adjacent Member TOs via PJMnet, if available. PJMnet is a dual redundant frame relay network using the Inter-control Center Communications Protocol (ICCP). 3. PJM shall provide adequate and reliable telecommunications facilities for the exchange of Interconnection and operating information with other Reliability Coordinators, Transmission Operators and Balancing Authorities as necessary to maintain reliability. | 1. Describe your voice communication systems with your adjacent TOs external to PJM. 2. Describe your data communication systems with your adjacent TOs external to PJM. | 1. Show evidence that describes your voice communication systems with your adjacent TOs external to PJM. 2. Show evidence that describes your data communication systems with your adjacent TOs external to PJM. | M-1 Control Center and Data Exchange Requirements; Section 2.4-Communications Requirements | 5/13/2009 | 9/30/2015 |
| COM | COM-001-1.1 | R 1.4. | Where applicable, these facilities shall be redundant and diversely routed. | S | 1. Voice communications with PJM shall be redundant and diversely routed. 2. TOs shall use PJMnet to communicate EMS data to PJM. PJMnet is a dual redundant frame relay network using the Inter-control Center Communications Protocol (ICCP). 3. Voice communications with adjacent neighboring (both internal and external) TOs shall be redundant and diversely routed. 4. Exchange of EMS data with adjacent TOs external to PJM shall be redundant and diversely routed. | 1. PJM shall have redundant and diversely routed voice communications with Member TOs. 2. PJM shall use PJMnet to exchange EMS data with Member TOs. PJMnet is a dual redundant frame relay network using the Inter-control Center Communications Protocol (ICCP). 3. PJM has no Shared Task related to voice communications with neighboring (both internal and external) TOs. 4. Member TOs may use PJMnet to exchange EMS data with TOs external to PJM, if such information is available. | 1. Are your voice communication systems with PJM redundant and diversely routed? 2. Do you use PJMnet? 3. Are your voice communications with adjacent neighboring (both internal and external) TOs redundant and diversely routed? 4. Are your data communications with adjacent neighboring external TOs redundant and diversely routed? | Lists and/or diagrams of telecommunication facilities showing redundancy and diverse routing, where applicable. | PJM OA 11.3.1(b). General, 11.6 Membership Requirements M-1 Control Center and Data Exchange Requirements; Section 3.2-Energy Management System (EMS) Data Exchange, Section 4-Voice Communications | 5/13/2009 | 9/30/2015 |

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| COM | COM-001-1.1 | R 2. | Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall manage, alarm, test and/or actively monitor vital telecommunications facilities. Special attention shall be given to emergency telecommunications facilities and equipment not used for routine communications. | S | 1. The Member TO shall respond to all applicable All Call messages. 2. The Member TO shall participate in the PJM satellite phone tests. 3. Voice communications with neighboring (both internal and external) TOs shall be managed, alarmed, tested and/or actively monitored. 4. Data exchange with neighboring (both internal and external) TOs shall be managed, alarmed, tested and/or actively monitored. 5. TOs shall use PJMnet to communicate EMS data to PJM. Member TO shall actively monitor PJMnet. | 1. No Shared Task for All Call. 2. PJM shall initiate the PJM satellite phone tests. 3. PJM has no Shared Task related to voice communications with neighboring (both internal and external) TOs. 4. Member TOs may use PJMnet to exchange EMS data with TOs external to PJM, if such information is available. PJMnet is a dual redundant frame relay network using the Inter-control Center Communications Protocol (ICCP). 5. PJM shall manage, alarm, test, and/or actively monitor PJMnet. | 1. Describe your facilities used to participate in a PJM All Call. 2. Do you participate in the PJM satellite phone tests? 3. Do you manage, alarm, test and/or actively monitored voice communications with neighboring (both internal and external) TOs? 4. Do you manage, alarm, test and/or actively monitor data exchange with neighboring (both internal and external) TOs? | 1. Show logs of tests and logs of participation in PJM tests. 2. Show logs of management, alarming, testing and/or active monitoring of voice communications with neighboring (both internal and external) TOs. 3. Show logs of management, alarming, testing and/or active monitoring of data exchange with neighboring external TOs unless PJMnet is used for such data exchange. | M-36 System Restoration, Attachment E-Communications, Protocols and Testing. M-1 Control Center and Data Exchange Requirements Section 2.4-Communications Requirements; Section 3-Data Exchange Requirements; Section 4.2.3.1-Satellite Telephones | 5/13/2009 | 9/30/2015 |
| COM | COM-001-1.1 | R 4. | Unless agreed to otherwise, each Reliability Coordinator, Transmission Operator, and Balancing Authority shall use English as the language for all communications between and among operating personnel responsible for the real-time generation control and operation of the interconnected Bulk Electric System. Transmission Operators and Balancing Authorities may use an alternate language for internal operations. | S | Member TO system operators shall use English as the language for all communications among operating personnel responsible for the real-time operation of the interconnected Bulk Electric System. | PJM operators shall use English as the language for all communications with Member TOs. | 1. Do you use only English when communicating with PJM? 2. Do your system operators use only English when communicating with your operating personnel? | Documentation showing that for the Member TO system operators that English is used as the language for all communications among operating personnel responsible for the real-time generation control, when applicable, and operation of the interconnected Bulk Electric System. | M-1 Control Center and Data Exchange Requirements, Section 4.1-Dispatch Voice & Facsimile Communications | 5/13/2009 | 6/30/2016 |
| COM | COM-001-1.1 | R 5. | Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall have written operating instructions and procedures to enable continued operation of the system during the loss of telecommunications facilities. | S | 1. Each TO member shall have written operating instructions and procedures to enable continued operation of the Member TO's system during the loss of EMS data exchange. 2. The written operating instructions and procedures shall specifically address sending data to PJM as required by PJM Manual 1 Section 3.2.3 EMS Data Exchange during the loss of EMS data exchange. | During a loss of EMS data exchange with a Member TO, PJM operators shall be prepared to receive and use data, by non-EMS means, specifically addressed in PJM Manual 1 Section 3.2.3 EMS Data Exchange. | 1. Do your written operating instructions and procedures enable continued operation of the system during the loss of EMS data exchange? 2. Do they address sending data to PJM? 3. Have you had to initiate your operations without EMS data exchange procedure since the last audit? | 1. Operating instructions and procedures that enable continued operation of the system during the loss of EMS data exchange. 2. Show section that addresses data exchange with PJM. | TOA, 4.9 Data, Information and Metering 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; Section 2.5.6 - Recovery Procedures; Section 3.2.3 - EMS Data Exchange; Section 4.2 - Alternative Voice Communications | 5/13/2009 | 9/30/2015 |
| COM | COM-001-2.1 | Purpose | To establish Interpersonal Communication capabilities necessary to maintain reliability. | | Change from COM-001-2 to COM-001-2.1 includes only an errata fix to correctly line up parts under R6 with the requirement. | | | | | | |
| COM | COM-001-2.1 | 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-001-2.1 | 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-Voice Communications | COM-001-2 10/1/2015 COM-001-2.1 11/13/2015 | COM-001-2 11/12/2015 COM-001-2.1 None |
| COM | COM-001-2.1 | 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-Voice Communications | COM-001-2 10/1/2015 COM-001-2.1 11/13/2015 | COM-001-2 11/12/2015 COM-001-2.1 None |

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|------------|--------------------|---------------------|---|-----|---|---|---|--|---|---|--|
| COM | COM-001-2.1 | R3.3 | Each Distribution Provider within its Transmission Operator Area. | S | 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-Voice Communications | COM-001-2 10/1/2015 COM-001-2.1 11/13/2015 | COM-001-2 11/12/2015 COM-001-2.1 None |
| COM | COM-001-2.1 | 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-Voice Communications | COM-001-2 10/1/2015 COM-001-2.1 11/13/2015 | COM-001-2 11/12/2015 COM-001-2.1 None |
| COM | COM-001-2.1 | R3.5 | Each adjacent Transmission Operator synchronously connected. | S | Each Member TO shall have voice communications capability with neighboring TOs, internal or external to PJM. | PJM shall have voice communications capability with each Transmission Operator synchronously connected to PJM. | Describe your capability for voice communications with neighboring TOs, internal or external to PJM. | Provide evidence that you have voice communications capability with neighboring TOs, internal or external to PJM. | PJM OA 11.3.1(b) General, 11.6 Membership Requirements M-1 Control Center and Data Exchange Requirements, Section 4-Voice Communications | COM-001-2 10/1/2015 COM-001-2.1 11/13/2015 | COM-001-2 11/12/2015 COM-001-2.1 None |
| COM | COM-001-2.1 | R4 (Heading) | Each Transmission Operator shall designate an Alternative Interpersonal Communication capability with the following entities: | | | | | | | | |
| COM | COM-001-2.1 | 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-Voice Communications | COM-001-2 10/1/2015 COM-001-2.1 11/13/2015 | COM-001-2 11/12/2015 COM-001-2.1 None |
| COM | COM-001-2.1 | 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-Voice Communications | COM-001-2 10/1/2015 COM-001-2.1 11/13/2015 | COM-001-2 11/12/2015 COM-001-2.1 None |
| COM | COM-001-2.1 | R4.3 | Each adjacent Transmission Operator synchronously connected. | S | Each Member TO shall designate an Alternative Interpersonal Communication capability for voice communications with neighboring TOs, internal or external to PJM. | 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 TOs, internal or external to PJM. | Provide evidence that you have Alternative Interpersonal Communication capability for voice communications with neighboring TOs, internal or external to PJM. | PJM OA 11.3.1(b) General, 11.6 Membership Requirements M-1 Control Center and Data Exchange Requirements, Section 4-Voice Communications | COM-001-2 10/1/2015 COM-001-2.1 11/13/2015 | COM-001-2 11/12/2015 COM-001-2.1 None |
| COM | COM-001-2.1 | 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-Voice Communications | COM-001-2 10/1/2015 COM-001-2.1 11/13/2015 | COM-001-2 11/12/2015 COM-001-2.1 None |

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| COM | COM-001-2.1 | 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-Voice Communications | COM-001-2 10/1/2015 COM-001-2.1 11/13/2015 | COM-001-2 11/12/2015 COM-001-2.1 None |
| COM | COM-002-2 | Purpose | To ensure Balancing Authorities, Transmission Operators, and Generator Operators have adequate communications and that these communications capabilities are staffed and available for addressing a real-time emergency condition. To ensure communications by operating personnel are effective. | | | | | | | | |
| COM | COM-002-2 | R.1 | Each Transmission Operator, Balancing Authority, and Generator Operator shall have communications (voice and data links) with appropriate Reliability Coordinators, Balancing Authorities, and Transmission Operators. Such communications shall be staffed and available for addressing a real-time emergency condition. | S | 1. Each Member TO shall have voice communications with its adjacent neighboring (both inside and outside of PJM) TOs and PJM. 2. Each Member TO shall use PJMnet or other protocols/mediums to access EMS data with its adjacent neighboring Member TOs inside and outside PJM. PJMnet is a dual redundant frame relay network using the Inter-control Center Communications Protocol (ICCP). 3. Each TO Member's communications shall be staffed and available for addressing a real-time emergency condition. | 1. PJM shall have voice communications with Member TOs. 2. PJM shall use PJMnet to exchange EMS data with Member TOs. 3. PJM has no Shared Task related to voice communications with neighboring (both internal and external) TOs. 4. Member TOs may use PJMnet or other protocols/mediums to exchange EMS data with TOs external to PJM, if such information is available. PJMnet is a dual redundant frame relay network using the Inter-control Center Communications Protocol (ICCP). 5. PJM communications shall be staffed and available for addressing a real-time emergency condition. | 1. Describe your voice communications with your adjacent neighboring (both inside and outside of PJM) TOs and PJM. 2. Describe your data communications with your adjacent neighboring (both inside and outside of PJM) TOs and PJM. 3. Are your communications staffed and available for addressing a real-time emergency condition? | 1. Description or drawing of your voice communications with your adjacent neighboring (both inside and outside of PJM) TOs. 2. Description or drawing of your data communications with your adjacent neighboring (both inside and outside of PJM) TOs. 3. Describe how these communications are staffed and available for addressing a real-time emergency condition. | M-1 Control Center and Data Exchange Requirements; Section 2.4 Communications Requirements | 6/18/2007 | 6/30/2016 |

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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 |
|----------|-----------------|--------------------|---|-----|--|---|--|---|--|------------------|---------------|
| COM | COM-002-2 | R1.1. | Each Balancing Authority and Transmission Operator shall notify its Reliability Coordinator, and all other potentially affected Balancing Authorities and Transmission Operators through predetermined communication paths of any condition that could threaten the reliability of its area or when firm load shedding is anticipated. | S | 1. Each Member TO shall communicate with PJM through predetermined communication paths of any condition that could threaten the reliability of the Member TO's area or when firm load shedding is anticipated. 2. Each Member TO shall communicate with neighboring (both inside and outside of PJM) TOs through predetermined communication paths of any emergency outages of lines between TOs. | 1. PJM shall establish predetermined communication paths for Member TOs. 2. PJM will gather information from all Member TOs and communicate any condition that could threaten the reliability of the Member TO's area. | 1. Do you have predetermined communication paths (phone numbers, etc.) to PJM? 2. Have you had incidents since the last audit that you communicated to PJM about any condition that could threaten the reliability of your area or when firm load shedding is anticipated? 3. Do you have predetermined communication paths (phone numbers, etc.) to neighboring (both inside and outside of PJM) TOs? 4. Have you had incidents since the last audit that you communicated to neighboring (both inside and outside of PJM) TOs about any emergency outages of lines between TOs? | 1. Exhibit a list of phone numbers or other predetermined communication paths with PJM. 2. Evidence of any communication (voice recordings, logs, emails etc.) with PJM about any condition that could have threatened the reliability of your area or when firm load shedding is anticipated, if available. 3. Exhibit a list of phone numbers or other predetermined communication paths with neighboring (both inside and outside of PJM) TOs. 4. Evidence of any communication (voice recordings, logs, emails etc.) with neighboring (both inside and outside of PJM) TOs about any emergency outages of lines between TOs, if available. | M-1 Control Center and Data Exchange Requirements; Section 2.4 Communications Requirements | 6/18/2007 | 6/30/2016 |
| COM | COM-002-2 | R.2. | Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall issue directives in a clear, concise, and definitive manner; shall ensure the recipient of the directive repeats the information back correctly; and shall acknowledge the response as correct or repeat the original statement to resolve any misunderstandings. | S | 1. When PJM issues an <u>Operating Instruction during an Emergency a PJM Directive (as defined in Manual 1)</u> the Member TO system operator shall repeat the information back. 2. When the Member TO LCC sSystem eOperator is communicating the <u>Operating Instruction PJM Directive</u> to the Member TO's operating personnel, the parties shall engage in 3-part communications. | When PJM issues <u>Operating Instruction during an Emergency a PJM Directive (as defined in Manual 1)</u> the PJM System Operator shall properly engage in 3-part communications with the Member TO LCC system operator. | Do you have procedures for proper use of three-part communications with PJM and your operating personnel? | 1. Exhibit procedures for proper use of three-part communications with PJM and your operating personnel. 2. Voice transcripts or other types of proof that the requirement was followed. (Examples -Auditor will select days to provide examples.) | M-1 Control Center and Data Exchange Requirements, Section 4.2.4 - Three Part Communications | 6/18/2007 | 6/30/2016 |
| 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-Voice Communications | 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 assess adherence to the documented communications protocols in Manual 1 Section 4 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. | | Did you at least once every 12 calendar months assess adherence to the documented communications protocols in Manual 1 Section 4 by 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? | Continuing training r 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 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-Voice Communications | 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: • Repeat, not necessarily verbatim, the Operating Instruction and receive confirmation from the issuer that the response was correct, or • Request that the issuer reissue the Operating Instruction. | 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: • Repeat, not necessarily verbatim, the Operating Instruction and receive confirmation from the issuer that the response was correct, or • Request that the issuer reissue the Operating Instruction. | | 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: • Repeat, not necessarily verbatim, the Operating Instruction and receive confirmation from the issuer that the response was correct, or • Request that the issuer reissue the Operating Instruction? | 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: • Repeating, not necessarily verbatim, the Operating Instruction and receiving confirmation from the issuer that the response was correct, or • Requesting that the issuer reissue the Operating Instruction. | M-1 Control Center and Data Exchange Requirements; Section 4-Voice Communications | 7/1/2016 | None |
| EOP | EOP-001-0.1b | Purpose | Each Transmission Operator and Balancing Authority needs to develop, maintain, and implement a set of plans to mitigate operating emergencies. These plans need to be coordinated with other Transmission Operators and Balancing Authorities, and the Reliability Coordinator. | | No changes necessary for interpretation | | | | | | |
| EOP | EOP-001-0.1b | R2. | The Transmission Operator shall have an emergency load reduction plan for all identified IROLs. The plan shall include the details on how the Transmission Operator will implement load reduction in sufficient amount and time to mitigate the IROL violation before system separation or collapse would occur. The load reduction plan must be capable of being implemented within 30 minutes. | S | Load reduction within each Member TO shall be capable of being implemented without delay, but no longer than 5 minutes as directed by PJM. | IROL mitigation plan is located in PJM Manual 13. | Are you capable of assigned load reduction within 5 minutes if directed by PJM? | Explain/simulate load reduction capability, and/or provide documented evidence of having implemented load reduction for IROL violation within established time frames of a PJM request. | M-13 Emergency Operations, Section 5.5- Interconnection Reliability Operating Limits (IROL) Manual Load Dump Warning/Action; Attachment F-PJM Manual Load Dump Capability; Attachment N-IROL Load Dump Tables | EOP-001-0.1b 9/13/2012 | EOP-001-0.1b 06/30/2013 |
| EOP | EOP-001-0.1b | R3 (Heading) | Each Transmission Operator and Balancing Authority shall: | | | | - | | | | |
| EOP | EOP-001-0.1b | R3.1. | Develop, maintain, and implement a set of plans to mitigate operating emergencies for insufficient generating capacity. | S | 1. The Member TO shall develop and maintain a set of plans to mitigate operating emergencies for insufficient generating capacity. 2. The Member TO shall comply with PJM instructions and PJM Directives unless such actions would violate safety, equipment, or regulatory or statutory requirements. | PJM is responsible for developing and maintaining plans to mitigate operating emergencies for insufficient generating capacity. PJM shall issue PJM Directives and PJM instructions to implement plans to ensure mitigation of operating emergencies for insufficient generating capacity. | 1. Have you developed and maintain a set of plans to mitigate operating emergencies for insufficient generating capacity? 2. Did you comply with any PJM instructions or PJM Directives unless such actions would violate safety, equipment, or regulatory or statutory requirements. | 1. Exhibit plans to mitigate operating emergencies for insufficient generating capacity. 2. Evidence such as system operator logs, voice recordings or incident reports etc., for any incidents where your operators had to follow PJM Directives or PJM instructions. | PJM OA Schedule 1, 1.7.4 General Obligations of the Market Participants; Section 1.7.6 Scheduling and Dispatching; Section 1.7.15 Corrective Action | EOP-001-0.1b 9/13/2012 | EOP-001-0.1b 06/30/2013 |
| EOP | EOP-001-0.1b | R3.2. | Develop, maintain, and implement a set of plans to mitigate operating emergencies on the transmission system. | S | The Member TO shall comply with PJM instructions and PJM Directives unless such actions would violate safety, equipment, or regulatory or statutory requirements. | PJM is responsible for developing and maintaining the plans to mitigate operating emergencies on the transmission system. PJM shall issue PJM Directives and PJM instructions to implement plans to ensure mitigation of operating emergencies on the transmission system. | Did you comply with any PJM instructions or PJM Directives unless such actions would violate safety, equipment, or regulatory or statutory requirements. | Evidence such as system operator logs, voice recordings or incident reports etc., for any incidents where your operators had to follow PJM Directives or PJM instructions. | PJM OA, Schedule 1, Section 1.7.6 Scheduling and Dispatching; 1.7.15 Corrective Action | EOP-001-0.1b 9/13/2012 | EOP-001-0.1b 06/30/2013 |

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-001-0.1b | R3.3: | Develop, maintain, and implement a set of plans for load shedding. | S | 1. The Member TO shall develop and maintain a set of plans for implementation of load shedding on its system. 2. The Member TO shall comply with PJM Directives for implementation of load shedding unless such actions would violate safety, equipment, or regulatory or statutory requirements. | PJM is responsible for developing and maintaining the plans for the issuing of Directives for load shedding. | 1. Do you have and maintain a set of plans for implementation of load shedding on your system? 2. Did you comply with any PJM Directives for load shedding unless such actions would violate safety, equipment, or regulatory or statutory requirements. | 1. Exhibit a set of plans for implementation of load shedding on your system. 2. Evidence such as system operator logs, voice recordings or incident reports etc., for any incidents where your operators had to follow PJM Directives for load shedding. | M-3 Transmission Operations Transmission Operations, Section 3 Voltage & Stability Operating Guidelines; Section 5 Index of Operating Procedures for PJM RTO Operation PJM OA, Schedule 1, 1.7.6 Scheduling and Dispatching; 1.7.15 Corrective Action M-13 Emergency Operations, Section 1.1 Policy Statements; Section 2 Capacity Emergencies; Attachment E: Manual Load Dump Allocation Tables; Attachment F: PJM Manual Load Dump Capability TOA Article 4.7 | EOP-001-0.1b 9/13/2012 | EOP-001-0.1b 06/30/2013 |
| EOP | EOP-001-0.1b | R3.4: | Develop, maintain, and implement a set of plans for system restoration. | S | See EOP-005-2 for requirements of TO members to develop, maintain, and implement a set of plans for system restoration. | See EOP-005-2 | See EOP-005-2 | See EOP-005-2 | Covered by EOP-005-2 | EOP-001-0.1b 9/13/2012 | EOP-001-0.1b 06/30/2013 |
| EOP | EOP-001-0.1b | R4 (Heading) | Each Transmission Operator and Balancing Authority shall have emergency plans that will enable it to mitigate operating emergencies. At a minimum, Transmission Operator and Balancing Authority emergency plans shall include: | | | | | | | | |
| EOP | EOP-001-0.1b | R4.4 | Staffing levels for the emergency. | A | The Member TO's Emergency Plans shall include staffing levels for the emergency. | | Are staffing levels for the emergency part of your Emergency Plans? | Exhibit the part of your Emergency Plans that indicates staffing levels for the emergency. | M-13 Emergency Operations Section 3-Weather/Environmental Emergencies | EOP-001-0.1b 9/13/2012 | EOP-001-0.1b 06/30/2013 |
| EOP | EOP-001-2.1b | Purpose | Each Transmission Operator and Balancing Authority needs to develop, maintain, and implement a set of plans to mitigate operating emergencies. These plans need to be coordinated with other Transmission Operators and Balancing Authorities, and the Reliability Coordinator. | | | | | | | | |
| EOP | EOP-001-2.1b | R2 (Heading) | Each Transmission Operator and Balancing Authority shall: | | | | | | | | |
| EOP | EOP-001-2.1b | R2.2 | Develop, maintain, and implement a set of plans to mitigate operating emergencies on the transmission system. | S | The Member TO shall comply with <u>Operating Instructions PJM instructions</u> unless such actions would violate safety, equipment, or regulatory or statutory requirements. | 1. PJM is responsible for developing and maintaining the plans to mitigate operating emergencies on the transmission system. 2. PJM shall implement the plans to mitigate operating emergencies on the transmission system when conditions exist to implement those plans. | Did you comply with any <u>Operating Instructions PJM instructions</u> unless such actions would violate safety, equipment, or regulatory or statutory requirements? | Evidence such as system operator logs, voice recordings or incident reports etc., for any incidents where your operators had to follow <u>Operating Instructions PJM instructions</u> . | PJM OA, Schedule 1, Section 1.7.6 - Scheduling and Dispatching; 1.7.15 Corrective Action M-13 Emergency Operations, Section 5-Transmission Security Emergencies TOA Article 4.7 M-3 Transmission Operations, Section 5-Index of Operating Procedures for PJM RTO Operation | 7/1/2013 | None <u>3/31/2017</u> |

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-001-2.1b | R2.3 | Develop, maintain, and implement a set of plans for load shedding. | S | The Member TO shall comply with <u>Operating Instructions PJM Directives</u> unless such actions would violate safety, equipment, or regulatory or statutory requirements. | 1. PJM is responsible for developing and maintaining the plans for load shedding. 2. PJM shall implement the plans for load shedding when conditions exist to implement the plans for load shedding. | Did you comply with any <u>Operating Instructions PJM Directives</u> unless such actions would violate safety, equipment, or regulatory or statutory requirements? | Evidence such as system operator logs, voice recordings or incident reports etc., for any incidents where your operators had to follow <u>Operating Instructions PJM Directives</u> . | M-3 Transmission Operations Transmission Operations, Section 3-Voltage & Stability Operating Guidelines; Section 5-Index of Operating Procedures for PJM RTO Operation PJM OA, Schedule 1, 1.7.6 -Scheduling and Dispatching; 1.7.15- Corrective Action M-13 Emergency Operations, Section 1.1- Policy Statements; Section 2; Attachment E: Manual Load Dump Allocation Tables; Attachment F: PJM Manual Load Dump Capability TOA Article 4.7 | 7/1/2013 | None <u>3/31/2017</u> |
| EOP | EOP-001-2.1b | R3 (Heading) | Each Transmission Operator and Balancing Authority shall have emergency plans that will enable it to mitigate operating emergencies. At a minimum, Transmission Operator and Balancing Authority emergency plans shall include: | | | PJM is responsible for developing and maintaining the plans to mitigate operating emergencies on the transmission system. | | | PJM OA , Schedule 1, Section 1.7.6 - Scheduling and Dispatching; 1.7.15 Corrective Action M-13 Emergency Operations-, Section 5 TOA Article 4.7 M-3 Transmission Operations, Section 5 | | |
| EOP | EOP-001-2.1b | R3.4 | Staffing levels for the emergency. | A | The Member TO's Emergency Plans shall include staffing levels for the emergency. | | Are staffing levels for the emergency part of your Emergency Plans? | Exhibit the part of your Emergency Plans that indicates staffing levels for the emergency. | M-13 Emergency Operations Section 3- Weather/Environmental Emergencies | 7/1/2013 | None <u>3/31/2017</u> |
| EOP | EOP-001-2.1b | R4 (Heading) | Each Transmission Operator and Balancing Authority shall include the applicable elements in Attachment 1-EOP-001-0b when developing an emergency plan. | | | | | | | | |
| EOP | EOP-001-2.1b | R4 Attachment 1 Item 13 | 13. Load curtailment — A mandatory load curtailment plan to use as a last resort. This plan should address the needs of critical loads essential to the health, safety, and welfare of the community. Address firm load curtailment. | A | 1. The Member TO's Emergency Plan shall have a mandatory load shed plan to use as a last resort. 2. This plan should address the needs of critical loads essential to the health, safety, and welfare of the community. | | 1. Do you have a mandatory load shed plan to use as a last resort? 2. Does your Plan address the needs of critical loads essential to the health, safety, and welfare of the community? | 1. Exhibit the mandatory firm load curtailment plan to use as a last resort. 2. Show how the plan addresses the needs of critical loads essential to the health, safety, and welfare of the community. | PJM Operating Agreement, Section 11.3.1e- Member Responsibilities, General Transmission Owners Agreement, Section 4.5 M-3 Transmission Operations (Rev-44) , Sections 1.2-Responsibilities for Transmission Owner's Operating Entity, 1.3-Transmission Operating Guidelines M-13 Emergency Operations, Section 5.5: Interconnection Reliability Operating Limits (IROL) Manual Load Dump Warning/Action; Attachment F-PJM Manual Load Dump Capability; Attachment N-IROL Load Dump Tables M-37 Reliability Coordination, Section 1 - Roles and Responsibilities, Policy Statements; Section 3 - SOL and IROL Limits, Section 3.1- SOL and IROL Limit Determination (PJM Member Actions) | 7/1/2013 | None <u>3/31/2017</u> |

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-003-2 | Purpose | A Balancing Authority and Transmission Operator operating with insufficient generation or transmission capacity must have the capability and authority to shed load rather than risk an uncontrolled failure of the Interconnection. | | | | | | | | |
| EOP | EOP-003-2 | R1. | After taking all other remedial steps, a Transmission Operator or Balancing Authority operating with insufficient generation or transmission capacity shall shed customer load rather than risk an uncontrolled failure of components or cascading outages of the Interconnection. | S | The Member TO shall shed load at the direction of PJM. | <p>1. PJM is responsible for developing and maintaining the plans for load shedding.</p> <p>2. <u>PJM shall implement the plans for load shedding when conditions exist to implement the plans for load shedding.</u></p> | Have you had any incidents that have required you to follow the direction of PJM to shed load since the last PJM audit? | Documentation of the event that required you to shed load at the direction of PJM, including evidence that directions were followed as required. | <p>PJM OA , Schedule 1, 1.7.11 (b).</p> <p>M-13 Emergency Operations, Section 1.1- Policy Statements; Section 2-Capacity Emergencies; Attachment E: Manual Load Dump Allocation Tables; Attachment F: PJM Manual Load Dump Capability</p> <p>TOA Article 4.7</p> <p>M-3 Transmission Operations, Section 5- Index and Operating Procedures for PJM RTO Operation</p> | <p>EOP-003-1 06/18/2007</p> <p>EOP-003-2 10/1/2013</p> | <p>EOP-003-1 09/30/2013</p> <p>EOP-003-2 None 3/31/2017</p> |
| EOP | EOP-003-2 | R2. | Each Transmission Operator shall establish plans for automatic load shedding for undervoltage conditions if the Transmission Operator or its associated Transmission Planner(s) or Planning Coordinator(s) determine that an under-voltage load shedding scheme is required. | S | Each Member TO that owns BES UVLS shall not set the BES UVLS higher than the PJM Load Dump Voltage Limit (0.90 pu). | <p>1. PJM has not determined that an under-voltage load shedding scheme is required in its area. PJM shall exhaust all non-cost measures, redispatch generation, and issue a Post-Contingency Local Load Relief Warning (post-contingency load shed plan) in order to control voltages above the Load Dump Voltage Limit consistent with PJM operating criteria.</p> <p>2. PJM shall control voltages above the Load Dump Voltage Limit and not rely on the Member TO's UVLS plans for automatic load shedding for undervoltage conditions.</p> | <p>1. Do you have BES UVLS installed in your area?</p> <p>2. If yes, are the BES UVLS settings on BES facilities below the PJM Load Dump voltage Limit (0.90 pu)?</p> | <p>1. If applicable, exhibit a list of BES UVLS installations in your area.</p> <p>2. Demonstrate that your BES UVLS settings are below the PJM Load Dump Voltage Limit (0.90 pu).</p> | M-3 Transmission Operations; Section 3.2- Voltage Criteria and Policy; Exhibit 5 Note. | EOP-003-2 10/1/2013 | <p>EOP-003-2 None 3/31/2017</p> |
| EOP | EOP-003-2 | R4. | A Transmission Operator shall consider one or more of these factors in designing an automatic under voltage load shedding scheme: voltage level, rate of voltage decay, or power flow levels. | S | Each Member TO that owns a BES UVLS shall consider one or more of these factors in designing the automatic UVLS scheme: voltage level, rate of voltage decay, or power flow levels. | <p>1. PJM shall exhaust all non-cost measures, redispatch generation, and issue a Post-Contingency Local Load Relief Warning (post-contingency load shed plan) in order to control voltages above the Load Dump Voltage Limit consistent with PJM operating criteria.</p> <p>2. PJM shall control voltages above the Load Dump Voltage Limit and not rely on the Member TO's UVLS plans for automatic load shedding for undervoltage conditions.</p> | <p>1. Do you have BES UVLS installed in your area?</p> <p>2. If yes, did you consider one or more of these criteria in designing your automatic UVLS scheme: voltage level, rate of voltage decay, or power flow levels?</p> | <p>1. If applicable, exhibit a list of BES UVLS installations in your area.</p> <p>2. Demonstrate that you considered one or more of these criteria in designing your automatic UVLS scheme: voltage level, rate of voltage decay, or power flow levels.</p> | M-3 Transmission Operations; Section 3.2- Voltage Criteria and Policy; Exhibit 5 Note. | EOP-003-2 10/1/2013 | <p>EOP-003-2 None 3/31/2017</p> |
| EOP | EOP-003-2 | R5. | A Transmission Operator or Balancing Authority shall implement load shedding, excluding automatic under-frequency load shedding, in steps established to minimize the risk of further uncontrolled separation, loss of generation, or system shutdown. | S | The Member TO shall shed load at the direction of PJM. | <p>1. PJM is responsible for developing and maintaining the plans for load shedding.</p> <p>2. <u>PJM shall implement the plans for load shedding when conditions exist to implement the plans for load shedding.</u></p> | Have you had any incidents that have required you to follow the direction of PJM to shed load since the last PJM audit? | Documentation of the event that required you to shed load at the direction of PJM, including evidence that directions were followed as required. | <p>PJM OA , Schedule 1, 1.7.11 (b).</p> <p>M-13 Emergency Operations, Section 1.1- Policy Statements; Section 2-Capacity Emergencies; Attachment E: Manual Load Dump Allocation Tables; Attachment F: PJM Manual Load Dump Capability</p> <p>TOA Article 4.7</p> <p>M-3 Transmission Operations, Section 5- Index and Operating Procedures for PJM RTO Operation</p> | <p>EOP-003-1 06/18/2007</p> <p>EOP-003-2 10/1/2013</p> | <p>EOP-003-1 09/30/2013</p> <p>EOP-003-2 None 3/31/2017</p> |

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-003-2 | R6. | After a Transmission Operator or Balancing Authority Area separates from the Interconnection, if there is insufficient generating capacity to restore system frequency following automatic underfrequency load shedding, the Transmission Operator or Balancing Authority shall shed additional load. | S | The Member TO shall shed load at the direction of PJM. | 1. PJM is responsible for developing and maintaining the plans for load shedding. 2. <u>PJM shall implement the plans for load shedding when conditions exist to implement the plans for load shedding.</u> | Have you had any incidents that have required you to follow the direction of PJM to shed load since the last PJM audit? | Documentation of the event that required you to shed load at the direction of PJM, including evidence that directions were followed as required. | PJM OA , Schedule 1, 1.7.11 (b). M-13 Emergency Operations, Section 1.1- Policy Statements; Section 2-Capacity Emergencies; Attachment E: Manual Load Dump Allocation Tables; Attachment F: PJM Manual Load Dump Capability TOA Article 4.7 M-3 Transmission Operations, Section 5- Index and Operating Procedures for PJM RTO Operation | EOP-003-1 06/18/2007 | EOP-003-1 09/30/2013 EOP-003-2 10/1/2013 None 3/31/2017 |
| EOP | EOP-003-2 | R7 | The Transmission Operator shall coordinate automatic undervoltage load shedding throughout their areas with tripping of shunt capacitors, and other automatic actions that will occur under abnormal voltage, or power flow conditions. | S | Each Member TO that owns BES UVLS shall not set BES UVLS higher than the PJM Load Dump Voltage Limit (0.90 pu). | 1. PJM's voltage policy shall ensure that Member TO's UVLS will not initiate since PJM's operating criteria require PJM to control voltages above the Load Dump Voltage Limit. 2. PJM shall exhaust all non-cost measures, redispatch generation, and issue a Post-Contingency Local Load Relief Warning (post-contingency load shed plan) in order to control voltages above the Load Dump Voltage Limit consistent with PJM operating criteria. 3. PJM shall not rely on the Member TO's UVLS plans for automatic load shedding for undervoltage conditions. | 1. Do you have BES UVLS installed in your area? 2. If yes, are your BES UVLS settings on BES facilities below the PJM Load Dump voltage Limit (0.90 pu)? | 1. If applicable, exhibit a list of BES UVLS installations in your area. 2. Demonstrate that your UVLS settings on BES facilities are below the PJM Load Dump Voltage Limit (0.90 pu). | M-3 Transmission Operations; Section 3.2- Voltage Criteria and Policy; Exhibit 5 Note. | EOP-003-2 10/1/2013 | EOP-003-2 None 3/31/2017 |
| EOP | EOP-003-2 | R8. | Each Transmission Operator or Balancing Authority shall have plans for operator-controlled manual load shedding to respond to real-time emergencies. The Transmission Operator or Balancing Authority shall be capable of implementing the load shedding in a timeframe adequate for responding to the emergency. | S | The Member TO must be capable of implementing actions as directed by PJM including load shedding in a timeframe adequate for responding to the emergency. See PJM Manual 3 for requirements. | 1. PJM is responsible for developing and maintaining the plans for load shedding. 2. <u>PJM shall implement the plans for load shedding when conditions exist to implement the plans for load shedding.</u> | 1. Does the Member TO have plans for operator-controlled manual load shedding to respond to real-time emergencies that can be implemented in a timeframe adequate (See Manual 3 for requirements) for responding to the emergency? 2. Describe the method used to shed load? | 1. Plans for manual load shedding that meet the timing requirements as specified in M-13, Emergency Operations, Section 5, Transmission Security Emergencies and Section 2, Step 8. 2. Exhibit methods used for load shedding. | PJM OA , Schedule 1, 1.7.11 (b). M-13 Emergency Operations, Section 1.1- Policy Statements; Section 2-Capacity Emergencies; Attachment E: Manual Load Dump Allocation Tables; Attachment F: PJM Manual Load Dump Capability TOA Article 4.7 M-3 Transmission Operations, Section 5- Index and Operating Procedures for PJM RTO Operation | EOP-003-1 06/18/2007 | EOP-003-1 09/30/2013 EOP-003-2 10/1/2013 None 3/31/2017 |
| EOP | EOP-004-1 | Purpose | Disturbances or unusual occurrences that jeopardize the operation of the Bulk Electric System, or result in system equipment damage or customer interruptions, need to be studied and understood to minimize the likelihood of similar events in the future. | | | | | | | | |
| EOP | EOP-004-1 | R3 (Heading) | A Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator or Load Serving Entity experiencing a reportable incident shall provide a preliminary written report to its Regional Reliability Organization and NERC. | | | | | | | | |

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-004-1 | R3.1: | The affected Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator or Load Serving Entity shall submit within 24 hours of the disturbance or unusual occurrence either a copy of the report submitted to DOE, or, if no DOE report is required, a copy of the NERC Interconnection Reliability Operating Limit and Preliminary Disturbance Report form. Events that are not identified until some time after they occur shall be reported within 24 hours of being recognized. | S | The Member TO experiencing a disturbance shall supply sufficient information to PJM to allow PJM to meet its 24-hour reporting requirement. | PJM has the responsibility to file the report with NERC and RFC 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 R3.1? | 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 | 6/18/2007 | 12/31/2013 |
| EOP | EOP-004-1 | R3.3: | Under certain adverse conditions, e.g., severe weather, it may not be possible to assess the damage caused by a disturbance and issue a written Interconnection Reliability Operating Limit and Preliminary Disturbance Report within 24 hours. In such cases, the affected Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator, or Load Serving Entity shall promptly notify its Regional Reliability Organization(s) and NERC, and verbally provide as much information as is available at that time. The affected Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator, or Load Serving Entity shall then provide timely, periodic verbal updates until adequate information is available to issue a written Preliminary Disturbance Report. | S | The Member TO experiencing a disturbance has the responsibility to report to PJM unless certain adverse conditions (see EOP-004-R3.3) prevent adequate assessment. The Member TO shall promptly notify PJM and verbally provide as much information as is available at that time. The Member TO shall then provide timely, periodic verbal updates until adequate information is available. | PJM has the responsibility to file the report with NERC and RFC or SERC in 24 hours unless certain adverse conditions prevent adequate assessment. PJM shall promptly notify NERC and RFC or SERC and verbally provide as much information as is available at that time. PJM shall then provide timely, periodic verbal updates until adequate information is available to issue a written Preliminary Disturbance Report. 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 timely manner adequate to meet R3.2? | 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 | 6/18/2007 | 12/31/2013 |
| EOP | EOP-004-1 | R3.4: | If, in the judgment of the Regional Reliability Organization, after consultation with the Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator, or Load Serving Entity in which a disturbance occurred, a final report is required, the affected Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator, or Load Serving Entity shall prepare this report within 60 days. As a minimum, the final report shall have a discussion of the events and its cause, the conclusions reached, and recommendations to prevent recurrence of this type of event. The report shall be subject to Regional Reliability Organization approval. | S | The Member TO experiencing a disturbance shall supply information as requested by PJM to allow PJM to meet its 60-day reporting requirement. | PJM has the responsibility to file the final report with NERC and RFC or SERC within 60 days. 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 R3.4? | Show example evidence of the information requested by PJM. | M-13 Emergency Operations, Section 6— Reporting Emergencies; Attachment J: Disturbance Reporting—US Department of Energy | 6/18/2007 | 12/31/2013 |
| EOP | EOP-004-2 | Purpose | To improve the reliability of the Bulk Electric System by requiring the reporting of events by Responsible 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 |
|------------|------------------|--------------------|---|----------|---|---|--|--|---|------------------|--------------------------|
| EOP | EOP-004-2 | R2. | Each Responsible Entity shall report events per their Operating Plan within 24 hours of recognition of meeting an event type threshold for reporting or by the end of the next business day if the event occurs on a weekend (which is recognized to be 4 PM local time on Friday to 8 AM Monday local time). [Violation Risk Factor: Medium] [Time Horizon: Operations Assessment] | 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 RFC 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 | 1/1/2014 | None <u>3/31/2017</u> |
| <u>EOP</u> | <u>EOP-004-3</u> | <u>Purpose</u> | <u>Disturbances or unusual occurrences that jeopardize the operation of the Bulk Electric System, or result in system equipment damage or customer interruptions, need to be studied and understood to minimize the likelihood of similar events in the future.</u> | | | | | | | | |
| <u>EOP</u> | <u>EOP-004-3</u> | <u>R2.</u> | <u>Each Responsible Entity shall report events per their Operating Plan within 24 hours of recognition of meeting an event type threshold for reporting or by the end of the next business day if the event occurs on a weekend (which is recognized to be 4 PM local time on Friday to 8 AM Monday local time). [Violation Risk Factor: Medium] [Time Horizon: Operations Assessment]</u> | <u>S</u> | <u>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.</u> | <u>PJM has the responsibility to file the report required for the Transmission Operator with NERC and RFC or SERC within 24 hours. PJM shall also file the report with the Member TO experiencing a disturbance.</u> | <u>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?</u> | <u>Evidence that shows that you supplied PJM sufficient information in a timely manner.</u> | <u>M-13 Emergency Operations, Section 6 - Reporting Emergencies; Attachment J: Disturbance Reporting—US Department of Energy</u> | <u>4/1/2017</u> | <u>None</u> |
| <u>EOP</u> | <u>EOP-005-1</u> | <u>Purpose</u> | <u>To ensure plans, procedures, and resources are available to restore the electric system to a normal condition in the event of a partial or total shut down of the system.</u> | | | | | | | | |
| EOP | EOP-005-1 | R1. | Each Transmission Operator shall have a restoration 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, and the loss of vital telecommunications channels. Each Transmission Operator shall include the applicable elements listed in Attachment 1-EOP-005 in developing a restoration plan. | S | Each Member TO shall have a restoration 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, and the loss of vital telecommunications channels. | PJM shall have a restoration plan to coordinate with Member TOs when Member TOs are syncing together with other Member TOs or with external TOs 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, and the loss of vital telecommunications channels. | Do you have a restoration plan to reestablish your 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, and the loss of vital telecommunications channels? | Exhibit your 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, and the loss of vital telecommunications channels | M-1 Control Center Requirements, Section 2.3.1—Transmission Monitoring Capability M-3 Transmission Operations, Section 1.2- Responsibilities for Transmission Owner's Operating Entity, Section 1.3—Transmission Operating Guidelines M-36 System Restoration, Section 8-System Restoration Plan Guidelines; Section 1.1- Policy Statements, PJM Member Actions | 6/18/2007 | 6/30/2013 |
| EOP | EOP-005-1 | Attachment 1-#01 | Plan and procedures outlining the relationships and responsibilities of the personnel necessary to implement system restoration | S | The Member TO Restoration Plan must outline the relationships and responsibilities of the personnel necessary to implement system restoration. | PJM's operators are fully responsible for implementing the PJM System Restoration Plan in Manual 36 and for communicating with the Member TOs as necessary. | Does your plan include the relationships and responsibilities of the personnel who will implement your plan? | Exhibit the parts of your restoration plan that shows the relationships and responsibilities of the personnel who will implement your plan. | M-36 System Restoration, Section 1.1- Policy Statements, PJM Member Actions; Section 8- System Restoration Plan Guidelines; Attachment F-Transmission Owner and Blackstart Supporting Documentation-References, Figure 1: TO Restoration Document References | 6/18/2007 | 6/30/2013 |

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-005-1 | Attachment 1-#02 | The provision for a reliable black-start capability plan including: fuel resources for black-start power for generating units, available cranking and transmission paths, and communication adequacy and protocol and power supplies | S | 1. The Member TO Restoration Plan must provide for a reliable black-start capability plan including: available cranking and transmission paths. 2. Communication with black-start resources is important so adequate communication capability with each blackstart unit shall be defined in your Restoration Plan. 3. Proper communication protocols with blackstart units should be listed within the Member TO Restoration Plan. 4. Power supply requirements for communication with blackstart units during a blackout should also be listed in the Member TO Restoration Plan. | PJM requires that a black-start unit have at least 10 hours of fuel. (see Manual 36 Attachment A- Minimum Critical Black-Start Requirement) | 1. Does your Restoration Plan provide for a reliable black-start capability plan including: available cranking and transmission paths? 2. Is adequate communication capability with blackstart units defined in your Restoration Plan? 3. Are proper communication protocols with blackstart units listed within the your Restoration Plan. 4. Are power supply requirements for communication with blackstart units during a blackout listed in the Member TO Restoration Plan. | Exhibit the parts of your Restoration Plan that show: -Available cranking and transmission paths -Communication adequacy (what methods do you use to communicate with blackstart units in your Restoration Plan during a blackout) -Communication protocol (how do you communicate with blackstart units in your Restoration Plan) -Communication power supplies (do you have adequate power supplies to communicate with blackstart units in your Restoration Plan during a blackout) | M-36 System Restoration, Section 1.1 Policy Statements, Section 6 – Generation | 6/18/2007 | 6/30/2013 |
| EOP | EOP-005-1 | Attachment 1-#04 | The necessary operating instructions and procedures for synchronizing areas of the system that have become separated. | S | 1. Each Member TO Restoration Plan shall include the necessary operating instructions and procedures for synchronizing areas of the system (within the Member TO area) that have become separated. 2. The Member TO Restoration Plan shall require coordination with PJM if the Member TO is synchronizing their area with another TO, internal or external, to PJM. 3. The Member TO Restoration Plan shall require coordination with PJM if the Member TO must deviate from the Member TO Restoration Plan. Member TO must notify PJM before deviating from its Restorations Plan. | PJM shall coordinate with Member TOs when Member TOs are syncing together with other Member TOs or with external TOs and if a Member TO needs to deviate from the Member TO Restoration Plan. | 1. Does your Restoration Plan include the necessary operating instructions and procedures for synchronizing areas of the system (within the Member TO area) that have become separated? 2. Does your Restoration Plan require coordination with PJM if you are synchronizing your area with another TO (internal or external to PJM)? 3. Does your Restoration Plan require notification of PJM if you have to deviate from your Restoration Plan? | Exhibit in the section in the Member TO Restoration Plan that shows: -The necessary operating instructions and procedures for synchronizing areas of the system (within the Member TO area) that have become separated -The section that requires coordination with PJM if the Member TO is synchronizing their area with another TO (internal or external to PJM). -The section that requires coordination with PJM if the Member TO must deviate from the Member TO Restoration Plan. | M-36 System Restoration, Section 7.2- Synchronization, Attachment B Restoration Forms | 6/18/2007 | 6/30/2013 |
| EOP | EOP-005-1 | Attachment 1-#05 | The necessary operating instructions and procedures for restoring loads, including identification of critical load requirements. | S | Each Member TO Restoration Plan shall include the necessary operating instructions and procedures for restoring loads, including identification of critical load requirements. | Some critical loads may need neighboring Member TOs to help restore. PJM would get involved during this part of the restoration. | 1. Describe how load is restored within your area. 2. How do you identify critical loads? | Exhibit the necessary operating instructions and procedures for: -Restoring loads -Identification of critical load requirements | M-36 System Restoration, Section 3.1.5- Implement Restoration Procedures | 6/18/2007 | 6/30/2013 |
| EOP | EOP-005-1 | Attachment 1-#07 | Documentation must be retained in the personnel training records that operating personnel have been trained annually in the implementation of the plan and have participated in restoration exercises. | S | Each Member TO Restoration Plan shall include requirements that each Member TO's operating personnel have been trained annually in the implementation of the Member TO Restoration Plan and have participated in restoration exercises. | The PJM Annual System Operator Seminar partially meets these requirements. Member TO training has to address Member TO operating procedures. | 1. Does your Restoration Plan have a requirement that all of your system operators have annual training in system restoration? 2. Does your Restoration Plan have a requirement that all of your system operators participate in annual restoration exercises? | 1. Exhibit the section of the Restoration Plan that requires annual training in system restoration. 2. Exhibit the section of the Restoration Plan that requires that all your operators participate in annual restoration exercises | M-40 Certification and Training Requirements, Section 1 – Training Overview, Section 1.4.2 – Task List, Section 1.4.3 – Reliability Related Tasks, Section 3.1 Overview; Section 3.2 Entity Training and Certification Requirements | 6/18/2007 | 6/30/2013 |
| EOP | EOP-005-1 | R2. | Each Transmission Operator shall review and update its restoration plan at least annually and whenever it makes changes in the power system network, and shall correct deficiencies found during the simulated restoration exercises. | S | Each Member TO shall annually review and update their Restoration Plan and as required by changes in the power system network. Each Member TO shall correct deficiencies found during the simulated restoration exercises. The annual review and update shall reflect changes in PJM Manual 36. | Annually review and update the PJM Restoration Plan in Manual 36 as required by changes in the power system network and Member TO Restoration Plans. Correct deficiencies found during the simulated restoration exercises. | 1. Explain your process for annually reviewing and updating your Restoration Plan? 2. How do you take into account configuration changes within your Transmission Zone? 3. How do you take into consideration changes within the PJM Restoration Plan as defined in Manual 36? 4. When was your Restoration Plan last updated? 5. When is it scheduled to be reviewed and updated next? 6. How do you take into account Lessons Learned and feedback from drill simulations and exercises? | 1. Exhibit documented history of the Member TO Restoration Plan that shows that the Restoration Plan has been reviewed and updated at least annually. 2. If applicable show that changes were made to the Member TO Restoration Plan to reflect changes to the power system network. 3. Evidence that deficiencies found during simulated restoration exercises have been corrected, if applicable. | M-36 System Restoration, Section 1 PJM- Member Actions; Section 8 – System Restoration Plan Guidelines, 3rd bullet under 8.1; Attachment D: Restoration Drill Guide, Drill Logistics, 6th paragraph | 6/18/2007 | 6/30/2013 |

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-005-1 | R3. | Each Transmission Operator shall develop restoration plans with a priority of restoring the integrity of the Interconnection. | S | Each Member TO's Restoration Plan must state the priority of restoring the integrity of the Interconnection. | PJM's Restoration Plan states the priority of restoration is the integrity of the Interconnection. | Does your restoration plan clearly emphasize the priority of restoring the integrity of the Interconnection? | Show that the Member TO's Restoration Plan has restoring the integrity of the Interconnection is listed as a priority. | M-36 System Restoration, Section 1.1 Policy Statements | 6/18/2007 | 6/30/2013 |
| EOP | EOP-005-1 | R5. | Each Transmission Operator and Balancing Authority shall periodically test its telecommunication facilities needed to implement the restoration plan. | S | 1. Each Member TO shall participate in PJM tests to test telecommunication facilities with PJM needed to implement its Restoration Plan. 2. Each Member TO shall periodically test any other communication facilities needed during a system restoration including communication with its operating personnel and neighboring TOs (internal and external to PJM). | 1. PJM shall initiate the PJM satellite phone tests. 2. PJM has no Shared Task related to voice communications with neighboring (both internal and external) TOs. | 1. Do you participate in the PJM satellite phone tests? 2. Do you conduct tests of communication systems needed during a system restoration? 3. Do you conduct tests of backup communication systems with neighboring TOs (internal and external to PJM)? | 1. PJM satellite phone test logs. 2. Records showing testing of back-up communication systems needed during a system restoration. 3. Records showing tests of backup communication systems with neighboring TOs (internal and external to PJM). | M-1 Control Center and Data Exchange Requirements, Section 2.4 Communication Requirements; Section 4 Voice Communications M-36 System Restoration, Attachment E Communications, Protocols and Testing | 6/18/2007 | 6/30/2013 |
| EOP | EOP-005-1 | R6. | Each Transmission Operator and Balancing Authority shall train its operating personnel in the implementation of the restoration plan. Such training shall include simulated exercises, if practicable. | S | 1. The required Member TO's personnel shall participate in PJM sponsored restoration training or an equivalent as required by Manual 40. 2. The required Member TO's personnel shall participate in PJM sponsored restoration drills (simulated exercises) or an equivalent as required by Manual 40. 3. The Member TO shall also provide all required operating personnel with training in the implementation of the Member TO Restoration Plan. 4. Member TO shall retain training records in PJM LMS or their own training records. | 1. PJM shall offer Restoration Plan training during the annual System Operator Seminar which includes simulated exercises. 2. PJM shall offer semiannual restoration drills (simulated exercises). | 1. Does your Restoration Plan training program meet the requirements of Manual 40? 2. Where do you store your Restoration Plan training records? | 1. Evidence that all required Member TO operators have participated in PJM Restoration Plan training or equivalent as required by Manual 40. 2. Evidence that all required Member TO operators have participated in PJM Restoration Plan drills or equivalent as required by Manual 40. 3. The Member TO shall also provide all required operating personnel with training in the implementation of the Member TO Restoration Plan. | M-36 System Restoration, Section 1.1 Policy Statements; Attachment D Restoration Drill Guide M-40 Certification and Training Requirements, Section 3.2 Entity Training and Certification Requirements | 6/18/2007 | 6/30/2013 |
| EOP | EOP-005-1 | R7. | Each Transmission Operator and Balancing Authority shall verify the restoration procedure by actual testing or by simulation. | S | The Member TO shall verify the Restoration Plan by actual testing or by simulation. | PJM shall offer simulation exercises of system restoration at least annually. | How do you verify your Restoration Plans? | Documented evidence that the Member TO has verified the restoration procedure by either actual testing of the procedure or simulated implementation of the procedure. | M-36 System Restoration, Attachment D Restoration Drill Guide; Section 1.1 Policy Statements NERC CAN on EOP-005-1 R7 | 6/18/2007 | 6/30/2013 |
| EOP | EOP-005-1 | R8. | Each Transmission Operator shall verify that the number, size, availability, and location of system Blackstart generating units are sufficient to meet Regional Reliability Organization restoration plan requirements for the Transmission Operator's area. | S | 1. The Member TO shall identify Priority 1 critical loads (See Manual 36). 2. In conjunction with the Member TO, PJM uses the critical loads to define the minimum number, size and location of the Blackstart resources. 3. Member TO in conjunction with PJM shall secure the required Blackstart resources. | 1. In conjunction with the Member TO, PJM uses the Member TO defined Priority 1 critical loads to define the number, size and location of the required Blackstart resources. 2. PJM shall offer adequate Blackstart resources in the Blackstart Service Ancillary Service Market. 3. PJM in conjunction with the Member TO shall secure the required Blackstart resources. 4. PJM shall determine the availability of the critical Blackstart resources. | 1. Have you identified your Priority 1 critical loads as defined in Manual 36? 2. Have you worked with PJM to define the number, size and location of the required Blackstart resources? 3. Have you worked with PJM to secure the required Blackstart resources? | 1. Provide a list of critical loads as defined in Manual 36. 2. Provide a list of critical Blackstart generators (include their size and location). | 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 | 6/18/2007 | 6/30/2013 |
| EOP | EOP-005-1 | R9. | The Transmission Operator shall document the Cranking Paths, including initial switching requirements, between each Blackstart generating unit and the unit(s) to be started and shall provide this documentation for review by the Regional Reliability Organization upon request. Such documentation may include Cranking Path diagrams. | 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. | | 1. Have you documented initial switching requirements between each Blackstart generating unit and the unit(s) to be started? 2. Do you have cranking path diagrams? | Documentation of initial switching requirements and cranking paths. | M-36 System Restoration, Section 1.1 Policy Statements; Section 6.2 Cranking Power; Attachment F Transmission Owner and Blackstart Supporting Documentation References | 6/18/2007 | 6/30/2013 |

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-005-1 | R11: | Following a disturbance in which one or more areas of the Bulk Electric System become isolated or blacked-out, the affected Transmission Operators and Balancing Authorities shall begin immediately to return the Bulk Electric System to normal. | S | 1. Each Member TO shall take actions as instructed by PJM. 2. Use the Member TO restoration plan to restore the system and coordinate with PJM if any deviations from the plan are required. | If following a disturbance in which one or more areas of the Bulk Electric System become isolated or blacked-out, PJM shall begin immediately to return the Bulk Electric System to normal by directing or instructing Member TOs. | 1. Since the last audit have you had a disturbance in which one or more areas of the Bulk Electric System become isolated or blacked-out? 2. Did you take actions as instructed by PJM? 3. Did you use the Member TO restoration plan to restore the system and coordinate with PJM if any deviations from the plan are required? | 1. If you have had a disturbance in which one or more areas of the Bulk Electric System become isolated or blacked-out since your last audit, provide a report. 2. Evidence that you took actions as instructed by PJM like logs or voice recordings. 3. If you used the Member TO restoration plan to restore the system, provide evidence like logs. 4. Provide documentation of any deviations from the plan and communications with PJM. | M-36 System Restoration, Section 1.1 Policy Statements | 6/18/2007 | 6/30/2013 |
| EOP | EOP-005-1 | R11.1: | The affected Transmission Operators and Balancing Authorities shall work in conjunction with their Reliability Coordinator(s) to determine the extent and condition of the isolated area(s). | S | Each Member TO shall work with PJM to determine the extent and condition of the isolated area(s). | PJM shall work with each Member TO to determine the extent and condition of the isolated area(s). | 1. Have you had a disturbance in which one or more areas of the Bulk Electric System become isolated or blacked-out since the last audit? 2. If so, did you work with PJM to determine the extent and condition of the isolated area(s)? | 1. A report of the event. 2. Documentation that shows that you worked with PJM to determine the extent and condition of the isolated area? | M-36 System Restoration, Section 3.1.2 Ascertain System Status; Section 8.1.1 Ascertain System Status | 6/18/2007 | 6/30/2013 |
| EOP | EOP-005-1 | R11.2: | The affected Transmission Operators and Balancing Authorities shall take the necessary actions to restore Bulk Electric System frequency to normal, including adjusting generation, placing additional generators on-line, or load shedding. | S | Each Member TO shall take actions as instructed by PJM to restore the Bulk Electric System including Directives for load shedding. | PJM shall instruct the necessary actions to restore Bulk Electric System frequency to normal, including adjusting generation, placing additional generators on-line, or Directives for load shedding. | 1. Have you had a disturbance in which PJM had to take actions to restore Bulk Electric System frequency to normal since the last audit? 2. If so, did you take actions to restore the BES as instructed by PJM? | 1. A report of the event. 2. Evidence that shows that the TO took actions to restore the BES as instructed by PJM including Directives for load shedding? | M-36 System Restoration; Section 3 System Restoration | 6/18/2007 | 6/30/2013 |
| EOP | EOP-005-1 | R11.4: | The affected Transmission Operators shall give high priority to restoration of off-site power to nuclear stations. | S | Each Member TO shall give high priority to restoration of off-site power to nuclear stations. | PJM shall give high priority to restoration of off-site power to nuclear stations. | 1. Have you had a disturbance in which an area of the BES became isolated or blacked-out and a nuclear station was within the isolated area? 2. If so, was high priority given to establishing off-site power to the nuclear unit? | 1. A report of the event. 2. Evidence that shows that the TO gave high priority to reestablishing off-site power to nuclear units? | PJM OA 10.4 Duties and Responsibilities M-36 System Restoration, Section 3.1 Restoration Process; Section 3.1.5 Implement Restoration Procedure | 6/18/2007 | 6/30/2013 |
| EOP | EOP-005-1 | R11.5: | The affected Transmission Operators may resynchronize the isolated area(s) with the surrounding area(s) when the following conditions are met: R11.5.1. Voltage, frequency, and phase angle permit. R11.5.2. The size of the area being reconnected and the capacity of the transmission lines effecting the reconnection and the number of synchronizing points across the system are considered. R11.5.3. Reliability Coordinator(s) and adjacent areas are notified and Reliability Coordinator approval is given. R11.5.4. Load is shed in neighboring areas, if required, to permit successful interconnected system restoration. | S | 1. Each Member TO shall take actions as instructed by PJM. 2. Each Member TO shall assure PJM that the listed conditions are met before reconnecting a Member TO with another TO (internal or external to PJM) to prevent another collapse. | 1. PJM shall assure that all conditions listed in R11.5 are met before allowing interconnection of two or more TOs. 2. PJM shall coordinate and disseminate information relative to generation and transmission availability. 3. PJM shall keep the Member TOs apprised of developing system conditions to assist in the formation and on-going adjustments of a cohesive System Restoration Plan. 4. System Restoration Plans may be adjusted to take advantage of this additional information. | 1. Have you had a disturbance in which one or more areas of the Bulk Electric System became isolated or blacked-out since the last audit? 2. If so, were all the listed requirements met before reestablishing connections to neighbors? | Exhibit evidence (voice recordings or logs) that demonstrates that all the requirements were met before reestablishing connections to neighbors. | M-36 System Restoration, Section 1 Overview; Section 2.3 Internal with Separation; Section 3.1.5 Implement Restoration Procedure Frequency Control and Synchronization of Areas (Subsystems) Within a Transmission Owner Zone; Section 7.1.1 Reactive Regulation—Energization Guidelines | 6/18/2007 | 6/30/2013 |
| EOP | EOP-005-2 | Purpose | Ensure plans, Facilities, and personnel are prepared to enable System restoration from Blackstart Resources to assure reliability is maintained during restoration and priority is placed on restoring the Interconnection. | | | | | | | | |

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-005-2 | R1 | Each Transmission Operator shall have a restoration plan approved by its Reliability Coordinator. The restoration plan shall allow for restoring 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 shut down area to service, 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]</i> | S | 1. Each Member TO shall have 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 send the Member TO restoration plan to PJM for approval. | PJM will review, recommend revision, and/or approve submitted Member TO Restoration Plans. | 1. Do you have a restoration plan that supports for restoring the Transmission Operator's System following a Disturbance in which one or more areas of the Member TO's BES shuts down? 2. Is it approved by PJM? | Exhibit your 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, and the loss of vital telecommunications channels. 2. Show evidence of approval by PJM. | M-36 System Restoration, Section 8-System Restoration Plan Guidelines; Section 1.1-Policy Statements, PJM Member Actions, Attachment G: Coordination of Restoration Plan with PJM Internal and External Neighboring Entities | 7/1/2013 | None |
| EOP | EOP-005-2 | R1.1 | Strategies for system restoration that are coordinated with the 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 the Member TO's Restoration Plan has a high level strategy of restoring the integrity of the Interconnection. | M-36 System Restoration, Section 1.1-Policy Statements | 7/1/2013 | None |
| EOP | EOP-005-2 | 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 has 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 | 7/1/2013 | None |
| EOP | EOP-005-2 | 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 Resource, 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 | 7/1/2013 | None |
| EOP | EOP-005-2 | 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; Attachment F-Transmission Owner and Blackstart Supporting Documentation References | 7/1/2013 | None |
| EOP | EOP-005-2 | 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 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 | 7/1/2013 | 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-005-2 | 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 implementation date of the plan. | 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 implementation 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 implementation 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 implementation 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. Show emails, logs, or routing logs that show providing 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 implementation 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-Cracking Power; Attachment F-Transmission Owner and Blackstart Supporting Documentation References, Attachment G: Coordination of Restoration Plan with PJM Internal and External Neighboring Entities - PJM Approval Process for TO Restoration Plans. | 7/1/2013 | None |
| EOP | EOP-005-2 | R3 | Each Transmission Operator shall review its restoration plan and submit it to its Reliability Coordinator annually on a mutually agreed predetermined schedule. | 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. | 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, Table 1 - Annual Restoration Plan Review Deadlines; Section 1.1 Policy Statements, PJM Member Actions | 7/1/2013 | None |
| EOP | EOP-005-2 | R4 | Each Transmission Operator shall update its restoration plan within 90 calendar days after identifying any unplanned permanent System modifications, or prior to implementing a planned BES modification, that would change the implementation of its restoration plan. | A | Each Member TO shall update its restoration plan within 90 calendar days after identifying any unplanned permanent System modifications, or prior to implementing a planned BES modification, that would change the implementation of its restoration plan. | | 1. Did you need to update your restoration plan more than annually? 2. Did you update your restoration plan within 90 calendar days after identifying any unplanned permanent System modifications, or prior to implementing a planned BES modification, that would change the implementation of its restoration plan? | 1. Exhibit dated documents showing identification of any unplanned permanent system changes or a planned BES modification that would change the implementation of its 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 | 7/1/2013 | None |
| EOP | EOP-005-2 | R4.1 | Each Transmission Operator shall submit its revised restoration plan to its Reliability Coordinator for approval within the same 90 calendar day period. | S | Each Member TO shall submit its revised restoration plan to PJM for approval within the same 90 calendar day period. | 1. Receive the submitted Member TO restoration plans and consider for approval. 2. Notify TO of disposition of submitted restoration plans. | Did you submit your revised restoration plan to PJM for approval within the same 90 calendar day period? | Exhibit emails, screen shots, showing that you submitted your revised restoration plan to PJM for approval within the same 90 calendar day period. | M-36 System Restoration, Attachment G: Coordination of Restoration Plan with PJM Internal and External Neighboring Entities | 7/1/2013 | None |
| EOP | EOP-005-2 | 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 implementation date. | 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 implementation 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 implementation 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 implementation date. | 1. Did you have a copy of your latest PJM approved restoration plan within your primary and backup control rooms prior to its implementation 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 implementation date. | 1. Attestation that each of your PJM approved restoration plans were within your primary and backup control rooms prior to their implementation 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 | 7/1/2013 | 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-005-2 | R6 | Each Transmission Operator shall verify through analysis of actual events, steady state and dynamic simulations, or testing that its restoration plan accomplishes its intended function. This shall be completed every five years at a minimum. Such analysis, simulations or testing shall verify: | 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 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 at least every five years. | 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 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, voice recordings, reports, etc.) of the verification through analysis of actual events, steady state and dynamic simulations, or testing that its restoration plan accomplishes its intended function. 2. Provide evidence of providing requested information to PJM to support the analysis of Blackstart generation. | M-36 System Restoration, Attachment D: Restoration Drill Guide M-40 Certification and Training Requirements, Section 4.9-PJM System Operator Continuing Training Program | 7/1/2013 | None |
| EOP | EOP-005-2 | 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 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 at least every five years. | 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 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? | Provide evidence of providing requested information to PJM to support the analysis of Blackstart generation. | 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 | 7/1/2013 | None |
| EOP | EOP-005-2 | R6.2 | The location and magnitude of Loads required to control voltages and frequency within acceptable operating limits. | S | Each member TO shall provide 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 at least every five years. | 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 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? | Provide evidence of providing requested information to PJM to support the analysis of Blackstart generation. | 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 | 7/1/2013 | None |
| EOP | EOP-005-2 | R6.3 | The capability of generating resources required to control voltages and frequency within acceptable operating limits. | S | Each member TO shall provide 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 at least every five years. | 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 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? | Provide evidence of providing requested information to PJM to support the analysis of Blackstart generation. | 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 | 7/1/2013 | None |
| EOP | EOP-005-2 | R7 | Following a Disturbance in which one or more areas of the BES shuts down and the use of Blackstart Resources is required to restore the shut down area to service, each affected Transmission Operator shall implement its restoration plan. If the restoration plan cannot be executed as expected the Transmission Operator shall utilize its restoration strategies to facilitate restoration. | S | Use the Member TO restoration plan to restore the system and coordinate with PJM if any deviations from the plan are required. | Following a Disturbance in which one or more areas of the BES shuts down and the use of Blackstart Resources is required to restore the shut down area to service, PJM shall begin immediately to return the Bulk Electric System to normal. | 1. Since the last audit have you had a disturbance in which one or more areas of the Bulk Electric System become isolated or blacked out? 2. Did you use the Member TO restoration plan to restore the system and coordinate with PJM if any deviations from the plan are required? | 1. If you have had a disturbance in which one or more areas of the Bulk Electric System become isolated or blacked out since your last audit, provide a report. 2. Evidence that you took actions as instructed by PJM like logs or voice recordings. 3. If you used the Member TO restoration plan to restore the system, provide evidence like logs. 4. Provide documentation of any deviations from the plan and communications with PJM. | M-36 System Restoration, Section 1.1-Policy Statements | 7/1/2013 | 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-005-2 | R8 | <u>Following a Disturbance in which one or more areas of the BES shuts down and the use of Blackstart Resources is required to restore the shut down area to service, the Transmission Operator shall resynchronize area(s) with neighboring Transmission Operator area(s) only with the authorization of the Reliability Coordinator or in accordance with the established procedures of the Reliability Coordinator.</u> | A | 1. Each Member TO shall use its restoration plan to restore the system and coordinate with PJM prior to resynchronizing areas with neighboring areas, internal or external to PJM. 2. Each Member TO shall comply with Operating Instructions issued by PJM to resynchronize with neighboring areas, internal or external to PJM. | 1. PJM shall coordinate with the areas to be synchronized and issue an Operating Instruction to resynchronize when coordination is completed. 2. PJM shall coordinate with neighboring Transmission Operators as necessary. | 1. Since the last audit have you had a disturbance in which one or more areas of the Bulk Electric System shut down and the use of Blackstart Resources was required to restore the shut down area to service? 2. Did you use your restoration plan to restore the system and coordinate with PJM prior to resynchronizing areas with neighboring areas, internal or external to PJM? 3. Did your System Operators comply with any Operating Instructions issued by PJM to resynchronize with neighboring areas, internal or external to PJM? | 1. If you have had a disturbance in which one or more areas of the Bulk Electric System shut down and Blackstart Resources were required to restore the shut down area to service since your last audit, provide a report. 2. Evidence that you used your restoration plan to restore the system and coordinated with PJM prior to resynchronizing areas with neighboring areas, internal or external to PJM. 3. If applicable, evidence that your System Operators complied with any Operating Instructions issued by PJM to resynchronize with neighboring areas, internal or external to PJM. | Manual 36: System Restoration, Section 3.1.5 Implement Restoration Procedure, PJM Member Actions, Synchronization of Areas (Subsystems) within a Transmission Owner Zone; Section 3.1.9 PJM Reliability Coordinator Responsibilities during the Restoration Process and Coordination of Information; Section 7.2 Synchronization | 7/1/2013 | None |
| EOP | EOP-005-2 | R10 | Each Transmission Operator shall include within its operations training program, annual System restoration training for its System Operators to assure the proper execution of its restoration plan. This training program shall include training on the following: | 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 Certification and Training 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 | 7/1/2013 | None |
| EOP | EOP-005-2 | R10.1 | System restoration plan including coordination with the 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 Certification and Training 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 | 7/1/2013 | None |
| EOP | EOP-005-2 | R10.2 | 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 Certification and Training 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 | 7/1/2013 | None |
| EOP | EOP-005-2 | R10.3 | 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 Certification and Training 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 | 7/1/2013 | None |
| EOP | EOP-005-2 | R10.4 | 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 Certification and Training 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 | 7/1/2013 | None |
| EOP | EOP-005-2 | R12 | Each Transmission Operator shall participate in its Reliability Coordinator's restoration drills, exercises, or simulations as requested by its Reliability Coordinator. | 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 Certification and Training 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 | 7/1/2013 | None |
| EOP | EOP-008-0 | Purpose | <u>Each reliability entity must have a plan to continue reliability operations in the event its control center becomes inoperable.</u> | | | | | | | | |

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-008-0 | R1- (Heading) | Each Reliability Coordinator, Transmission Operator and Balancing Authority shall have a plan to continue reliability operations in the event its control center becomes inoperable. The contingency plan must meet the following requirements: | A | Each Member TO shall develop a plan to continue reliability operations in the event its primary control center becomes inoperable. | | Do you have a plan to continue reliability operations in the event your primary control center becomes inoperable? | TO shall provide a copy of their Plans for loss of primary control center functionality. | M-1 Control Center and Data Exchange Requirements, Section 2.5.6 Recovery Procedures | 6/18/2007 | 6/30/2013 |
| EOP | EOP-008-0 | R1.1. | The contingency plan shall not rely on data or voice communications from the primary control facility to be viable. | A | Each Member TO must have a plan for loss of primary control center functionality that is viable without data or voice communication from the primary control center. | | Is your plan for loss of primary control center functionality viable without data or voice communication from the primary control facility? | 1. Exhibit a copy of the voice communication systems illustrating that the plans for loss of primary control center functionality does not rely on voice communication from the primary facility. 2. Exhibit a copy of the data communication systems illustrating that the plans for loss of primary control center functionality does not rely on data communication from the primary facility. | M-1 Control Center and Data Exchange Requirements, Section 2.5.6 Recovery Procedures | 6/18/2007 | 6/30/2013 |
| EOP | EOP-008-0 | R1.2. | The plan shall include procedures and responsibilities for providing basic tie line control and procedures and for maintaining the status of all inter-area schedules, such that there is an hourly accounting of all schedules. | S | The plan shall provide PJM basic tie line (between Member TOs and external TOs) control at the instruction of PJM and monitoring data to allow for an hourly accounting of schedules. | PJM shall use the data provided by the Member TO to maintain the status and basic tie line control to maintain all inter-area schedules, such that there is an hourly accounting of all schedules. | 1. Are you a Member TO with ties to TOs outside of PJM? 2. If applicable, how will your plan for loss of primary control center functionality, allow PJM to provide basic tie line data (between Member TOs and external TOs) and control at the instruction of PJM to maintain the status of all inter-area schedules, such that there is an hourly accounting of all schedules? | If applicable, exhibit the part of the plan for loss of primary control center functionality to provide basic tie line (between Member TOs and external TOs) data and control at the instruction of PJM to maintain the status of all inter-area schedules, such that there is an hourly accounting of all schedules to PJM. | M-1 Control Center and Data Exchange Requirements, Section 2.5.6 Recovery Procedures | 6/18/2007 | 6/30/2013 |
| EOP | EOP-008-0 | R1.3. | The contingency plan must address monitoring and control of critical transmission facilities, generation control, voltage control, time and frequency control, control of critical substation devices, and logging of significant power system events. The plan shall list the critical facilities. | S | 1. Each Member TO must have a contingency plan for loss of primary control center functionality that addresses monitoring and control of critical facilities. 2. The plan must include the logging of significant power system events. | 1. PJM shall have a contingency plan for monitoring and control of generation real power output, time and frequency. 2. The list of PJM critical facilities is contained in the PJM OM 45—Plan for Loss of Control Room Functionality. | 1. Does your plan for loss of primary control center functionality address monitoring and control of critical facilities? 2. Does the plan include the logging of significant power system events? | 1. Member TO shall provide a copy of the plan for loss of primary control center functionality that addresses monitoring and control of critical facilities. 2. Exhibit the sections of the plan showing the inclusion of the logging of significant power system events? | 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, Attachment B Schedule of Data Submittals, Section 2.7 PJM Member Back-Up Capability Required to Support PJM in its TOP Role PJM Operating Memo 45—Plan for Loss of Control Room Functionality | 6/18/2007 | 6/30/2013 |
| EOP | EOP-008-0 | R1.4. | The plan shall include procedures and responsibilities for maintaining basic voice communication capabilities with other areas. | S | The Member TO plan shall include procedures and responsibilities for maintaining basic voice communication capabilities with PJM and neighboring TOs. | The PJM Control Center and Data Exchange Requirements Manual (M-1) shall include procedures and responsibilities for maintaining basic voice communication capabilities with other TOPs, BAs and RCs. | Does your plan include procedures and responsibilities for maintaining basic voice communication capabilities with PJM and neighboring TOs? | Member TO shall provide a copy of their plan for loss of primary control center functionality which includes procedures and responsibilities for maintaining basic voice communication capabilities with PJM and neighboring TOs. | M-1 Control Center and Data Exchange Requirements, Section 2.4 Communications Requirements M-13 Emergency Operations, Section 1.3 Communications | 6/18/2007 | 6/30/2013 |
| EOP | EOP-008-0 | R1.5. | The plan shall include procedures and responsibilities for conducting periodic tests, at least annually, to ensure viability of the plan. | S | Each Member TO must have a plan for loss of primary control center functionality that includes procedures and responsibilities for conducting periodic tests at least annually. | PJM shall facilitate the Member TO tests. | Does your plan for loss of primary control center functionality include procedures and responsibilities for conducting periodic tests at least annually? | TO shall provide a copy of their plans for loss of primary control center functionality which includes specific information that addresses procedures and responsibilities to conduct periodic tests, at least annually, to ensure viability of the plan. | M-1 Control Center and Data Exchange Requirements, Attachment B Schedule of Data Submittals | 6/18/2007 | 6/30/2013 |
| EOP | EOP-008-0 | R1.6. | The plan shall include procedures and responsibilities for providing annual training to ensure that operating personnel are able to implement the contingency plans. | A | Each Member TO must have a plan for loss of primary control center functionality that includes procedures and responsibilities for providing annual training to ensure that operating personnel are able to implement the plans. | | Does your plan for loss of primary control center functionality include procedures and responsibilities for providing annual training to ensure that operating personnel are able to implement the plans? | 1. TO shall provide a copy of their plans for loss of primary control center functionality that includes procedures and responsibilities for providing annual training to ensure that operating personnel are able to implement the plan. 2. TO shall provide training records on their plans for loss of primary control center functionality. | M-1 Control Center and Data Exchange Requirements, Attachment B Schedule of Data Submittals | 6/18/2007 | 6/30/2013 |

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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-008-0 | R1.7. | The plan shall be reviewed and updated annually. | A | Each Member TO plan for loss of primary control center functionality must be reviewed and updated annually. | | 1. When was the last time that your backup plan was updated? 2. When is it scheduled to be reviewed next? | Exhibit the review and update history. | M-1 Control Center and Data Exchange Requirements, Attachment B Schedule of Data Submittals | 6/18/2007 | 6/30/2013 |
| EOP | EOP-008-0 | R1.8. | Interim provisions must be included if it is expected to take more than one hour to implement the contingency plan for loss of primary control facility. | A | Each TO must have a plan for loss of primary control center functionality that includes interim provisions if it is expected to take more than one hour to implement the plan for loss of a control center functionality. | | 1. Do you expect that it will take more than one hour to implement the plan for loss of primary control facility? 2. If so, do you have interim measures in your plan for loss of primary control center functionality? 3. Describe the measures. | The TO shall provide the plan for loss of primary control center functionality that includes interim provisions if it is expected to take more than one hour to implement the plan for loss of a 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 | 6/18/2007 | 6/30/2013 |
| EOP | EOP-008-1 | Purpose | Ensure continued reliable operations of the Bulk Electric System (BES) in the event that a control center becomes inoperable. | | | | | | | | |
| EOP | EOP-008-1 | 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 the following, at a minimum: | A | Each Member TO shall 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. | | 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 | 7/1/2013 | None |
| EOP | EOP-008-1 | R1.1 | The location and method of implementation for providing backup functionality for the time it takes to restore the primary control center 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 for the time it takes to restore the primary control center functionality. | | Does your plan for the loss of primary control center functionality include the location and method of implementation for providing backup functionality for the time it takes to restore the primary control center functionality? | Exhibit your plan for the loss of primary control center functionality that includes the location and method of implementation for providing backup functionality for the time it takes to restore the primary control center functionality. | M-1 Control Center and Data Exchange Requirements, Section 2.5.6-Recovery Procedures | 7/1/2013 | None |
| EOP | EOP-008-1 | R1.2 (Heading) | A summary description of the elements required to support the backup functionality. These elements shall include, at a minimum: | | | | | | | | |
| EOP | EOP-008-1 | 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 | 7/1/2013 | None |
| EOP | EOP-008-1 | R1.2.2 | Data communications. | A | The Member TO plan for the loss of primary control center functionality shall include a summary description of data communications 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 communications 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 communications including a description of how PJMnet is used. | M-1 Control Center and Data Exchange Requirements, Section 2.3.1-Transmission Monitoring Capability | 7/1/2013 | None |
| EOP | EOP-008-1 | R1.2.3 | Voice communications. | A | The Member TO plan for the loss of primary control center functionality shall include a summary description of voice communications. | | Does your plan for the loss of primary control center functionality include a summary description of voice communications? | Exhibit your plan for the loss of primary control center functionality that includes a summary description of voice communications. | M-1 Control Center and Data Exchange Requirements, Section 2.3.1-Transmission Monitoring Capability | 7/1/2013 | None |
| EOP | EOP-008-1 | 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 | 7/1/2013 | None |
| EOP | EOP-008-1 | 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 | 7/1/2013 | None |

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|----------|-----------------|--------------------|---|-----|--|--|--|---|--|------------------|---------------|
| EOP | EOP-008-1 | 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 | 7/1/2013 | None |
| EOP | EOP-008-1 | 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 | 7/1/2013 | None |
| EOP | EOP-008-1 | 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 | 7/1/2013 | None |
| EOP | EOP-008-1 | 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 at a minimum: | 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 | 7/1/2013 | None |
| EOP | EOP-008-1 | 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 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 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 | 7/1/2013 | None |
| EOP | EOP-008-1 | 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 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 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 | 7/1/2013 | 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-008-1 | 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 | 7/1/2013 | None |
| EOP | EOP-008-1 | 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. | 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 | 7/1/2013 | None |
| EOP | EOP-008-1 | 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 depend on a Balancing Authority and Transmission Operator's primary control center functionality respectively. To avoid requiring tertiary functionality, backup functionality is not required during: <ul style="list-style-type: none"> Planned outages of the primary or backup functionality of two weeks or less Unplanned outages of the primary or backup functionality | 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"> Planned outages of the primary or backup functionality of two weeks or less Unplanned outages of the primary or backup functionality | | 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 a Member TO's 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 a Member TO's 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 | 7/1/2013 | None |
| EOP | EOP-008-1 | R5 | Each Reliability Coordinator, Balancing Authority, and Transmission Operator, shall annually review and approve its Operating Plan for backup functionality. | 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, Section 2.7 PJM Member Back Up Capability Required to Support PJM in its TOP Role | 7/1/2013 | None |
| EOP | EOP-008-1 | 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. | | 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, Section 2.7 PJM Member Back Up Capability Required to Support PJM in its TOP Role Attachment B: Schedule of Data Submittals. | 7/1/2013 | None |
| EOP | EOP-008-1 | 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 does 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 does 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 does not depend on each other for the control center functionality required to maintain compliance with Reliability Standards such as drawings showing their independence. Attestations are also valid evidence. | M-1 Control Center and Data Exchange Requirements, Section 2.7 PJM Member Back Up Capability Required to Support PJM in its TOP Role | 7/1/2013 | 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-008-1 | R7 | Each Reliability Coordinator, Balancing Authority, and Transmission Operator shall conduct and document results of an annual test of its Operating Plan that demonstrates: | A | Each Member TO shall conduct and document results of a test of its Operating Plan for backup functionality at least annually. | | Did you conduct and document results of a test of your Operating Plan at least annually? | Reports of the test of your Operating Plan performed at least annually. | M-1 Control Center and Data Exchange Requirements, Section 2.7 PJM Member Back Up Capability Required to Support PJM in its TOP Role | 7/1/2013 | None |
| EOP | EOP-008-1 | 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, Section 2.7 PJM Member Back Up Capability Required to Support PJM in its TOP Role | 7/1/2013 | None |
| EOP | EOP-008-1 | 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 | 7/1/2013 | None |
| EOP | EOP-008-1 | 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. | 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 | 7/1/2013 | 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-Voice Communications 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 3.7 Geo-Magnetic Disturbances (GMD) Operating Plan (EOP-010-1) | 4/1/2015 | None |

NERC Reliability Standards

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|----------|-----------------|--------------------|--|-----|---|---|--|---|---|---|---|
| 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: | | | | | | | | |
| 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 PJM Directives or PJM instructions. | 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 PJM Directives and PJM 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 PJM Directives or PJM instructions to mitigate the effects of GMD events? | 1. Documentation of procedures that requires the Member TO System Operators to comply with Operating Instructions PJM Directives or PJM instructions. 2. Examples of the Member TO system operator following Operating Instructions PJM Directives or 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-Voice Communications 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 3.7 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 PJM Directives or PJM instructions. | 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 PJM Directives and PJM 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 PJM Directives or PJM instructions? | 1. Documentation of procedures that requires the Member TO System Operators to comply with Operating Instructions PJM Directives or PJM instructions. 2. Examples of the Member TO system operator following Operating Instructions PJM Directives or 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-1 Control Center and Data Exchange Requirements, Section 4-Voice Communications 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 3.7 Geo-Magnetic Disturbances (GMD) Operating Plan (EOP-010-1) | 4/1/2015 | None |
| FAC | FAC-001-1 | Purpose | To avoid adverse impacts on reliability, Transmission Owners must establish facility connection and performance requirements. | | | | | | | | |
| FAC | FAC-001-1 | R1 | The Transmission Owner shall document, maintain, and publish facility connection requirements to ensure compliance with NERC Reliability Standards and applicable Regional Entity, subregional, Power Pool, and individual Transmission Owner planning criteria and Facility connection requirements. The Transmission Owner's Facility connection requirements shall address connection requirements for: | A | Member TO shall confirm that the current specific planning criteria and interconnection requirements are posted on the PJM website. | PJM shall post the Member TO's specific planning criteria and interconnection requirements on the PJM web site. (Transmission Owner function that PJM supports) | Did you confirm that the current Interconnection Requirements are posted on the PJM website. | Exhibit a screenshot of the PJM webpage showing the current specific planning criteria and interconnection requirements and show that your current documents are the same. | Open Access Transmission Tariff; 1.2c- Applicable Technical Requirements and Standards M-14C Generation and Transmission Interconnection Facility Construction; Section 4-Technical and Construction Requirements | FAC-001-0 06/18/2007 FAC-001-1 11/25/2013 | FAC-001-0 11/24/2013 FAC-001-1 12/31/2015 |

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 | 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. | | | | | | | | |
| 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 Operating Agreement, 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-001-1.1 | Purpose | Reliability Coordinators must have the authority, plans, and agreements in place to immediately direct reliability entities within their Reliability Coordinator Areas to re-dispatch generation, reconfigure transmission, or reduce load to mitigate critical conditions to return the system to a reliable state. If a Reliability Coordinator delegates tasks to others, the Reliability Coordinator retains its responsibilities for complying with NERC and regional standards. Standards of conduct are necessary to ensure the Reliability Coordinator does not act in a manner that favors one market participant over another. | | | | | | | | |

NERC Reliability Standards

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|----------|-----------------|--------------------|--|-----|--|--|---|---|---|------------------|---------------|
| IRO | IRO-001-1.1 | R8 | Transmission Operators, Balancing Authorities, Generator Operators, Transmission Service Providers, Load-Serving Entities, and Purchasing-Selling Entities shall comply with Reliability Coordinator directives unless such actions would violate safety, equipment, or regulatory or statutory requirements. Under these circumstances, the Transmission Operator, Balancing Authority, Generator Operator, Transmission Service Provider, Load-Serving Entity, or Purchasing-Selling Entity shall immediately inform the Reliability Coordinator of the inability to perform the directive so that the Reliability Coordinator may implement alternate remedial actions. | S | <p><u>1. The Member TO shall comply with Operating Instructions PJM Directives unless such actions would violate safety, equipment, or regulatory, or statutory requirements.</u></p> <p><u>2. If because of the reasons mentioned above the Member TO System Operators cannot comply with PJM Operating Instructions, the Member TO System Operators shall inform PJM as soon as possible.</u></p> | PJM shall have remedial plans if the Member TO cannot follow the <u>Operating Instruction PJM Directive.</u> | <p><u>1. Have you had any incidents when you were not able to comply with the Operating Instruction PJM Reliability Coordinator Directives due to safety, equipment, or regulatory or statutory requirements?</u></p> <p><u>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?</u></p> | <p>1. Documentation of procedures that requires the Member TO system operators to comply with <u>Operating Instructions PJM Directives.</u></p> <p>2. Examples of the Member TO system operator following <u>Operating Instructions PJM Directives</u> in the form of logs, voice recordings or transcripts of voice recordings, or other equivalent evidence, or in the case of inability to follow the <u>Operating Instructions PJM Directives</u>, the evidence that for safety, equipment, regulatory or statutory requirements they could not comply and that they informed the PJM as soon as practical.</p> <p><u>3. If the Member TO System Operators could not comply with PJM Operating Instructions, evidence that they could not comply due to safety, equipment, or regulatory, or statutory requirements and that the Member TO System Operators informed PJM as soon as possible.</u></p> | <p>PJM OA 11.3, Schedule 1, 1.9.9</p> <p>TOA</p> <p>M-3 Transmission Operations, Section 1.2- Responsibilities for Transmission Owner's Operating Entity</p> <p>M-37 Reliability Coordination, Section 1- Roles and Responsibilities</p> <p>M-1 Control Center and Data Exchange Requirements, Section 4-Voice Communications</p> | 5/13/2009 | None |
| IRO | IRO-001-4 | Purpose | <u>To establish the responsibility of Reliability Coordinators to act or direct other entities to act.</u> | | | | | | | | |
| IRO | IRO-001-4 | R2 | <u>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.</u> | S | <p><u>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.</u></p> <p><u>2. If because of the reasons mentioned above the Member TO System Operators cannot comply with PJM Operating Instructions, the Member TO System Operators shall inform PJM as soon as possible.</u></p> | PJM shall have remedial plans if the Member TO cannot follow the <u>Operating Instruction.</u> | <p><u>1. Do you have documented procedures that require your System Operators to comply with PJM Operating Instructions?</u></p> <p><u>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.</u></p> <p><u>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?</u></p> | <p>1. Documentation of procedures that requires the Member TO System Operators to comply with PJM Operating Instructions.</p> <p>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.</p> <p>3. If the Member TO System Operators could not comply with PJM Operating Instructions, evidence that they could not comply because compliance with <u>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.</u></p> | <p>PJM OA 11.3, Schedule 1, 1.9.9</p> <p>TOA</p> <p>M-3 Transmission Operations, Section 1.2- Responsibilities for Transmission Owner's Operating Entity</p> <p>M-37 Reliability Coordination, Section 1- Roles and Responsibilities</p> <p>M-1 Control Center and Data Exchange Requirements, Section 4-Voice Communications</p> | 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 1.3-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, Section 33-Load Shedding and Curtailments | 4/1/2017 | None |
| IRO | IRO-004-2 | Purpose | Each Reliability Coordinator must conduct next-day reliability analyses for its Reliability Coordinator Area to ensure the Bulk Electric System can be operated reliably in anticipated normal and Contingency conditions. System studies must be conducted to highlight potential interface and other operating limits, including overloaded transmission lines and transformers, voltage and stability limits, etc. Plans must be developed to alleviate System Operating Limit (SOL) and Interconnection Reliability Operating Limit (IROL) violations. | | | | | | | | |

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-004-2 | R1. | Each Transmission Operator, Balancing Authority, and Transmission Service Provider shall comply with the directives of its Reliability Coordinator based on the next day assessments in the same manner in which it would comply during real time operating events. | S | The Member TO shall comply <u>Operating Instructions PJM-Directives</u> based on the next day assessments in the same manner in which it would comply during real time operating events unless such actions would violate safety, equipment, or regulatory or statutory requirements. | PJM shall have remedial plans if the Member TO cannot follow the <u>Operating Instructions-PJM-Directives</u> . | Have you had any incidents when you were not able to comply with the <u>Operating Instructions PJM-Reliability-Coordinator-Directives</u> based on the next day assessments in the same manner in which it would comply during real time operating events due to safety, equipment, or regulatory or statutory requirements? | 1. Documentation of procedures that requires the Member TO system operators to comply with <u>Operating Instructions PJM-Directives</u> based on the next day assessments in the same manner in which it would comply during real time operating events. 2. Examples of the Member TO system operator following <u>Operating Instructions PJM-Directives</u> based on the next day assessments in the same manner in which it would comply during real time operating events in the form of logs, voice recordings or transcripts of voice recordings, or other equivalent evidence, or in the case of inability to follow the <u>Operating Instructions PJM-Directives</u> based on the next day assessments in the same manner in which it would comply during real time operating events, the evidence that for safety, equipment, regulatory or statutory requirements they could not comply and that they informed the PJM immediately. | 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-Voice Communications | 10/1/2011 | None |
| IRO | IRO-005-3.1a | Purpose | The Reliability Coordinator must be continuously aware of conditions within its Reliability Coordinator Area and include this information in its reliability assessments. The Reliability Coordinator must monitor Bulk Electric System parameters that may have significant impacts upon the Reliability Coordinator Area and neighboring Reliability Coordinator Areas. | | | | | | | | |
| IRO | IRO-005-3.1a | R5 | Each Reliability Coordinator shall monitor system frequency and its Balancing Authorities' performance and direct any necessary rebalancing to return to CPS and DCS compliance. The Transmission Operators and Balancing Authorities shall utilize all resources, including firm load shedding, as directed by its Reliability Coordinator to relieve the emergent condition. | S | The Member TO shall comply with <u>Operating Instructions PJM-instructions and PJM-Directives</u> unless such actions would violate safety, equipment, or regulatory or statutory requirements. | PJM shall monitor system frequency and issue an <u>Operating Instruction a-PJM-Directive</u> (load shedding, <u>generation redispatch to GOs or GOPs</u>) or PJM-instruction (generation redispatch to GOs or GOPs) for any necessary rebalancing to return to CPS and DCS compliance. PJM shall utilize all resources, including firm load shedding, to relieve the emergent condition. | Have you complied with <u>Operating PJM-instructions and PJM-Directives</u> ? | Example evidence such as operator logs, voice recordings or incident reports etc., for any incidents where you had to follow <u>Operating Instructions-PJM-instructions or PJM-Directives</u> . | PJM Operating Agreement, 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, Section 1.3-Transmission Operating Guidelines, Section 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 | IRO-005-3.1a 09/13/2012 | IRO-005-3.1a 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-005-3.1a | R6 | The Reliability Coordinator shall coordinate with Transmission Operators, Balancing Authorities, and Generator Operators as needed to develop and implement action plans to mitigate potential or actual SOL, CPS, or DCS violations. The Reliability Coordinator shall coordinate pending generation and transmission maintenance outages with Transmission Operators, Balancing Authorities, and Generator Operators as needed in both the real time and next-day reliability analysis timeframes. | S | 1. The Member TO shall comply with Operating Instructions-PJM instructions and PJM Directives unless such actions would violate safety, equipment, or regulatory or statutory requirements. 2. The Member TO shall coordinate pending transmission maintenance outages with PJM as needed in both the real time and next-day reliability analysis timeframes. | 1. PJM will operate to mitigate potential or actual SOL, CPS, or DCS violations. 2. PJM shall coordinate pending generation and transmission maintenance outages with Member TOs and GOs as needed in both the real time and next-day reliability analysis timeframes. | 1. Have you complied with Operating Instructions PJM instructions and PJM Directives? 2. Did you coordinate transmission maintenance outages with PJM as needed in both the real time and next-day reliability analysis timeframes? | Example evidence such as operator logs, voice recordings or incident reports etc., for any incidents where you had to follow Operating Instructions PJM instructions or PJM Directives. | PJM Operating Agreement, 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, Section 1.3-Transmission Operating Guidelines, Section 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 | IRO-005-3.1a 09/13/2012 | IRO-005-3.1a None |
| IRO | IRO-005-3.1a | R9. | Whenever a Special Protection System that may have an inter-Balancing Authority, or inter-Transmission Operator impact (e.g., could potentially affect transmission flows resulting in a SOL or IROL violation) is armed, the Reliability Coordinators shall be aware of the impact of the operation of that Special Protection System on inter-area flows. The Transmission Operator shall immediately inform the Reliability Coordinator of the status of the Special Protection System including any degradation or potential failure to operate as expected. | S | Each Member TO shall inform PJM as soon as possible of the status change of any Special Protection System that may have an inter-Balancing Authority, or inter-Transmission Operator impact (e.g., could potentially affect transmission flows resulting in a SOL or IROL violation) including any degradation or potential failure to operate as expected. | PJM will share information on SPS that may have an inter-Balancing Authority, or inter-Transmission Operator impact status information with neighboring Balancing Authorities and Transmission Operators. | 1. Do you have any Member TO owned SPSs within your Member TO area? 2. If so, do you have procedures to notify PJM of SPS status including any degradation or potential failure to operate as expected? 3. Have you informed PJM of the status change of your SPSs including any degradation or potential failure to operate as expected? | 1. Exhibit documented procedures that require notifying PJM of SPS status including any degradation or potential failure to operate as expected. 2. Exhibit records that indicate PJM has been informed of the status of the SPSs including any degradation or potential failure to operate as expected. | M-37 Reliability Coordination, Attachment A-PJM Reliability Plan, Section 3.1-SOL and IROL Limit Determination | IRO-005-3.1a 09/13/2012 | IRO-005-3.1a None |
| IRO | IRO-005-3.1a | R10. | In instances where there is a difference in derived limits, the Transmission Operators, Balancing Authorities, Generator Operators, Transmission Service Providers, Load-Serving Entities, and Purchasing-Selling Entities shall always operate the Bulk Electric System to the most limiting parameter. | S | The Member TO and PJM shall always operate the Bulk Electric System to the most limiting parameter or rating in case of a discrepancy between ratings. | In instances where there is a difference in derived operating limits between the Member TO and PJM, PJM shall always operate the Bulk Electric System to the most limiting parameter or rating in case of a discrepancy between ratings. | 1. Have you had to coordinate with PJM because of a difference in derived operating limits between you and PJM? 2. Did you then operate to the most limiting parameter/rating? | Example evidence that you always operate the Bulk Electric System to the most limiting parameter or rating in case of a discrepancy between ratings. | 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 | IRO-005-3.1a 09/13/2012 | IRO-005-3.1a None |
| PER | PER-001-0.2 | Purpose | Transmission Operator and Balancing Authority operating personnel must have the responsibility and authority to implement real-time actions to ensure the stable and reliable operation of the Bulk Electric System. | | | | | | | | |

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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-001-0.2 | R1. | Each Transmission Operator and Balancing Authority shall provide operating personnel with the responsibility and authority to implement real-time actions to ensure the stable and reliable operation of the Bulk Electric System. | A | Member TO system operators shall have the responsibility and authority to implement real-time actions at the direction of PJM unless immediate actions are required to avoid loss of life, ensure safety or protect equipment. Such non-PJM approved actions shall be communicated to PJM as soon as practical. | | Do your system operators have the authority and responsibility to take real time actions, including load shedding at the direction of PJM unless immediate actions are required to avoid loss of life, ensure safety or protect equipment. Such non-PJM approved actions shall be communicated to PJM as soon as practical? | 1. Exhibit the document that states your system operators have the authority and responsibility to take real time actions, including load shedding. 2. Job descriptions of operating personnel that includes the authority and responsibility to take real time actions. | PJM Open Access Transmission Tariff, Schedule U -Independent Transmission Companies, Section 2 - Security Coordination M-3 Transmission Operations, Section 1.2 Responsibilities for Transmission Owner's Operating Entity PJM OA, 11.3.1 (e)-Member Responsibilities-General | PER-001-0.2 09/13/2012 | PER-001-0.2 None |
| PER | PER-002-0 | Purpose | Each Transmission Operator and Balancing Authority must provide their personnel with a coordinated training program that will ensure reliable system operation. | | | | | | | | |
| PER | PER-002-0 | R1. | Each Transmission Operator and Balancing Authority shall be staffed with adequately trained operating personnel. | S | Assure that all Member TO system operators are adequately trained by meeting the requirements of Manual 40 Section 2. | PJM Manual 40 Section 2 defines adequate training. | 1. Do all of your Member TO system operators meet the requirements of Manual 40 Section 2—Training Requirements? 2. Are any of your system operators working on shift under the "Temporary Waiver of PJM Training Requirements" guidelines? | Exhibit training records to verify that TO system operators meet the PJM training requirements as outlined in M-40 Certification and Training Requirements, Section 2—Training Requirements. | PJM OA, 11.3.1(c) Member Responsibilities-General M-40 Certification and Training Requirements; Section 1 Training Overview, 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; Attachment B Schedule of Data Submittals M-3 Transmission Operations, Section 1.2 Responsibilities for Transmission Owner's Operating Entity | 6/18/2007 | 3/31/2013 |
| PER | PER-002-0 | R2.1. | Positions that have the primary responsibility, either directly or through communications with others, for the real-time operation of the interconnected Bulk Electric System. | A | The Member TO shall identify positions that have the primary responsibility, either directly or through communications with others, for the real-time operation of the interconnected Bulk Electric System. | | Have you identified positions that have the primary responsibility, either directly or through communications with others, for the real-time operation of the interconnected Bulk Electric System? | Evidence that you have identified positions that have the primary responsibility, either directly or through communications with others, for the real-time operation of the interconnected Bulk Electric System. | M-40 Certification and Training Requirements; Section 1—Training Overview, Section 2—Certification Overview, Section 3—Member Training and Certification Requirements OA Section 11.3.1(c) Member Responsibilities-General | 6/18/2007 | 3/31/2013 |
| PER | PER-002-0 | R3.1. | A set of training program objectives must be defined, based on NERC and Regional Reliability Organization standards, entity operating procedures, and applicable regulatory requirements. These objectives shall reference the knowledge and competencies needed to apply those standards, procedures, and requirements to normal, emergency, and restoration conditions for the Transmission Operator and Balancing Authority operating positions. | S | Each Member TO's training program for their system operators shall meet the training requirements outlined in the parts of PJM Manual 40 that refer to Member TO operators. | PJM Manual 40 outlines the training requirements for PJM operators and Member TO system operators. The requirements follow objectives that are defined, based on NERC and Regional Reliability Organization standards, entity operating procedures, and applicable regulatory requirements. These objectives shall reference the knowledge and competencies needed to apply those standards, procedures, and requirements to normal, emergency, and restoration conditions for the Transmission Operator and Balancing Authority operating positions. | Does your training plan for your system operators required to meet the training requirements of the parts of PJM Manual 40 that refer to Member TO operators? | Exhibit training records for each of your system operators that show they have met the requirements of the parts of PJM Manual 40 that refer to Member TO operators. | OA 10.4, OA 11.3.1 M-40 Certification and Training Requirements; Section 2 Certification Overview; Section 3.3 Compliance Monitoring Process for Training and Certification Requirements M-1 Control Center and Data Exchange Requirements; Section 2.6 Control Center Staffing; Attachment B Schedule of Data Submittals M-3 Transmission Operations, Section 1.2 Responsibilities for Transmission Owner's Operating Entity | 6/18/2007 | 3/31/2013 |

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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-002-0 | R3.2: | The training program must include a plan for the initial and continuing training of Transmission Operator and Balancing Authority operating personnel. That plan shall address knowledge and competencies required for reliable system operations. | S | Each Member TO's training plan for their system operators shall meet the Member TO training requirements outlined in the parts of PJM Manual 40 that refer to Member TO operators. | PJM Manual 40 includes a plan for the initial and continuing training of Transmission Operator and Balancing Authority operating personnel. PJM Manual 40 addresses knowledge and competencies required for reliable system operations. | Does your training plan for your system operators meet the training requirements of the parts of PJM Manual 40 that refer to Member TO operators? | Exhibit training plans that meet the requirements of the parts of PJM Manual 40 that refer to Member TO operators. | OA 10.4, OA 11.3.1 M-40 Certification and Training Requirements; Section 2-Certification Overview; Section 3.3 Compliance Monitoring Process for Training and Certification Requirements M-1 Control Center and Data Exchange Requirements; Section 2.6 Control Center Staffing; Attachment B-Schedule of Data Submittals M-3 Transmission Operation, Section 1.2-Responsibilities for Transmission Owner's Operating Entity | 6/18/2007 | 3/31/2013 |
| PER | PER-002-0 | R3.3: | The training program must include training time for all Transmission Operator and Balancing Authority operating personnel to ensure their operating proficiency. | S | Each Member TO's training program for their system operators shall meet the training requirements outlined in the parts of PJM Manual 40 that refer to Member TO operators. | PJM Manual 40 includes a plan for training time for all PJM operating personnel to ensure their operating proficiency. | Does your training plan for system operators required to meet the training requirements of the parts of PJM Manual 40 that refer to Member TO operators? | 1. Exhibit dates that each Member TO System Operator attended the PJM Annual System Operator Seminar since your last audit. 2. Exhibit a training schedule that allows sufficient training time for all TO system operating personnel to ensure their operating proficiency, if necessary. | OA 10.4, OA 11.3.1 M-40 Certification and Training Requirements; Section 2-Certification Overview; Section 3.3 Compliance Monitoring Process for Training and Certification Requirements M-1 Control Center and Data Exchange Requirements; Section 2.6 Control Center Staffing; Attachment B-Schedule of Data Submittals M-3 Transmission Operations, Section 1.2-Responsibilities for Transmission Owner's Operating Entity M-36 System Restoration, Section 1 Policy Statements, Attachment D-Restoration Drill Guide | 6/18/2007 | 3/31/2013 |
| PER | PER-002-0 | R3.4: | Training staff must be identified, and the staff must be competent in both knowledge of system operations and instructional capabilities. | A | The Member TO training staff must be competent in both knowledge of system operations and instructional capabilities. | | 1. What experience does your training staff have? 2. What train the trainer classes has your training staff attended? | List of training staff and their qualifications and certifications. | OA 10.4, OA 11.3.1 M-40 Certification and Training Requirements; Section 2-Certification Overview; Section 3.3 Compliance Monitoring Process for Training and Certification Requirements M-1 Control Center and Data Exchange Requirements; Section 2.6 Control Center Staffing; Attachment B-Schedule of Data Submittals M-3 Transmission Operations, Section 1.2-Responsibilities for Transmission Owner's Operating Entity | 6/18/2007 | 3/31/2013 |

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-002-0 | R4. | For personnel identified in Requirement R2, each Transmission Operator and Balancing Authority shall provide its operating personnel at least five days per year of training and drills using realistic simulations of system emergencies, in addition to other training required to maintain qualified operating personnel. | S | Each Member TO system operator shall meet the training requirements outlined in the parts of PJM Manual 40 that refer to Member TO operators. | PJM Manual 40 includes a plan for at least five days per year of training and drills using realistic simulations of system emergencies, in addition to other training required to maintain qualified operating personnel. | Are all of your system operators required to meet the training requirements of the parts of PJM Manual 40 that refer to Member TO operators? | 1. Training records for all system operators showing how they met the 32-hour emergency preparedness training requirement 2. Documentation of the training program to verify that the training used realistic simulation of system emergencies 3. If there is additional training requirements for emergency preparedness, provide the program documentation and records that verify that personnel have received the additional training. | OA 10.4, OA 11.3.1 M-40 Certification and Training Requirements; Section 2-Certification Overview; Section 3.3 Compliance Monitoring Process for Training and Certification Requirements M-1 Control Center and Data Exchange Requirements; Section 2.6 Control Center Staffing; Attachment B-Schedule of Data Submittals M-3 Transmission Operations, Section 1.2-Responsibilities for Transmission Owner's Operating Entity M-36 System Restoration, Section 1-Policy Statements, Attachment D-Restoration Drill Guide | 6/18/2007 | 3/31/2013 |
| PER | PER-003-1 | 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. | | | | | | | | |
| PER | PER-003-1 | 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 Certification and Training 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 | 10/1/2012 | None |
| PER | PER-005-1 | Purpose | To ensure that System Operators performing real-time, reliability-related tasks on the North American Bulk Electric System (BES) are competent to perform those reliability-related tasks. The competency of System Operators is critical to the reliability of the North American Bulk Electric System. | | | | | | | | |

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-005-1 | R1. | Each Reliability Coordinator, Balancing Authority and Transmission Operator shall use a systematic approach to training to establish a training program for the BES company-specific reliability-related tasks performed by its System Operators and shall implement the program. | S | 1. Each Member TO shall establish a training program for the BES company-specific reliability-related tasks performed by its System Operators and that meets the training requirements outlined in PJM Manual 40 which includes requirements to use a systematic approach to training. 2. Implement the training program. | Keep Manual 40 up to date. | 1. Have you established a training program for the BES company-specific reliability-related tasks performed by your System Operators and meets that training requirements outlined in PJM Manual 40 which include requirements to use a systematic approach to training? 2. Have you implemented the training program? | 1. Description of the training program for the BES company-specific reliability-related tasks performed by its System Operators and meets the training requirements outlined in PJM Manual 40 which include requirements to use a systematic approach to training. 2. Sample training modules 3. Training records showing implementation of the training program. | OA 10.4, OA 11.3.1 M-40 Certification and Training Requirements; Section 1.1.2 - Training for Member Operating/Dispatch Personnel; Section 1.2 - PJM 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 (ITP); 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; Attachment B-Schedule of Data Submittals 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; Attachment F-Transmission Owner and Blackstart Supporting Documentation References | 4/1/2013 | 6/30/2016 |
| PER | PER-005-1 | R1.1. | Each Reliability Coordinator, Balancing Authority and Transmission Operator shall create a list of BES company-specific reliability-related tasks performed by its System Operators. | S | Each Member TO, in coordination with PJM, shall create a list of BES company-specific and common reliability-related tasks performed by its system operators. | PJM, in coordination with each member TO, shall create a list of BES common reliability-related tasks and common objectives performed by its system operators. | Have you, in coordination with PJM, created a list of BES company-specific reliability-related tasks performed by your system operators? | 1. Exhibit the list of BES company-specific reliability-related tasks performed by your system operators. 2. Show evidence of coordination with PJM such as emails or minutes of meetings. | M-40 Certification and Training Requirements, - Section 1.4.2 Task Lists; Section 1.4.3 - Reliability-Related Tasks | 4/1/2013 | 6/30/2016 |
| PER | PER-005-1 | R1.1.1. | Each Reliability Coordinator, Balancing Authority and Transmission Operator shall update its list of BES company-specific reliability-related tasks performed by its System Operators each calendar year to identify new or modified tasks for inclusion in training. | S | In coordination with PJM, update the list created in R1.1 each calendar year to identify new or modified tasks for inclusion in training. | In coordination with each Member TO, update the list created in R1.1 each calendar year to identify new or modified tasks for inclusion in training. | Have you, in coordination with PJM updated the list created in R1.1 each calendar year to identify new or modified tasks for inclusion in training. | 1. Show evidence of updating the list created in R1.1 each year. 2. Show coordination with PJM such as emails or minutes of meetings. | M-40 Certification and Training Requirements, - Section 1.4.4 Task List Maintenance; Section 1.4.5 Task Modification | 4/1/2013 | 6/30/2016 |
| PER | PER-005-1 | R1.2. | Each Reliability Coordinator, Balancing Authority and Transmission Operator shall design and develop learning objectives and training materials based on the task list created in R1.1. | S | Each member TO shall, in accordance with PJM Manual 40, design and develop learning objectives and training materials based on their company-specific tasks. | In coordination with each Member TO, PJM shall design and develop learning objectives and training materials based on the common task list created in R1.1. | Have you, in accordance with PJM Manual 40, designed and developed learning objectives and training materials based on company-specific tasks? | 1. Show evidence of design and development of learning objectives and training materials based on your company-specific tasks. | M-40 Certification and Training Requirements, Section 1.2 - PJM 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 | 4/1/2013 | 6/30/2016 |
| PER | PER-005-1 | R1.3. | Each Reliability Coordinator, Balancing Authority and Transmission Operator shall deliver the training established in R1.2. | S | Member TOs will provide training on their company-specific tasks that meets the requirements of R1.2 | PJM will offer training that meets the requirements of R1.2 for all common tasks | 1. Did you deliver training on your company-specific objectives that meets the requirements of R1.2? 2. Did each of your system operators receive training that meets the requirements of R1.2? | Provide evidence that shows training on company-specific tasks, meeting the requirements of R1.2, was delivered. | M-40 Certification and Training Requirements, Section 1.2 - PJM Member Systematic Approach to Training (SAT); Section 1.5 - Development of Training Programs ; Section 1.5.2 - Initial Training Program (ITP); 1.5.3 - Continuing Training Program; Section 1.6 Implementation of Program Activities | 4/1/2013 | 6/30/2016 |

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-005-1 | R1.4. | Each Reliability Coordinator, Balancing Authority and Transmission Operator shall conduct an annual evaluation of the training program established in R1, to identify any needed changes to the training program and shall implement the changes identified. | S | 1. The Member TO shall participate in annual evaluations of the PJM training program established in R1, to identify any needed changes to the PJM training program. 2. Each Member TO shall conduct an annual evaluation of their training program, established in R1, to identify any needed changes to the training program and shall implement the changes identified. | PJM shall conduct an annual evaluation, in coordination with the Member TOs, of the training program established in R1, 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? 2. Have you conducted an annual evaluation of your training program established in R1, to identify any needed changes to the training program? | 1. Show evidence of participation in the PJM training program evaluation, such as emails or minutes of meetings. 2. Show evidence of an annual evaluation of your training program established in R1, to identify any needed changes to the training program, and any changes that have been implemented. | M-40 Certification and Training Requirements, Section 1.7 Evaluation of Program Activities | 4/1/2013 | 6/30/2016 |
| PER | PER-005-1 | R2 | Each Reliability Coordinator, Balancing Authority and Transmission Operator shall verify each of its System Operator's capabilities to perform each assigned task identified in R1.1 at least one time. | A | The Member TO shall verify each of its system operator's capabilities to perform each assigned task identified in R1.1 at least one time. | | Have you verified each of your system operator's capabilities to perform each assigned task identified in R1.1 at least one time? | Show records for each of your system operators exhibiting verification of capabilities to perform each assigned task identified in R1.1. | M-40 Certification and Training Requirements, Section 1.5.4 - Task Verification; Section 3.2.1 - Transmission Owner System Operators | 4/1/2013 | 6/30/2016 |
| PER | PER-005-1 | R2.1. | Within six months of a modification of the BES company-specific reliability-related tasks, each Reliability Coordinator, Balancing Authority and Transmission Operator shall verify each of its System Operator's capabilities to perform the new or modified tasks. | A | Within six months of a modification of the BES company-specific reliability-related tasks, or addition of a new task, each Member TO shall verify each of its system operator's capabilities to perform the new or modified tasks. | | Within six months of a modification of the BES company-specific or common reliability-related task, or the addition of a new task, did you verify that each of your Member TO system operators were capable of performing the new or modified task? | Show verification records for each of your system operators that exhibits within six months of a modification of the BES company-specific or common reliability-related task, or the addition of a new task, an operator's capabilities to perform the new or modified task. | M-40 Certification and Training Requirements, Section 1.5.4 - Task Verification | 4/1/2013 | 6/30/2016 |
| PER | PER-005-1 | R3 | At least every 12 months each Reliability Coordinator, Balancing Authority and Transmission Operator shall provide each of its System Operators with at least 32 hours of emergency operations training applicable to its organization that reflects emergency operations topics, which includes system restoration using drills, exercises or other training required to maintain qualified personnel. | S | At least every 12 months, as determined by PJM in Manual 40, each Member TO, in coordination with PJM, shall provide each of its system operators with at least 32 hours of emergency operations training, consisting of PJM training and individual company restoration plan training that reflects emergency operations topics, which includes system restoration using drills, exercises or other training required to maintain qualified personnel. | At least every 12 months PJM, in coordination with Member TOs, shall offer Member TO system operators at least 32 hours of emergency operations training consisting of PJM training and individual company restoration plan training that reflects emergency operations topics, which includes system restoration using drills, exercises or other training required to maintain qualified personnel. | At least every 12 months, as determined by PJM in Manual 40, did you, in coordination with PJM, provide each of your system operators with at least 32 hours of emergency operations training consisting of PJM training and individual company restoration plan training that reflects emergency operations topics, which includes system restoration using drills, exercises or other training required to maintain qualified personnel. | Show training records for each of your system operators showing attendance at training at least every 12 months, as determined by PJM in Manual 40, with at least 32 hours of emergency operations training consisting of PJM training and individual company restoration plan training that reflects emergency operations topics, which includes system restoration using drills, exercises or other training required to maintain qualified personnel. | M-40 Certification and Training Requirements, Section 3.2.1 Transmission Owner System Operators, Annual Continuing Training | 4/1/2011 | 6/30/2016 |
| 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: | | 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. | OA 10.4, OA 11.3.1 M-40 Certification and Training 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; Attachment B-Schedule of Data Submittals M-3 Transmission Operations, Section 1.2- Responsibilities for Transmission Owner's Operating Entity M-36 System Restoration, Section 1-Policy Statements; Attachment D-Restoration Drill Guide; Attachment F-Transmission Owner and Blackstart Supporting Documentation References | 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, reports from company Dispatcher Training Subcommittee (DTS) account in the PJM Learning Management System (LMS). | M-40 Certification and Training 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, reports from company Dispatcher Training Subcommittee (DTS) account in the PJM Learning Management System (LMS). | M-40 Certification and Training 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 Certification and Training 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 |

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 | R1.3. | Each Reliability Coordinator, Balancing Authority, and Transmission Operator shall deliver training to its System Operators according to its training program. | S | Each Member TO will provide training to its TO Operators on its company-specific tasks that meets the requirements of R1.2. | 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? | 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 Certification and Training Requirements, Section 1.2 - PJM Member Systematic Approach to Training (SAT); Section 1.5 - Development of Training Programs ; Section 1.5.2 - Initial Training Program (ITP); 1.5.3 - Continuing Training Program; Section 1.6 Implementation of Program Activities | 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 Certification and Training 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 1.1 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 1.1 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 1.1. Evidence may include operator records in the Task Tracking Module (TTM) of the PJM Learning Management System (LMS). | M-40 Certification and Training Requirements, Section 1.5.4 - Task Verification; Section 3.2.1 - Transmission Owner System-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 1.1 | | 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 Certification and Training 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 Certification and Training Requirements, Section 3.2.1 Transmission Owner System Operators, Annual Continuing Training | 7/1/2016 | None |
| PRC | PRC-001-1.1(ii) | Purpose | To ensure system protection is coordinated among operating entities. | | | | | | | | |
| PRC | PRC-001-1.1(ii) | R1. | Each Transmission Operator, Balancing Authority, and Generator Operator shall be familiar with the purpose and limitations of Protection System schemes applied in its area. | S | 1. Each Member TO operator shall be familiar with the purpose and limitations of Protection System schemes applied in its area as noted in PJM Compliance Bulletin on PRC-001. 2. Each Member TO shall provide PJM Protection System information on request. | 1. PJM operators shall be familiar with the purpose and limitations of Protection System schemes located? 2. If more information is needed, the PJM operator shall request the Member TO operator to supply additional information. | 1. Where is the information with regards to the purpose and limitations of Protection System schemes located? 2. Have you provided Protection System schemes information to PJM when requested? | 1. Documented Protection System scheme information. 2. Evidence that you provided information about Protection System schemes within your area to PJM when requested. 3. Describe any training on Protection Systems provided to each operator. | M-3 Transmission Operations; Section 1.2-Responsibilities for Transmission Owner's Operating Entity, Section 4.2.4-Protection System Coordination M-40 Certification and Training Requirements, Section 3.2.1 Transmission Owner System Operators, Annual Continuing Training; Appendix 1-NERC Recommended Operator Training Topics PJM Compliance Bulletin on PRC-001 | PRC-001-1 06/18/2007 PRC-001-1.1 4/1/2013 PRC-001-1.1(ii) 5/29/2015 | PRC-001-1 03/31/2013 PRC-001-1.1 5/28/2015 PRC-001-1.1(ii) None |
| PRC | PRC-001-1.1(ii) | R2. | Each Generator Operator and Transmission Operator shall notify reliability entities of relay or equipment failures as follows: | S | Each Member TO shall notify PJM of relay or equipment failures as follows: | Notify affected Member TO of relay failures as follows: | Do you notify PJM of relay or equipment failures as follows? | See below. | M-1 Control Center and Data Exchange Requirements, Section 2.3.1-Transmission Monitoring Capability | PRC-001-1 06/18/2007 PRC-001-1.1 4/1/2013 PRC-001-1.1(ii) 5/29/2015 | PRC-001-1 03/31/2013 PRC-001-1.1 5/28/2015 PRC-001-1.1(ii) None |
| PRC | PRC-001-1.1(ii) | R2.2. | If a protective relay or equipment failure reduces system reliability, the Transmission Operator shall notify its Reliability Coordinator and affected Transmission Operators and Balancing Authorities. The Transmission Operator shall take corrective action as soon as possible. | S | 1. The Member TO must report all protection system failures and protection system outages on EHV facilities (345 kV and above) through the PJM eDart tool. The Member TO shall report to PJM Operations any protection system failures and outages on any other Reportable Facilities that are a part of the Bulk Electric System requiring PJM to modify PJM EMS Network Application Contingencies. 2. Take corrective action as instructed by PJM as soon as possible. | 1. Instruct Member TO to take corrective actions as soon as possible. 2. Notify affected TOP and RCs of relay failure that reduces system reliability as noted in PJM Compliance Bulletin on PRC-001. | 1. Did you report all protection system failures and protection system outages on EHV facilities (345 kV and above) through the PJM eDart tool? Did you report to PJM Operations any protection system failures and outages on any other Reportable Facilities that are a part of the Bulk Electric System requiring PJM to modify PJM EMS Network Application Contingencies? 2. Have you taken any corrective action as instructed by PJM as soon as possible? | 1. Exhibit evidence (logs, voice recordings, reports etc.) that you reported all protection system failures and protection system outages on EHV facilities (345 kV and above) through the PJM eDart tool. Exhibit evidence (logs, voice recordings, reports etc.) that you reported to PJM Operations any protection system failures and outages on any other Reportable Facilities that are a part of the Bulk Electric System requiring PJM to modify PJM EMS Network Application Contingencies. 2. Evidence that you took corrective action as instructed by PJM as soon as possible. | M-3 Transmission Operations; Section 1.5.4: Reportable Transmission Facility, Section 4.2.4-Protection System Coordination M-40 Certification and Training Requirements, Section 3.2.1 Transmission Owner System Operators, Annual Continuing Training; Appendix 1-NERC Recommended Operator Training Topics PJM Compliance Bulletin on PRC-001 | PRC-001-1 06/18/2007 PRC-001-1.1 4/1/2013 PRC-001-1.1(ii) 5/29/2015 | PRC-001-1 03/31/2013 PRC-001-1.1 5/28/2015 PRC-001-1.1(ii) 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 |
|----------|-----------------|--------------------|--|-----|---|--|---|---|--|--|--|
| PRC | PRC-001-1.1(ii) | R3 | A Generator Operator or Transmission Operator shall coordinate new protective systems and changes as follows. | S | A Member TO shall coordinate new protective systems and changes as follows. | 1. Facilitate the PJM Relay Subcommittee. 2. Notify Member TO of periodic model build due dates. | Do you coordinate new protective systems and changes as follows? | See below. | M-3 Transmission Operations, Section 4.2-Scheduling Transmission Outage Requests, Section 4.2.4 - Protection System Coordination M-14C Generation and Transmission Interconnection Facility Construction; Section 4: Technical and Construction Requirements 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-Model Information and Transmission Facility Requirements PJM Compliance Bulletin on PRC-001 | PRC-001-1 06/18/2007 PRC-001-1.1 4/1/2013 PRC-001-1.1(ii) 5/29/2015 | PRC-001-1 03/31/2013 PRC-001-1.1 5/28/2015 PRC-001-1.1(ii) None |
| PRC | PRC-001-1.1(ii) | R3.2 | Each Transmission Operator shall coordinate all new protective systems and all protective system changes with neighboring Transmission Operators and Balancing Authorities. | S | 1. The Member TO shall coordinate new protective systems and protective system changes with neighboring Transmission Owners, Transmission Operators and Balancing Authorities as noted in PJM Compliance Bulletin on PRC-001. In general, coordination must occur when a modification is made to a protection system that changes its performance. The list in Compliance Bulletin on PRC-001 provides general guidance on when coordination must occur. 2. The Member TO shall coordinate new protective systems and protective system changes that effect contingency modeling as noted in PJM Manual 3A with PJM. | 1. Facilitate the PJM Relay Subcommittee. 2. Notify Member TOs of periodic model build due dates. 3. PJM shall update the model to reflect protection system additions or changes as noted in PJM Manual 3A. | 1. Have you coordinated new protective systems and protective system changes with neighboring Transmission Owners, Transmission Operators and Balancing Authorities as noted in PJM Compliance Bulletin on PRC-001? 2. Do you support the periodic update of the PJM operations models as noted in PJM Manual 3A with PJM? | 1. Show evidence of coordination of new protective systems and protective system changes with neighboring Transmission Owners, Transmission Operators and Balancing Authorities as noted in PJM Compliance Bulletin on PRC-001. 2. The Member TO shall coordinate new protective systems and protective system changes that effect contingency modeling as noted in PJM Manual 3A with PJM. | M-3 Transmission Operations, Section 4.2-Scheduling Transmission Outage Requests, Section 4.2.4 - Protection System Coordination M-14C Generation and Transmission Facility Construction; Section 4: Technical and Construction Requirements 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-Model Information and Transmission Facility Requirements PJM Compliance Bulletin on PRC-001 | PRC-001-1 06/18/2007 PRC-001-1.1 4/1/2013 PRC-001-1.1(ii) 5/29/2015 | PRC-001-1 03/31/2013 PRC-001-1.1 5/28/2015 PRC-001-1.1(ii) None |
| PRC | PRC-001-1.1(ii) | R4 | Each Transmission Operator shall coordinate Protection Systems on major transmission lines and interconnections with neighboring Generator Operators, Transmission Operators, and Balancing Authorities. | S | 1. The Member TO shall coordinate Protective Systems with neighboring Transmission Owners, Generator Operators, Transmission Operators, and Balancing Authorities as noted in PJM Compliance Bulletin on PRC-001. In general, coordination must occur when a modification is made to a Protection System that changes its performance. The list in Compliance Bulletin on PRC-001 provides general guidance on when coordination must occur. 2. The Member TO shall coordinate new Protective systems and protective system changes that effect contingency modeling as noted in PJM Manual 3A with PJM. | 1. Facilitate the PJM Relay Subcommittee. 2. Notify Member TO of periodic model build due dates. 3. PJM shall update the model to reflect Protection system additions or changes as noted in PJM Manual 3A. | 1. Have you coordinated new Protective Systems and Protective System changes with neighboring Transmission Owners, Generator Operators, Transmission Operators, and Balancing Authorities as noted in PJM Compliance Bulletin on PRC-001? 2. Do you support the periodic update of the PJM operations models as noted in PJM Manual 3A with PJM? | 1. Show evidence of coordination of new Protective Systems and Protective System changes with neighboring Transmission Owners, Generator Operators, Transmission Operators, and Balancing Authorities as noted in PJM Compliance Bulletin on PRC-001. 2. The Member TO shall coordinate new Protective Systems and Protective System changes that effect contingency modeling as noted in PJM Manual 3A. | M-3 Transmission Operations, Section 4.2-Scheduling Transmission Outage Requests, Protection System Coordination M-14C Generation and Transmission Interconnection Facility Construction; Section 4: Technical and Construction Requirements 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-Model Information and Transmission Facility Requirements PJM Compliance Bulletin on PRC-001 PJM Relay Subcommittee Charter - Item 12 | PRC-001-1 06/18/2007 PRC-001-1.1 4/1/2013 PRC-001-1.1(ii) 5/29/2015 | PRC-001-1 03/31/2013 PRC-001-1.1 5/28/2015 PRC-001-1.1(ii) 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 |
|----------|-----------------|--------------------|---|-----|---|--|---|---|---|--|--|
| PRC | PRC-001-1.1(ii) | R5.2. | Each Transmission Operator shall notify neighboring Transmission Operators in advance of changes in generation, transmission, load, or operating conditions that could require changes in the other Transmission Operators' protection systems. | S | Member TOs shall support the normal Operations and Planning processes to identify any changes in generation, transmission, load or other operating conditions that may require changes in neighboring TO protection systems as noted in PJM Compliance Bulletin on PRC-001. | PJM will communicate all system changes to the appropriate entities through normal Operations and Planning processes as noted in PJM Compliance Bulletin on PRC-001. | Do you participate in normal Operations and Planning processes as noted in PJM Compliance Bulletin on PRC-001? | Evidence of participation in normal Operations and Planning processes as noted in PJM Compliance Bulletin on PRC-001 such as emails. | M-3 Transmission Operations, Section 4.2-Scheduling Transmission Outage Requests, Section 4.2.4 - Protection System Coordination M-14C Generation and Transmission Interconnection Facility Construction; Section 4- Technical and Construction Requirements PJM Compliance Bulletin on PRC-001 | PRC-001-1 06/18/2007 PRC-001-1.1 4/1/2013 PRC-001-1.1(ii) 5/29/2015 | PRC-001-1 03/31/2013 PRC-001-1.1 5/28/2015 PRC-001-1.1(ii) None |
| PRC | PRC-001-1.1(ii) | R6. | Each Transmission Operator and Balancing Authority shall monitor the status of each Special Protection System in their area, and shall notify affected Transmission Operators and Balancing Authorities of each change in status. | S | Each Member TO shall monitor the status of each Special Protection System in their area, and shall notify PJM of changes in status. | PJM shall notify other TOs and affected TOPs and BAs of each change in status of SPSs. | 1. Do you monitor the status of each Special Protection System in your TO area? 2. Do you notify PJM of changes in status of your SPSs? | 1. Exhibit evidence that you monitor the status of each Special Protection System in your TO area. 2. Show evidence that you notify PJM of changes in status of your SPSs such as logs emails, etc.? | M-3 Transmission Operations; Section 1.2- Responsibilities for Transmission Owner's Operating Entity, Section 5- Index & Operating Procedures for PJM RTO Operations, Automatic Special Protection Scheme (SPS) Operating Criteria 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 | PRC-001-1 06/18/2007 PRC-001-1.1 4/1/2013 PRC-001-1.1(ii) 5/29/2015 | PRC-001-1 03/31/2013 PRC-001-1.1 5/28/2015 PRC-001-1.1(ii) None |
| PRC | PRC-010-0 | Purpose | Provide System preservation measures in an attempt to prevent system voltage collapse or voltage instability by implementing an Undervoltage Load Shedding (UVLS) program. | | | | | | | | |
| PRC | PRC-010-0 | R1 | The Load-Serving Entity, Transmission Owner, Transmission Operator, and Distribution Provider that owns or operates a UVLS program shall periodically (at least every five years or as required by changes in system conditions) conduct and document an assessment of the effectiveness of the UVLS program. This assessment shall be conducted with the associated Transmission Planner(s) and Planning Authority(ies). | S | The Member TO that owns a UVLS program shall periodically (at least every five years or as required by changes in system conditions) conduct and document an assessment of the effectiveness of the UVLS program. This assessment shall be conducted with PJM. | PJM shall participate in the periodic analysis required to assess the effectiveness of the UVLS program with each Member TO that owns or operates a UVLS program. | 1. Do you own a UVLS program? 2. Have you conducted an assessment of the effectiveness of the UVLS program with PJM's participation. | 1. Show documentation describing the UVLS program. 2. Show a list of any UVLS relays on the system. 3. Evidence includes reports of the effectiveness analysis performed. | M-3 Transmission Operations; Section 3.2-Voltage Criteria and Policy | 6/18/2007 | None |
| PRC | PRC-010-0 | R1.1 (Heading) | This assessment shall include, but is not limited to: | S | | | | | | | |
| PRC | PRC-010-0 | R1.1.1 | Coordination of the UVLS programs with other protection and control systems in the Region and with other Regional Reliability Organizations, as appropriate. | S | The Member TO assessment shall include a review of the coordination of the UVLS programs with other protection and control systems in the Region and with other Regional Reliability Organizations, as appropriate. | PJM shall participate in the periodic analysis required to assess the effectiveness of the UVLS program with each Member TO that owns or operates a UVLS program. | Does your assessment include a review of the coordination of the UVLS programs with other protection and control systems in the Region and with other Regional Reliability Organizations, as appropriate? | Show most current UVLS assessment and highlight the section on the coordination of the UVLS programs with other protection and control systems in the Region and with other Regional Reliability Organizations, as appropriate. | M-3 Transmission Operations; Section 3.2-Voltage Criteria and Policy | 6/18/2007 | None 3/31/2017 |
| PRC | PRC-010-0 | R1.1.2 | Simulations that demonstrate that the UVLS programs performance is consistent with Reliability Standards TPL-001-0, TPL-002-0, TPL-003-0 and TPL-004-0. | S | The Member TO assessment shall include simulations that demonstrate that the UVLS programs performance is consistent with Reliability Standards TPL-001-0, TPL-002-0, TPL-003-0 and TPL-004-0. | PJM shall participate in the periodic analysis required to assess the effectiveness of the UVLS program with each Member TO that owns or operates a UVLS program. | Does your assessment include simulations that demonstrate that the UVLS programs performance is consistent with Reliability Standards TPL-001-0, TPL-002-0, TPL-003-0 and TPL-004-0? | Show most current UVLS assessment and highlight the section on simulations that demonstrate that the UVLS programs performance is consistent with Reliability Standards TPL-001-0, TPL-002-0, TPL-003-0 and TPL-004-0. | M-3 Transmission Operations; Section 3.2-Voltage Criteria and Policy | 6/18/2007 | None 3/31/2017 |

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 |
|----------|-----------------|--------------------|--|-----|---|---|---|--|---|------------------|------------------------------|
| PRC | PRC-010-0 | R1.1.3 | A review of the voltage set points and timing. | S | The Member TO assessment shall include a review of the voltage set points and timing. | PJM shall participate in the periodic analysis required to assess the effectiveness of the UVLS program with each Member TO that owns or operates a UVLS program. | Does your assessment include a review of the voltage set points and timing? | Show most current UVLS assessment and highlight the section on a review of the voltage set points and timing. | M-3 Transmission Operations; Section 3.2-Voltage Operating Criteria and Policy | 6/18/2007 | None 3/31/2017 |
| PRC | PRC-022-1 | Purpose | Ensure that Under Voltage Load Shedding (UVLS) programs perform as intended to mitigate the risk of voltage collapse or voltage instability in the Bulk Electric System (BES). | | | | | | | | |
| PRC | PRC-022-1 | R1. | Each Transmission Operator, Load-Serving Entity, and Distribution Provider that operates a UVLS program to mitigate the risk of voltage collapse or voltage instability in the BES shall analyze and document all UVLS operations and Misoperations. The analysis shall include: | A | 1. Each Member TO that operates BES UVLS to mitigate the risk of voltage collapse or voltage instability shall analyze and document all UVLS operations and Misoperations as described in R1.1. through R1.5. 2. Each Member TO that operates BES UVLS shall provide documentation of the operations and Misoperations analysis as described in Task 1 to PJM every calendar quarter. The quarterly submittal shall include an analysis of all BES UVLS operations and Misoperations in the previous calendar quarter. | PJM does not have a UVLS program and does not rely on the few instances of UVLS installed on BES facilities in the PJM footprint to mitigate the risk of voltage collapse or voltage instability. | 1. Do you operate BES UVLS in your area? 2. Have you analyzed and documented all BES UVLS operations and Misoperations? 3. Did you provide PJM documentation of the analysis of all BES UVLS operations and Misoperations every calendar quarter? The quarterly submittal shall include an analysis of all BES UVLS operations and Misoperations in the previous quarter. | 1. If applicable, exhibit evidence that you analyzed and documented all BES UVLS operations and Misoperations. 2. Exhibit evidence that you provided the documentation of BES UVLS operations and Misoperations analysis to PJM quarterly. The quarterly submittal shall include an analysis of all BES UVLS operations and Misoperations in the previous calendar quarter. | M-3 Transmission Operations; Section 3.2-Voltage Operating Criteria and Policy; Exhibit 5 Note. | 6/18/2007 | None 3/31/2017 |
| PRC | PRC-022-1 | R1.1. | A description of the event including initiating conditions. | A | The Member TO analysis shall include a description of the event including initiating conditions. | | Does your analysis include a description of the event including initiating conditions? | Exhibit documentation of the most current analysis highlighting the description of the event including initiating conditions. | M-3 Transmission Operations; Section 3.2-Voltage Operating Criteria and Policy; Exhibit 5 Note. | 6/18/2007 | None 3/31/2017 |
| PRC | PRC-022-1 | R1.2. | A review of the UVLS set points and tripping times. | A | The Member TO analysis shall include a review of the UVLS set points and tripping times. | | Does your analysis include a review of the UVLS set points and tripping times? | Exhibit documentation of the most current analysis that includes a review of the UVLS set points and tripping times. | M-3 Transmission Operations; Section 3.2-Voltage Operating Criteria and Policy; Exhibit 5 Note. | 6/18/2007 | None 3/31/2017 |
| PRC | PRC-022-1 | R1.3. | A simulation of the event, if deemed appropriate by the Regional Reliability Organization. For most events, analysis of sequence of events may be sufficient and dynamic simulations may not be needed. | S | 1. When instructed by PJM, the Member TO analysis shall include a simulation of the event. 2. The Member TO shall perform an analysis of sequence of events. | When instructed by the Regional Reliability Organization, PJM will instruct the Member TO to perform a simulation of the event. | 1. Were you instructed by PJM to include in your analysis a simulation of the event and did you perform the simulation? 2. Does your analysis include sequence of events? | 1. Exhibit documentation demonstrating that your analysis included a simulation of the event when instructed by PJM to do so. 2. Exhibit documentation demonstrating that your analysis included sequence of events. | M-3 Transmission Operations; Section 3.2-Voltage Operating Criteria and Policy; Exhibit 5 Note. | 6/18/2007 | None 3/31/2017 |
| PRC | PRC-022-1 | R1.4. | A summary of the findings. | A | The Member TO analysis shall include a summary of the findings. | | Does your analysis include a summary of the findings? | Exhibit documentation of the analysis that includes a summary of the findings. | M-3 Transmission Operations; Section 3.2-Voltage Operating Criteria and Policy; Exhibit 5 Note. | 6/18/2007 | None 3/31/2017 |
| PRC | PRC-022-1 | R1.5. | For any Misoperation, a Corrective Action Plan to avoid future Misoperations of a similar nature. | A | The Member TO analysis shall include creation of a Corrective Action Plan for every BES UVLS Misoperation to avoid future Misoperations of a similar nature. | | 1. Did you have any BES UVLS Misoperations during the audit period? 2. If yes, did you create a Corrective Action Plan for every BES UVLS Misoperation to avoid future BES UVLS Misoperations of a similar nature. | 1. If applicable, exhibit a list of all BES UVLS Misoperations during the audit period. 2. Exhibit a Corrective Action Plan for every BES UVLS Misoperation that occurred during the audit period. | M-3 Transmission Operations; Section 3.2-Voltage Operating Criteria and Policy; Exhibit 5 Note. | 6/18/2007 | None 3/31/2017 |
| TOP | TOP-001-1a | Purpose | To ensure reliability entities have clear decision-making authority and capabilities to take appropriate actions or direct the actions of others to return the transmission system to normal conditions during an emergency. | | | | | | | | |

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-001-1a | R1. | Each Transmission Operator shall have the responsibility and clear decision-making authority to take whatever actions are needed to ensure the reliability of its area and shall exercise specific authority to alleviate operating emergencies. | S | 1. The Member TO system operators shall have the responsibility and clear decision-making authority to take actions as directed by PJM (Operating Instruction PJM Directive or PJM instruction). If the Operating Instruction PJM Directive or PJM instruction cannot be complied with in order to avoid loss of life, ensure safety, or protect equipment the Member TO system operator shall inform PJM as soon as possible. 2. The Member TO system operators shall also have the responsibility and clear decision-making authority to take actions to avoid loss of life, ensure safety, or protect equipment without PJM's direction. If the Member TO system operator took actions to avoid loss of life, ensure safety, or protect equipment without PJM's direction, the Member TO system operator shall inform PJM as soon as possible. 3. See PJM Manual 3 Section 5 for ComEd 138 kV Phase Shifting Transformer Operations allowances. | PJM shall have the responsibility and clear decision-making authority to issue Operating Instructions PJM Directives or PJM instructions to ensure the reliability of its area and shall exercise specific authority to alleviate operating emergencies. | 1. Do your system operators have the responsibility and clear decision-making authority to take actions as directed by PJM (Operating Instruction PJM Directive or PJM instruction). Did your system operators not comply with Operating Instructions PJM Directives or PJM instructions in order to avoid loss of life, ensure safety, or protect equipment? If so, did your system operators inform PJM as soon as possible? 2. Do your system operators have the responsibility and clear decision-making authority to take actions to avoid loss of life, ensure safety, or protect equipment without PJM's direction. Did your system operators take actions to avoid loss of life, ensure safety, or protect equipment without PJM's direction? If so, did your system operators inform PJM of such actions as soon as possible? | 1. Exhibit documents demonstrating that your system operators have the responsibility and clear decision-making authority to take actions as directed by PJM (Operating Instruction PJM Directive or PJM instruction). Exhibit evidence, if applicable, of any instances when your system operators did not comply with Operating Instructions PJM Directives or PJM instructions to avoid loss of life, ensure safety, or protect equipment. Exhibit evidence that your system operators communicated to PJM as soon as possible that they could not comply with Operating Instructions PJM Directives or PJM instructions to avoid loss of life, ensure safety, or protect equipment. 2. Exhibit evidence demonstrating that your system operators have the responsibility and clear decision-making authority to take actions to avoid loss of life, ensure safety, or protect equipment without PJM's direction. Exhibit evidence, if applicable, of any instances when your system operators took action without PJM's direction to avoid loss of life, ensure safety, or protect equipment. Exhibit evidence that your system operators informed PJM of such actions as soon as possible. | PJM OA, Section 11.3 Member Responsibilities, 11.3.1 General (e) M-3 Transmission Operations, 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, Section 33-Load Shedding and Curtailments | TOP-001-1a 11/21/11 | TOP-001-1a None <u>3/31/2017</u> |
| TOP | TOP-001-1a | R2. | Each Transmission Operator shall take immediate actions to alleviate operating emergencies including curtailing transmission service or energy schedules, operating equipment (e.g., generators, phase shifters, breakers), shedding firm load, etc. | S | All Member TO actions impacting BES facilities (operating equipment e.g., phase shifters, breakers), and or load shedding shall be at the direction (Operating Instruction PJM Directive or PJM instruction) of PJM unless immediate actions are required to avoid loss of life, ensure safety or protect equipment. Such non-PJM directed (Operating Instruction PJM Directive or PJM instruction) actions shall be communicated to PJM as soon as practical. See PJM Manual 3 Section 5 for ComEd 138 kV Phase Shifting Transformer Operations allowances. | PJM shall issue Operating Instructions PJM instructions or PJM Directives to alleviate operating emergencies including curtailing transmission service or energy schedules, operating equipment (e.g., generators, phase shifters, breakers), shedding firm load, etc. | Have you had any incidents when the TO system operator has had to take immediate actions at the direction (Operating Instruction PJM Directive or PJM instruction) of PJM to alleviate operating emergencies, operating equipment (e.g. phase shifters, breakers), shedding firm load, etc.? | Evidence such as example system operator logs or voice recordings of actions taken during emergencies that support compliance to this requirement. | PJM OA Schedule 1: 1.7.15-Corrective Actions 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, Section 5-Index and Operating Procedures for PJM RTO Operation M-13 Emergency Operations, Section 1.1-Policy Statements M-36 System Restoration, Section 1.1-Policy Statements M-37 Reliability Coordination, Section 1.1-Policy Statements TOA - Section 4.7-Actions in an Emergency RAA - Article 9, Section 9.1(f) Open Access Tariff, Section 1.7.4-General Obligations of the Market Participants (b), Section 5.3 Outage Authority and Coordination | TOP-001-1a 11/21/11 | TOP-001-1a None <u>3/31/2017</u> |

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-001-1a | R3. | Each Transmission Operator, Balancing Authority, and Generator Operator shall comply with reliability directives issued by the Reliability Coordinator, and each Balancing Authority and Generator Operator shall comply with reliability directives issued by the Transmission Operator, unless such actions would violate safety, equipment, regulatory or statutory requirements. Under these circumstances the Transmission Operator, Balancing Authority or Generator Operator shall immediately inform the Reliability Coordinator or Transmission Operator of the inability to perform the directive so that the Reliability Coordinator or Transmission Operator can implement alternate remedial actions. | S | Member TO system operators shall comply with Operating Instructions PJM (reliability) Directives issued by PJM unless such actions would violate safety, equipment, regulatory or statutory requirements. If, because of the reasons mentioned above, the Operating Instructions PJM Directives cannot be complied with, the Member TO system operator shall inform PJM as soon as possible. | 1. PJM shall issue Operating Instructions PJM Directives to ensure the stable and reliable operation of the Bulk Electric System. 2. PJM shall be prepared to implement alternate remedial actions if necessary. | 1. Do you have documented procedures that require the your system operators to comply with Operating Instructions PJM (reliability) Directives ? 2. Have you had any incidents where your system operators were not able to comply with Operating Instructions PJM (reliability) Directives because such actions would violate safety, equipment, regulatory or statutory requirements? | 1. Exhibit documented procedures that require your operators to comply with Operating Instructions PJM (reliability) Directives . 2. Evidence such as system operator logs, voice recordings or incident reports etc., for any incidents where your system operators were not able to comply with Operating Instructions PJM (reliability) Directives because such actions would violate safety, equipment, regulatory or statutory requirements. | PJM OA Schedule 1: 1.7.15-Corrective Actions 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, Section 5-Index and Operating Procedures for PJM RTO Operation M-13 Emergency Operations, Section 1.1-Policy Statements M-36 System Restoration, Section 1.1-Policy Statements M-37 Reliability Coordination, Section 1.1-Policy Statements TOA - Section 4.7-Actions in an Emergency RAA - Article 9, Section 9.1(f) Open Access Tariff, Section 1.7.4-General Obligations of the Market Participants (b), Section 5.3 Outage Authority and Coordination | TOP-001-1a 11/21/11 | TOP-001-1a None <u>3/31/2017</u> |
| TOP | TOP-001-1a | R5. | Each Transmission Operator shall inform its Reliability Coordinator and any other potentially affected Transmission Operators of real time or anticipated emergency conditions, and take actions to avoid, when possible, or mitigate the emergency. | S | Each Member TO shall inform PJM of real time or anticipated emergency conditions. Through discussion with PJM, decide on actions to avoid, when possible, or mitigate the emergency unless immediate actions are required to avoid loss of life, ensure safety or protect equipment. Such non-PJM approved actions shall be communicated to PJM as soon as practical. | 1. Through discussion with the Member TO, decide on actions to avoid, when possible, or mitigate an emergency. 2. PJM will inform any other potentially affected Transmission Operators. | Have you had discussions with PJM to decide on actions to avoid, when possible, or mitigate an emergency. | Show example evidence such as system operator logs or voice recordings of discussions with PJM to decide on actions taken to avoid, when possible, or mitigate 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.3.6-Maintaining System Reliability M-13 Emergency Operations, Section 1.1-Policy Statements TOA Article 4.7-Actions in an Emergency M-3 Transmission Operations, Section 1.2-Responsibilities for Transmission Owner's Operating Entity | TOP-001-1a 11/21/11 | TOP-001-1a None <u>3/31/2017</u> |

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-001-1a | R6 | Each Transmission Operator, Balancing Authority, and Generator Operator shall render all available emergency assistance to others as requested, provided that the requesting entity has implemented its comparable emergency procedures, unless such actions would violate safety, equipment, or regulatory or statutory requirements. | S | 1. Member TO system operators shall comply with Operating Instructions issued by PJM to render emergency assistance to others unless such actions would violate safety, equipment, regulatory or statutory requirements. 2. If, because of the reasons mentioned above, the Operating Instructions cannot be complied with, the Member TO System Operator shall inform PJM as soon as possible. | 1. PJM shall issue Operating Instructions as needed to render emergency assistance to others as requested, provided that the requesting entity has implemented its comparable emergency procedures. 2. PJM shall be prepared to implement alternate remedial actions if necessary. | 1. Since your last audit, did your System Operators receive Operating Instructions from PJM to render emergency assistance to others? 2. Did your System Operators comply with those Operating Instructions 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 issued Operating Instructions, did your System Operators inform PJM as soon as possible? | 1. If applicable, evidence such as system operator logs, voice recordings, or incident reports etc., for any incidents where your System Operators complied with PJM issued Operating Instructions to render emergency assistance to others as requested. 2. If your System Operators could not comply with PJM issued Operating Instructions to render emergency assistance to others as requested, evidence that your System Operators could not comply with those PJM issued Operating Instructions because such actions would have violated safety, equipment, regulatory, or statutory requirements. 3. Evidence that in such an instance, your System Operators informed PJM as soon as possible | PJM OA Schedule 1: 1.7.15-Corrective Actions 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, Section 5-Index and Operating Procedures for PJM RTO Operation M-13 Emergency Operations, Section 1.1-Policy Statements M-36 System Restoration, Section 1.1-Policy Statements M-37 Reliability Coordination, Section 1.1-Policy Statements TOA - Section 4.7-Actions in an Emergency RAA - Article 9, Section 9.1(f) Open Access Tariff, Section 1.7.4-General Obligations of the Market Participants (b), Section 5.3 Outage Authority and Coordination | TOP-001-1a 11/21/11 | TOP-001-1a 3/31/2017 |
| TOP | TOP-001-1a | R7. | Each Transmission Operator and Generator Operator shall not remove Bulk Electric System facilities from service if removing those facilities would burden neighboring systems unless: | S | Each Member TO shall not remove Bulk Electric System facilities from service if removing those facilities would burden neighboring systems unless: | PJM shall not remove Bulk Electric System facilities from service if removing those facilities would burden neighboring systems unless: | Have you had to remove Bulk Electric System facilities from service if removing those facilities would burden neighboring systems unless: | Provide examples of coordinating, with PJM, the removal of facilities from service. | M-37 Reliability Coordination, Section 1.1-Policy Statements PJM OA Section 10.4-Duties and Responsibilities, Schedule 1.9.1-Outage Scheduling M-3 Transmission Operations; Section 1.2-Responsibilities for Transmission Owner's Operating Entity, Section 4-Reportable Transmission Facility Outages M-13 Emergency Operations, Section 1-Policy Statements | TOP-001-1a 11/21/11 | TOP-001-1a None 3/31/2017 |
| TOP | TOP-001-1a | R7.2. | For a transmission facility, the Transmission Operator shall notify and coordinate with its Reliability Coordinator. The Transmission Operator shall notify other affected Transmission Operators, and coordinate the impact of removing the Bulk Electric System facility. | S | The Member TO shall notify and coordinate with PJM about the impact of removing a Bulk Electric System facility. | PJM shall notify other affected Transmission Operators, and coordinate the impact of removing the Bulk Electric System facility. | Have you had to notify and coordinate with PJM about the impact of removing a Bulk Electric System facility? | Provide examples of coordinating the removal of facilities from service. | M-37 Reliability Coordination, Section 1.1-Policy Statements PJM OA Section 10.4-Duties and Responsibilities, Schedule 1.9.1-Outage Scheduling M-3 Transmission Operations; Section 1.2-Responsibilities for Transmission Owner's Operating Entity, Section 4-Reportable Transmission Facility Outages M-13 Emergency Operations, Section 1-Policy Statements | TOP-001-1a 11/21/11 | TOP-001-1a None 3/31/2017 |

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-001-1a | R7.3. | When time does not permit such notifications and coordination, or when immediate action is required to prevent a hazard to the public, lengthy customer service interruption, or damage to facilities, the Generator Operator shall notify the Transmission Operator, and the Transmission Operator shall notify its Reliability Coordinator and adjacent Transmission Operators, at the earliest possible time. | S | The Member TO shall notify PJM at the earliest possible time if they have removed transmission facilities from service without first coordinating with PJM. Member TO may remove facilities from service without coordinating with PJM to prevent a hazard to the public or damage to facilities. | PJM shall notify other adjacent Transmission Operators, and coordinate the impact of removing the Bulk Electric System facility. | Have you had any incidents where you have removed a transmission element from service to prevent a hazard to the public or damage to facilities without coordinating with PJM? | Evidence such as system operator logs, voice recordings or incident reports etc., for any incidents where the Member TO operators removed a transmission element from service to prevent a hazard to the public or damage to facilities without coordination with PJM and the notification of PJM soon after. | OA Section 11.3, Member Responsibilities M-3 Transmission Operations; Section 1.2- Responsibilities for Transmission Owner's Operating Entity | TOP-001-1a 11/21/11 | TOP-001-1a None 3/31/2017 |
| TOP | TOP-001-1a | R8. | During a system emergency, the Balancing Authority and Transmission Operator shall immediately take action to restore the Real and Reactive Power Balance. If the Balancing Authority or Transmission Operator is unable to restore Real and Reactive Power Balance it shall request emergency assistance from the Reliability Coordinator. If corrective action or emergency assistance is not adequate to mitigate the Real and Reactive Power Balance, then the Reliability Coordinator, Balancing Authority, and Transmission Operator shall implement firm load shedding. | S | The Member TO shall comply with <u>Operating Instructions to implement firm load shedding, PJM Directives and PJM instructions</u> unless such actions would violate safety, equipment, or regulatory or statutory requirements. | PJM shall issue <u>Operating Instructions, PJM Directives and PJM instructions</u> to restore the real and reactive power balance including firm load shedding. | Have you had an incident where you had to comply with <u>Operating Instructions, PJM Directives and PJM instructions</u> unless such actions would violate safety, equipment, or regulatory or statutory requirements. | Evidence such as system operator logs, voice recordings or incident reports etc., for any incidents where your operators at the direction (<u>Operating Instruction, Directives or instructions</u>) of PJM had to implement shedding of firm load. | OA Section 11.3, Member Responsibilities M-3 Transmission Operations; Section 1.2- Responsibilities for Transmission Owner's Operating Entity | TOP-001-1a 11/21/11 | TOP-001-1a None 3/31/2017 |
| TOP | TOP-001-3 | Purpose | <u>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.</u> | | | | | | | | |
| TOP | TOP-001-3 | 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. 2. If because of the reasons mentioned above the Member TO System Operators cannot comply with PJM Operating Instructions, the Member TO System Operators shall inform PJM as soon as possible. | 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? 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. 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. 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. 3. If the Member TO System Operators could not comply with PJM Operating Instructions, 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 Member Responsibilities, 11.3.1 General (e) M-3 Transmission Operations, 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, Section 33-Load Shedding and Curtailments | 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 |
|----------|-----------------|--------------------|---|-----|--|---|--|--|--|------------------|---------------|
| TOP | TOP-001-3 | 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 | <p>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.</p> <p>2. If because of the reasons mentioned above the Member TO System Operators cannot comply with PJM Operating Instructions, the Member TO System Operators shall inform PJM as soon as possible.</p> | <p>1. PJM shall issue Operating Instructions to ensure the stable and reliable operation of the Bulk Electric System.</p> <p>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.</p> | <p>1. Do you have documented procedures that require your System Operators to comply with PJM Operating Instructions?</p> <p>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?</p> <p>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?</p> | <p>1. Documentation of procedures that requires the Member TO System Operators to comply with PJM Operating Instructions.</p> <p>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.</p> <p>3. If the Member TO System Operators could not comply with PJM Operating Instructions, 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.</p> | <p>PJM OA, Section 11.3 Member Responsibilities, 11.3.1 General (e)</p> <p>M-3 Transmission Operations, Section 1.3-Transmission Operating Guidelines</p> <p>M-13 Emergency Operations, Section 1.1-Policy Statements</p> <p>M-37 Reliability Coordination, Section 1.1-Policy Statements</p> <p>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.</p> <p>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, Section 33-Load Shedding and Curtailments</p> | 4/1/2017 | None |
| TOP | TOP-001-3 | 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 | <p>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.</p> | <p>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.</p> | <p>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?</p> <p>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?</p> | <p>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.</p> | <p>PJM OA, Section 11.3 Member Responsibilities, 11.3.1 General (e)</p> <p>M-3 Transmission Operations, Section 1.3-Transmission Operating Guidelines</p> <p>M-13 Emergency Operations, Section 1.1-Policy Statements</p> <p>M-37 Reliability Coordination, Section 1.1-Policy Statements</p> <p>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.</p> <p>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, Section 33-Load Shedding and Curtailments</p> | 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 |
|----------|-----------------|--------------------|--|-----|--|--|---|---|--|------------------|---------------|
| TOP | TOP-001-3 | 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.3.6-Maintaining System Reliability M-13 Emergency Operations, Section 1.1- Policy Statements TOA Article 4.7-Actions in an Emergency M-3 Transmission Operations, Section 1.2- Responsibilities for Transmission Owner's Operating Entity | 4/1/2017 | None |
| TOP | TOP-001-3 | 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, of its communication channels between the following affected entities: (i) Member TO and PJM (ii) 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 communication channels between the following affected entities: (i) Member TO and PJM (ii) 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 communication channels between the following affected entities? (i) Member TO and PJM (ii) 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 communication channels between the following affected entities: (i) Member TO and PJM (ii) 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 | 4/1/2017 | None |
| TOP | TOP-001-3 | R10 (Heading) | Each Transmission Operator shall perform the following as necessary for determining System Operating Limit (SOL) exceedances within its Transmission Operator Area: | | | | | | | | |
| TOP | TOP-001-3 | R10.1 | Within its Transmission Operator Area, monitor Facilities and the status of Special Protection Systems, and | S | Member TOs shall monitor Facilities and the status of Special Protection Systems (SPSs) with their area and inform PJM of any change in status. | PJM shall monitor the status of all Facilities and SPSs as necessary for determining System Operating Limit (SOL) exceedances within its Transmission Operator Area. | 1. Do you monitor the status of each Facility in your TO area? 2. Do you notify PJM of changes in status of your Facilities? 3. Do you monitor the status of each SPS in your TO area? 4. Do you notify PJM of changes in status of your SPSs? | 1. Exhibit evidence that you monitor the status of each Facility in your TO area. 2. Show evidence that you notify PJM of changes in status of your Facilities. 3. Exhibit evidence that you monitor the status of each SPS in your TO area. 4. Show evidence that you notify PJM of changes in status of your SPSs? | M-3 Transmission Operations; Section 1.2- Responsibilities for Transmission Owner's Operating Entity, Section 5- Index & Operating Procedures for PJM RTO Operations, Automatic Special Protection Scheme (SPS) Operating Criteria 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 | 4/1/2017 | 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 |
|----------|-----------------|--------------------|--|-----|--|--|---|--|--|------------------|---------------|
| TOP | TOP-001-3 | 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 | <p>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.</p> <p>2. If because of the reasons mentioned above the Member TO System Operators cannot comply with PJM Operating Instructions, the Member TO System Operators shall inform PJM as soon as possible.</p> | <p>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.</p> <p>2. PJM shall be prepared to implement alternate remedial actions if Member TOs cannot comply with Operating Instructions for the listed reasons.</p> | <p>1. Do you have documented procedures that require your System Operators to comply with PJM Operating Instructions?</p> <p>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?</p> <p>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?</p> | <p>1. Documentation of procedures that requires the Member TO System Operators to comply with PJM Operating Instructions.</p> <p>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.</p> <p>3. If the Member TO System Operators could not comply with PJM Operating Instructions, 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.</p> | <p>PJM Operating Agreement, Section 11.3.1e-Member Responsibilities, General</p> <p>Transmission Owners Agreement, Section 4.5</p> <p>M-3 Transmission Operations, Sections 1.2-Responsibilities for Transmission Owner's Operating Entity, 1.3-Transmission Operating Guidelines, 3.5-Voltage Control Actions</p> <p>M-37 Reliability Coordination, Sections 1.1-Policy Statements, Section 3-SOL and IROL Limits</p> <p>M-13 Emergency Operations, Section 5.5-Interconnection Reliability Operating Limits (IROL) Manual Load Dump Warning/Action</p> <p>M-12 Balancing Operations, Section 3.1.3-PJM Member Control Implementation, Section 5-Transmission Facility Control</p> | 4/1/2017 | None |
| TOP | TOP-001-3 | R13 | Each Transmission Operator shall ensure that a Real-time Assessment is performed at least once every 30 minutes. | S | <p>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.</p> <p>2. 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.</p> <p>3. If because of the reasons mentioned above the Member TO System Operators cannot comply with PJM Operating Instructions, the Member TO System Operators shall inform PJM as soon as possible.</p> | <p>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.</p> <p>2. PJM shall issue Operating Instructions to ensure the stable and reliable operation of the Bulk Electric System.</p> <p>3. 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.</p> | <p>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?</p> <p>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?</p> <p>3. 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?</p> <p>4. 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?</p> | <p>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.</p> <p>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.</p> <p>3. 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.</p> <p>4. If the Member TO System Operators could not comply with PJM Operating Instructions, 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.</p> | <p>PJM Operating Agreement, Section 11.3.1e-Member Responsibilities, General</p> <p>Transmission Owners Agreement, Section 4.5</p> <p>M-3 Transmission Operations, Sections 1.2-Responsibilities for Transmission Owner's Operating Entity, 1.3-Transmission Operating Guidelines, 3.5-Voltage Control Actions</p> <p>M-37 Reliability Coordination, Sections 1.1-Policy Statements, Section 3-SOL and IROL Limits</p> <p>M-13 Emergency Operations, Section 5.5-Interconnection Reliability Operating Limits (IROL) Manual Load Dump Warning/Action</p> <p>M-12 Balancing Operations, Section 3.1.3-PJM Member Control Implementation, Section 5-Transmission Facility Control</p> <p>M-39 Nuclear Plant Interface Coordination, Section 2.3-Notification for Loss of Calculation Capability</p> <p>May need a Manual change to require the 30 minutes.</p> | 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 |
|----------|-----------------|--------------------|---|-----|--|---|--|--|--|------------------|---------------|
| TOP | TOP-001-3 | 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 | <p>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.</p> <p>2. If because of the reasons mentioned above the Member TO System Operators cannot comply with PJM Operating Instructions, the Member TO System Operators shall inform PJM as soon as possible.</p> | <p>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.</p> <p>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.</p> | <p>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.</p> <p>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?</p> | <p>1. 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.</p> <p>2. If the Member TO System Operators could not comply with PJM Operating Instructions, 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.</p> | <p>PJM Operating Agreement, Section 11.3.1e-Member Responsibilities, General</p> <p>Transmission Owners Agreement, Section 4.5</p> <p>M-3 Transmission Operations, Sections 1.2-Responsibilities for Transmission Owner's Operating Entity, 1.3-Transmission Operating Guidelines, 3.5-Voltage Control Actions</p> <p>M-37 Reliability Coordination, Sections 1.1-Policy Statements, Section 3-SOL and IROL Limits</p> <p>M-13 Emergency Operations, Section 5.5-Interconnection Reliability Operating Limits (IROL) Manual Load Dump Warning/Action</p> <p>M-12 Balancing Operations, Section 3.1.3-PJM Member Control Implementation, Section 5-Transmission Facility Control</p> | 4/1/2017 | None |
| TOP | TOP-001-3 | 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 | <p>Member TO System Operators shall comply with PJM Operating Instructions to approve or deny planned outages and maintenance of communication channels between the following affected entities:</p> <p>(i) Member TO and PJM</p> <p>(ii) Member TO and a Member TO</p> <p>(iii) Where applicable, Member TO and an entity external to PJM</p> | <p>PJM shall issue Operating Instructions to approve or deny planned outages and maintenance of communication channels between the following affected entities:</p> <p>(i) Member TO and PJM</p> <p>(ii) Member TO and a Member TO</p> <p>(iii) Where applicable, Member TO and an entity external to PJM</p> | <p>Have you complied with PJM Operating Instructions to approve or deny planned outages and maintenance of communication channels between the following affected entities?</p> <p>(i) Member TO and PJM</p> <p>(ii) Member TO and a Member TO</p> <p>(iii) Where applicable, Member TO and an entity external to PJM</p> | <p>Exhibit evidence, such as, system operator logs, voice recordings, or incident reports etc., demonstrating that you complied with any PJM Operating Instructions to approve or deny planned outages and maintenance of communication channels between the following affected entities:</p> <p>(i) Member TO and PJM</p> <p>(ii) Member TO and a Member TO</p> <p>(iii) Where applicable, Member TO and an entity external to PJM</p> | <p>PJM Operating Agreement, Section 11.3.1e-Member Responsibilities, General</p> <p>Transmission Owners Agreement, Section 4.5</p> <p>M-1 Control Center and Data Exchange Requirements, Section 3.8: Planning, Coordination and Notification of System Changes</p> <p>M-3 Transmission Operations, Sections 1.2-Responsibilities for Transmission Owner's Operating Entity, 1.3-Transmission Operating Guidelines, 3.5-Voltage Control Actions</p> <p>M-37 Reliability Coordination, Sections 1.1-Policy Statements, Section 3-SOL and IROL Limits</p> <p>M-13 Emergency Operations, Section 5.5-Interconnection Reliability Operating Limits (IROL) Manual Load Dump Warning/Action</p> <p>M-12 Balancing Operations, Section 3.1.3-PJM Member Control Implementation, Section 5-Transmission Facility Control</p> | 4/1/2017 | None |

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|----------|-----------------|--------------------|---|-----|--|--|--|--|---|----------------------------|----------------------|
| TOP | TOP-001-3 | 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 | 4/1/2017 | None |
| TOP | TOP-001-3 | R19 | Each Transmission Operator shall have data exchange capabilities with the entities that it has identified that it needs data from in order to maintain reliability in its Transmission Operator Area. | S | The Member TO shall make required (see Manual 1: Attachment A, Part B EMS Services) EMS information available to PJM via PJMnet. PJMnet is a dual redundant frame relay network using the Inter-control Center Communications Protocol (ICCP). | PJM shall make any identified data that PJM and the Member TO needs available to the Member TO via PJMnet. PJMnet is a dual redundant frame relay network using the Inter-control Center Communications Protocol (ICCP). | Have you made required (see Manual 1: Attachment A, Part B EMS Services) EMS information available to PJM via PJMnet? | Exhibit evidence that you made required information from each category in Manual 1 Attachment A, Part B - EMS Services available to PJM via PJMnet. | Manual 1 Control Center Requirements, Section 2.2 PJM Member Data Exchange, Attachment A-Information Access Matrix | 4/1/2017 | None |
| TOP | TOP-002-2.1b | Purpose | Current operations plans and procedures are essential to being prepared for reliable operations, including response for unplanned events. | | | | | | | | |
| TOP | TOP-002-2.1b | R1. | Each Balancing Authority and Transmission Operator shall maintain a set of current plans that are designed to evaluate options and set procedures for reliable operation through a reasonable future time period. In addition, each Balancing Authority and Transmission Operator shall be responsible for using available personnel and system equipment to implement these plans to ensure that interconnected system reliability will be maintained. | S | <p>1. Each Member TO shall support PJM by providing PJM with expected transmission status, operating conditions and TO zone specific operating procedures, to facilitate the preparation of a set of current plans for reliable operation.</p> <p>2. In addition, each Member TO shall be responsible for using available personnel and system equipment to implement these plans to ensure that interconnected system reliability will be maintained.</p> | PJM shall work with the Member TO to maintain a current set of plans that are designed to evaluate options and set procedures for reliable operation through a reasonable future time period. | <p>1. Have you supported PJM by providing expected transmission status, operating conditions and TO zone specific operating procedures to PJM?</p> <p>2. Can the plans be implemented if required?</p> | <p>1. Exhibit procedural documents for planning future operations.</p> <p>2. Be prepared to explain the operational planning process to the auditors.</p> <p>3. Show how the plans use available personnel and system equipment.</p> | <p>PJM OA; 11.3-Member Responsibilities, Schedule 1, 1.7.15 Corrective Action</p> <p>M-3 Transmission Operations; Section 5-Index and Operating Procedures for PJM RTO Operation</p> <p>M-10 Pre-Scheduling Operations; Section 2.2-Planned Outages</p> <p>M-37 Reliability Coordination, Section 1.1-Policy Statements</p> <p>M-38, Operations Planning; Section 1-Seasonal Operating Studies, Section 3-Next Day Reliability Analysis, Attachment A-PJM-OATF Scope and Procedures OATF Scope</p> | TOP-002-2.1b 09/13/2012 | TOP-002-2.1b None |
| TOP | TOP-002-2.1b | R16. (Heading) | Subject to standards of conduct and confidentiality agreements, Transmission Operators shall, without any intentional time delay, notify their Reliability Coordinator and Balancing Authority of changes in capabilities and characteristics including but not limited to: | | | | | | | | |
| TOP | TOP-002-2.1b | R16.1. | Changes in transmission facility status. | S | The Member TO shall notify PJM of any changes in transmission facility status. | PJM shall provide changes of status of other TOs' (internal or external) transmission facilities to Member TOs. | <p>1. How do you inform PJM of changes in transmission facility status?</p> <p>2. Have you ever not informed PJM of a change in transmission facility status? Reason?</p> | <p>1. Examples of informing PJM of a change in transmission facility status.</p> <p>2. Why did you not inform PJM of a change in transmission facility status, if applicable?</p> | <p>M-3 Transmission Operations, Section 1.2-Responsibilities for Transmission Owner's Operating Entity, Section 4-Reportable Transmission Facility Outages</p> <p>M-38 Operations Planning, Section 2-Outage Coordination</p> <p>TOA - Article 4.6-Interconnection Facilities</p> <p>PJM OA Section 1.9.4-Forced Outages</p> | TOP-002-2.1b 09/13/2012 | TOP-002-2.1b None |

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|----------|-----------------|--------------------|--|-----|--|---|---|--|--|----------------------------|----------------------|
| TOP | TOP-002-2.1b | R16.2. | Changes in transmission facility rating. | S | The Member TO shall notify PJM of any changes in transmission facility rating through TERM or by other means agreed to by PJM. | Make TERM available for use by Member TOs. | 1. How do you inform PJM of changes in transmission facility ratings? 2. Have you ever not informed PJM of a change in transmission facility rating? Reason? | 1. Examples of informing PJM of a change in transmission facility ratings. 2. Explanation of why you did not inform PJM of a change in transmission facility ratings? | M-3 Transmission Operations, Section 1.2-Responsibilities for Transmission Owner's Operating Entity OA - Section 1.9.8-Transmission Owner Responsibilities PJM Open Access Transmission Tariff, Section 1.9.8-Transmission Owner Responsibilities TOA - Article 4.11-Transmission Facility Ratings | TOP-002-2.1b 09/13/2012 | TOP-002-2.1b None |
| TOP | TOP-002-2.1b | R17. | Balancing Authorities and Transmission Operators shall, without any intentional time delay, communicate the information described in the requirements R1 to R16 above to their Reliability Coordinator. | A | The Member TO system operators shall, without any intentional time delay, communicate the information described in the requirements R1 and R16 above to PJM. | | Have your system operators ever intentionally delayed communications as described in the requirements R1 and R16? | Description of the reasons why communications were intentionally delayed or attestation that there were no delays. | M-3 Transmission Operations, Section 1-Transmission Operations Requirements; Section 4-Reportable Transmission Facility Outages M-38 Operations Planning, Section 2-Outage Coordination TOA - Article 4 PJM OA Section 11.3.2, Sheet 43-44 | TOP-002-2.1b 09/13/2012 | TOP-002-2.1b None |
| TOP | TOP-002-2.1b | R19. | Each Balancing Authority and Transmission Operator shall maintain accurate computer models utilized for analyzing and planning system operations. | S | Each Member TO shall maintain and provide PJM with accurate modeling data to support the PJM operating models. | Notify Member TO of periodic model build due dates. | 1. Do you maintain accurate modeling data of your equipment? 2. Do you support the periodic update of the PJM operations models? 3. Do you let PJM know of significant changes between updates? | 1. Exhibit maintenance of your operating models. Show Process. 2. Exhibit evidence that you provide data as per Manual 3A Sections 1 and 2. | PJM OA, Section 6.3.2(b)-Designation of Local Transmission Facilities 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-Model Information and Transmission Facility Requirements, Section 3.1-Background on the PJM EMS System Model Update M-1 Control Center and Data Exchange Requirements, Section 1.10-Planning Systems M-14B PJM Region Transmission Planning Process Attachment H: Power System Modeling Data M-37 Reliability Coordination, Attachment A-PJM Reliability Plan | TOP-002-2.1b 09/13/2012 | TOP-002-2.1b None |
| TOP | TOP-003-1 | Purpose | Scheduled generator and transmission outages that may affect the reliability of interconnected operations must be planned and coordinated among Balancing Authorities, Transmission Operators, and Reliability Coordinators. | | | | | | | | |

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|----------|-----------------|--------------------|--|-----|---|---|--|---|---|------------------------|-------------------|
| TOP | TOP-003-1 | R1. | Generator Operators and Transmission Operators shall provide planned outage information. | S | The Member TO must submit transmission outage information to PJM based on the procedures in PJM Manual 3. | PJM shall inform Member TOs and external TOs of planned transmission and generation outage information. | Do you submit transmission outage information based on the procedures in PJM Manual 3? | Show examples that you provide outage information based on the procedures in PJM Manual 3 (eDART Tickets; PJM day ahead email; and day-ahead discussion with PJM Reliability Engineer). | PJM OA; 11.3-Member Responsibilities, Schedule 1, 1.7.15 Corrective Action M-3 Transmission Operations; Section 4-Reportable Transmission Facility Outages, Section 5-Index and Operating Procedures for PJM RTO Operation M-10 Pre-Scheduling Operations; Section 2.2-Planned Outages M-37 Reliability Coordination, Section 1.1-Policy Statements M-38, Operations Planning; Section 3-Next Day Reliability Analysis | TOP-003-1 10/1/2011 | TOP-003-1 None |
| TOP | TOP-003-1 | R1.2. | Each Transmission Operator shall provide outage information daily to affected Balancing Authorities and Transmission Operators for scheduled generator and bulk transmission outages planned for the next day (any foreseen outage of a transmission line or transformer greater than 100 kV or generator greater than 50 MW) that may collectively cause or contribute to an SOL or IROL violation or a regional operating area limitation. | S | The Member TO must submit transmission outage information to PJM based on the procedures in PJM Manual 3. | PJM shall inform Member TOs and external TOs of planned transmission and generation outage information. | Do you submit transmission outage information based on the procedures in PJM Manual 3? | Show examples that you provide outage information based on the procedures in PJM Manual 3 (eDART Tickets; PJM day ahead email; and day-ahead discussion with PJM Reliability Engineer). | PJM OA; 11.3-Member Responsibilities, Schedule 1, 1.7.15 Corrective Action M-3 Transmission Operations; Section 4-Reportable Transmission Facility Outages, Section 5-Index and Operating Procedures for PJM RTO Operation M-10 Pre-Scheduling Operations; Section 2.2-Planned Outages M-37 Reliability Coordination, Section 1.1-Policy Statements M-38, Operations Planning; Section 3-Next Day Reliability Analysis | TOP-003-1 10/1/2011 | TOP-003-1 None |
| TOP | TOP-003-1 | R1.3. | Such information shall be available by 1200 Central Standard Time for the Eastern Interconnection and 1200 Pacific Standard Time for the Western Interconnection. | S | The TO must submit transmission outage information based on the procedures in PJM Manual 3. | PJM shall inform Member TOs and external TOs of planned transmission and generation outage information by 1200 Central Standard Time. | Do you submit transmission outage information based on the procedures in PJM Manual 3? | Show examples that you provide outage information based on the procedures in PJM Manual 3 (eDART Tickets; PJM day ahead email; and day-ahead discussion with PJM Reliability Engineer). | PJM OA; 11.3-Member Responsibilities, Schedule 1, 1.7.15 Corrective Action M-3 Transmission Operations; Section 4-Reportable Transmission Facility Outages, Section 5-Index and Operating Procedures for PJM RTO Operation M-10 Pre-Scheduling Operations; Section 2.2-Planned Outages M-37 Reliability Coordination, Section 1.1-Policy Statements M-38, Operations Planning; Section 3-Next Day Reliability Analysis | TOP-003-1 10/1/2011 | TOP-003-1 None |

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|----------|-----------------|--------------------|---|-----|--|---|---|---|--|------------------------|-------------------|
| TOP | TOP-003-1 | R2. | Each Transmission Operator, Balancing Authority, and Generator Operator shall plan and coordinate scheduled outages of system voltage regulating equipment, such as automatic voltage regulators on generators, supplementary excitation control, synchronous condensers, shunt and series capacitors, reactors, etc., among affected Balancing Authorities and Transmission Operators as required. | S | The TO must submit transmission system voltage regulating equipment outage information based on the procedures in PJM Manual 3. | PJM shall plan and coordinate scheduled system voltage regulating equipment outages with Member TOs and external TOs. | Do you submit transmission system voltage regulating equipment outage information based on the procedures in PJM Manual 3? | Show examples that you provide system voltage regulating equipment outage information based on the procedures in PJM Manual 3 (eDART Tickets; PJM day ahead email; and day-ahead discussion with PJM Reliability Engineer). | PJM OA; 11.3-Member Responsibilities, Schedule 1, 1.7.15 Corrective Action M-3 Transmission Operations; Section 4-Reportable Transmission Facility Outages-Section 5-Index and Operating Procedures for PJM RTO Operation M-10 Pre-Scheduling Operations; Section 2.2-Planned Outages M-37 Reliability Coordination, Section 1.1-Policy Statements M-38, Operations Planning; Section 3-Next Day Reliability Analysis | TOP-003-1 10/1/2011 | TOP-003-1 None |
| TOP | TOP-003-1 | R3. | Each Transmission Operator, Balancing Authority, and Generator Operator shall plan and coordinate scheduled outages of telemetering and control equipment and associated communication channels between the affected areas. | S | The Member TO shall inform PJM of scheduled outages of telemetering and control equipment and associated communication channels as required by PJM Manual 1 Section 3.8: Planning, Coordination and Notification of System Changes and EventsAttachment C . | PJM shall inform affected Member TOs and external TOs of scheduled outages of telemetering and control equipment and associated communication channels. | Do you submit scheduled outages of telemetering and control equipment and associated communication channels based on the procedures in PJM Manual 1 Section 3.8: Planning, Coordination and Notification of System Changes and EventsAttachment C ? | Show examples that you provided scheduled telecommunications outage information 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 | TOP-003-1 10/1/2011 | TOP-003-1 None |
| TOP | TOP-004-2 | Purpose | To ensure that the transmission system is operated so that instability, uncontrolled separation, or cascading outages will not occur as a result of the most severe single Contingency and specified multiple Contingencies. | | | | | | | | |
| TOP | TOP-004-2 | R1. | Each Transmission Operator shall operate within the Interconnection Reliability Operating Limits (IROLs) and System Operating Limits (SOLs). | S | 1. Member TO system operators shall comply with Operating Instructions PJM Directives to operate within the Interconnection Reliability Operating Limits (IROLs) or Operating Instructions to PJM-instructions operate within the System Operating Limits (SOLs) unless such actions would violate safety, equipment, regulatory or statutory requirements. If, because of the reasons mentioned above, the Operating Instructions PJM Directives to operate within the Interconnection Reliability Operating Limits (IROLs) or PJM instructions operate within the System Operating Limits (SOLs) cannot be complied with, the Member TO system operator shall inform PJM as soon as possible. 2. Member TO will monitor SOLs. | 1. PJM shall issue Operating Instructions PJM Directives to operate within the Interconnection Reliability Operating Limits (IROLs). 2. PJM shall issue Operating Instructions PJM-instructions to operate within the System Operating Limits (SOLs). 3. PJM shall be prepared to implement alternate remedial actions if Member TOs cannot comply with Operating Instructions PJM Directives or PJM-instructions for the listed reasons. | 1. Have you complied with Operating Instructions PJM Directives to operate within the Interconnection Reliability Operating Limits (IROLs) or Operating Instructions PJM-instructions operate within the System Operating Limits (SOLs) unless such actions violated safety, equipment, regulatory or statutory requirements? 2. Do you monitor SOLs in your area? | 1. Evidence such as system operator logs, voice recordings or incident reports etc., for any incidents where your system operators had to follow Operating Instructions PJM Directives to operate within the Interconnection Reliability Operating Limits (IROLs) or Operating Instructions PJM-instructions operate within the System Operating Limits (SOLs). 2. Evidence that you monitor SOLs. | PJM Operating Agreement, 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 | 1/22/2009 | None |

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|----------|-----------------|--------------------|--|-----|---|--|---|---|--|------------------|---------------|
| TOP | TOP-004-2 | R2. | Each Transmission Operator shall operate so that instability, uncontrolled separation, or cascading outages will not occur as a result of the most severe single contingency. | S | Member TO system operators shall comply with <u>Operating Instructions PJM Directives or PJM instructions</u> issued by PJM unless such actions would violate safety, equipment, regulatory or statutory requirements. If, because of the reasons mentioned above, the <u>Operating Instructions PJM Directives or PJM instructions</u> issued by PJM to operate so that instability, uncontrolled separation, or cascading outages will not occur as a result of the most severe single contingency cannot be complied with, the Member TO system operator shall inform PJM as soon as possible. | 1. PJM shall issue <u>Operating Instructions PJM Directives or PJM instructions</u> so that instability, uncontrolled separation, or cascading outages will not occur as a result of the most severe single contingency. 2. PJM shall be prepared to implement alternate remedial actions if Member TOs cannot comply with <u>Operating Instructions PJM Directives or PJM instructions</u> for the listed reasons. 3. PJM shall determine their most severe single contingency. | Have you complied with <u>Operating Instructions PJM Directives or PJM instructions</u> issued by PJM unless such actions violated safety, equipment, regulatory or statutory requirements? | Evidence such as system operator logs, voice recordings or incident reports etc., for any incidents where your system operators had to follow <u>Operating Instructions PJM Directives or PJM instructions</u> issued by PJM. | PJM Operating Agreement, 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 | 1/22/2009 | None |
| TOP | TOP-004-2 | R3. | Each Transmission Operator shall operate to protect against instability, uncontrolled separation, or cascading outages resulting from multiple outages, as specified by its Reliability Coordinator. | S | Member TO system operators shall comply with <u>Operating Instructions PJM Directives or PJM instructions</u> unless such actions would violate safety, equipment, regulatory or statutory requirements. If, because of the reasons mentioned above, the <u>Operating Instructions PJM Directives or PJM instructions</u> to operate to protect against instability, uncontrolled separation, or cascading outages resulting from multiple outages, as specified by the appropriate (RFC or SERC) policy cannot be complied with, the Member TO system operator shall inform PJM as soon as possible. | 1. PJM shall issue <u>Operating Instructions PJM Directives or PJM instructions</u> to operate to protect against instability, uncontrolled separation, or cascading outages resulting from multiple outages, as specified by the appropriate (RFC or SERC) policy. 2. PJM shall be prepared to implement alternate remedial actions if Member TO system operators cannot comply with <u>Operating Instructions PJM Directives or PJM instructions</u> to operate to protect against instability, uncontrolled separation, or cascading outages resulting from multiple outages, as specified by the appropriate (RFC or SERC) policy for the listed reasons. | Have you complied with <u>Operating Instructions PJM Directives or PJM instructions</u> unless such actions violated safety, equipment, regulatory or statutory requirements? | Evidence such as system operator logs, voice recordings or incident reports etc., for any incidents where your operators had to follow <u>Operating Instructions PJM Directives or PJM instructions</u> . | PJM Operating Agreement, 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 | 1/22/2009 | 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 |
|----------|-----------------|--------------------|---|-----|---|--|---|---|---|------------------|---------------|
| TOP | TOP-004-2 | R4. | If a Transmission Operator enters an unknown operating state (i.e. any state for which valid operating limits have not been determined), it will be considered to be in an emergency and shall restore operations to respect proven reliable power system limits within 30 minutes. | S | <p>1. If the Member TO analysis packages are unavailable for more than 15 minutes, the Member TO shall coordinate with PJM to see if the PJM analysis packages are available. This is not an unknown operating state.</p> <p>2. If PJM experiences a data communication failure or analysis packages are unavailable</p> <p>PJM will rely on the Member TO to monitor the Member TOs BES facilities and supply operating information to PJM verbally, if appropriate.</p> <p>3. Member TO system operators shall comply with Operating Instructions instructions issued by PJM unless such actions would violate safety, equipment, regulatory or statutory requirements. If, because of the reasons mentioned above, the Operating Instructions PJM instructions cannot be complied with, the Member TO system operator shall inform PJM as soon as possible.</p> | <p>1. If the PJM analysis packages are unavailable (possibly because of an EMS outage), PJM shall coordinate with the appropriate Member TOs to see if their analysis packages are available. This is not an unknown operating state.</p> <p>2. If both the Member TO and PJM EMS analysis packages are not functioning or unavailable, then PJM shall be considered to be in an unknown operating state, then PJM will work with the Member TO to return the system to a known operating condition within 30 minutes.</p> <p>3. PJM shall issue Operating Instructions PJM instructions if it enters an unknown operating state and implement alternate remedial actions if Member TOs cannot comply with the Operating Instructions PJM instructions for the listed reasons.</p> | <p>1. Has your analysis packages been unavailable for more than 15 minutes and did you coordinate with PJM to see if the PJM analysis packages are available?</p> <p>2. Have you had to monitor your BES facilities and supply operating information to PJM verbally, if appropriate?</p> <p>3. Have you complied with Operating Instructions instructions issued by PJM unless such actions would violate safety, equipment, regulatory or statutory requirements? If, because of the reasons mentioned above, the Operating Instructions PJM instructions cannot be complied with, have you informed PJM as soon as possible?</p> | <p>1. Example logs or reports about your analysis packages being unavailable for more than 15 minutes and your coordination with PJM to see if the PJM analysis packages are available.</p> <p>2. Example logs or reports about when you had to monitor your BES facilities and supply operating information to PJM verbally, if appropriate.</p> <p>3. Evidence such as system operator logs, voice recordings or incident reports etc., for any incidents where your system operators had to follow Operating Instructions PJM instructions.</p> | <p>PJM Operating Agreement, Section 11.3.1e-Member Responsibilities, General</p> <p>Transmission Owners Agreement, Section 4.5</p> <p>M-3 Transmission Operations, Sections 1.2-Responsibilities for Transmission Owner's Operating Entity, 1.3-Transmission Operating Guidelines, 3.5-Voltage Control Actions</p> <p>M-37 Reliability Coordination, Sections 1.1-Policy Statements, Section 3-SOL and IROL Limits</p> <p>M-13 Emergency Operations, Section 5.5-Interconnection Reliability Operating Limits (IROL) Manual Load Dump Warning/Action</p> <p>M-12 Balancing Operations, Section 3.1.3-PJM Member Control Implementation, Section 5-Transmission Facility Control</p> <p>M-39 Nuclear Plant Interface Coordination, Section 2.3-Notification for Loss of Calculation Capability</p> | 1/22/2009 | None |
| TOP | TOP-004-2 | R5. | Each Transmission Operator shall make every effort to remain connected to the Interconnection. If the Transmission Operator determines that by remaining interconnected, it is in imminent danger of violating an IROL or SOL, the Transmission Operator may take such actions, as it deems necessary, to protect its area. | S | <p>Member TO system operators shall comply with Operating Instructions PJM instruction or PJM Directives unless such actions would violate safety, equipment, regulatory or statutory requirements. If, because of the reasons mentioned above, the Operating Instructions PJM instruction or PJM Directives cannot be complied with, the Member TO system operator shall inform PJM as soon as possible.</p> | <p>1. PJM shall issue Operating Instructions PJM instructions or PJM Directives so that it remains connected to the rest of the Eastern Interconnection, unless it deems it necessary because PJM is in imminent danger of violating an IROL or SOL or to protect the PJM area.</p> <p>2. PJM shall be prepared to implement alternate remedial actions if Member TOs cannot comply with Operating Instructions PJM Directives or instructions so that PJM remains connected to the rest of the Eastern Interconnection, unless PJM deems necessary to separate because PJM is in imminent danger of violating an IROL or SOL or to protect the PJM area for the listed reasons.</p> | <p>Have you complied with Operating Instructions PJM instruction or PJM Directives unless such actions violated safety, equipment, regulatory or statutory requirements?</p> | <p>Evidence such as system operator logs, voice recordings or incident reports etc., for any incidents where your operators had to follow Operating Instructions PJM Directives or PJM instructions.</p> | <p>PJM Operating Agreement, Section 11.3.1e-Member Responsibilities, General</p> <p>Transmission Owners Agreement, Section 4.5</p> <p>M-3 Transmission Operations, Sections 1.2-Responsibilities for Transmission Owner's Operating Entity, 1.3-Transmission Operating Guidelines, 3.5-Voltage Control Actions</p> <p>M-37 Reliability Coordination, Sections 1.1-Policy Statements, Section 3-SOL and IROL Limits</p> <p>M-13 Emergency Operations, Section 5.5-Interconnection Reliability Operating Limits (IROL) Manual Load Dump Warning/Action</p> <p>M-12 Balancing Operations, Section 3.1.3-PJM Member Control Implementation, Section 5-Transmission Facility Control</p> | 1/22/2009 | None |
| TOP | TOP-006-2 | Purpose | To ensure critical reliability parameters are monitored in real-time. | | Only changes from V1 to V2 were in R4. | | | | | | |

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|----------|-----------------|--------------------|--|-----|---|--|---|---|--|------------------------|-------------------|
| TOP | TOP-006-2 | R1. | Each Transmission Operator and Balancing Authority shall know the status of all generation and transmission resources available for use. | S | 1. The Member TO shall know the status of all transmission resources available for use in their area and provide this information to PJM. 2. The Member TO shall know the status of all generation resources available for use in their area. | 1. PJM shall use information provided by Member TOs to know the status of all transmission resources available for use. 2. PJM shall know the status of all generation resources available for use. 3. PJM shall make transmission and generator information available to Member TOs. | 1. Do you have any transmission resources that the status is not telemetered into your EMS? 2. Do you pass information on status of all Member TO transmission resources to PJM? 3. Do you know the status of all generation resources available for use in your area? | 1. Example demonstration that transmission and generation resources in the Member TO area are monitored. 2. Example demonstration that all transmission statuses are sent to PJM. | M-1 Control Center and Data Exchange Requirements, Section 3.6-Real-Time Analysis Monitoring Requirements for System Security M-3 Transmission Operations; Section 1.2-Responsibilities for TO's Operating Entity | TOP-006-2 10/1/2011 | TOP-006-2 None |
| TOP | TOP-006-2 | R2. | Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall monitor applicable transmission line status, real and reactive power flows, voltage, load-tap-changer settings, and status of rotating and static reactive resources. | S | 1. Each Member TO shall monitor PJM Monitored Facilities status, real and reactive power flows, voltage, load-tap-changer settings, and status of rotating and static reactive resources in their area. 2. Each Member TO shall provide to PJM its PJM Monitored Facilities status, real and reactive power flows, voltage, load-tap-changer settings, and status of static reactive resources for its area. | 1. PJM shall use information provided by Member TOs to monitor applicable transmission line status, real and reactive power flows, voltage, load-tap-changer settings, and status of static reactive resources. 2. PJM shall use information provided by Member GOs to monitor applicable status of rotating reactive resources. 3. PJM shall make transmission and generator information available to Member TOs. | 1. Do you have any of the following that is not monitored for your area: PJM Monitored Facilities status, real and reactive power flows, voltage, load-tap-changer settings, and status of rotating and static reactive resources? 2. Do you provide to PJM Monitored Facilities status, real and reactive power flows, voltage, load-tap-changer settings, and status of static reactive resources for your area? | 1. Example demonstration that PJM Monitored Facilities status, real and reactive power flows, voltage, load-tap-changer settings, and status of rotating and static reactive resources in the Member TO area are monitored. 2. Example demonstration that all PJM Monitored Facilities status, real and reactive power flows, voltage, load-tap-changer settings, and status of static reactive resources are sent to PJM. | M-1 Control Center and Data Exchange Requirements, Section 3.6-Real-Time Analysis Monitoring Requirements for System Security M-3 Transmission Operations; Section 1.2-Responsibilities for TO's Operating Entity | TOP-006-2 10/1/2011 | TOP-006-2 None |
| TOP | TOP-006-2 | R3. | Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall provide appropriate technical information concerning protective relays to their operating personnel. | S | 1. For protection systems applied at 345 kV and above each Member TO shall communicate via EDART any known conditions which increase the risk that protection systems will not perform as designed. Reportable conditions include protection system unavailability and any that reduce reliability (confidence that fault will be cleared), reduce security (confidence that only faulted zones will be interrupted), or reduce the speed of fault clearing. 2. For facilities below 345 kV designated as PJM Monitored Facility, Member TOs shall communicate known conditions which for a fault, without additional relay failures or other contingencies, will result in the tripping of additional zones of protection beyond the faulted zone. 3. Each Member TO shall provide appropriate technical information concerning protective relays as requested by PJM. | PJM shall modify contingency analysis if real-time changes to protective relays deems it necessary. | 1. Do you communicate via EDART any known conditions which increase the risk that protection systems applied at 345 kV and above will not perform as designed? Reportable conditions include protection system unavailability and any that reduce reliability (confidence that fault will be cleared), reduce security (confidence that only faulted zones will be interrupted), or reduce the speed of fault clearing? 2. Do you communicate known conditions which for a fault, without additional relay failures or other contingencies, will result in the tripping of additional zones of protection beyond the faulted zone for facilities below 345 kV, designated as PJM Monitored Facility? 3. Did you provide appropriate technical information concerning protective relays as requested by PJM? | 1. Exhibit communication to PJM through EDART of information on protective relays installed at 345 kV and above. 2. Exhibit communication to PJM of information that effects normal fault clearing on protective relays installed at below 345 kV examples. 3. Provide examples of providing appropriate technical information concerning protective relays when requested by PJM. | M-3 Transmission Operations; Section 4.2.2 Hotline / In Service Work Requests /Protective Relay Outages/Failures | TOP-006-2 10/1/2011 | TOP-006-2 None |
| TOP | TOP-006-2 | R5. | Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall use monitoring equipment to bring to the attention of operating personnel important deviations in operating conditions and to indicate, if appropriate, the need for corrective action. | S | Each Member TO shall use monitoring equipment to bring to the attention (alarming) of operating personnel important deviations in operating conditions and to indicate, if appropriate, the need for corrective action. | PJM shall use monitoring equipment to bring to the attention (alarming) of PJM operating personnel important deviations in operating conditions and to indicate, if appropriate, the need for corrective action. | Do you have monitoring equipment used to bring to the attention (alarming) of operating personnel important deviations in operating conditions and to indicate, if appropriate, the need for corrective action? | Describe the monitoring equipment used to bring to the attention (alarming) of operating personnel important deviations in operating conditions and to indicate, if appropriate, the need for corrective action. | M-3 Transmission Operations; Section 1.2-Responsibilities for TO's Operating Entities, Section 4.2-Scheduling Transmission Outage Requests-Protection System Coordination | TOP-006-2 10/1/2011 | TOP-006-2 None |
| TOP | TOP-006-2 | R6. | Each Balancing Authority and Transmission Operator shall use sufficient metering of suitable range, accuracy and sampling rate (if applicable) to ensure accurate and timely monitoring of operating conditions under both normal and emergency situations. | S | Follow metering requirements in PJM Manual M1 Sections 3.6, 5.4, and 5.5 for BES equipment. | PJM shall keep PJM Manual 1 Section 5 up to date. | Do you have any metering that does not meet the M1 Sections 3.6, 5.4, and 5.5 requirements for BES equipment at this time? | Exhibit example documentation (technical specifications, test reports, etc.) of meter meeting the requirements of M1 Sections 3.6, 5.4, and 5.5 for BES equipment. | M-1 Control Center and Data Exchange Requirements, Section 3.6-Real-Time Analysis Monitoring Requirements for System Security, Section 5-Metering Requirements, Attachment B-Schedule of Data Submittals | TOP-006-2 10/1/2011 | TOP-006-2 None |

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|----------|-----------------|--------------------|---|-----|--|--|---|--|--|------------------------|-------------------|
| TOP | TOP-006-2 | R7. | Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall monitor system frequency. | A | Each Member TO shall monitor system frequency in their zone. | | 1. Do you monitor system frequency in your zone? 2. How many locations? | Exhibit example output from frequency sources (screens or printouts). Multiple examples if available. | M-1 Control Center and Data Exchange Requirements, Section 3.6-Real-Time Analysis Monitoring Requirements for System Security, Section 5-Metering Requirements, Attachment B-Schedule of Data Submittals | TOP-006-2 10/1/2011 | TOP-006-2 None |
| TOP | TOP-007-0 | Purpose | This standard ensures SOL and IROL violations are being reported to the Reliability Coordinator so that the Reliability Coordinator may evaluate actions being taken and direct additional corrective actions as needed. | | | | | | | | |
| TOP | TOP-007-0 | R2 | Following a Contingency or other event that results in an IROL violation, the Transmission Operator shall return its transmission system to within IROL as soon as possible, but not longer than 30 minutes. | S | Member TO system operators shall comply with Operating Instructions PJM Directives unless such actions would violate safety, equipment, regulatory or statutory requirements. If, because of the reasons mentioned above, the Operating Instructions PJM Directives cannot be complied with, the Member TO system operator shall inform PJM as soon as possible. | 1. PJM shall issue Operating Instructions PJM Directives 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 not longer than 30 minutes. 2. PJM shall be prepared to implement alternate remedial actions if Member TOs cannot comply with Operating Instructions PJM Directives for the listed reasons. | Have you complied with Operating Instructions PJM Directives issued by PJM unless such actions violated safety, equipment, regulatory or statutory requirements? | Evidence such as system operator logs, voice recordings or incident reports etc., for any incidents where your operators had to follow Operating Instructions PJM Directives . | PJM Operating Agreement, 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 | 6/18/2007 | None |
| TOP | TOP-007-0 | R3 | A Transmission Operator shall take all appropriate actions up to and including shedding firm load, or directing the shedding of firm load, in order to comply with Requirement R2. | S | Member TO system operators shall comply with Operating Instructions PJM Directives unless such actions would violate safety, equipment, regulatory or statutory requirements. If, because of the reasons mentioned above, the Operating Instructions PJM Directives cannot be complied with, the Member TO system operator shall inform PJM as soon as possible. | 1. PJM shall issue Operating Instructions PJM Directives up to and including directing the shedding of firm load, in order to comply with Requirement R2. 2. PJM shall be prepared to implement alternate remedial actions if Member TOs cannot comply with Operating Instructions PJM Directives in order to comply with Requirement R2 for the listed reasons. | Have you complied with Operating Instructions PJM Directives up to and including the shedding of firm load? | Evidence such as system operator logs, voice recordings or incident reports etc., for any incidents where your operators had to follow Operating Instructions PJM Directives up to and including directing the shedding of firm load. | PJM Operating Agreement, 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 | 6/18/2007 | None |

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|----------|-----------------|--------------------|--|-----|---|---|---|--|--|------------------|---------------|
| TOP | TOP-008-1 | Purpose | To ensure Transmission Operators take actions to mitigate SOL and IROL violations. | | | | | | | | |
| TOP | TOP-008-1 | R1. | The Transmission Operator experiencing or contributing to an IROL or SOL violation shall take immediate steps to relieve the condition, which may include shedding firm load. | S | 1. Member TO system operators shall comply with Operating Instructions PJM Directives or the PJM instructions unless such actions would violate safety, equipment, regulatory or statutory requirements. If, because of the reasons mentioned above, the Operating Instructions PJM Directives or the PJM instructions cannot be complied with, the Member TO system operator shall inform PJM as soon as possible. 2. Member TO will monitor SOLs within their area. | 1. When experiencing or contributing to an IROL violation PJM shall issue Operating Instructions directives to take immediate steps to relieve the condition, which may include shedding firm load. 2. PJM shall issue Operating Instructions PJM instructions to operate within the System Operating Limits (SOLs). 3. PJM shall be prepared to implement alternate remedial actions if Member TOs cannot comply with Operating Instructions PJM Directives or PJM instructions for the listed reasons. | 1. Have you complied with Operating Instructions PJM Directives or the PJM instructions unless such actions violated safety, equipment, regulatory or statutory requirements since the last audit? 2. Do you monitor SOLs in your area? | 1. Evidence such as system operator logs, voice recordings or incident reports etc., for any incidents where your operators had to follow Operating Instructions PJM Directives or the PJM instructions since the last audit. 2. Evidence that you monitor SOLs. | PJM Operating Agreement, 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 | 6/18/2007 | None |
| TOP | TOP-008-1 | R2. | Each Transmission Operator shall operate to prevent the likelihood that a disturbance, action, or inaction will result in an IROL or SOL violation in its area or another area of the Interconnection. In instances where there is a difference in derived operating limits, the Transmission Operator shall always operate the Bulk Electric System to the most limiting parameter. | S | 1. Member TO system operators shall comply with Operating Instructions PJM Directives or instructions unless such actions would violate safety, equipment, regulatory or statutory requirements. If, because of the reasons mentioned above, the Operating Instructions PJM Directives or instructions cannot be complied with, the Member TO system operator shall inform PJM as soon as possible. 2. Member TO will monitor SOLs within their area. 3. The Member TO and PJM shall always operate the Bulk Electric System to the most limiting parameter or rating in case of a discrepancy between ratings. | 1. PJM shall operate and issue Operating Instructions PJM Directives or PJM instructions to prevent the likelihood that a disturbance, action, or inaction will result in an IROL or SOL violation in the PJM area or another area of the Interconnection. 2. In instances where there is a difference in derived operating limits between the Member TO and PJM, PJM shall always operate the Bulk Electric System to the most limiting parameter or rating in case of a discrepancy between ratings. | 1. Have you complied with Operating Instructions PJM Directives or PJM instructions unless such actions violated safety, equipment, regulatory or statutory requirements? 2. Have you had to coordinate with PJM because of a difference in derived operating limits between you and PJM? 3. Did you then operate to the most limiting parameter/rating? | 1. Provide documented evidence, voice recordings etc. of any such incident and your compliance with Operating Instructions PJM Directives or PJM instructions since your last audit. 2. Evidence that you monitor SOLs. 3. Example evidence that you always operate the Bulk Electric System to the most limiting parameter or rating in case of a discrepancy between ratings. | M-3 Transmission Operations, Section 1.3-Transmission Operating Guidelines M-37 Reliability Coordination, Section 3.2-Monitoring of SOL and IROL Limits, Section 5.3-Mitigating Operational Problems, Attachment A-PJM Reliability Plan, Section C.2-Common Tasks for Next-Day and Current-Day Operations | 6/18/2007 | None |
| TOP | TOP-008-1 | R3. | The Transmission Operator shall disconnect the affected facility if the overload on a transmission facility or abnormal voltage or reactive condition persists and equipment is endangered. In doing so, the Transmission Operator shall notify its Reliability Coordinator and all neighboring Transmission Operators impacted by the disconnection prior to switching, if time permits, otherwise, immediately thereafter. | S | 1. Member TO system operators shall comply with Operating Instructions PJM instructions unless such actions would violate safety, equipment, regulatory or statutory requirements. If, because of the reasons mentioned above, the Operating Instructions PJM instructions cannot be complied with, the Member TO system operator shall inform PJM as soon as possible. 2. If equipment is endangered, the Member TO shall inform PJM. | 1. PJM shall issue Operating Instructions PJM instructions to disconnect the affected facility if the overload on a transmission facility or abnormal voltage or reactive condition persists and equipment is endangered. 2. PJM shall notify neighboring TOPs and RCs impacted by a disconnection prior to switching, if time permits, otherwise, immediately thereafter. | 1. Have you had any incidents where your system operator had to comply with Operating Instructions PJM instructions since the last audit? 2. Have you had any incidents where equipment was endangered and you informed PJM? | 1. Provide documented evidence, voice recordings etc. of any such incident and your compliance with Operating Instructions PJM instructions since your last audit. 2. Evidence that you informed PJM when equipment was endangered. | M-3 Transmission Operations; Section 1.2-Responsibilities for TO's Operating Entities-Entity TOA, Section 4.7-Actions in an Emergency, Section-5.1 Procedures | 6/18/2007 | None |

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|----------|-----------------|--------------------|--|-----|---|---|--|--|--|---|--|
| TOP | TOP-008-1 | R4. | The Transmission Operator shall have sufficient information and analysis tools to determine the cause(s) of SOL violations. This analysis shall be conducted in all operating timeframes. The Transmission Operator shall use the results of these analyses to immediately mitigate the SOL violation. | S | 1. Each Member TO shall maintain and provide PJM with accurate modeling data to support the PJM operating models. 2. The Member TO shall know the status of all transmission resources available for use in their area and provide this information to PJM. 3. Member TO system operators shall comply with <u>Operating Instructions PJM-instructions</u> unless such actions would violate safety, equipment, regulatory or statutory requirements. If, because of the reasons mentioned above, the <u>Operating Instructions PJM-instructions</u> cannot be complied with, the Member TO system operator shall inform PJM as soon as possible. | 1. PJM shall have sufficient information and analysis tools to determine the cause(s) of SOL violations. 2. PJM shall perform analysis to determine the cause of SOL violations in all operating timeframes. 3. PJM shall issue <u>Operating Instructions PJM-instructions</u> to the Member TO to immediately mitigate an SOL violation. 4. Share results analysis to determine the cause(s) of SOL violations conducted in all operating timeframes. | 1. Do you maintain and provide PJM with accurate modeling data to support the PJM operating models? 2. Do you know the status of all transmission resources available for use in your area and provide this information to PJM? 3. Have you had any incidents where your system operator has had to follow <u>Operating Instructions PJM-instructions</u> since the last audit? | 1. Example evidence that you maintain and provide PJM with accurate modeling data to support the PJM operating models. 2. Example evidence that you know the status of all transmission resources available for use in your area and provide this information to PJM. 3. Example evidence such as system operator logs, voice recordings or incident reports etc., for any incidents where your operators had to follow <u>Operating Instructions PJM-instructions</u> since the last audit. | M-3 Transmission Operations, Section 1.3-Transmission Operating Guidelines M-37 Reliability Coordination, Section 3.2-Monitoring of SOL and IROL Limits, Section 5.3-Mitigating Operational Problems, Attachment A-PJM Reliability Plan, Section C.2-Common Tasks for Next-Day and Current-Day Operations M-3A Energy Management System Model Updates and Quality Assurance, Section 1.2 Electrical Model Responsibilities for Transmission Owner's Operating Entity, Section 1.6 Real-Time Telemetry Data Requirements for System Reliability, Section 2 Model Information and Transmission Facility Requirements | 6/18/2007 | None |
| VAR | VAR-001-3 | 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. | | | | | | | | |
| VAR | VAR-001-3 | R1. | Each Transmission Operator, individually and jointly with other Transmission Operators, shall ensure that formal policies and procedures are developed, maintained, and implemented for monitoring and controlling voltage levels and MVAR flows within their individual areas and with the areas of neighboring Transmission Operators. | S | 1. Follow PJM Manual 3, Sections 3.3 and 3.5. 2. Member TO may also establish complementary policies and procedures. | PJM shall ensure that formal policies and procedures are developed, maintained, and implemented in Manual 3-Sections 3.3 and 3.5 for monitoring and controlling voltage levels and MVAR flows within the Member TO areas and with the areas of neighboring Transmission Operators. | 1. Do you follow PJM Manual 3-Sections 3.3 and 3.5? 2. Have you established complementary policies and procedures for monitoring and controlling voltage levels and MVAR flows within your area? | Exhibit complimentary policies and procedures, if developed, for monitoring and controlling voltage levels and MVAR flows within your area. | PJM Operating Agreement; 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 | VAR-001-2 10/1/2011 VAR-001-3 1/1/2014 | VAR-001-2 12/31/2013 VAR-001-3 09/30/2014 |
| VAR | VAR-001-3 | R4. | Each Transmission Operator shall specify a voltage or Reactive Power schedule at the interconnection between the generator facility and the Transmission Owner's facilities to be maintained by each generator. The Transmission Operator shall provide the voltage or Reactive Power schedule to the associated Generator Operator and direct the Generator Operator to comply with the schedule in automatic voltage control mode (AVR in service and controlling voltage). The voltage schedule is a target voltage to be maintained within a tolerance band during a specified period. | S | 1. Each Member TO shall use PJM Manual 3, Section 3.3.3 default schedule or establish and coordinate voltage schedules for all generators within its zone with PJM and Generator Operator. 2. If necessary to change the voltage schedule, coordinate with PJM and the Generator Operator. 3. Direct the Generator Operator to comply with the schedule in automatic voltage control mode (AVR in service and controlling voltage). | 1. Keep PJM Manual 3 Section 3.3 up to date. 2. Maintain eDart. | 1. Have you established and coordinated voltage schedules for all generators within your zone with PJM and the Generator Operator? 2. If necessary to change the voltage schedule, did you coordinate with PJM and the Generator Operator. 3. Have you instructed the Generator Operator to comply with the schedule in automatic voltage control mode (AVR in service and controlling voltage)? | 1. Exhibit list of generator voltage schedules. 2. Example documented evidence or recordings demonstrating coordination with the Generator Operator and PJM, if necessary, to change the voltage schedule. 3. Provide example documented evidence or recordings instructing the generator to follow the voltage schedules in automatic voltage control mode (AVR in service and controlling voltage)?. | PJM Operating Agreement; 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 M-14D Generator Operational Requirements, Section 7.1.2-Voltage and Reactive Control | VAR-001-2 10/1/2011 VAR-001-3 1/1/2014 | VAR-001-2 12/31/2013 VAR-001-3 09/30/2014 |
| VAR | VAR-001-3 | R6. | The Transmission Operator shall know the status of all transmission Reactive Power resources, including the status of voltage regulators and power system stabilizers. | S | Each Member TO shall know the status of all transmission Reactive Power resources, voltage regulators and power system stabilizers. | 1. PJM shall know the status of all rotating reactive resources, voltage regulators and power system stabilizers and forward this information to the Member TO. 2. Provide information on AVR and PSS status to Member TOs. | Do you know the status of all transmission Reactive Power resources, including the status of voltage regulators and power system stabilizers? | Example evidence that you know the status of all transmission Reactive Power resources, including the status of voltage regulators and power system stabilizers. | PJM Operating Agreement; 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 M-14D Generator Operational Requirements, Section 7.1.2-Voltage and Reactive Control | VAR-001-2 10/1/2011 VAR-001-3 1/1/2014 | VAR-001-2 12/31/2013 VAR-001-3 09/30/2014 |

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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 |
|----------|-----------------|--------------------|---|-----|--|--|---|--|---|---|--|
| VAR | VAR-001-3 | R6.1. | When notified of the loss of an automatic voltage regulator control, the Transmission Operator shall direct the Generator Operator to maintain or change either its voltage schedule or its Reactive Power schedule. | S | When notified by PJM of the loss of an automatic voltage regulator control, the Member TO shall, if necessary, instruct the Generator Operator to change its voltage schedule/bandwidth. | 1. PJM shall inform the appropriate Member TO when a generator voltage regulator is not in automatic. 2. PJM Dispatch will approve/deny adjustments based on PJM EMS Security Analysis results. PJM may elect to deviate from default voltage schedules based on load levels, transfer patterns, transmission or generation outages, or as required to honor pre-/post-contingency voltage limits or to maximize transfer capability based on PJM Security Analysis. Generation Owners shall communicate concerns regarding Transmission Owner voltage schedule/bandwidth or PJM Default Voltage Schedule/Bandwidth to PJM for resolution. There are no exemption criteria from either following a voltage/reactive schedule. | 1. Have you had an incident where you were notified that an AVR on a generator within your area was out of automatic? 2. If so, did you have to instruct the Generator Operator to maintain or change its voltage schedule/bandwidth? 3. Did you coordinate voltage schedules upon the loss of an AVR, as well as adjustments to voltage schedules with PJM Dispatch. | 1. Provide example evidence of instances when a generator voltage regulator was out of service, if available. 2. Provide example evidence of instructing, if necessary, the Generator Operator to change its voltage schedule/bandwidth when an AVR is out of service. 3. Examples of coordinating voltage schedules upon the loss an AVR, as well as adjustments to voltage schedules with PJM Dispatch such as emails or voice recordings. | PJM Operating Agreement; 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 M-14D Generator Operational Requirements, Section 7.1.2-Voltage and Reactive Control | VAR-001-2 10/1/2011 VAR-001-3 1/1/2014 | VAR-001-2 12/31/2013 VAR-001-3 09/30/2014 |
| VAR | VAR-001-3 | R7. | The Transmission Operator shall be able to operate or direct the operation of devices necessary to regulate transmission voltage and reactive flow. | S | When PJM issues an Operating InstructionAt the instruction of PJM , 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 instruct the operation of 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 Operating Agreement; 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 M-14D Generator Operational Requirements, Section 7.1.2-Voltage and Reactive Control | VAR-001-2 10/1/2011 VAR-001-3 1/1/2014 | VAR-001-2 12/31/2013 VAR-001-3 09/30/2014 |
| VAR | VAR-001-3 | R8. | Each Transmission Operator shall operate or direct the operation of capacitive and inductive reactive resources within its area – which may include, but is not limited to, reactive generation scheduling; transmission line and reactive resource switching; controllable load; and, if necessary, load shedding – to maintain system and Interconnection voltages within established limits. | S | 1. When PJM issues an Operating InstructionAt the instruction of PJM , the Member TO shall operate the devices under its control necessary to regulate transmission voltage and reactive flow including reactive generation scheduling; transmission line and reactive resource switching. Note: PJM authorizes the Member TO to automatically or manually switch/adjust reactive devices connected to 138 kV and below without notifying PJM. 2. Member TO system operators shall comply with Operating Instructions PJM Directives to shed load unless such actions would violate safety, equipment, regulatory or statutory requirements. If, because of the reasons mentioned above, the Operating Instructions PJM Directives to shed load cannot be complied with, the Member TO system operator shall inform PJM as soon as possible. | 1. PJM shall issue an Operating Instruction to operate instruct the operation of capacitive and inductive reactive resources within its area to maintain system and Interconnection voltages within established limits. 2. PJM shall issue an Operating Instruction a PJM Directive , if necessary, for load shedding, to maintain system and Interconnection voltages within established limits. | 1. Have you, when PJM issued an Operating Instructionat the instruction of PJM , operated devices to regulate transmission voltage and reactive flow? 2. Have you had any incidents where your system operator has had to follow Operating Instructions PJM Directives to shed load since the last audit? | 1. Provide examples of operating reactive resources within your area when PJM issued an Operating Instructionat the instruction of PJM . 2. Provide examples of load shedding to comply with an Operating Instruction a PJM Directive since your last audit. | PJM Operating Agreement; 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 M-14D Generator Operational Requirements, Section 7.1.2-Voltage and Reactive Control | VAR-001-2 10/1/2011 VAR-001-3 1/1/2014 | VAR-001-2 12/31/2013 VAR-001-3 09/30/2014 |

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-001-3 | R10. | Each Transmission Operator shall correct IROL or SOL violations resulting from reactive resource deficiencies (IROL violations must be corrected within 30 minutes) and complete the required IROL or SOL violation reporting. | S | 1. Follow <u>Operating Instructions PJM Directives</u> to operate reactive resources. 2. Follow <u>PJM instructions to operate reactive resources.</u> | 1. PJM shall issue <u>Operating Instructions PJM Directives</u> to operate reactive resources to correct violations of IROLs and SOLs within 30 minutes. 2. PJM shall issue instructions to operate reactive resources to correct violations of SOLs within 30 minutes. 3. PJM shall complete the required IROL or SOL violation reporting. | 1. Have you had any incidents where you had to follow <u>Operating Instructions PJM Directives</u> since the last audit? 2. Have you had any incidents where you had to follow PJM instructions since the last audit? | 1. Provide documented evidence, voice recordings etc. of any such incident to operate reactive resources and your compliance with <u>Operating Instructions PJM Directives</u> since the last audit. 2. Provide documented evidence, voice recordings etc. of any such incident and your compliance with PJM instructions since the last audit. | PJM Operating Agreement; 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 M-14D Generator Operational Requirements, Section 7.1.2-Voltage and Reactive Control | VAR-001-2 10/1/2011 VAR-001-3 1/1/2014 | VAR-001-2 12/31/2013 VAR-001-3 09/30/2014 |
| VAR | VAR-001-3 | R12. | The Transmission Operator shall direct corrective action, including load reduction, necessary to prevent voltage collapse when reactive resources are insufficient. | S | 1. <u>When PJM issues an Operating Instruction</u> At the instruction of PJM, the Member TO shall operate the devices under its control necessary to regulate transmission voltage and reactive flow including reactive generation scheduling; transmission line and reactive resource switching. Note: PJM authorizes the Member TO to automatically or manually switch/adjust reactive devices connected to 138 kV and below without notifying PJM. 2. Member TO system operators shall comply with <u>Operating Instructions PJM Directives</u> to shed load unless such actions would violate safety, equipment, regulatory or statutory requirements. If, because of the reasons mentioned above, the Operating Instructions <u>PJM Directives</u> to shed load cannot be complied with, the Member TO system operator shall inform PJM as soon as possible. | 1. PJM shall <u>issue Operating Instructions to operate</u> instruct the operation of capacitive and inductive reactive resources within its area to maintain system and Interconnection voltages within established limits. 2. PJM shall issue <u>an Operating Instruction a PJM Directive</u> , if necessary, for load shedding, to maintain system and Interconnection voltages within established limits. | 1. Have you, <u>when PJM issued an Operating Instruction at the instruction of PJM</u> , operated devices to regulate transmission voltage and reactive flow? 2. Have you had any incidents where your system operator has had to follow <u>Operating Instructions PJM Directives</u> to shed load since the last audit? | 1. Provide examples of operating reactive resources within your area <u>after PJM issued an Operating Instruction at the instruction of PJM</u> . 2. Provide examples of load shedding to comply with a PJM Directive since the last audit. | PJM Operating Agreement; 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 M-14D Generator Operational Requirements, Section 7.1.2-Voltage and Reactive Control | VAR-001-2 10/1/2011 VAR-001-3 1/1/2014 | VAR-001-2 12/31/2013 VAR-001-3 09/30/2014 |
| VAR | VAR-001-4.1 | 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. | | Change from VAR-001-4 to VAR-001-4.1 includes adding "or" to R5.3 to read: schedules or Reactive Power | | | | | | |
| VAR | VAR-001-4.1 | 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 At the instruction of PJM, 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 <u>issue an Operating Instruction to operate</u> instruct the operation of devices to regulate Transmission voltage and reactive flow. | Do you have the capability to operate or instruct the operation of devices <u>when PJM issues an Operating Instruction</u> 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 <u>when PJM issues an Operating Instruction</u> . | PJM Operating Agreement; 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 | VAR-001-4 10/1/2014 VAR-001-4.1 11/13/2015 | VAR-001-4 11/12/2015 VAR-001-4.1 None |
| VAR | VAR-001-4.1 | 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 3.3.3 or establish and coordinate voltage schedules for all BES generators within its zone with PJM and the Generator Operator. | 1. Keep PJM Manual 3 Section 3.3.3 up to date. 2. Maintain eDart. | Do you use PJM default generator voltage schedules specified in Manual 3, Section 3.3.3 or establish and coordinate voltage schedules for all BES generators within your zone with PJM and the Generator Operator? | Exhibit documentation that you use PJM default generator voltage schedules specified in Manual 3, Section 3.3.3 or establish and coordinate voltage schedules for all BES generators within your zone with PJM and the Generator Operator. | PJM Operating Agreement; 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 M-14D Generator Operational Requirements, Section 7.1.2-Voltage and Reactive Control | VAR-001-4 10/1/2014 VAR-001-4.1 11/13/2015 | VAR-001-4 11/12/2015 VAR-001-4.1 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 |
|----------|-----------------|--------------------|--|-----|--|--|---|--|---|---|--|
| VAR | VAR-001-4.1 | 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 | 1. Each Member TO shall notify all Generator Operators within its zone in writing of the specified voltage schedule (PJM default schedule as specified in PJM Manual 3, Section 3.3.3 or Member TO voltage schedule). 2. When necessary to change the specified voltage schedule (PJM default schedule as specified in PJM Manual 3, Section 3.3.3 or Member TO voltage schedule), each Member TO shall coordinate with PJM and the Generator Operator. 3. Each Member TO shall direct the Generator Operator to comply with the schedule (PJM default schedule as specified in PJM Manual 3, Section 3.3.3 or Member TO voltage schedule) in automatic voltage control mode (AVR in service and controlling voltage). | 1. Keep PJM Manual 3 Section 3.3.3 up to date. 2. Maintain eDart. | 1. Did you notify all Generator Operators within your zone in writing of the specified voltage schedule (PJM default schedule as specified in PJM Manual 3, Section 3.3.3 or your voltage schedule)? 2. When necessary to change the specified voltage schedule (PJM default schedule as specified in PJM Manual 3, Section 3.3.3 or your voltage schedule), did you coordinate with PJM and the Generator Operator? 3. Did you direct the Generator Operator to comply with the schedule (PJM default schedule as specified in PJM Manual 3, Section 3.3.3 or your voltage schedule) in automatic voltage control mode (AVR in service and controlling voltage)? | 1. Exhibit evidence that you notified all Generator Operators within your zone in writing of the specified voltage schedule (PJM default schedule as specified in PJM Manual 3, Section 3.3.3 or your voltage schedule). 2. Exhibit evidence, such as, emails or voice recordings, demonstrating that you coordinated with PJM and the Generator Operator when necessary to change the specified voltage schedule (PJM default schedule as specified in PJM Manual 3, Section 3.3.3 or your voltage schedule). 3. Exhibit evidence, such as, documentation or voice recordings, demonstrating that you directed the Generator Operator to comply with the schedule (PJM default schedule as specified in PJM Manual 3, Section 3.3.3 or your voltage schedule) in automatic voltage control mode (AVR in service and controlling voltage). | PJM Operating Agreement; 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 M-14D Generator Operational Requirements, Section 7.1.2-Voltage and Reactive Control | VAR-001-4 10/1/2014 VAR-001-4.1 11/13/2015 | VAR-001-4 11/12/2015 VAR-001-4.1 None |
| VAR | VAR-001-4.1 | R5.2 | The Transmission Operator shall provide the Generator Operator with the notification requirements for deviations from the voltage or Reactive Power schedule (which is either a range or a target value with an associated tolerance band). | A | 1. Each Member TO shall provide the Generator Operator in its area with notification requirements for deviations from the specified voltage schedule (PJM default schedule as specified in PJM Manual 3, Section 3.3.3 or Member TO voltage schedule). 2. When notified of such deviations, each Member TO shall coordinate with PJM. | | 1. Did you provide the Generator Operator in your area with notification requirements for deviations from the specified voltage schedule (PJM default schedule as specified in PJM Manual 3, Section 3.3.3 or your voltage schedule)? 2. When notified of such deviations, did you coordinate with PJM? | 1. Exhibit evidence that you provided the Generator Operator in your area with notification requirements for deviations from the specified voltage schedule (PJM default schedule as specified in PJM Manual 3, Section 3.3.3 or your voltage schedule). 2. Exhibit evidence (recordings or logs, etc.) demonstrating that when notified of such deviations, you coordinated with PJM. | PJM Operating Agreement; 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 M-14D Generator Operational Requirements, Section 7.1.2-Voltage and Reactive Control | VAR-001-4 10/1/2014 VAR-001-4.1 11/13/2015 | VAR-001-4 11/12/2015 VAR-001-4.1 None |
| VAR | VAR-001-4.1 | R5.3 | The Transmission Operator shall provide the criteria used to develop voltage schedules <u>or</u> 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 voltage schedules (PJM default schedule as specified in PJM Manual 3, Section 3.3.3 or Member TO voltage schedule) or Reactive Power schedule (which is either a range or a target value with an associated tolerance band) to Generator Operator in its area within 30 days of receiving a request. 2. If the Member TO is not able to provide the criteria used to develop the voltage schedule to the Generator Operator, the Member TO shall notify PJM. | 1. PJM shall keep PJM Manual 3, Section 3.3.3 up to date. 2. If the Member TO is not able to provide the criteria used to develop the 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 3.3.3 to Generator Operator within 30 days of receiving a request. | 1. Did you provide the criteria used to develop voltage schedules (PJM default schedule as specified in PJM Manual 3, Section 3.3.3 or your voltage schedule) or Reactive Power schedule (which is either a range or a target value with an associated tolerance band) to the Generator Operator in your area within 30 days of receiving a request? 2. If you were not able to provide the criteria used to develop the voltage schedule to the Generator Operator in your area, did you notify PJM? | 1. Exhibit evidence (logs, emails, or other form of communication) that you provided the criteria used to develop voltage schedules (PJM default schedule as specified in PJM Manual 3, Section 3.3.3 or your voltage schedule) or Reactive Power schedule (which is either a range or a target value with an associated tolerance band) to the Generator Operator in your area within 30 days of receiving a request. 2. Exhibit evidence (logs, emails, or recordings, etc.) that you notified PJM when you were not able to provide the criteria used to develop the voltage schedule to the Generator Operator in your area. | PJM Operating Agreement; 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 M-14D Generator Operational Requirements, Section 7.1.2-Voltage and Reactive Control | VAR-001-4 10/1/2014 VAR-001-4.1 11/13/2015 | VAR-001-4 11/12/2015 VAR-001-4.1 None |

NERC Reliability Standards

The following Reference Documents are utilized in the TO/TOP Matrix are associated with the following PJM Manuals:

Manual 1 *Control Center and Data Exchange Requirements*, Rev. 320 (Effective Date: ~~March 31, 2016~~ July 29, 2015)

Manual 3, *Transmission Operations*, Rev. 497A (Effective Date: ~~June~~ July 1, 2016)

Manual 3A, *Energy Management System (EMS) Model Updates and Quality Assurance (QA)*, Rev. 110 (Effective Date: ~~August 25, 2016~~ June 25, 2015)

Manual 10, *Pre-Scheduling Operations*, Rev. 341 (Effective Date: ~~July 1, 2016~~ December 22, 2014)

Manual 12, *Balancing Operations*, Rev. 342 (Effective Date: April 286, 2016)

Manual 13, *Emergency Operations*, Rev. 6058 (Effective Date: ~~June 1, 2016~~ August 1, 2015)

Manual 14B, *PJM Region Transmission Planning Process*, Rev. 340 (Effective Date: ~~August 9, 2016~~ February 26, 2015)

Manual 14C, *Generation and Transmission Interconnection Facility Construction*, Rev. 98 (Effective Date: ~~July 28, 2016~~ December 20, 2012)

Manual 14D, *Generator Operational Requirements*, Rev. 395 (Effective Date: ~~September 1, 2016~~ July 28, 2015)

Manual 36, *System Restoration*, Rev. 232 (Effective Date: June 105, 2016)

Manual 37, *Reliability Coordination*, Rev. 134 (Effective Date: ~~September 1, 2016~~ August 4, 2014)

Manual 38, *Operations Planning*, Rev. 98 (Effective Date: ~~February~~ June 1, 2016)

Manual 39, *Nuclear Plant Interface Coordination*, Rev. 120 (Effective Date: ~~January 1, 2016~~ July 15, 2015)

Manual 40, *Certification and Training Requirements*, Rev. 175 (Effective Date: February 127, 2016)

PJM Compliance Bulletin CB 001 NERC Standard PRC-001-1, Rev. 43 (Effective Date: ~~September 10, 2015~~ August 12, 2013)

Operating Memo 45 - Plan for Loss of Control Room Functionality, Rev. 144 (Effective Date: ~~June 27, 2016~~ January 1, 2015)

PJM Relay Subcommittee Charter

NERC Reliability Standards

Version 10

-Effective: January 1, 2017

-Approved by TO/TOP Matrix Subcommittee: September 16, 2016

-Approved by the Transmission Owners Agreement-Administrative Committee:

New NERC Reliability Standard Additions

| | | |
|----|---------------------------|-----------------------|
| 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 | R10.1 |
| 10 | TOP-001-3 | R12 |
| 11 | TOP-001-3 | R13 |
| 12 | TOP-001-3 | R14 |
| 13 | TOP-001-3 | R16 |
| 14 | TOP-001-3 | R18 |
| 15 | TOP-001-3 | R19 |

Inactive Date Changes

| | | |
|---|------------------------------|---------------------------|
| 1 | EOP-001-2.1b | 3/31/2017 |
| 2 | EOP-003-2 | 3/31/2017 |
| 3 | EOP-004-2 | 3/31/2017 |
| 4 | PRC-010-0 | 3/31/2017 |
| 5 | PRC-022-1 | 3/31/2017 |
| 6 | TOP-001-1a | 3/31/2017 |

COM-002-4 Operating Instruction Changes To Assigned/Shared Tasks

| | | |
|----|------------------------------|----------------------|
| 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 |

ReliabilityFirst Annual Review of TO/TOP Matrix V8 Recommended Updates To Assigned/Shared Tasks

PJM Shared Task Additions to Existing Requirements

| | | |
|---|------------------------------|----------------------|
| 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 |

TO Assigned Task Additions to Existing Requirements

| | | |
|---|-----------------------------|--------------------|
| 1 | IRO-001-1.1 | R8 |
|---|-----------------------------|--------------------|

Addition of Assigned/Shared Tasks for New Requirements

| | | |
|---|----------------------------|--------------------|
| 1 | EOP-005-2 | R3 |
| 2 | EOP-005-2 | R8 |
| 3 | TOP-001-1a | R6 |

Reference Document Updates

| | | | | | |
|----|---------------------------------|------------------------|----|------------------------------|-----------------------|
| 1 | BAL-005-0.2b | R1.2. | 23 | PRC-022-1 | R1.4. |
| 2 | COM-001-1.1 | R 2. | 24 | PRC-022-1 | R1.5. |
| 3 | EOP-010-1 | R1.2 | 25 | TOP-002-2.1b | R1. |
| 4 | EOP-010-1 | R3.2 | 26 | TOP-003-1 | R1. |
| 5 | EOP-010-1 | R3.3 | 27 | TOP-003-1 | R1.2. |
| 6 | PER-005-1 | R1. | 28 | TOP-003-1 | R1.3. |
| 7 | PER-005-1 | R1.3. | 29 | TOP-003-1 | R2. |
| 8 | PER-005-1 | R2 | 30 | TOP-003-1 | R3. |
| 9 | PER-005-1 | R3 | 31 | TOP-006-2 | R7. |
| 10 | PER-005-2 | R1 | 32 | TOP-008-1 | R3. |
| 11 | PER-005-2 | R1.3. | 33 | TOP-008-1 | R4. |
| 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. | | | |

Deletion of Standards Inactive for More Than 3 Years

| | | |
|---|------------------------------|----------------------------|
| 1 | CIP-001-2a | 12/31/2013 |
| 2 | EOP-001-0.1b | 6/30/2013 |
| 3 | EOP-004-1 | 12/31/2013 |
| 4 | EOP-005-1 | 6/30/2013 |
| 5 | EOP-008-0 | 6/30/2013 |
| 6 | FAC-001-0 | 11/24/2013 |
| 7 | PER-002-0 | 3/31/2013 |
| 8 | PRC-001-1 | 3/31/2013 |

Administrative Changes

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 |

[Updated Assigned Task](#)

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

Version 9.1

-Effective: January 26, 2016

NERC Reliability Standards

-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