Governance

1. The PJM TO/TOP Matrix is a cross-reference between PJM Manuals and the NERC Reliability Standards, indicating where the assignment of various reliability tasks is documented in the PJM Manuals. It does not create any new obligations for PJM or its members.

2. The Matrix shall be reviewed and revised, if necessary, by PJM in collaboration with the PJM TO/TOP Matrix Subcommittee at least annually.

3. The Matrix shall be approved for use by the PJM Transmission Owner's Agreement Administrative Committee (TOA-AC).

4. The Matrix will be used as a basis (defines the scope, Member TO 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 ReliabilityFirst (RF) and SERC Reliability Corporation (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 Reliability Audit.
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<tr>
<td>BAL</td>
<td>BAL-005-0.2b</td>
<td>R1.1</td>
<td>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.</td>
<td></td>
<td>4A</td>
<td>All of the Member TO's BES facilities shall be included in the list of Transmission Facilities identified in PIM Manual 3: Transmission Operations, Section 1.5.6: Monitored Transmission Facility.</td>
<td>PIM shall update the list of Transmission Facilities identified in PIM Manual 3: Transmission Operations, Section 1.5.6: Monitored Transmission Facility as needed.</td>
<td>1. Provide evidence demonstrating that all Member TO BES facilities are included in the list of Transmission Facilities identified in PIM Manual 3: Transmission Operations, Section 1.5.6: Monitored Transmission Facility.</td>
<td>B-1 Control Center and Data Exchange Requirements, Section 5.2.1 The Lines Reliability Assurance Agreement, Schedule 2, Section B, item 1</td>
<td>BAL-005-0.2b</td>
<td>05/13/2012</td>
<td></td>
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<tr>
<td>COM</td>
<td>COM-001-1.1</td>
<td>R1</td>
<td>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 to maintain reliability.</td>
<td></td>
<td>1A</td>
<td>Member TO shall have All Call equipment, ring down circuits (or simulated ring down), manual dial circuits, 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. Member TO shall provide appropriate power supply, appropriate environmental conditions and dial-up modem lines for out of band router access for the PJMnet.</td>
<td>Member TO shall have All Call equipment, ring down circuits (or simulated ring down), manual dial circuits, appropriate power supply, appropriate environmental conditions and dial-up modem lines for out of band router access for the PJMnet.</td>
<td>1. Provide evidence that Member TO has All Call system, ring down (or simulated ring down) circuits, manual dial, facsimile communications, and a dedicated voice connection to PJMnet. 2. Show diagrams that show the Member TOs EMS connection to PJMnet.</td>
<td>TOA, 4.9 Data, Information and Metering Requirements, Section 11.1-4.9.2 Data, Information and Metering Requirements, Section 11.1-4.9.2 Data, Information and Metering Requirements, Section 11.6 Membership Requirements, Section 4-9.6 Data, Information and Metering Requirements</td>
<td>5/13/2009</td>
<td>9/30/2015</td>
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<tr>
<td>NERC</td>
<td>COM-001-1.1</td>
<td>R1.1</td>
<td>Operations Reliability Coordination, Transmission Operators, and Balancing Authorities as necessary to maintain reliability.</td>
<td>5</td>
<td>In-Phase Member TO shall use English as the language for all communications among operating personnel responsible for the real-time generation control and operation of the interconnected Bulk Electric System.</td>
<td>FM1 Tasks</td>
<td>1. Describe your voice communication systems with your adjacent TOs external to PJM.</td>
<td>Document 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 and operation of the interconnected Bulk Electric System.</td>
<td>COM-001-1.1 R4.</td>
<td>7/13/2009</td>
<td>3/30/2015</td>
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<td>NERC</td>
<td>COM-001-1.1</td>
<td>R2.4</td>
<td>Other applicable, these facilities shall be redundant and diversity routed.</td>
<td>5</td>
<td>In-Phase Member TO shall use English as the language for all communications among operating personnel responsible for the real-time generation control and operation of the interconnected Bulk Electric System.</td>
<td>FM1 Tasks</td>
<td>2. Describe your data communication systems with your adjacent TOs external to PJM.</td>
<td>Document 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 and operation of the interconnected Bulk Electric System.</td>
<td>COM-001-1.1 R4.</td>
<td>7/13/2009</td>
<td>3/30/2015</td>
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<tr>
<td>NERC</td>
<td>COM-001-1.1</td>
<td>R3.1</td>
<td>Basic Reliability Coordination, Transmission Operators, and Balancing Authorities shall manage, alarm, test and/or actively monitor telecommunications facilities and equipment used for real-time communications.</td>
<td>5</td>
<td>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.</td>
<td>FM1 Tasks</td>
<td>3. Describe your facilities used to participate in the PJM Satellite Phone Tests.</td>
<td>Document 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 operation of the interconnected Bulk Electric System.</td>
<td>COM-001-1.1 R4.</td>
<td>7/13/2009</td>
<td>3/30/2015</td>
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<tr>
<td>NERC</td>
<td>COM-001-1.1</td>
<td>R4.4</td>
<td>Unless agreed to otherwise, the 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.</td>
<td>5</td>
<td>Member TO system operators shall use English as the language for all communications with Member TDs.</td>
<td>FM1 Tasks</td>
<td>4. Do you use only English when communicating with FIM?</td>
<td>Document 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 and operation of the interconnected Bulk Electric System.</td>
<td>COM-001-1.1 R4.</td>
<td>7/13/2009</td>
<td>3/30/2015</td>
<td></td>
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<td>Category</td>
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<tr>
<td>COM</td>
<td>COM-001-2.1</td>
<td>R3</td>
<td>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):</td>
<td>5</td>
<td>Each Member TO shall have All Call capability and voice communications capability with each Member TD.</td>
<td>PIM shall have All Call capability and voice communications capability with each Member TD.</td>
<td>Describe your All Call capability and voice communications capability with each Member TD.</td>
<td>Provide evidence that you have All Call capability and voice communications capability with each Member TD.</td>
<td>PIM OA 11.3.1(b) General, 11.6 Membership Requirements</td>
<td>11/12/2015</td>
<td>None</td>
<td></td>
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<tr>
<td>COM</td>
<td>COM-001-2.1</td>
<td>R3</td>
<td>Each Balancing Authority within its Transmission Operator Area.</td>
<td>5</td>
<td>Each Member TO shall have All Call capability and voice communications capability with each Member TD.</td>
<td>PIM shall have All Call capability and voice communications capability with each Member TD.</td>
<td>Describe your All Call capability and voice communications capability with each Member TD.</td>
<td>Provide evidence that you have All Call capability and voice communications capability with each Member TD.</td>
<td>PIM OA 11.3.1(b) General, 11.6 Membership Requirements</td>
<td>11/12/2015</td>
<td>None</td>
<td></td>
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<tr>
<td>COM</td>
<td>COM-001-2.1</td>
<td>R3</td>
<td>Each Distribution Provider within its Transmission Operator Area.</td>
<td>5</td>
<td>Each Member TO shall have voice communications capability with each Distribution Provider in its area.</td>
<td>Describe your capability for voice communications with each Distribution Provider in your area.</td>
<td>Provide evidence that you have voice communications capability with each Distribution Provider in your area.</td>
<td>PIM OA 11.3.1(b) General, 11.6 Membership Requirements</td>
<td>11/12/2015</td>
<td>None</td>
<td></td>
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<tr>
<td>COM</td>
<td>COM-001-2.1</td>
<td>R3</td>
<td>Each Generator Operator within its Transmission Operator Area.</td>
<td>5</td>
<td>Each Member TO shall have voice communications capability with each Generator Operator in its area.</td>
<td>PIM shall have voice communications capability with each Generator Operator in its area.</td>
<td>Describe your capability for voice communications with each Generator Operator in your area.</td>
<td>Provide evidence that you have voice communications capability with each Generator Operator in your area.</td>
<td>PIM OA 11.3.1(b) General, 11.6 Membership Requirements</td>
<td>11/12/2015</td>
<td>None</td>
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NERC Reliability Standards

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<td>COM</td>
<td>COM-001-1</td>
<td>R3.5</td>
<td>Each adjacent Transmission Operator synchronously connected.</td>
<td>5</td>
<td>Each Member TO shall have voice communications capability with</td>
<td>PIM shall have voice communications capability with each Transmission Operator synchronously connected to PIM.</td>
<td>Describe your capability for voice communications with neighboring Member TOs, internal to PIM, or neighboring TOs/TPs external to PIM, as appropriate.</td>
<td>Provide evidence that you have voice communications capability with neighboring Member TOs, internal to PIM, or neighboring TOs/TPs external to PIM, as appropriate.</td>
<td>PIM OA 11.3.3(b) General, 11.6 Membership Requirements</td>
<td>COM-001-1</td>
<td>11/12/2015</td>
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<tr>
<td>COM</td>
<td>COM-001-1</td>
<td>R4.1</td>
<td>Its Reliability Coordinator.</td>
<td>5</td>
<td>Each Member TO shall designate an Alternative Interpersonal Communication capability for voice communications with PIM.</td>
<td>PIM shall designate an Alternative Interpersonal Communication capability for voice communications with each Member TO.</td>
<td>Describe your Alternative Interpersonal Communication capability for voice communications with PIM.</td>
<td>Provide evidence that you have Alternative Interpersonal Communication capability for voice communications with PIM.</td>
<td>PIM OA 11.3.3(b) General, 11.6 Membership Requirements</td>
<td>COM-001-1.2</td>
<td>11/13/2015</td>
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<tr>
<td>COM</td>
<td>COM-001-1</td>
<td>R4.2</td>
<td>Each Balancing Authority within its Transmission Operator Area.</td>
<td>5</td>
<td>Each Member TO shall designate an Alternative Interpersonal Communication capability for voice communications with PIM.</td>
<td>PIM shall designate an Alternative Interpersonal Communication capability for voice communications with each Member TO.</td>
<td>Describe your Alternative Interpersonal Communication capability for voice communications with PIM.</td>
<td>Provide evidence that you have Alternative Interpersonal Communication capability for voice communications with PIM.</td>
<td>PIM OA 11.3.3(b) General, 11.6 Membership Requirements</td>
<td>COM-001-1.2</td>
<td>11/13/2015</td>
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<tr>
<td>COM</td>
<td>COM-001-1</td>
<td>R4.3</td>
<td>Each adjacent Transmission Operator synchronously connected.</td>
<td>5</td>
<td>Each Member TO shall designate an Alternative Interpersonal Communication capability for voice communications with neighboring TOs, internal or external to PIM, or neighboring TOs/TPs external to PIM, as appropriate.</td>
<td>PIM shall designate an Alternative Interpersonal Communication capability for voice communications with each Member TO.</td>
<td>Describe your Alternative Interpersonal Communication capability for voice communications with neighboring TOs, internal or external to PIM, or neighboring TOs/TPs external to PIM, as appropriate.</td>
<td>Provide evidence that you have Alternative Interpersonal Communication capability for voice communications with neighboring TOs, internal or external to PIM, or neighboring TOs/TPs external to PIM, as appropriate.</td>
<td>PIM OA 11.3.3(b) General, 11.6 Membership Requirements</td>
<td>COM-001-1.2</td>
<td>11/13/2015</td>
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<tr>
<td>COM</td>
<td>COM-001-1</td>
<td>R9</td>
<td>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.</td>
<td>5</td>
<td>Each Member TO shall test its Alternative Interpersonal Communication capability for voice communications at least once each calendar month.</td>
<td>PIM shall test its Alternative Interpersonal Communication capability for voice communications at least once each calendar month.</td>
<td>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?</td>
<td>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.</td>
<td>PIM OA 11.3.3(b) General, 11.6 Membership Requirements</td>
<td>COM-001-1.2</td>
<td>11/13/2015</td>
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January 11, 2018
### NERC Reliability Standards

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<tr>
<td>COM</td>
<td>COM-001-3</td>
<td>R10</td>
<td></td>
<td>5</td>
<td>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 or voice communications that lasts 30 minutes or longer.</td>
<td>PJM shall notify Member TOs and Generator Operators within its area and adjacent Reliability Coordinators, Balancing Authorities, and synchronously connected Transmission Owners within 60 minutes of the detection of a failure of its Interpersonal Communication capability or voice communications that lasts 30 minutes or longer.</td>
<td>1. Did you detect a failure of your Interpersonal Communication capability or 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 or voice communications that lasted 30 minutes or longer?</td>
<td>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 or voice communications that lasted 30 minutes or longer.</td>
<td>PM OA 11.3.1(b) General, 11.6 Membership Requirements</td>
<td>M-1 Control Center and Data Exchange Requirements, Section 4-Interpersonal Communication (Voice Communications) Capability</td>
<td>11/13/2015</td>
</tr>
<tr>
<td>COM</td>
<td>COM-001-3</td>
<td>R12</td>
<td></td>
<td>5</td>
<td>1. Where applicable, Each Member TO shall have internal Interpersonal Communication capabilities for the exchange of information necessary for the Reliable Operation of the BES between two or more Control Centers and/or between Control Centers and field personnel.</td>
<td>PJM shall have internal Interpersonal Communication capabilities for the exchange of information necessary for the Reliable Operation of the BES. This includes communication capabilities between the PJM Control Centers.</td>
<td>1. Do you have two or more Control Centers that are actively monitoring your system within the same functional entity? If yes, do you have internal Interpersonal Communication capabilities for the exchange of information necessary for the Reliable Operation of the BES between such Control Centers? 2. Do you have internal Interpersonal Communication capabilities for the exchange of information necessary for the Reliable Operation of the BES between each Control Center and field personnel?</td>
<td>Provide evidence that you have internal Interpersonal Communication capabilities for the exchange of information necessary for the Reliable Operation of the BES between Control Centers.</td>
<td>PM OA 11.3.1(b) General, 11.6 Membership Requirements</td>
<td>M-1 Control Center and Data Exchange Requirements, Section 4-Interpersonal Communication (Voice Communications) Capability, Section 4.1-Dispatch Voice &amp; Facsimile Communications</td>
<td>10/1/2017</td>
</tr>
<tr>
<td>COM</td>
<td>COM-002-2</td>
<td>Purpose</td>
<td></td>
<td></td>
<td>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.</td>
<td></td>
<td>1. If you have two or more Control Centers that are actively monitoring your system within the same functional entity, provide evidence that you have internal Interpersonal Communication capabilities for the exchange of information necessary for the Reliable Operation of the BES between each Control Center and field personnel.</td>
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<td>Category</td>
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<tr>
<td>COM</td>
<td>COM-002-2</td>
<td>R1</td>
<td>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.</td>
<td>5</td>
<td>1. Each Member TO shall have voice communications with its adjacent neighboring (both inside and outside of PIM) TOs and PIM. 2. Each Member TO shall use PIMnet or other protocols/mediums to access EMS data with its adjacent neighboring Member TOs inside and outside PIM. PIMnet 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.</td>
<td>1. PIM shall have voice communications with Member TOs. 2. PIM shall use PIMnet to exchange EMS data with Member TOs. 3. PIM has no Shared Task related to voice communications with neighboring (both internal and external) TOs. 4. Member TOs may use PIMnet or other protocols/mediums to exchange EMS data with TOs internal to PIM, if such information is available. PIMnet is a dual redundant frame relay network using the Inter-control Center Communications Protocol (ICCP).</td>
<td>1. Describe your voice communications with your adjacent neighboring (both inside and outside of PIM) TOs and PIM. 2. Describe your data communications with your adjacent neighboring (both inside and outside of PIM) TOs. 3. Are your communications staffed and available for addressing a real-time emergency condition?</td>
<td>Exhibit a list of phone numbers or other predetermined communication paths with PIM. 2. Have you had incidents since the last audit that you communicated to PIM about any condition that could threaten the reliability of your area or when firm load shedding is anticipated? 3. Have you had incidents since the last audit that you communicated to PIM about any condition that could threaten the reliability of your area or when firm load shedding is anticipated? 4. Evidence of any communication (voice recordings, logs, emails etc.) with PIM (outside of PJM) TOs. 5. Evidence of any communication (voice recordings, logs, emails etc.) about neighboring (both inside and outside of PIM) TOs about any emergency outages of lines between TOs.</td>
<td>X-1 Control Center and Data Exchange Requirements; Section 2.4 Communications Requirements</td>
<td>6/18/2007</td>
<td>6/30/2020</td>
</tr>
<tr>
<td>COM</td>
<td>COM-002-2</td>
<td>R1.1</td>
<td>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.</td>
<td>5</td>
<td>1. Each Member TO shall communicate with PIM 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 PIM) TOs through predetermined communication paths of any emergency outages of lines between TOs.</td>
<td>1. PIM shall establish predetermined communication paths for Member TOs. 2. PIM will gather information from all Member TOs and communicate any condition that could threaten the reliability of the Member TO’s area.</td>
<td>1. Do you have predetermined communication paths (phone numbers, etc.) to PIM? 2. Have you had incidents since the last audit that you communicated to PIM 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 PIM) TOs? 4. Have you had incidents since the last audit that you communicated to neighboring (both inside and outside of PIM) TOs about any emergency outages of lines between TOs?</td>
<td>Exhibit a list of phone numbers or other predetermined communication paths with PIM. 2. Have you had incidents since the last audit that you communicated to PIM about any condition that could threaten the reliability of your area or when firm load shedding is anticipated? 3. Have you had incidents since the last audit that you communicated to neighboring (both inside and outside of PIM) TOs about any emergency outages of lines between TOs?</td>
<td>X-1 Control Center and Data Exchange Requirements; Section 2.4 Communications Requirements</td>
<td>6/18/2007</td>
<td>6/30/2020</td>
</tr>
<tr>
<td>COM</td>
<td>COM-002-2</td>
<td>R2</td>
<td>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.</td>
<td>5</td>
<td>1. When PIM issues an Operating Instruction during an Emergency the Member TO system operator shall repeat the information back. 2. When the Member TO System Operator is communicating the Operating Instruction to the Member TO’s operating personnel, the parties shall engage in 3-part communications.</td>
<td>1. When PIM issues Operating Instruction during an Emergency the PIM System Operator shall properly engage in 3-part communications with the Member TO LCC system operator.</td>
<td>Do you have procedures for proper use of three-part communications with PIM and your operating personnel?</td>
<td>Exhibit procedures for proper use of three-part communications with PIM 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.)</td>
<td>X-1 Control Center and Data Exchange Requirements; Section 4.5 PIM Communication Protocol</td>
<td>6/18/2007</td>
<td>6/30/2020</td>
</tr>
<tr>
<td>COM</td>
<td>COM-002-4</td>
<td>Purpose</td>
<td>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).</td>
<td>5</td>
<td>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).</td>
<td>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).</td>
<td>Provide examples.</td>
<td>X-1 Control Center and Data Exchange Requirements; Section 4.5 PIM Communication Protocol</td>
<td>6/18/2007</td>
<td>6/30/2020</td>
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NERC Reliability Standards

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<tbody>
<tr>
<td>COM</td>
<td>COM-002-4</td>
<td>R2</td>
<td>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.</td>
<td>S</td>
<td>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.</td>
<td>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?</td>
<td>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.</td>
<td>K-1 Control Center and Data Exchange Requirements, Section 4-Interpersonal Communication (Voice Communications) Capability</td>
<td>7/1/2016</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>COM</td>
<td>COM-002-4</td>
<td>R4</td>
<td>Each Balancing Authority, Reliability Coordinator, and Transmission Operator shall at least once every twelve (12) calendar months:</td>
<td>A</td>
<td>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.</td>
<td>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?</td>
<td>Records that show 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.</td>
<td>K-1 Control Center and Data Exchange Requirements, Section 4-Interpersonal Communication (Voice Communications) Capability</td>
<td>7/1/2016</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>COM</td>
<td>COM-002-4</td>
<td>R4.1</td>
<td>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:</td>
<td>A</td>
<td>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:</td>
<td>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:</td>
<td>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:</td>
<td>K-1 Control Center and Data Exchange Requirements, Section 4-Interpersonal Communication (Voice Communications) Capability</td>
<td>7/1/2016</td>
<td>None</td>
<td></td>
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<tr>
<td>EOP</td>
<td>EOP-001.2.1b</td>
<td>Purpose</td>
<td>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.</td>
<td></td>
<td>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:</td>
<td>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:</td>
<td>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:</td>
<td>K-1 Control Center and Data Exchange Requirements, Section 4-Interpersonal Communication (Voice Communications) Capability</td>
<td>7/1/2016</td>
<td>None</td>
<td></td>
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<tr>
<td>EOP</td>
<td>EOP-001.2.1b</td>
<td>R2 (Heading)</td>
<td>Each Transmission Operator and Balancing Authority shall:</td>
<td></td>
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### NERC Reliability Standards

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<tbody>
<tr>
<td>EOP</td>
<td>EOP-001-2.15</td>
<td>R2.2</td>
<td></td>
<td>5</td>
<td>The Member TO shall comply with Operating Instructions unless such actions would violate safety, equipment, or regulatory or statutory requirements.</td>
<td>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.</td>
<td>Did you comply with any Operating Instructions unless such actions would violate safety, equipment, or regulatory or statutory requirements? Evidence such as system operator logs, voice recordings, incident reports, etc. for any incidents where your operators had to follow Operating Instructions.</td>
<td>PJM OA, Schedule 1, Section 1.7.6 - Scheduling and Dispatching; 1.7.15 Corrective Action  M-3 Transmission Operations, Section 1.2-Responsibilities for Transmission Owner's Entity  M-13 Emergency Operations, Section 5-Transmission Security Emergencies  TDA Article 4.7 Actions in Emergency  M-3 Transmission Operations, Section 5-Index of Operating Procedures for PJM RTO Operation</td>
<td>7/1/2013</td>
<td>3/31/2017</td>
<td></td>
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<tr>
<td>EOP</td>
<td>EOP-001-2.15</td>
<td>R2.3</td>
<td></td>
<td>5</td>
<td>The Member TO shall comply with Operating Instructions unless such actions would violate safety, equipment, or regulatory or statutory requirements.</td>
<td>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.</td>
<td>Did you comply with any Operating Instructions unless such actions would violate safety, equipment, or regulatory or statutory requirements? Evidence such as system operator logs, voice recordings, incident reports, etc. for any incidents where your operators had to follow Operating Instructions.</td>
<td>M-3 Transmission Operations Transmission Security Emergencies, Section 3-Voltage &amp; Stability Operating Guidelines; Section 5-Index of Operating Procedures for PJM RTO Operation  M-3 Transmission Operations, Section 1.2-Responsibilities for Transmission Owner's Entity  M-13 Emergency Operations, Section 1.3-Policy Statements; Section 2 Capacity Emergencies; Attachment E: Manual Load Dump Allocation Tables; Attachment F: PJM Manual Load Dump Capability  TDA Article 4.7 Actions in Emergency</td>
<td>7/1/2013</td>
<td>3/31/2017</td>
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<tr>
<td>EOP</td>
<td>EOP-001-2.1b</td>
<td>R3</td>
<td>Heading</td>
<td>4</td>
<td>Staffing levels for the emergency.</td>
<td>The Member TO's Emergency Plans shall include staffing levels for the emergency.</td>
<td>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.</td>
<td>M-3 Control Center and Data Exchange Requirements, Section 2.6-Control Center Staffing  M-13 Emergency Operations Section 3-Weather/Environmental Emergencies</td>
<td>7/1/2013</td>
<td>3/31/2017</td>
<td></td>
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<tr>
<td>EOP</td>
<td>EOP-001-2.1b</td>
<td>R4</td>
<td>Heading</td>
<td>4</td>
<td>Staffing levels for the emergency.</td>
<td>The Member TO's Emergency Plans shall include staffing levels for the emergency.</td>
<td>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.</td>
<td>M-3 Control Center and Data Exchange Requirements, Section 2.6-Control Center Staffing  M-13 Emergency Operations Section 3-Weather/Environmental Emergencies</td>
<td>7/1/2013</td>
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<tbody>
<tr>
<td>EOP</td>
<td>EOP-001-2.15</td>
<td>Item 13</td>
<td>R4</td>
<td>A</td>
<td>1. The Member TO's Emergency Plan shall have a mandatory load shedding 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.</td>
<td></td>
<td>1. Do you have a mandatory load shedding 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?</td>
<td>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.</td>
<td>PJM Operating Agreement, Section 11.3 Member Responsibilities 11.3-1. 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 M-13 Emergency Operations, Section 2.3 Capacity Shortages, Section 2.3.2 Real-Time Emergency Procedures (Warnings and Actions) Step 10 Manual Load Dump Action: Section 2.3.10 - Manual Load Dump Action 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, Section 1.1-Policy Statements; Section 3 SOL and IROL Limits, Section 3.1- SOLs and IROL Limit Determination (PJM Member Actions)</td>
<td>7/1/2013</td>
<td>3/31/2017</td>
</tr>
</tbody>
</table>

<p>| EOP      | EOP-003-2       | Purpose            | A | 1. After taking all other remedial steps, a Transmission 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. | PNM 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. | Have you had any incidents that have required you to follow the direction of PJM to shed load at the direction of PJM; including evidence that directions were followed as required. | Documentation of the event that required you to shed load at the direction of PJM. | PJM DA, Schedule 1, 1.7.11 (b). M-1 Control Center and Data Exchange Requirements, Section 4.5 PJM Communication Protocols M-13 Emergency Operations, Section 1.3-Policy Statements; Section 2-Capacity Emergencies; Attachment E: Manual Load Dump Allocation Tables; Attachment F-PJM Manual Load Dump Capability TDA Article 4.7 M-3 Transmission Operations, Sections 5- Index and Operating Procedures for PJM RTO Operation | EOP-001-2 | 10/1/2011 | EOP-005-2 | 3/31/2017 |</p>
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<tbody>
<tr>
<td>EOP</td>
<td>EOP-003-2</td>
<td>R2</td>
<td>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 undervoltage load shedding scheme is required.</td>
<td>5</td>
<td>Each Member TO that owns BES UVLS shall not set the BES UVLS higher than the PJM Load Dump Voltage Limit (0.90 pu).</td>
<td>1. PJM has not determined that an undervoltage 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. 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.</td>
<td>1. Do you have BES UVLS installed in your area? 2. If yes, are the BES UVLS settings on BES facilities below the PJM Load Dump Voltage Limit (0.90 pu)?</td>
<td>M-5 Transmission Operations; Section 3.9: Stability Limits</td>
<td>EOP-003-2</td>
<td>3/31/2017</td>
<td></td>
</tr>
<tr>
<td>EOP</td>
<td>EOP-003-2</td>
<td>R4</td>
<td>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.</td>
<td>5</td>
<td>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.</td>
<td>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. 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.</td>
<td>1. Do you have BES UVLS installed in your area? 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?</td>
<td>M-5 Transmission Operations; Section 3.9: Stability Limits</td>
<td>EOP-003-2</td>
<td>3/31/2017</td>
<td></td>
</tr>
<tr>
<td>EOP</td>
<td>EOP-003-2</td>
<td>R5</td>
<td>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 uncontrollable separation, loss of generation, or system shutdown.</td>
<td>5</td>
<td>The Member TO shall shed load at the direction of PJM.</td>
<td>1. PJM is responsible for developing and maintaining the plans for load shedding when conditions exist to implement the plans for load shedding. 2. PJM shall implement the plans for load shedding when conditions exist to implement the plans for load shedding.</td>
<td>Have you had any incidents that have required you to follow the direction of PJM to shed load since the last PJM audit?</td>
<td>M-5 Transmission Operations, Section 5: Index and Operating Procedures for PJM RTO Operation</td>
<td>EOP-003-2</td>
<td>3/31/2017</td>
<td></td>
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<tr>
<td>EOP</td>
<td>EOP-005-2</td>
<td>R6.</td>
<td></td>
<td>5</td>
<td>The Member TO shall shed load at the direction of PJM.</td>
<td></td>
<td></td>
<td>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.</td>
<td>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 TDA Article 4.7 M-3 Transmission Operations, Section 5: Index and Operating Procedures for PJM RTO Operation</td>
<td>EOP-005-2 10/1/2013</td>
<td>EOP-005-2 3/31/2017</td>
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<tr>
<td>EOP</td>
<td>EOP-005-2</td>
<td>R7.</td>
<td></td>
<td>5</td>
<td>Each Member TO that owns BES UVLS 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.</td>
<td></td>
<td></td>
<td>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.</td>
<td>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)?</td>
<td>PJM OA, Schedule 1, 1.7.11 (b). M-3 Transmission Operations; Section 3: Stability Limits Schedule 1, 1.7.11 (b). Specific Variations to PJM Base Line Voltage Stability Limits M-3 Transmission Operations; Section 3.9: Manual Load Dump Capability M-3 Transmission Operations; Section 3.10: Specific Variations to PJM Load Dump Capability Attachment C</td>
<td>EOP-005-2 10/1/2013</td>
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<tr>
<td>EOP</td>
<td>EOP-005-2</td>
<td>R8.</td>
<td></td>
<td>5</td>
<td>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.</td>
<td></td>
<td></td>
<td>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. 3. 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? 4. Describe the method used to shed load? 5. 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 B. 6. Demonstrate that your UVLS settings on BES facilities are below the PJM Load Dump Voltage Limit (0.90 pu).</td>
<td>Documentation of the event that required you to follow the direction of PJM to shed load since the last PJM audit?</td>
<td>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 TDA Article 4.7 M-3 Transmission Operations, Section 5: Index and Operating Procedures for PJM RTO Operation</td>
<td>EOP-005-2 10/1/2013</td>
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**NERC Reliability Standards**

**Category:** EOP

- **EOP-003-2**
- **EOP-004-2**
- **EOP-005-2**

**Purpose:** 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.

**Reference Documents:**

- 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
- TDA Article 4.7
- M-3 Transmission Operations, Section 5: Index and Operating Procedures for PJM RTO Operation

**Enforcement Date:**

- EOP-005-2 10/1/2013
- EOP-005-2 3/31/2017

**Inactive Date:**

- EOP-005-2 3/31/2017
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<td>EOP</td>
<td>EOP-004-2</td>
<td>R2</td>
<td>Implemented with a 24-hour threshold for reporting or by the end of the Member TO's 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).</td>
<td>3</td>
<td>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.</td>
<td>PJM has the responsibility to file the report required for the Transmission Operator with NERC and PJM if R2 or EOP-004-2. PJM shall also file the report with the Member TO experiencing a disturbance.</td>
<td>1. Have you had a reportable disturbance since your last audit? 2. Did you supply sufficient information to PJM in a timely manner?</td>
<td>EOP-004-2 Reporting Emergencies; Attachment 1: Disturbance Reporting—US Department of Energy</td>
<td>3/31/2019</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>EOP</td>
<td>EOP-004-3</td>
<td>R2</td>
<td>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).</td>
<td>3</td>
<td>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.</td>
<td>PJM has the responsibility to file the report required for the Transmission Operator with NERC and PJM if R2 or EOP-004-2. PJM shall also file the report with the Member TO experiencing a disturbance.</td>
<td>1. Have you had a reportable disturbance since your last audit? 2. Did you supply sufficient information to PJM in a timely manner?</td>
<td>EOP-004-3 Reporting Emergencies; Attachment 1: Disturbance Reporting—US Department of Energy</td>
<td>3/31/2017</td>
<td>None</td>
<td></td>
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<tr>
<td>EOP</td>
<td>EOP-004-4</td>
<td>R2</td>
<td>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).</td>
<td>3</td>
<td>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.</td>
<td>PJM has the responsibility to file the report required for the Transmission Operator with NERC and PJM if R2 or EOP-004-2. PJM shall also file the report with the Member TO experiencing a disturbance.</td>
<td>1. Have you had a reportable disturbance since your last audit? 2. Did you supply sufficient information to PJM in a timely manner?</td>
<td>EOP-004-4 Reporting Emergencies; Attachment 1: Disturbance Reporting—US Department of Energy</td>
<td>3/31/2017</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>EOP</td>
<td>EOP-005-4</td>
<td>R2</td>
<td>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).</td>
<td>3</td>
<td>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.</td>
<td>PJM has the responsibility to file the report required for the Transmission Operator with NERC and PJM if R2 or EOP-004-2. PJM shall also file the report with the Member TO experiencing a disturbance.</td>
<td>1. Have you had a reportable disturbance since your last audit? 2. Did you supply sufficient information to PJM in a timely manner?</td>
<td>EOP-005-4 Reporting Emergencies; Attachment 1: Disturbance Reporting—US Department of Energy</td>
<td>3/31/2017</td>
<td>None</td>
<td></td>
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<tr>
<td>EOP</td>
<td>EOP-005-13</td>
<td>Purpose</td>
<td>Ensure plans, facilities, and personnel are prepared to enable System restoration from Blackstart Resources to ensure reliability is maintained during restoration and priority is placed on restoring the interconnection.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>EOP-005-3 Changes &amp; Impacts to Metric 1, Revised 97 and 98 of EOP-005-2; EOP-005-3 8.11 becomes EOP-005-1 8.18; EOP-005-1 added 89.5; EOP-005-2 R12 become R12</td>
<td></td>
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**Category** | **Standard Number** | **Requirement Number** | **Approved BOD/FERC Standards** | **A/S** | **Assigned or Shared Member TO Tasks** | **PJM Tasks** | **Audit Questions** | **Evidence of Compliance** | **Reference Documents** | **Enforcement Date** | **Ineffective Date**
--- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ---
**ECOF** | EOP-005-2 | R1 | Each Transmission Operator shall develop and implement a restoration plan approved by its Reliability Coordinator. The restoration plan shall be implemented to restore bulk electric system integrity 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 Bulk Electric System integrity 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: (Violation Risk Factor = High) (Time Horizon - Operations Planning) (Rest-into-Operation) / Result: Yes | PJM will review, recommend revision, and/or approve submitted Member TO Restoration Plans. | 1. Do you develop and implement a restoration plan that supports restoring the Transmission Operator's System following a Disturbance in which one or more areas of your BES shuts down? | 1. Exhibit your System restoration plan and show that it covers a plan to reestablish its electric system in a stable and orderly manner in the event of a single or total shutdown of its system, including necessary operating instructions and procedures to cover emergency conditions. | M-38 System Restoration, Section B-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 - PJM Approval Process for TO Restoration Plans | EOP-005-2 | 7/1/2013 | 7/1/2018

**ECOF** | EOP-005-2 | R1.1 | Strategies for system restoration that are coordinated with other Reliability Coordinator's high level strategy for restoring the Interconnection. | PJM's restoration plan shall state the high level strategy of restoring the integrity of the Interconnection. | 3. If you have had a disturbance in which one or more areas of your BES shut down, did you implement your restoration plan and coordinate with PJM if any deviations from the plan were required? | Show that your Member's restoration plan has a high level strategy of restoring the integrity of the Interconnection. | M-36 System Restoration, Section 1.3-Policy Statements | EOP-005-2 | 7/1/2013 | 7/1/2018

**ECOF** | EOP-005-2 | R1.2. A description of how all Agreements or mutually-accepted procedures or protocols for off-site power requirements of nuclear power plants, including priority of restoration, will be fulfilled during System restoration. | The Member TO's restoration plan shall, if applicable, have a description of how all Agreements or mutually-accepted procedures or protocols for off-site power requirements of nuclear power plants, including priority of restoration, will be fulfilled during System restoration. | 2. Do you have agreements for off-site power for a nuclear plant? Does your restoration plan have a description of how all Agreements or mutually-accepted 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 describe a description of how all Agreements or mutually-accepted procedures or protocols for off-site power requirements of nuclear power plants, including priority of restoration, will be fulfilled during System restoration. | M-38 System Restoration, Section 3.1- Restoration Process, Section 3.1-5- Implement Restoration Procedure, A.1.2- Minimum Critical Black Start Requirement | EOP-005-2 | 7/1/2013 | 7/1/2018

**ECOF** | EOP-005-2 | R1.3 | 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. | The Member TO's 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. | M-38 System Restoration, Section 1.1-Policy Statements; PJM Member Actions; Attachment A-Minimum Critical Black Start Requirement | EOP-005-2 | 7/1/2013 | 7/1/2018

**ECOF** | EOP-005-2 | R1.4. | Identification of Cranking Paths and initial switching requirements between each Blackstart Resource and the unit(s) to be started. | 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-38 System Restoration, Section 1.1-Policy Statements; Section 6.2-Cranking Power; Section 6.2-T-Transmission-Derived Blackstart Supporting Documentation References | EOP-005-2 | 7/1/2013 | 7/1/2018

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**Category** | **Standard Number** | **Requirement Number** | **Approved BOD/FERC Standards** | **A/S** | **Assigned or Shared Member TO Tasks** | **PJM Tasks** | **Audit Questions** | **Evidence of Compliance** | **Reference Documents** | **Enforcement Date** | **Ineffective Date**
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<td>EOP-005-1</td>
<td>EOP-005-1</td>
<td>R1.6</td>
<td>Identification of acceptable operating voltage and frequency limits during restoration.</td>
<td>5</td>
<td>Each Member TO shall, in their restoration plan, identify acceptable operating voltage and frequency limits during restoration.</td>
<td>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).</td>
<td>Do you identify acceptable operating voltage and frequency limits during restoration in your restoration plan?</td>
<td>Exhibit the acceptable operating voltage and frequency limits used during restoration in the restoration plan.</td>
<td>M-36 System Restoration, Section 3.1.3 Implement Restoration Procedure (Frequency and Voltage Control); Attachment G: Coordination of Restoration Plan with FIM Internal and External Neighboring Entities - FIM Approval for TO Restoration Plans, G-2 #4</td>
<td>EOP-005-2</td>
<td>7/1/2013</td>
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<tr>
<td>EOP-005-2</td>
<td>EOP-005-2</td>
<td>R2</td>
<td>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/activation date of the plan. (Violation Factor = Medium/Time Horizon = Operations Planning).</td>
<td>5</td>
<td>Each Member TO shall provide the entities neighboring TOs, Distribution Providers, Blackstart Commands, and Transmission Providers, identified in its approved restoration plan with a description of any changes to their roles and specific tasks prior to the implementation/activation date of the plan.</td>
<td>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/activation date of the plan.</td>
<td>1. Did you provide the entities neighboring TOs, Distribution Providers, Blackstart Commands, and Transmission Providers, identified in its approved restoration plan with a description of any changes to their roles and specific tasks prior to the implementation/activation date of the plan?</td>
<td>Exhibit emails, logs, or routing logs demonstrating that you provided the entities neighboring TOs, Distribution Providers, Blackstart Commands, and Transmission Providers, identified in your approved restoration plan with a description of any changes to their roles and specific tasks prior to the implementation/activation date of the plan.</td>
<td>EOP-005-2</td>
<td>7/1/2013</td>
<td>EOP-005-3</td>
</tr>
<tr>
<td>EOP-005-2</td>
<td>EOP-005-2</td>
<td>R3</td>
<td>Each Transmission Operator shall review its restoration plan and submit it to its Reliability Coordinator annually on a mutually agreed upon schedule. (Violation Factor = Medium/Time Horizon = Operations Planning).</td>
<td>5</td>
<td>Each Member TO shall annually review its restoration plan and submit 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.</td>
<td>PJM shall conduct an annual review of Member TO 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.</td>
<td>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?</td>
<td>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.</td>
<td>M-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 Framework, Table 1.3 Policy Statements, PJM Member Actions.</td>
<td>EOP-005-2</td>
<td>7/1/2013</td>
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<td>EOP-005-2</td>
<td>EOP-005-2</td>
<td>R4</td>
<td>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.</td>
<td>5</td>
<td>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.</td>
<td>PJM Manual 36: System Restoration.</td>
<td>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?</td>
<td>Exhibit dated documents showing the implementation of any unplanned permanent system changes or a planned BES modification that would change the implementation of its restoration plan.</td>
<td>EOP-005-2</td>
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<td>EOP-005-3</td>
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<tr>
<td>EOP-005-2</td>
<td>EOP-005-2</td>
<td>R4.1</td>
<td>Each Transmission Operator shall submit its revised restoration plan to its Reliability Coordinator for approval within the same 90 calendar day period.</td>
<td>5</td>
<td>Each Member TO shall submit its revised restoration plan to PJM for approval within the same 90 calendar day period.</td>
<td>M-36 requires coordination of Restoration Plan with PJM Approval for TO Restoration Plans.</td>
<td>Did you submit your revised restoration plan to PJM for approval within the same 90 calendar day period?</td>
<td>Exhibit emails, screen shots, showing that you submitted your revised restoration plan to PJM for approval within the same 90 calendar day period.</td>
<td>M-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</td>
<td>EOP-005-2</td>
<td>7/1/2013</td>
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<tr>
<td>EOP-005-2</td>
<td>EOP-005-2</td>
<td>R4.2</td>
<td>Each Transmission Operator shall submit its revised restoration plan to PJM for approval, when the revision would change the Member TO’s ability to implement its System restoration plan, as follows (Violation Factor = Medium/Time Horizon = Operations Planning).</td>
<td>5</td>
<td>Each Member TO shall submit its revised restoration plan to PJM for approval, when the revision would change the Member TO’s ability to implement its System restoration plan, as follows. (Violation Factor = Medium/Time Horizon = Operations Planning).</td>
<td>1. Review the submitted Member TO restoration plans and consider for approval.</td>
<td>Did you submit your revised restoration plan to PJM for approval, when the revision would change your ability to implement your System restoration plan?</td>
<td>Exhibit dated documents showing the implementation of any unplanned permanent system changes or a planned BES modification that would change your ability to implement your System restoration plan.</td>
<td>EOP-005-2</td>
<td>7/1/2013</td>
<td>EOP-005-3</td>
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<tr>
<td>EOP-005-2</td>
<td>EOP-005-2</td>
<td>R4.3</td>
<td>Each Transmission Operator shall submit its revised restoration plan to its Reliability Coordinator for approval, when the revision would change the Member TO’s ability to implement its System restoration plan, as follows. (Violation Factor = Medium/Time Horizon = Operations Planning).</td>
<td>5</td>
<td>Each Member TO shall submit its revised restoration plan to its Reliability Coordinator for approval, when the revision would change the Member TO’s ability to implement its System restoration plan, as follows. (Violation Factor = Medium/Time Horizon = Operations Planning).</td>
<td>1. Review the submitted Member TO restoration plans and consider for approval.</td>
<td>Did you submit your revised restoration plan to PJM for approval, when the revision would change your ability to implement your System restoration plan?</td>
<td>Exhibit dated documents showing the implementation of any unplanned permanent system changes or a planned BES modification that would change your ability to implement your System restoration plan.</td>
<td>EOP-005-2</td>
<td>7/1/2013</td>
<td>EOP-005-3</td>
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<tr>
<td>EOP</td>
<td>EOP-005-3</td>
<td>R4.1</td>
<td>Within 90 calendar days after identifying any unplanned permanent BES modifications.</td>
<td></td>
<td>Each Member TO shall submit its revised system restoration plan to PJM for approval when the revision would change the Member TO's ability to implement System restoration plan within 90 calendar days after identifying any unplanned permanent BES modifications.</td>
<td>1. Review the submitted Member TO restoration plans and consider for approval.</td>
<td>Prior to implementing a planned permanent BES modification.</td>
<td>Exhibit evidence such as, emails, screenshots, etc., showing that you submitted your revised restoration plan to PJM for approval within 90 calendar days after you identified any unplanned permanent BES modifications.</td>
<td>M-30 System Restoration, Attachment G: Coordination of Restoration Plan with PJM Internal and External Neighboring Entities - Approval Process for TO Restoration Plans</td>
<td>7/1/2013</td>
<td>None</td>
</tr>
<tr>
<td>EOP</td>
<td>EOP-005-3</td>
<td>R4.2</td>
<td>Plan to implementing a planned permanent BES modification subject to its Reliability Coordinator approval requirements per EOP-005.</td>
<td></td>
<td>Each Member TO shall submit its revised system restoration plan to PJM for approval when the revision would change the Member TO's ability to implement System restoration plan prior to implementing a planned permanent BES modification.</td>
<td>1. Review the submitted Member TO restoration plans and consider for approval.</td>
<td>Prior to implementing a planned permanent BES modification.</td>
<td>Exhibit evidence such as, emails, screenshots, etc., showing that you submitted your revised restoration plan to PJM for approval prior to implementing a planned permanent BES modification.</td>
<td>M-30 System Restoration, Attachment G: Coordination of Restoration Plan with PJM Internal and External Neighboring Entities - Approval Process for TO Restoration Plans</td>
<td>7/1/2013</td>
<td>None</td>
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<tr>
<td>EOP</td>
<td>EOP-005-3</td>
<td>R5</td>
<td>Each Transmission Operator shall have a copy of its latest 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 effective date.</td>
<td></td>
<td>Each Member TO shall have a copy of its latest 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 effective date.</td>
<td>1. 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 and that it is available to all of its System Operators prior to its implementation effective date.</td>
<td>1. Did you have a copy of your latest PJM approved restoration plan within your primary and backup control rooms prior to its implementation effective date?</td>
<td>M-30 System Restoration, Section 3.1-Policy Statements, Attachment G: Coordination of Restoration Plan with PJM Internal and External Neighboring Entities - PJM Approval for TO Restoration Plans, G-2 #6</td>
<td>EOP-005-1</td>
<td>7/1/2013</td>
<td>EOP-005-2</td>
</tr>
<tr>
<td>EOP</td>
<td>EOP-005-3</td>
<td>R6</td>
<td>Each Transmission Operator shall verify through analysis of actual events a combination of steady state and dynamic simulations, or testing that its restoration plan accomplishes its intended function. This shall be completed at least once every five years.</td>
<td></td>
<td>Each Member TO shall participate in the simulation exercises (PJM Restoration Drills) of system restoration at least annually. 2. Each Member TO shall provide PJM requested information to support analysis of Blackstart Resources to meet the Real and Reactive Power requirements of the Cranking Paths and the dynamic capability to supply initial Loads at least every five years.</td>
<td>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.</td>
<td>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 at least every five years?</td>
<td>M-44 D-Generator Operational Requirements, Section 10.3.2 Selection Process, E: Verify Feasibility of Blackstart Units Selected</td>
<td>EOP-005-1</td>
<td>7/1/2013</td>
<td>EOP-005-2</td>
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<tr>
<td>EOP</td>
<td>EOP-005-3</td>
<td>R6.1</td>
<td>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.</td>
<td></td>
<td>Each member TO shall provide PJM requested information to support analysis of Blackstart Resources to meet the Real and Reactive Power requirements of the Cranking Paths and the dynamic capability to supply initial Loads at least every five years.</td>
<td>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.</td>
<td>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 at least every five years?</td>
<td>M-36 System Restoration, Attachment D: Restoration Drill Guide</td>
<td>EOP-005-1</td>
<td>7/1/2013</td>
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<td>R6.2</td>
<td></td>
<td></td>
<td>Each Member TO shall provide PIM 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 once every five years.</td>
<td>PIM shall have analysis of Blackstart Resources to meet the Real and Reactive Power requirements of the Cranking Paths and the dynamic capability to supply initial Loads at least once every five years.</td>
<td>Did you provide to PIM 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?</td>
<td>Exhibit evidence such as, emails, screenshots, etc., showing that you provided evidence of providing PIM requested information to PIM to support the analysis of Blackstart Resources to meet the Real and Reactive Power requirements of the Cranking Paths and the dynamic capability to supply initial Loads.</td>
<td>PIM OA Tariff; Schedule 6A-Black Start Service</td>
<td>7/1/2013</td>
<td>None</td>
</tr>
<tr>
<td>EOP</td>
<td>EOP-005-2</td>
<td>R6.3</td>
<td></td>
<td></td>
<td>Each Member TO shall provide PIM 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 once every five years.</td>
<td>PIM shall have analysis of Blackstart Resources to meet the Real and Reactive Power requirements of the Cranking Paths and the dynamic capability to supply initial Loads at least once every five years.</td>
<td>Did you provide to PIM 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?</td>
<td>Exhibit evidence such as, emails, screenshots, etc., showing that you provided evidence of providing PIM requested information to PIM to support the analysis of Blackstart Resources to meet the Real and Reactive Power requirements of the Cranking Paths and the dynamic capability to supply initial Loads.</td>
<td>PIM OA Tariff; Schedule 6A-Black Start Service</td>
<td>7/1/2013</td>
<td>None</td>
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<td>EOP</td>
<td>EOP-005-2</td>
<td>R7</td>
<td></td>
<td></td>
<td>Following a Disturbance in which one or more areas of the BES was shut down and the use of Blackstart Resources was required to restore the shut down area to service, the Transmission Operator shall resynchronize the area 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.</td>
<td>Use the Member TO restoration plan to restore the system and coordinate with PJM.</td>
<td>1. 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 at least once every five years?</td>
<td>Exhibit evidence such as, emails, screenshots, etc., showing that you provided evidence of providing PIM requested information to PJM to support the analysis of Blackstart Resources to meet the Real and Reactive Power requirements of the Cranking Paths and the dynamic capability to supply initial Loads.</td>
<td>PIM OA Tariff; Schedule 6A-Black Start Service</td>
<td>7/1/2013</td>
<td>None</td>
</tr>
<tr>
<td>EOP</td>
<td>EOP-005-2</td>
<td>R8</td>
<td></td>
<td></td>
<td>Each Transmission Operator shall include within its operations training program, annual System operation training for its System Operators to meet the proper execution of the responsibilities. This training program shall include training on the following: Communication; Risk Factor = Medium; Time Horizon = Real-time Operations</td>
<td>PIM shall coordinate with the system to be synchronized and issue an Operating Instructions to re-synchronize when coordination is completed.</td>
<td>1. Once the last audit have you 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.</td>
<td>Did you use the Member TO restoration plan to restore the system and coordinate with PJM if any deviations from the plan are required?</td>
<td>Exhibit evidence such as, emails, screenshots, etc., showing that you did not deviate from the plan and provided evidence of providing PJM requested information to PJM to support the analysis of Blackstart Resources to meet the Real and Reactive Power requirements of the Cranking Paths and the dynamic capability to supply initial Loads.</td>
<td>PIM OA Tariff; Schedule 6A-Black Start Service</td>
<td>7/1/2013</td>
</tr>
</tbody>
</table>

### Section 4 - PJM Operator Training

- **Training and Certification Requirements:**
  - The Transmission Operator shall have annual training and testing for members of its System Operations to ensure the proper execution of the responsibilities.

- **Member Actions:**
  - Synchronization of areas, internal or external to PJM.

- **Synchronization of Areas:**
  - PJM shall coordinate 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.

- **Risk Factor:** Medium

- **Time Horizon:** Real-time Operations

- **Operating Instructions:**
  - Provided to PJM.

- **Evidence of Compliance:**
  - Emails, screenshots, etc., showing that you provided evidence of providing PJM requested information to PJM to support the analysis of Blackstart Resources to meet the Real and Reactive Power requirements of the Cranking Paths and the dynamic capability to supply initial Loads.

- **Reference Documents:**
  - PIM OA Tariff; Schedule 6A-Black Start Service.
<table>
<thead>
<tr>
<th>Category</th>
<th>Standard Number</th>
<th>Requirement Number</th>
<th>Approved BTO/ERC Standards</th>
<th>A/S</th>
<th>Assigned or Shared Member TO Tasks</th>
<th>SPM Tasks</th>
<th>Audit Questions</th>
<th>Evidence of Compliance (What auditors will be looking for)</th>
<th>Reference Documents</th>
<th>Enforcement Date</th>
<th>Inactive Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>EOP</td>
<td>EOP-005-2</td>
<td>R3a, 1</td>
<td>System restoration plan including coordination with (a) Reliability Coordinator and Generator Operators included in the restoration plan.</td>
<td>5</td>
<td>Each Member TO operations training program shall include training on its restoration plan including how and when to coordinate with FIM and Generator Operators included in your restoration plan.</td>
<td>Annually provide the FIM System Operator Seminar. The FIM Annual System Operator Seminar partially meets these requirements.</td>
<td>Does your operations training program include training on your restoration plan?</td>
<td>Exhibit the section of your operations training program that includes training on your restoration plan including how and when to coordinate with FIM and Generator Operators included in your restoration plan?</td>
<td>M-40 Certification and Training Requirements, Section 1.1- Training Overview, Section 1.2 - Task List, Section 1.4.3 Reliability-Related Tasks, Section 3 - Member Training and Certification Requirements</td>
<td>None</td>
<td>None</td>
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<tr>
<td>EOP</td>
<td>EOP-005-2</td>
<td>R3a, 2</td>
<td>System restoration plan including coordination with (b) Reliability Coordinator and Generator Operators included in the restoration plan.</td>
<td>5</td>
<td>Each Member TO operations training program shall include training on restoration priorities.</td>
<td>Annually provide the FIM System Operator Seminar. The FIM Annual System Operator Seminar partially meets this requirement.</td>
<td>Does your operations training program have a requirement that all of your System Operators have annual training in system restoration including restoration priorities?</td>
<td>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.</td>
<td>M-40 Certification and Training Requirements, Section 1.1- Training Overview, Section 1.2 - Task List, Section 1.4.3 Reliability-Related Tasks, Section 3 - Member Training and Certification Requirements</td>
<td>None</td>
<td>None</td>
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<tr>
<td>EOP</td>
<td>EOP-005-2</td>
<td>R3a, 3</td>
<td>System restoration plan including coordination with (c) Reliability Coordinator and Generator Operators included in the restoration plan.</td>
<td>5</td>
<td>Each Member TO operations training program shall include training on building of cranking paths.</td>
<td>Annually provide the FIM System Operator Seminar. The FIM Annual System Operator Seminar partially meets these requirements.</td>
<td>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?</td>
<td>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.</td>
<td>M-40 System Restoration, Attachment D: Restoration Drill Guide</td>
<td>None</td>
<td>None</td>
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<td>EOP</td>
<td>EOP-005-2</td>
<td>R3b, 1</td>
<td>Synchronizing (re-energized sections of the System).</td>
<td>5</td>
<td>Each Member TO operations training program shall include training on synchronizing (re-energized sections of the System) under the direction of FIM.</td>
<td>Annually provide the FIM System Operator Seminar. The FIM Annual System Operator Seminar partially meets these requirements.</td>
<td>Does your operations training program have a requirement that all of your System Operators have annual training in system restoration including synchronizing?</td>
<td>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.</td>
<td>M-40 Certification and Training Requirements, Section 2.1- Training Overview, Section 1.2 - Task List, Section 1.4.3 Reliability-Related Tasks, Section 3 - Member Training and Certification Requirements</td>
<td>None</td>
<td>None</td>
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<td>EOP</td>
<td>EOP-005-1</td>
<td>R3b.5</td>
<td>Transition of Demand and resource balance within the area to the Balancing Authority.</td>
<td>3</td>
<td>Each Member TO operations training program shall include training on transition of Demand and resource balance within its area to the FIM in the Balancing Authority.</td>
<td>Annually provide the FIM System Operator Seminar, which covers this training.</td>
<td>Does your operations training program include training on transition of Demand and resource balance within your area to FIM as the Balancing Authority?</td>
<td>Exhibit the section of your operations training program that requires your System Operators to be trained on transition of Demand and resource balance within your area to FIM as the Balancing Authority.</td>
<td>M-36 System Restoration, Attachment D: Restoration Drill Guide</td>
<td>None</td>
<td>None</td>
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<tr>
<td>EOP</td>
<td>EOP-005-3</td>
<td>R4a, 1</td>
<td>Each Transmission Operator shall participate in the Reliability Coordinator’s restoration drills, exercises, or simulations as requested by its Reliability Coordinator.</td>
<td>5</td>
<td>Each Member TO shall participate in FIM’s restoration drills, exercises, or simulations as mentioned in Manual 40.</td>
<td>1. Keep Manual 40 up to date.</td>
<td>Do you meet FIM’s restoration drill requirements mentioned in Manual 40?</td>
<td>Exhibit training records that show that you meet FIM’s restoration drill requirements mentioned in Manual 40.</td>
<td>M-40 Certification and Training Requirements, Section 1.1- Training Overview, Section 1.2 - Task List, Section 1.4.3 Reliability-Related Tasks, Section 3 - Member Training and Certification Requirements</td>
<td>None</td>
<td>None</td>
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<tr>
<td>EOP</td>
<td>EOP-005-2</td>
<td>R4a, 2</td>
<td>Purpose</td>
<td>Ensure continued reliable operations of the Bulk Electric System (BES) in the event that a control center becomes inoperable.</td>
<td>A</td>
<td>Each Member TO shall have a current Operating Plan describing the manner in which its primary control center functionality is lost.</td>
<td>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?</td>
<td>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.</td>
<td>V-1 Control Center and Data Exchange Requirements, Section 2.5.6-Recovery Procedures</td>
<td>None</td>
<td>None</td>
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<td>Category</td>
<td>Standard Number</td>
<td>Requirement Number</td>
<td>Approved B17/NERC Standards</td>
<td>A/S</td>
<td>Assigned or Shared Member TO Tasks</td>
<td>PFM Tasks</td>
<td>Audit Questions</td>
<td>Evidence of Compliance (What auditors will be looking for)</td>
<td>Reference Documents</td>
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<td>EOP-008-2</td>
<td>R.1.1</td>
<td>The location and method of implementation for providing backup functionality must be documented and included in the primary control center functionality.</td>
<td>A</td>
<td>The Member TO plan for the loss of primary control center functionality shall include the location and method of implementation for providing backup functionality. Does your plan for the loss of primary control center functionality include the location and method of implementation for providing backup functionality?</td>
<td>Exhibit your plan for the loss of primary control center functionality that includes the location and method of implementation for providing backup functionality.</td>
<td>K-1 Control Center and Data Exchange Requirements, Section 2.1.6 Recovery Procedures</td>
<td>EOP-008-1 7/1/2013</td>
<td>None</td>
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<tr>
<td>EOP-008-2</td>
<td>R.1.2</td>
<td>A summary description of the elements required to support the backup functionality. These elements shall include: voice exchange capabilities, communications, data exchange capabilities, communications, inter-personal communications, voice communications, physical and cyber security.</td>
<td>A</td>
<td>The Member TO plan for the loss of primary control center functionality shall include a summary description of voice exchange capabilities, communications, data exchange capabilities, communications, inter-personal communications, voice communications, physical and cyber security. Does your plan for the loss of primary control center functionality include a summary description of voice exchange capabilities, communications, data exchange capabilities, communications, inter-personal communications, voice communications, physical and cyber security?</td>
<td>Exhibit your plan for the loss of primary control center functionality that includes a summary description of voice exchange capabilities, communications, data exchange capabilities, communications, inter-personal communications, voice communications, physical and cyber security.</td>
<td>K-1 Control Center and Data Exchange Requirements, Section 2.1.3-Transmission Monitoring Capability</td>
<td>EOP-008-1 7/1/2013</td>
<td>None</td>
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<tr>
<td>EOP-008-2</td>
<td>R.1.2.1</td>
<td>Tools and applications to ensure that System Operators have situational awareness of the BES.</td>
<td>A</td>
<td>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?</td>
<td>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.</td>
<td>K-1 Control Center and Data Exchange Requirements, Section 2.1.3-Transmission Monitoring Capability</td>
<td>EOP-008-1 7/1/2013</td>
<td>None</td>
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<tr>
<td>EOP-008-2</td>
<td>R.1.2.2</td>
<td>Data exchange capabilities, communications.</td>
<td>A</td>
<td>The Member TO plan for the loss of primary control center functionality shall include a summary description of data exchange capabilities, communications. Does your plan for the loss of primary control center functionality include a summary description of data exchange capabilities, communications?</td>
<td>Exhibit your plan for the loss of primary control center functionality that includes a summary description of data exchange capabilities, communications.</td>
<td>K-1 Control Center and Data Exchange Requirements, Section 2.1.3-Transmission Monitoring Capability</td>
<td>EOP-008-1 7/1/2013</td>
<td>None</td>
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<tr>
<td>EOP-008-2</td>
<td>R.1.2.3</td>
<td>Interpersonal communications, voice communications.</td>
<td>A</td>
<td>The Member TO plan for the loss of primary control center functionality shall include a summary description of interpersonal communications, voice communications. Does your plan for the loss of primary control center functionality include a summary description of interpersonal communications, voice communications?</td>
<td>Exhibit your plan for the loss of primary control center functionality that includes a summary description of interpersonal communications, voice communications.</td>
<td>K-1 Control Center and Data Exchange Requirements, Section 2.1.3-Transmission Monitoring Capability</td>
<td>EOP-008-1 7/1/2013</td>
<td>None</td>
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<td>EOP-008-2</td>
<td>R.1.2.4</td>
<td>Power source(s).</td>
<td>A</td>
<td>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?</td>
<td>Exhibit your plan for the loss of primary control center functionality that includes a summary description of power sources.</td>
<td>K-1 Control Center and Data Exchange Requirements, Section 2.1.3-Transmission Monitoring Capability</td>
<td>EOP-008-1 7/1/2013</td>
<td>None</td>
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<tr>
<td>EOP-008-2</td>
<td>R.1.2.5</td>
<td>Physical and cyber security.</td>
<td>A</td>
<td>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?</td>
<td>Exhibit your plan for the loss of primary control center functionality that includes a summary description of physical and cyber security.</td>
<td>K-1 Control Center and Data Exchange Requirements, Section 2.1.3-Transmission Monitoring Capability</td>
<td>EOP-008-1 7/1/2013</td>
<td>None</td>
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<tr>
<td>EOP-008-2</td>
<td>R.3.3</td>
<td>An Operating Process for keeping the backup functionality consistent with the primary control center.</td>
<td>A</td>
<td>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?</td>
<td>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.</td>
<td>K-1 Control Center and Data Exchange Requirements, Section 2.1.3-Transmission Monitoring Capability</td>
<td>EOP-008-1 7/1/2013</td>
<td>None</td>
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<tr>
<td>EOP-008-2</td>
<td>R.4.1</td>
<td>Operating Procedures, including decision authority, for use in determining when to implement the Operating Plan for backup functionality.</td>
<td>A</td>
<td>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?</td>
<td>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.</td>
<td>K-1 Control Center and Data Exchange Requirements, Section 2.1.6 Recovery Procedures</td>
<td>EOP-008-1 7/1/2013</td>
<td>None</td>
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<td>EOP-008-2</td>
<td>R.1.5</td>
<td>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.</td>
<td>A</td>
<td>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?</td>
<td>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.</td>
<td>K-1 Control Center and Data Exchange Requirements, Section 2.1.6 Recovery Procedures</td>
<td>EOP-008-1 7/1/2013</td>
<td>None</td>
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## NERC Reliability Standards

### R1.6
**R1.6.2**

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<th>Category</th>
<th>Standard Number</th>
<th>Requirement Number</th>
<th>Approved BDOT/FERC Standards</th>
<th>A/S</th>
<th>Assigned or Shared Member TO Tasks</th>
<th>PIM Tasks</th>
<th>Audit Questions</th>
<th>Evidence of Compliance (What auditors will be looking for)</th>
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<tbody>
<tr>
<td>EOP</td>
<td>EOP-008-2</td>
<td>R1.6</td>
<td></td>
<td>A</td>
<td>The Member TO plan for 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 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.</td>
<td>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?</td>
<td>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</td>
<td>M-1: Control Center and Data Exchange Requirements, Section 2.1.1, Transmission Monitoring Capability</td>
<td>EOP-008-1</td>
<td>7/1/2013</td>
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<td>EOP</td>
<td>EOP-008-2</td>
<td>R1.6.1</td>
<td></td>
<td>S</td>
<td>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 PIM, to notify when there is a change in operating locations.</td>
<td>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 PIM, to notify when there is a change in operating locations?</td>
<td>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 PIM, to notify when there is a change in operating locations.</td>
<td>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</td>
<td>EOP-008-1</td>
<td>7/1/2013</td>
<td>None</td>
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<td>EOP</td>
<td>EOP-008-2</td>
<td>R1.6.2</td>
<td></td>
<td>S</td>
<td>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.</td>
<td>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?</td>
<td>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.</td>
<td>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</td>
<td>EOP-008-1</td>
<td>7/1/2013</td>
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<td>EOP</td>
<td>EOP-008-2</td>
<td>R1.6.3</td>
<td></td>
<td>A</td>
<td>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.</td>
<td>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?</td>
<td>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.</td>
<td>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</td>
<td>EOP-008-1</td>
<td>7/1/2013</td>
<td>None</td>
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</tbody>
</table>

### R2
**R2. Each Reliability Coordinator, Balancing Authority, and Transmission Operation Planning Authority 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.**

- **R2. Each Reliability Coordinator, Balancing Authority, and Transmission Operation Planning Authority 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 2.1.7, PJM Member Back-Up Capability Required to Support PIM in its TDF Role**
Each Member TO shall annually review and document results of a test of its Operating Plan that demonstrates:

- Planned outages of the primary or backup functionality of two weeks or less
- Unplanned outages of the primary or backup 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. To avoid requiring tertiary functionality, backup functionality is not required during:
- Violation Risk Factor = High
- Time Horizon = Operations Planning

Evidence of Compliance

- Exhibit your Operating Plan for backup functionality showing in the revision history the annual review and approval.
- Show evidence that the primary and backup functionality do not depend on each other for the control center functionality required to maintain compliance with Reliability Standards such as drawings showing their independence.

Reference Documents

M-1 Control Center and Data Exchange Requirements, Attachment B: Schedule of Data Submittals

Enforcement Date

EOP-008-1 7/1/2013
EOP-008-2 7/1/2013
EOP-008-3 7/1/2013
July 1, 2018

NERC Reliability Standards
The transition time between the simulated loss of primary control center functionality and the time to fully implement the backup functionality.

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.

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.

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.

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.

Have you experienced a loss of your primary or backup functionality that you anticipated would last for more than six calendar months?

1. Reports such as emails, voice recordings, 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.

M-1 Control Center and Data Exchange Requirements, Section 2.7 PJM Member Backup Capability Required to Support PJM in its TOP Role

PJM OA 11.3, Schedule 1, 1.9.9

M-1 Control Center and Data Exchange Requirements, Section 4: Interpersonal Communication (Voice Communications), Capability

M-3 Transmission Operations, Section 1.2 Responsibilities for Transmission Owner's Operating Entity

M-37 Reliability Coordinator, Section 1.1 Rules and Responsibilities

M-12 Emergency Operations, Section 3 Geo-Magnetic Disturbances (GMD) Operating Plan (EOP-010-1)

EOP-008-1

1/7/2013

EOP-008-2

1/7/2013

None

EOP-008-1

1/7/2013

EOP-008-2

1/7/2013

None

EOP-008-1

1/7/2013

EOP-008-2

1/7/2013

None

EOP-008-1

1/7/2013

EOP-008-2

1/7/2013

None

EOP-010-1

1/4/2021

EOP-010-1

1/4/2021

None
NERC Reliability Standards

Category | Standard Number | Requirement Number | Approved BOT/FERC Standards | A/S | Assigned or Shared Member TO Tasks | FIM Tasks | Audit Questions | Evidence of Compliance (What auditors will be looking for) | Reference Documents | Enforcement Date | Inactive Date
--- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ---
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:

5. The Member TO shall comply with Operating Instructions.

1. FIM is responsible for developing, maintaining, and implementing its GMD Operating Procedure located in FIM Manual 13: Emergency Operations, Section 3.7 Geo-Magnetic Disturbances. 2. FIM shall issue Operating Instructions to implement its GMD Operating Procedure to ensure mitigation of GMD events on its system.

Have you had any incidents when you were not able to comply with Operating Instructions to mitigate the effects of GMD events?

1. Documentation of procedures that requires the Member TO System Operators to comply with Operating Instructions. 2. Examples of the Member TO system operator following Operating Instructions to mitigate the effects of GMD events in the form of logs, voice recordings or transcripts of voice recordings, or other equivalent evidence.

FIM OA 11.3, Schedule 1, 1.9.9
TDA
M-1 Control Center and Data Exchange Requirements, Section 4 Interpersonal Communication (Voice Communications) Capability
M-3 Transmission Operations, Section 1.2 Responsibilities for Transmission Owner’s Operating Entity
M-37 Reliability Coordination, Section 1- Roles and Responsibilities
M-13 Emergency Operations, Section 3.2 Geo-Magnetic Disturbances (GMD) Operating Plan (EOP-010-1)
4/1/2015 None

EOP | EOP-010-1 | R3.2 | System Operator actions to be initiated based on predetermined conditions.

5. The Member TO shall comply with Operating Instructions.

1. FIM is responsible for developing, maintaining, and implementing its GMD Operating Procedure located in FIM Manual 13: Emergency Operations, Section 3.7 Geo-Magnetic Disturbances. 2. FIM shall issue Operating Instructions to implement its GMD Operating Procedure to ensure mitigation of GMD events on its system.

Have you had any incidents when you were not able to comply with Operating Instructions to mitigate the effects of GMD events?

1. Documentation of procedures that requires the Member TO System Operators to comply with Operating Instructions. 2. Examples of the Member TO system operator following Operating Instructions to mitigate the effects of GMD events in the form of logs, voice recordings or transcripts of voice recordings, or other equivalent evidence.

FIM OA 11.3, Schedule 1, 1.9.9
TDA
M-1 Control Center and Data Exchange Requirements, Section 4 Interpersonal Communication (Voice Communications) Capability
M-3 Transmission Operations, Section 1.2 Responsibilities for Transmission Owner’s Operating Entity
M-37 Reliability Coordination, Section 1- Roles and Responsibilities
M-13 Emergency Operations, Section 3.2 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.

5. The Member TO shall comply with Operating Instructions.

1. FIM is responsible for developing, maintaining, and implementing its GMD Operating Procedure located in FIM Manual 13: Emergency Operations, Section 3.7 Geo-Magnetic Disturbances. 2. FIM shall issue Operating Instructions to implement its GMD Operating Procedure to ensure mitigation of GMD events on its system.

Have you had any incidents when you were not able to comply with Operating Instructions to mitigate the effects of GMD events?

1. Documentation of procedures that requires the Member TO System Operators to comply with Operating Instructions. 2. Examples of the Member TO system operator following Operating Instructions to mitigate the effects of GMD events in the form of logs, voice recordings or transcripts of voice recordings, or other equivalent evidence.

FIM OA 11.3, Schedule 1, 1.9.9
TDA
M-1 Control Center and Data Exchange Requirements, Section 4 Interpersonal Communication (Voice Communications) Capability
M-3 Transmission Operations, Section 1.2 Responsibilities for Transmission Owner’s Operating Entity
M-37 Reliability Coordination, Section 1- Roles and Responsibilities
M-13 Emergency Operations, Section 3.2 Geo-Magnetic Disturbances (GMD) Operating Plan (EOP-010-1)
4/1/2015 None

Exhibit a screenshot of the PJM webpage showing the current specific planning criteria and interconnection requirements on the PJM website.

Examples of the Member TO system operator following Operating Instructions to mitigate the effects of GMD events in the form of logs, voice recordings or transcripts of voice recordings, or other equivalent evidence.

PJM OA 11.3, Schedule 1, 1.9.9
TDA
M-1 Control Center and Data Exchange Requirements, Section 4 Interpersonal Communication (Voice Communications) Capability
M-3 Transmission Operations, Section 1.2 Responsibilities for Transmission Owner’s Operating Entity
M-37 Reliability Coordination, Section 1- Roles and Responsibilities
M-13 Emergency Operations, Section 3.2 Geo-Magnetic Disturbances (GMD) Operating Plan (EOP-010-1)
4/1/2015 None

Exhibit a screenshot of the PJM webpage showing the current specific planning criteria and interconnection requirements on the PJM website.

Examples of the Member TO system operator following Operating Instructions to mitigate the effects of GMD events in the form of logs, voice recordings or transcripts of voice recordings, or other equivalent evidence.

PJM OA 11.3, Schedule 1, 1.9.9
TDA
M-1 Control Center and Data Exchange Requirements, Section 4 Interpersonal Communication (Voice Communications) Capability
M-3 Transmission Operations, Section 1.2 Responsibilities for Transmission Owner’s Operating Entity
M-37 Reliability Coordination, Section 1- Roles and Responsibilities
M-13 Emergency Operations, Section 3.2 Geo-Magnetic Disturbances (GMD) Operating Plan (EOP-010-1)
4/1/2015 None
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<tbody>
<tr>
<td>FAC</td>
<td>FAC-014-2</td>
<td>Purpose</td>
<td></td>
<td></td>
<td>Each Member TO shall establish facility ratings for its portion of PJM.</td>
<td>PJM shall maintain its SOL methodology. PJM shall create SOLs from the Member TO facility ratings using the PJM manual.</td>
<td>Have you established ratings for your portion of PJM?</td>
<td>Exhibit example evidence establishing your ratings.</td>
<td>PJM Operating Agreement, Section 11.3.1a-Member Responsibilities, General Transmission Owners Agreement, Section 4.5 M-3 Transmission Operations, Sections 1.2-Responsibilities for Transmission Owner’s Operating Entity, 1.5-Transmission Operating Guidelines, 3.5-Voltage Control Actions M-37 Reliability Coordination, Sections 1.1-Policy Statements, 3-SOL and IROL Limits M-12 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</td>
<td>4/29/2009</td>
<td>None</td>
</tr>
<tr>
<td>SRO</td>
<td>SRO-001-1.1</td>
<td>Purpose</td>
<td></td>
<td></td>
<td>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.</td>
<td></td>
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## NERC Reliability Standards

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<tbody>
<tr>
<td>IRO</td>
<td>IRO-001-1.1</td>
<td>R8</td>
<td></td>
<td>5</td>
<td>The Member TO System Operators shall comply with Operating Instructions unless such actions would violate safety, equipment, or regulatory or statutory requirements.</td>
<td>PJM shall have remedial plans if the Member TO cannot follow the Operating Instruction.</td>
<td>1. Have you had any incidents when you were not able to comply with the Operating Instructions due to safety, equipment, or regulatory or statutory requirements?</td>
<td>1. Documentation of procedures that require the Member TO system operators to comply with Operating Instructions.</td>
<td>PJM OA 11.3, Schedule 1, 1.9.9</td>
<td>5/13/2009</td>
<td>3/11/2017</td>
</tr>
<tr>
<td></td>
<td>IRO-001-4</td>
<td></td>
<td></td>
<td></td>
<td>To establish the responsibility of Reliability Coordinators to act or direct other entities to act.</td>
<td></td>
<td>2. Examples of the Member TO system operator following Operating Instructions in the form of logs, voice recordings or transcripts of voice recordings, or other equivalent evidence.</td>
<td>2. Examples of the Member TO system operator following Operating Instructions in the form of logs, voice recordings or transcripts of voice recordings, or other equivalent evidence.</td>
<td>M-3 Transmission Operations, Section 1.2-Responsibilities for Transmission Owner's Operating Entity</td>
<td>4/2/2017</td>
<td>None</td>
</tr>
<tr>
<td>IRO</td>
<td>IRO-001-4</td>
<td>R2</td>
<td></td>
<td>5</td>
<td>Each Transmission Operator, Balancing Authority, Generator Operator, Transmission Service Provider, Load-Serving Entities shall comply with the Reliability Coordinator’s Operating Instructions unless such actions would violate safety, equipment, or regulatory or statutory requirements.</td>
<td>PJM shall have remedial plans if the Member TO cannot follow the Operating Instruction.</td>
<td>1. Do you have documented procedures that require your System Operators to comply with PJM Operating Instructions?</td>
<td>1. Documentation of procedures that require the Member TO system operators to comply with Operating Instructions.</td>
<td>PJM OA 11.3, Schedule 1, 1.9.9</td>
<td>M-3 Transmission Operations, Section 1.2-Responsibilities for Transmission Owner's Operating Entity</td>
<td>M-37 Reliability Coordination, Section 1-Roles and Responsibilities</td>
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<tr>
<td>IRO</td>
<td>IRO-001-4</td>
<td>R3</td>
<td>Each Transmission Operator, Balancing Authority, Generator Operator, and Distribution Provider shall inform its Reliability Coordinator of its inability to perform the Operating Instructions issued by its Reliability Coordinator in Requirement R1.</td>
<td>S</td>
<td>If the FIRM Operating Instructions cannot be implemented with due regard to the reliability of the system and to the limitation of any other specified objectives, the Member TO System Operators shall inform the FIRM as soon as possible.</td>
<td>FIRM 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.</td>
<td>1. Have you had any incidents when your System Operators were not able to comply with FIRM Operating Instructions because compliance with the Operating Instructions could not be physically implemented or because such actions would have violated safety, equipment, regulatory, or statutory requirements?</td>
<td>Exhibit evidence, if applicable, of any instances when your System Operators did not comply with FIRM 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 FIRM as soon as possible.</td>
<td>FIRM OA, Section 11.3 Member Responsibilities, 11.3.1 General. M-3 Transmission Operations, Section 1.2-Responsibilities for Transmission Owner’s Entity, Section 1.3-Transmission Operating Guidelines. M-13 Emergency Operations, Section 1.1-Policy Statements. M-37 Reliability Coordination, Section 1.1-Policy Statements. PPA - Schedule 2-Confidentiality Standards for Integrating an Entity into the FIRM Region B, Schedule 4-Operating Programs, Procedures for Demand Resources IRP, 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 13-Load Shedding and Curtailments.</td>
<td></td>
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</tr>
<tr>
<td>IRO</td>
<td>IRO-004-2</td>
<td>Purpose</td>
<td>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 (IRDL) violations.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Draft Version 1.2</td>
<td>4/1/2017</td>
<td>None</td>
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</tr>
<tr>
<td>R1</td>
<td>IRO-004-2</td>
<td>R1</td>
<td>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.</td>
<td>5</td>
<td>The Member TO shall comply Operating Instructions based on the next day assessments in the same manner in which it would comply during real time operating events unless such actions would violatesafety, equipment, or regulatory or statutory requirements.</td>
<td>PFM shall have remedial plans if the Member TO cannot follow the Operating Instructions.</td>
<td>Have you had any incidents when you were not able to comply with the Operating Instructions based on the next day assessments in the same manner as which it would comply during real time operating events due to safety, equipment, or regulatory or statutory requirements?</td>
<td>1. Documentation of procedures that require the Member TO system operators to comply with Operating Instructions 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 Operating Instructions 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 Operating Instructions 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.</td>
<td>PJM OA 11.3, Schedule 1, 1.9.9 TDAC \n M-3 Transmission Operations, Section 1.2- Responsibilities for Transmission Owner’s Operating Entity \n M-37 Reliability Coordination, Section 1- Roles and Responsibilities \n M-1 Control Center and Data Exchange Requirements, Section 4- Interpersonal Communication (Voice Communications) Capability</td>
<td>10/1/2011</td>
<td>3/31/2017</td>
</tr>
<tr>
<td>R1</td>
<td>IRO-005-3.1a</td>
<td>Purpose</td>
<td>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.</td>
<td>5</td>
<td>The Member TO shall comply with Operating Instructions unless such actions would violate safety, equipment, or regulatory or statutory requirements.</td>
<td>PFM shall monitor system frequency and issue an Operating Instruction (load shedding, generation redispatch to GOs or G0Ps) for any necessary re balancing to return to CPS and DCS compliance. PFM shall utilize all resources, including firm load shedding, as directed by its Reliability Coordinator to relieve the emergent condition.</td>
<td>Have you complied with Operating Instructions?</td>
<td>Example evidence such as operator logs, voice recordings, incident reports, etc. for any incidents where you had to follow Operating Instructions.</td>
<td>PFM Operating Agreement, Section 11.3-1e Member Responsibilities, General Transmission-Owners Agreement, Section 4-5 \n M-3 Transmission Operations, Sections 1.2- Responsibilities for Transmission Owner’s Operating Entity, Section 1.5- Transmission Operating Guidelines, Section 3.5- Voltage Control Actions \n M-37 Reliability Coordination, Sections 1.1- Policy Statements, Section 3- SOL and IRD Limits \n M-13 Emergency Operations, Section 5.5- Interconnection Reliability Operating Limits (IROL) Manual Load Dump Warning/Action \n M-12 Balancing Operations, Section 3.1-3 PFM Member Control Implementation, Section 5- Transmission Feed by Control</td>
<td>09/13/2012</td>
<td>3/31/2017</td>
</tr>
<tr>
<td>R1</td>
<td>IRO-005-3.1a</td>
<td>R5</td>
<td>Each Reliability Coordinator shall monitor system frequency and its Balancing Authorities’ performance and direct any necessary re balancing 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.</td>
<td>5</td>
<td>The Member TO shall comply with Operating Instructions unless such actions would violate safety, equipment, or regulatory or statutory requirements.</td>
<td>PFM shall monitor system frequency and issue an Operating Instruction (load shedding, generation redispatch to GOs or G0Ps) for any necessary rebalancing to return to CPS and DCS compliance. PFM shall utilize all resources, including firm load shedding, to relieve the emergent condition.</td>
<td>Have you complied with Operating Instructions?</td>
<td>Example evidence such as operator logs, voice recordings, incident reports, etc. for any incidents where you had to follow Operating Instructions.</td>
<td>PFM Operating Agreement, Section 11.3-1e Member Responsibilities, General Transmission-Owners Agreement, Section 4-5 \n M-3 Transmission Operations, Sections 1.2- Responsibilities for Transmission Owner’s Operating Entity, Section 1.5- Transmission Operating Guidelines, Section 3.5- Voltage Control Actions \n M-37 Reliability Coordination, Sections 1.1- Policy Statements, Section 3- SOL and IRD Limits \n M-13 Emergency Operations, Section 5.5- Interconnection Reliability Operating Limits (IROL) Manual Load Dump Warning/Action \n M-12 Balancing Operations, Section 3.1-3 PFM Member Control Implementation, Section 5- Transmission Feed by Control</td>
<td>09/13/2012</td>
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<tr>
<td>R0</td>
<td>IRO-005-1.1a</td>
<td>R8</td>
<td>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.</td>
<td>5</td>
<td>1. The Member TO shall comply with Operating Instructions unless such actions would violate safety, equipment, or regulatory or statutory requirements. 2. The Member TO shall coordinate pending transmission maintenance outages with PIM as needed in both the real time and next-day reliability analysis timeframes.</td>
<td>1. PIM will operate to mitigate potential or actual SOL, CPs, or DCS violations. 2. PIM 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.</td>
<td>1. Have you complied with Operating Instructions? 2. Did you coordinate transmission maintenance outages with PIM as needed in both the real time and next-day reliability analysis timeframes?</td>
<td>Example evidence such as operator logs, voice recordings, incident reports, etc. for any incidents where you had to follow Operating Instructions.</td>
<td>PIM 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 3.1-Policy Statements, Section 3.5-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</td>
<td>IRO-005-3.1a 05/13/2012</td>
<td>IRO-005-3.1a 3/31/2017</td>
</tr>
<tr>
<td>R0</td>
<td>IRO-005-1.1a</td>
<td>R9</td>
<td>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.</td>
<td>3</td>
<td>Each Member TO shall inform PIM 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.</td>
<td>1. PIM shall 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.</td>
<td>1. Do you have any Member TO owned SPS within your Member TO area? 2. If so, do you have procedures to notify PIM of SPS status including any degradation or potential failure to operate as expected? 3. Have you informed PIM of the status change of your SPSs including any degradation or potential failure to operate as expected?</td>
<td>Exhibit documented procedures that require notifying PIM of SPS status including any degradation or potential failure to operate as expected. 2. Exhibit records that indicate PIM has been informed of the status of the SPSs including any degradation or potential failure to operate as expected.</td>
<td>M-37 Reliability Coordination, Attachment A-PJM Reliability Plan, Section E-Current Day Operations 4.11</td>
<td>IRO-005-3.1a 05/13/2012</td>
<td>IRO-005-3.1a 3/31/2017</td>
</tr>
<tr>
<td>R0</td>
<td>IRO-005-1.1a</td>
<td>RS1</td>
<td>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.</td>
<td>3</td>
<td>The Member TO and PIM shall always operate the Bulk Electric System to the most limiting parameter or rating in case of a discrepancy between ratings.</td>
<td>1. In instances where there is a difference in derived operating limits between the Member TO and PIM, PIM shall always operate the Bulk Electric System to the most limiting parameter or rating in case of a discrepancy between ratings.</td>
<td>1. Have you had to coordinate with PIM because of a difference in derived operating limits between you and PIM? 2. Did you then operate to the most limiting parameter/rating?</td>
<td>Example evidence that you always operate the Bulk Electric System to the most limiting parameter or rating in case of a discrepancy between ratings.</td>
<td>M-3 Transmission Operations, Section 3.3-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</td>
<td>IRO-005-3.1a 05/13/2012</td>
<td>IRO-005-3.1a 3/31/2017</td>
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### Summary

- 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.
- Each Member TO shall inform PIM 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.
- PIM shall 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.
- The Reliability Coordinator 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.
- The Member TO shall comply with Operating Instructions unless such actions would violate safety, equipment, or regulatory or statutory requirements.
- Transmission Operators, Balancing Authorities, and Generator Operators shall always operate the Bulk Electric System to the most limiting parameter or rating in case of a discrepancy between ratings.
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<td>PER</td>
<td>PER-001-0.2</td>
<td>R1</td>
<td>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.</td>
<td>A</td>
<td>Do your system operators have the authority and responsibility to take real-time actions, including load shedding at the direction of FIM unless immediate actions are required to avoid loss of life, ensure safety or protect equipment. Such non-FIM approved actions shall be communicated to FIM as soon as practical?</td>
<td>PIM Open Access Transmission Tariff, Attachment U - Independent Transmission Companies, Section 2 - Security Coordination</td>
<td>PER-001-0.2</td>
<td>09/13/2012</td>
</tr>
<tr>
<td>PER</td>
<td>PER-003-1</td>
<td>Purpose</td>
<td>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.</td>
<td>A</td>
<td>1. Are all your current System operators PJM certified? 2. Were all your system operators PJM and NERC certified since the last audit?</td>
<td>M-1 Control Center and Data Exchange Requirements, Section 2.6-Control Center Staffing</td>
<td>None</td>
<td>10/1/2012</td>
</tr>
<tr>
<td>PER</td>
<td>PER-005-1</td>
<td>Purpose</td>
<td>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.</td>
<td>A</td>
<td>1. Are all your current System operators PIM and NERC certified? 2. Were all your system operators PIM and NERC certified since the last audit?</td>
<td>M-3 Transmission Operations, Section 2.2 - Responsibilities for Transmission Owners Operating Entity</td>
<td>PER-005-0.2</td>
<td>05/13/2012</td>
</tr>
</tbody>
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**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 at the direction of FIM unless immediate actions are required to avoid loss of life, ensure safety or protect equipment. Such non-FIM approved actions shall be communicated to FIM as soon as practical.

**Reference Documents**

PER-001-0.2

**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.

**Reference Documents**

PER-003-1

**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.

**Reference Documents**

PER-005-1
## NERC Reliability Standards

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<tr>
<td>PER</td>
<td>PER-005-1</td>
<td>R1.</td>
<td></td>
<td>5</td>
<td>1. Each Member TO shall establish a training program for the BES company-specific reliability-related tasks performed by its System Operators and shall implement the program.</td>
<td>Keep Manual 40 up to date.</td>
<td>1. Have you established a training program for the BES company-specific reliability-related tasks performed by your system operators and meets the training requirements outlined in PIM Manual 40 which includes requirements to use a systematic approach to training? 2. Have you implemented the training program?</td>
<td>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 PIM 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.</td>
<td>OA 10.4, 11.3.1</td>
<td>4/1/2013</td>
<td>6/30/2016</td>
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<tr>
<td>PER</td>
<td>PER-005-1</td>
<td>R1.1.</td>
<td></td>
<td>5</td>
<td>Each Member TO, in coordination with PJM, shall create a list of BES company-specific reliability-related tasks performed by its system operators.</td>
<td>PIM, in coordination with each member TO, shall create a list of BES company-specific reliability-related tasks and common objectives performed by its operators.</td>
<td>Have you, in coordination with PJM, created a list of BES company-specific reliability-related tasks performed by your system operators?</td>
<td>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.</td>
<td>M-40 Certification and Training Requirements; Section 1.2.1 - Training for Member Operating/Dispatch Personnel; Section 1.2.2 - 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); Section 1.6 Implementation of Program Activities</td>
<td>M-1 Control Center and Data Exchange Requirements; Section 2.6 Control Center Staffing; Attachment B-Schedule of Data Submittals</td>
<td>4/1/2013</td>
</tr>
<tr>
<td>PER</td>
<td>PER-005-1</td>
<td>R1.2.</td>
<td></td>
<td>5</td>
<td>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.</td>
<td>In coordination with PJM, update the list created in R1.1 each calendar year to identify new or modified tasks for inclusion in training.</td>
<td>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?</td>
<td>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.</td>
<td>M-40 Certification and Training Requirements; - Section 1.4.2 Task Lists; Section 1.4.3 - Reliability-Related Tasks</td>
<td>4/1/2013</td>
<td>6/30/2016</td>
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<tr>
<td>PER</td>
<td>PER-005-1</td>
<td>R1.3.</td>
<td></td>
<td>5</td>
<td>Each Reliability Coordinator, Balancing Authority and Transmission Operator shall design and develop learning objectives and training materials based on the task list created in R1.3.</td>
<td>In coordination with each Member TO, shall design and develop learning objectives and training materials based on their company-specific tasks.</td>
<td>Have you, in accordance with PIM Manual 40, developed and delivered training materials based on your company-specific tasks?</td>
<td>Show evidence of design and development of learning objectives and training materials based on your company-specific tasks.</td>
<td>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</td>
<td>4/1/2013</td>
<td>6/30/2016</td>
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<tr>
<td>PER</td>
<td>PER-005-1</td>
<td>R1.3.</td>
<td></td>
<td>5</td>
<td>Each Reliability Coordinator, Balancing Authority and Transmission Operator shall deliver the training established in R1.2.</td>
<td>PIM will offer training that meets the requirements of R1.2 for all common tasks.</td>
<td>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?</td>
<td>Provide evidence that shows training on company-specific tasks, meeting the requirements of R1.2, was delivered.</td>
<td>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</td>
<td>January 11, 2019</td>
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<td>PER</td>
<td>PER-005-1</td>
<td>R.1.4.</td>
<td>Each Reliability Coordinator, Balancing Authority and Transmission Operator shall conduct an annual evaluation of the training program established in R.1, to identify any needed changes to the training program and shall implement the changes identified.</td>
<td>S</td>
<td>In the Member TO shall participate in annual evaluations of the FIM training program established in R.1, to identify any needed changes to the FIM training program. At least every 12 months each Reliability Coordinator, Balancing Authority and Transmission Operator shall conduct an annual evaluation of their training program, established in R.1, to identify any needed changes to the training program and shall implement the changes identified.</td>
<td>FIM shall conduct an annual evaluation, in coordination with the Member TOs, of the training program established in R.1, to identify any needed changes to the training program and shall implement the changes identified.</td>
<td>1. Have you participated in evaluations of the FIM training program? 2. Have you conducted an annual evaluation of your training program?</td>
<td>1. Show evidence of participation in the FIM training program evaluation, such as emails or minutes of meetings. 2. Show evidence of an annual evaluation of your training program established in R.1, to identify any needed changes to the training program, and any changes that have been implemented.</td>
<td>M-40 Certification and Training Requirements, Section 1.7 Evaluation of Program Activities</td>
<td>4/1/2013</td>
<td>6/30/2026</td>
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<td>PER</td>
<td>PER-005-1</td>
<td>R.2</td>
<td>Each Reliability Coordinator, Balancing Authority and Transmission Operator shall verify each of its System Operator’s capabilities to perform each assigned task identified in R.1.1 at least one time.</td>
<td>A</td>
<td>The Member TO shall verify each of its System Operator’s capabilities to perform each assigned task identified in R.1.1 at least one time.</td>
<td>Have you verified each of your System Operator’s capabilities to perform each assigned task identified in R.1.1 at least one time?</td>
<td>Show records for each of your System Operators exhibiting verification of capabilities to perform each assigned task identified in R.1.1.</td>
<td>M-40 Certification and Training Requirements, Section 1.5.4 - Task Verification; Section 3.2.1 - Transmission Owner Operators</td>
<td>4/1/2013</td>
<td>6/30/2026</td>
<td></td>
</tr>
<tr>
<td>PER</td>
<td>PER-005-1</td>
<td>ler-1.</td>
<td>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.</td>
<td>A</td>
<td>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.</td>
<td>Within six months of a modification of the BES company-specific 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?</td>
<td>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.</td>
<td>M-40 Certification and Training Requirements, Section 1.5.4 - Task Verification</td>
<td>4/1/2013</td>
<td>6/30/2026</td>
<td></td>
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<tr>
<td>PER</td>
<td>PER-005-1</td>
<td>R.3</td>
<td>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.</td>
<td>S</td>
<td>At least every 12 months, as determined by FIM in Manual 40, each Member TO, in coordination with FIM, shall provide each of its System Operators with at least 32 hours of emergency operations training consistent of FIM training and individual company restoration plan training that reflects emergency operations topics, which include system restoration using drills, exercises or other training required to maintain qualified personnel.</td>
<td>At least every 12 months FIM, in coordination with Member TOs, shall offer Member TO system operators at least 32 hours of emergency operations training consisting of FIM training and individual company restoration plan training that reflects emergency operations topics, which include system restoration using drills, exercises or other training required to maintain qualified personnel.</td>
<td>Show training records for each of your System Operators showing attendance at training at least every 12 months, as determined by FIM in Manual 40, with at least 32 hours of emergency operations training consisting of FIM 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.</td>
<td>M-40 Certification and Training Requirements, Section 3.2.1 Transmission Owner Operators, Annual Continuing Training</td>
<td>4/1/2011</td>
<td>6/30/2026</td>
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<tr>
<td>PER</td>
<td>PER-005-2</td>
<td>Purpose</td>
<td>To ensure that personnel performing or supporting real-time operations on the Bulk Electric System are trained using a systematic approach.</td>
<td>S</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>PER</td>
<td>PER-005-2</td>
<td>R1</td>
<td>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:</td>
<td>1</td>
<td>1. Each Member TO shall establish a training program for Member TO Operators that meets the training requirements outlined in PIM Manual 40, which includes requirements to use a systematic approach to training. 2. Each Member TO shall implement the training program.</td>
<td>Keep Manual 40 up to date.</td>
<td>1. Have you developed and implemented a training program that meets the requirements outlined in PIM 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.</td>
<td>1. Evidence of using the PIM(Member SAT outlined in PIM 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.</td>
<td>OA Section 10.4 Duties and Responsibilities (A), Section 11.3.1 General (s)</td>
<td>7/1/2016</td>
<td>None</td>
</tr>
<tr>
<td>PER</td>
<td>PER-005-2</td>
<td>R1.1</td>
<td>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.</td>
<td>5</td>
<td>Each Member TO, in coordination with PIM, shall create a list of BES company-specific Real-time reliability-related tasks performed by its TO Operators.</td>
<td>PIM, in coordination with each member TO, shall create a list of BES company-specific Real-time reliability-related tasks and common objectives performed by its operators.</td>
<td>Have you, in coordination with PIM, created a list of BES company-specific Real-time reliability-related tasks performed by your TO Operators?</td>
<td>1. Exhibit the list of BES company-specific Real-time reliability-related tasks performed by your TO Operators. 2. Show evidence of coordination with PIM such as emails, minutes of meetings, reports from company Dispatcher Training Subcommittee (DOTS) account in the PIM Learning Management System (LMS).</td>
<td>M-40 Certification and Training Requirements, Section 1.4.2 - Task Lists; Section 1.4.3 - Reliability-Related Tasks; Section 1.4.5 - Development of Training Programs; Section 11.3.2 - Initial Training Program; 1.5.5 - Continuing Training Program; 1.6. Implementation of Program Activities</td>
<td>7/1/2016</td>
<td>None</td>
</tr>
<tr>
<td>PER</td>
<td>PER-005-2</td>
<td>R1.1.1</td>
<td>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.</td>
<td>5</td>
<td>In coordination with PIM, review, and update if necessary, the list created in R1.1 each calendar year.</td>
<td>In coordination with each Member TO, review, and update if necessary, the list created in R1.1 each calendar year.</td>
<td>Have you, in coordination with PIM, reviewed, and updated if necessary, the list created in R1.1 each calendar year?</td>
<td>1. Show evidence of reviewing, and updating if necessary, the list created in R1.1 each year. 2. Show evidence of coordination with PIM such as emails, minutes of meetings, reports from company Dispatcher Training Subcommittee (DOTS) account in the PIM Learning Management System (LMS).</td>
<td>M-40 Certification and Training Requirements, Section 1.4.2 Task Lists; Section 1.4.3 - Reliability-Related Tasks; Section 1.4.5 Task Modification</td>
<td>7/1/2016</td>
<td>None</td>
</tr>
<tr>
<td>PER</td>
<td>PER-005-2</td>
<td>R1.2</td>
<td>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.</td>
<td>5</td>
<td>Each Member TO shall, in accordance with PIM Manual 40, design and develop training materials based on its company-specific tasks.</td>
<td>In coordination with each Member TO, PIM shall design and develop training materials based on the common task list created in R1.1.</td>
<td>Have you, in accordance with PIM Manual 40, designed and developed training materials based on your company-specific tasks?</td>
<td>Show evidence of training materials based on your company-specific tasks that meet the design, development, and documentation requirements of PIM Manual 40.</td>
<td>M-40 Certification and Training Requirements, Section 1.4.2 - Member Systematic Approach to Training; Section 1.5 - Development of Training Programs; Section 1.5.2 - Initial Training Program; 1.5.5 - Continuing Training Program; Section 1.6 Implementation of Program Activities</td>
<td>7/1/2016</td>
<td>None</td>
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<td>PER</td>
<td>PER-005-2</td>
<td>R1.3.</td>
<td>Each Reliability Coordinator, Balancing Authority, and Transmission Operator shall deliver training to its System Operators according to its training program.</td>
<td>S</td>
<td>Each Member TO will provide training to its TO Operators on its company-specific tasks that meets the requirements of R1.2.</td>
<td>FIM shall offer training that meets the requirements of R1.2 for all common tasks.</td>
<td>1. Did you deliver training on your company-specific tasks that meets the requirements of R1.2 to your TO Operators?</td>
<td>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.</td>
<td>M-40 Certification and Training Requirements, Section 1.2 - PJM Member Systematic Approach to Training (SAT).</td>
<td>7/1/2016</td>
<td>None</td>
</tr>
<tr>
<td>PER</td>
<td>PER-005-2</td>
<td>R1.4.</td>
<td>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.</td>
<td>S</td>
<td>Each Member TO shall participate in evaluations of the PIM training program established in R1, each calendar year, to identify any needed changes to the PIM training program.</td>
<td>FIM 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.</td>
<td>1. Have you participated in evaluations of the PIM 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?</td>
<td>1. Show evidence of participation in the PIM training program evaluation each calendar year, such as emails, minutes of meetings, reports from company Dispatcher Training Subcommittee (DTS) account in the PIM 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).</td>
<td>M-40 Certification and Training Requirements, Section 1.7 Evaluation of Program Activities</td>
<td>7/1/2016</td>
<td>None</td>
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<tr>
<td>PER</td>
<td>PER-005-2</td>
<td>R3</td>
<td>Each Reliability Coordinator, Balancing Authority, Transmission Operator, and Transmission Owner shall verify, at least once, the capabilities of its personnel, identified in Requirement R1, each of the applicable BES common and company-specific real-time reliability-related tasks identified under Requirement R1 part R1.1 or Requirement R2 part R2.1.</td>
<td>A</td>
<td>Each Member TO shall verify the capabilities of its personnel, identified in Requirement R1, assigned to perform each of the applicable BES common and company-specific real-time reliability-related tasks identified under Requirement R1 part R1.1 at least one time.</td>
<td>Have you verified the capabilities of your personnel, identified in Requirement R1, assigned to perform each of the applicable BES common and company-specific real-time reliability-related tasks identified under Requirement R1 part R1.1 at least one time?</td>
<td>Show records of verification of capabilities for each of your personnel, identified in Requirement R1, assigned to perform each of the applicable BES common and company-specific real-time reliability-related tasks identified under Requirement R1 part R1.1. Evidence may include operator records in the Task Tracking Module (TTM) of the PJM Learning Management System (LMS).</td>
<td>M-40 Certification and Training Requirements, Section 1.5.4 - Task Verification; Section 3.2.1 - Transmission Owner Operators</td>
<td>7/1/2016</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>PER</td>
<td>PER-005-2</td>
<td>R3.1.</td>
<td>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 R1.1 or Requirement R2 part R2.1.</td>
<td>A</td>
<td>Within six months of a modification or addition of an applicable BES common or company-specific real-time reliability-related task, each Member TO shall verify the capabilities of each of its personnel identified in Requirement R1 to perform the new or modified BES common or company-specific real-time reliability-related tasks identified in Requirement R1 part R1.1</td>
<td>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?</td>
<td>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).</td>
<td>M-40 Certification and Training Requirements, Section 1.5.4 - Task Verification</td>
<td>7/1/2016</td>
<td>None</td>
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<td>PER</td>
<td>PER-005-2</td>
<td>R4.</td>
<td>Each Reliability Coordinator, Balancing Authority, Transmission Operator, and Transmission Owner that has operational authority or control over Facilities with established Interconnection Reliability Operating Limits (IROCs), or (2) has established protection systems or operating guides to mitigate IROD 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.</td>
<td>5</td>
<td>Each Member TO shall provide its personnel identified in Requirement R1 or, 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 PIM training or an equivalent as required by Manual 40.</td>
<td>PIM 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.</td>
<td>Have you provided your personnel identified in Requirement R1 or, 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 PIM training or an equivalent as required by Manual 40?</td>
<td>Exhibit evidence that you provided your personnel identified in Requirement R1 or, 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 PIM training or an equivalent as required by Manual 40.</td>
<td>M-40 Certification and Training Requirements, Section 5.2.1 Transmission Owner Operators, Annual Continuing Training</td>
<td></td>
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<tr>
<td>FRC</td>
<td>PRC-001-1.1(ii)</td>
<td>Purpose</td>
<td>To ensure system protection is coordinated among operating entities.</td>
<td>5</td>
<td>Each Member TO operator shall be familiar with the purpose and limitations of Protection System schemes applied in its area.</td>
<td>Each Member TO shall provide PIM Protection System information on request.</td>
<td>1. Where is the information with regards to the purpose and limitations of Protection System schemes located? Have you provided Protection System schemes information to PIM when requested?</td>
<td>1. Documented Protection System scheme information. 2. Evidence that you provided information about Protection System schemes within your area to PIM when requested. 3. Describe any training on Protection Systems provided to each operator.</td>
<td>PRC-001-1.1(ii) 5/20/2015</td>
<td>PRC-001-1.1(ii) 5/20/2015</td>
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<tr>
<td>FRC</td>
<td>PRC-001-1.1(ii)</td>
<td>R1.</td>
<td>Each Transmission Operator, Balancing Authority, and Generator Operator shall be familiar with the purpose and limitations of Protection System schemes applied in its area.</td>
<td>5</td>
<td>Each Member TO operator shall be familiar with the purpose and limitations of Protection System schemes applied in its area.</td>
<td>PIM operators shall be familiar with the purpose and limitations of Protection System schemes applied in its area.</td>
<td>1. Did you report all protection system failures and protection system outages on EHV facilities ([45 kV and above] through the PIM eDART tool? Did you report to PIM Operations any protection system failures and outages on any other Reportable Facilities that are a part of the Bulk Electric System requiring PIM to modify PIM EMS Network Application Contingencies? 2. Have you taken any corrective action as instructed by PIM as soon as possible?</td>
<td>1. Did you report all protection system failures and protection system outages on EHV facilities ([45 kV and above] through the PIM eDART tool? Did you report to PIM Operations any protection system failures and outages on any other Reportable Facilities that are a part of the Bulk Electric System requiring PIM to modify PIM EMS Network Application Contingencies? 2. Have you taken any corrective action as instructed by PIM as soon as possible?</td>
<td>M-4 Transmission Operations, Section 1.2- Responsibilities for Transmission Owner’s Entity, Section 1.4- Reportable Transmission Facility, Section 2.4- Protection System Coordination</td>
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<tr>
<td>FRC</td>
<td>PRC-001-1.1(ii)</td>
<td>R2.</td>
<td>Each Generator Operator and Transmission Operator shall notify reliability entities of relay or equipment failures as follows:</td>
<td>5</td>
<td>Each Member TO shall notify PIM of relay or equipment failures as follows:</td>
<td>Notify affected Member TO of relay or equipment failures as follows:</td>
<td>1. Instruct Member TO to take corrective actions as soon as possible. 2. Notify affected TOP and RCs of relay or equipment failures as follows:</td>
<td>Do you notify PIM of relay or equipment failures as follows?</td>
<td>See below.</td>
<td>M-3 Transmission Operations, Section 4.2- Hotline / In Service Work Requests / Protective Relay Outages / Failures, Section 4.2-A Protection System Coordination</td>
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<tr>
<td>FRC</td>
<td>PRC-001-1.1(ii)</td>
<td>R2.2.</td>
<td>If a protective relay or equipment failure reduces system reliability, the Transmission Operator shall notify its Reliability Coordinator of such failure. The Transmission Operator shall take corrective action as soon as possible.</td>
<td>5</td>
<td>The Member TO must report all protection system failures and protection system outages on EHV facilities ([45 kV and above] through the PIM eDART tool. The Member TO shall report to PIM Operations any protection system failures and outages on any other Reportable Facilities that are a part of the Bulk Electric System requiring PIM to modify PIM EMS Network Application Contingencies? 2. Take corrective action as instructed by PIM as soon as possible.</td>
<td>1. Instruct Member TO to take corrective actions as soon as possible. 2. Notify affected TOP and RCs of relay or equipment failure that reduces system reliability as noted in PIM Compliance Bulletin on PRC-001-1.1(ii).</td>
<td>1. Did you report all protection system failures and protection system outages on EHV facilities ([45 kV and above] through the PIM eDART tool? Did you report to PIM Operations any protection system failures and outages on any other Reportable Facilities that are a part of the Bulk Electric System requiring PIM to modify PIM EMS Network Application Contingencies? 2. Have you taken any corrective action as instructed by PIM as soon as possible?</td>
<td>1. Did you report all protection system failures and protection system outages on EHV facilities ([45 kV and above] through the PIM eDART tool? Did you report to PIM Operations any protection system failures and outages on any other Reportable Facilities that are a part of the Bulk Electric System requiring PIM to modify PIM EMS Network Application Contingencies? 2. Have you taken any corrective action as instructed by PIM as soon as possible?</td>
<td>M-3 Transmission Operations, Section 2.2- Responsibilities for Transmission Owner’s Entity, Section 1.5-4 Reportable Transmission Facility, Section 2.4- Protection System Coordination</td>
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### Related Task List
- [System Protection Coordination](http://pjm.com/committees-and-groups/subcommittees/dts.aspx)
- [CB001 NERC Standard PRC-001-1.1(ii) – System Protection Coordination](http://pjm.com/committees-and-groups/subcommittees/dts.aspx)
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<th>Category</th>
<th>Standard Number</th>
<th>Requirement Number</th>
<th>Approved BOT/FERC Standards</th>
<th>A/S</th>
<th>Assigned or Shared Member TO Tasks</th>
<th>PIM Tasks</th>
<th>Audit Questions</th>
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<tbody>
<tr>
<td>PRC</td>
<td>PRC-001-1.1(ii)</td>
<td>R3</td>
<td>A Generator Operator or Transmission Operator shall coordinate new protective systems and changes as follows.</td>
<td>S</td>
<td>1. Facilitate the PIM Relay Subcommittee. 2. Notify Member TO of periodic model build due dates.</td>
<td>1. Do you coordinate new protective systems and changes as follows?</td>
<td>See below.</td>
<td>See PJM Compliance Bulletin on PRC-001, section 2.2.4.4 - Protection System Coordination</td>
<td>PRC-001-1.1(ii)</td>
<td>9/30/2015</td>
<td>None</td>
</tr>
<tr>
<td>PRC</td>
<td>PRC-001-1.1(ii)</td>
<td>R3.2</td>
<td>Each Transmission Operator shall coordinate new protective systems and changes with neighboring Transmission Owners and Balancing Authorities.</td>
<td>S</td>
<td>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 affect contingency modeling as noted in PIM Manual 3A with PIM.</td>
<td>1. Facilitate the PIM Relay Subcommittee. 2. Notify Member TOs of periodic model build due dates. 3. PIM shall update the model to reflect protection system additions or changes as noted in PIM Manual 3A.</td>
<td>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 PIM operations models as noted in PIM Manual 3A with PIM?</td>
<td>See PJM Compliance Bulletin on PRC-001, section 2.2.4.4 - Protection System Coordination</td>
<td>PRC-001-1.1(ii)</td>
<td>9/30/2015</td>
<td>None</td>
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<td>Category</td>
<td>Standard Number</td>
<td>Requirement Number</td>
<td>Approved RTO/FERC Standards</td>
<td>A/S</td>
<td>Assigned or Shared Member TO Tasks</td>
<td>PIM Tasks</td>
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<tr>
<td>PRC</td>
<td>PRC-001-1.1(0)</td>
<td>R4</td>
<td>Each Transmission Operator shall coordinate Protection Systems on major transmission lines and interconnections with neighboring Generator Operators, Transmission Operators, and Balancing Authorities.</td>
<td>S</td>
<td>1. The Member TO shall coordinate Protective Systems with neighboring Transmission Owners, Generator Operators, Transmission Operators, and Balancing Authorities as noted in PIM 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 affect contingency modeling as noted in PIM Manual SA with PIM.</td>
<td>Facilitate the PIM Relay Subcommittee. 2. Notify Member TO of periodic model build due dates. 3. PIM shall update the model to reflect Protection system additions or changes as noted in PIM Manual 3A.</td>
<td>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 PIM Compliance Bulletin on PRC-001? 2. Do you support the periodic update of the PIM operations models as noted in PIM Manual 3A with PIM?</td>
<td>I-1. Transmission Operations, Section 4.2- Coordination 2. The Member TO shall coordinate new Protective Systems and Protective System Changes that affect contingency modeling as noted in PIM Manual 3A.</td>
<td>CB001 NERC Standard PRC-001-1.1(ii) – System Protection Coordination</td>
<td>PRC-001.1(i)</td>
<td>5/29/2015</td>
</tr>
<tr>
<td>PRC</td>
<td>PRC-001-1.1(0)</td>
<td>R1.2</td>
<td>Each Transmission Operator shall notify neighboring Transmission Operators in advance of any changes in generation, transmission, load, or operating conditions that could require changes in the other Transmission Operators’ protection systems.</td>
<td>S</td>
<td>1. 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 PIM Compliance Bulletin on PRC-001.2. PIM shall communicate all system changes to the appropriate entities through normal Operations and Planning processes as noted in PIM Compliance Bulletin on PRC-001.1.1(1).</td>
<td>Do you participate in normal Operations and Planning processes as noted in PIM Compliance Bulletin on PRC-001.2. PIM shall communicate all system changes to the appropriate entities through normal Operations and Planning processes as noted in PIM Compliance Bulletin on PRC-001.1.1(ii).</td>
<td>Evidence of participation in normal Operations and Planning processes as noted in PIM Compliance Bulletin on PRC-001.2. PIM shall communicate all system changes to the appropriate entities through normal Operations and Planning processes as noted in PIM Compliance Bulletin on PRC-001.1.1(ii) such as emails.</td>
<td>CB001 NERC Standard PRC-001-1.1(ii) – System Protection Coordination</td>
<td>PRC-001.1(i)</td>
<td>5/29/2015</td>
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<tr>
<td>PRC</td>
<td>PRC-001-1.1(0)</td>
<td>R6</td>
<td>Each Transmission Operator and Balancing Authority shall monitor the status of each Special Protection System in their area, and shall notify PIM of changes in status.</td>
<td>S</td>
<td>1. Each Member TO shall monitor the status of each Special Protection System in their area, and shall notify PIM of changes in status.</td>
<td>PIM shall notify other TOs and affected TOPs and BAs of each change in status of SPSs.</td>
<td>Do you monitor the status of each Special Protection System in your TO area? 2. Do you notify PIM of changes in status of your SPSs?</td>
<td>CB001 NERC Standard PRC-001-1.1(ii) – System Protection Coordination</td>
<td>PRC-001.1(i)</td>
<td>5/29/2015</td>
<td></td>
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<tr>
<td>PRC</td>
<td>PRC-010-0</td>
<td>Purpose</td>
<td>Provide System preservation measures in an attempt to prevent system-voltage collapse or voltage instability by implementing an Undervoltage Load Shedding (UVLS) program.</td>
<td></td>
<td>Provide System preservation measures in an attempt to prevent system-voltage collapse or voltage instability by implementing an Undervoltage Load Shedding (UVLS) program.</td>
<td>Provide System preservation measures in an attempt to prevent system-voltage collapse or voltage instability by implementing an Undervoltage Load Shedding (UVLS) program.</td>
<td>I-1. Transmission Operations, Section 4.2- Responsibilities for Transmission Owner’s Operating Entity, Section 5- Index &amp; Operating Procedures for PJM RTO Operations, Automatic Special Protection Scheme (SPS) Operating Criteria</td>
<td>CB001 NERC Standard PRC-001-1.1(ii) – System Protection Coordination</td>
<td>PRC-001.1(i)</td>
<td>5/29/2015</td>
<td></td>
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</tbody>
</table>
Each Transmission Operator, Load-Serving Entity, Transmission Owner, 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).

PM shall participate in the periodic analysis required to assess the effectiveness of the UVLS program with each Member TD 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?

PM shall participate in the periodic analysis required to assess the effectiveness of the UVLS program with each Member TD that owns or operates a UVLS program. Shows 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?

PM shall participate in the periodic analysis required to assess the effectiveness of the UVLS program with each Member TD that owns or operates a UVLS program. 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.

PM shall participate in the periodic analysis required to assess the effectiveness of the UVLS program with each Member TD that owns or operates a UVLS program. PM shall participate in the periodic analysis required to assess the effectiveness of the UVLS program with each Member TD that owns or operates a UVLS program.

PM does not have a UVLS program and does not rely on the few instances of voltage collapse or voltage instability. PM shall participate in the periodic analysis required to assess the effectiveness of the UVLS program with each Member TD that owns or operates a UVLS program.

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PM does not participate in the periodic analysis required to assess the effectiveness of the UVLS program with each Member TD that owns or operates a UVLS program. PM does not have a UVLS program and does not rely on the few instances of voltage collapse or voltage instability. PM does not have a UVLS program and does not rely on the few instances of voltage collapse or voltage instability.

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PRC PRC-022-1 81.3 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.

A/S

R1.5 For any Misoperation, a Corrective Action Plan to avoid future Misoperations of a similar nature. A

The Member TO analysis shall include a simulation of the event when instructed by PJM to do so.
2. Does your analysis include sequence of events?

A/S

PRC PRC-022-1 81.4 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?

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. 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). Did your system operators not comply with Operating Instructions in order to avoid loss of life, ensure safety, or protect equipment?
2. The Member TO system operators shall have the responsibility and clear decision-making authority to take actions to avoid loss of life, ensure safety, or protect equipment. Did your system operators not comply with Operating Instructions to ensure the reliability of its area and shall exercise specific authority to alleviate operating emergencies?

PM 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.

TOP TOP-001-1a R1 Each Transmission Operator shall have the responsibility and clear decision-making authority to take actions as directed by PJM (Operating Instruction). If the Operating 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. 8

1. The Member TO system operators 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.

PM 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.

TOP TOP-001-1a R1 Each Transmission Operator shall have the responsibility and clear decision-making authority to take actions as directed by PJM (Operating Instruction). If the Operating 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. 8

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TOP TOP-001-1a R1 Each Transmission Operator shall have the responsibility and clear decision-making authority to take actions as directed by PJM (Operating Instruction). If the Operating 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. 8

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PM 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.

TOP TOP-001-1a R1 Each Transmission Operator shall have the responsibility and clear decision-making authority to take actions as directed by PJM (Operating Instruction). If the Operating 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. 8

1. The Member TO system operators 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.

PM 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.
# NERC Reliability Standards

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<th>Requirement Number</th>
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<th>FIM Tasks</th>
<th>Audit Questions</th>
<th>Evidence of Compliance (What auditors will be looking for)</th>
<th>Reference Documents</th>
<th>Enforcement Date</th>
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<tr>
<td>TOP-001-1a</td>
<td>R2</td>
<td>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.</td>
<td>PIM shall issue Operating Instructions to alleviate operating emergencies including curtailing transmission service or energy schedules, operating equipment (e.g., generators, phase shifters, breakers), shedding firm load, etc.</td>
<td>Have you had any incidents when the TO system operator has had to take immediate actions at the direction (Operating Instruction) of PIM to alleviate operating emergencies, operating equipment (e.g., phase shifters, breakers), shedding firm load, etc.?</td>
<td>Evidence such as example system operator logs or voice recordings of actions taken during emergencies that support compliance to this requirement.</td>
<td>PIM EA Schedule 1: 1.7.15-Corrective Actions</td>
<td>M-1 Control Center and Data Exchange Requirements, Section 2.6-Control Center Staffing</td>
<td>11/21/2011</td>
<td>3/31/2017</td>
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<tr>
<td>TOP-001-1a</td>
<td>R3</td>
<td>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.</td>
<td>PIM shall issue Operating Instructions to ensure the stable and reliable operation of the Bulk Electric System.</td>
<td>Do you have documented procedures that require your System Operators to comply with Operating Instructions?</td>
<td>Exhibit documented procedures that require your operators to comply with Operating Instructions.</td>
<td>PIM EA Schedule 1: 1.7.15-Corrective Actions M-1 Control Center and Data Exchange Requirements, Section 2.6-Control Center Staffing</td>
<td>M-3 Transmission Operations, Section 1.2-Responsibilities for Transmission Owner’s Operating Entities, Section 5-Index and Operating Procedures for PJM RTO Operation</td>
<td>11/21/2011</td>
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<tr>
<td>TOP</td>
<td>TOP-001-1a</td>
<td>R5</td>
<td>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.</td>
<td>5</td>
<td>Each Member TO shall inform FIM of real time or anticipated emergency conditions. Through discussion with FIM, 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-FIM approved actions shall be communicated to FIM as soon as practical.</td>
<td>Through discussion with the Member TO, decide on actions to avoid, when possible, or mitigate an emergency. FIM will inform any other potentially affected Transmission Operators.</td>
<td>Have you had discussions with FIM to decide on actions to avoid, when possible, or mitigate an emergency?</td>
<td>Show example evidence such as system operator logs or voice recordings of discussions with FIM to decide on actions taken to avoid, when possible, or mitigate an emergency.</td>
<td>M-37 Reliability Coordination, Attachment A- Reliability Plan FIM OA 11.3-Member Responsibilities M-12 Balancing Operations; Attachment B- Transmission Constraint Control Guidelines B.1.16-Maintaining System Reliability M-13 Emergency Operations, Section 1.1-Policy Statements TDA Article 4.7-Actions in Emergency M-3 Transmission Operations, Section 1.2-Responsibilities for Transmission Owner’s Operating Entity TOP-001-1a 11/21/2011 TOP-001-1a 3/31/2017</td>
</tr>
<tr>
<td>TOP</td>
<td>TOP-001-1a</td>
<td>R6</td>
<td>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.</td>
<td>5</td>
<td>Each Member TO system operators shall comply with Operating Instructions issued by FIM to render emergency assistance to others unless such actions would violate safety, equipment, regulatory or statutory requirements. If, because of the reasons mentioned above, the Operating Instructions cannot be complied with, the Member TO System Operator shall inform FIM as soon as possible.</td>
<td>FIM 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. FIM shall be prepared to implement alternate remedial actions if necessary.</td>
<td>Since your last audit, did your System Operators receive Operating Instructions from FIM to render emergency assistance to others? Did your System Operators comply with those Operating Instructions unless such actions would have violated safety, equipment, regulatory or statutory requirements? If, because of the reasons mentioned above, your System Operators could not comply with FIM issued Operating Instructions, did your System Operators inform FIM as soon as possible?</td>
<td>1. If applicable, evidence such as system operator logs, voice recordings, or incident reports etc., for any incidents or other extraordinary circumstances where your System Operators complied with FIM issued Operating Instructions to render emergency assistance to others as requested. 2. If your System Operators could not comply with FIM issued Operating Instructions to render emergency assistance to others as requested, evidence that your System Operators could not comply with those FIM issued Operating Instructions because such actions would have violated safety, equipment, regulatory, or statutory requirements. Evidence that in such an instance, your System Operators informed FIM as soon as possible.</td>
<td>M-37 Reliability Coordination, Section 1.7.15-Corrective Action for Emergency Operation 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 FIM RTO Operation M-13 Emergency Operations, Section 1.3-Policy Statements M-36 System Restoration, Section 1.1-Policy Statements M-37 Reliability Coordination, Section 1.1-Policy Statements TDA - Section 4.7-Actions in Emergency RAA - Article 9, Section 9.1(i) Open Access Transmission Tariff, Section 1.7.4-General Obligations of the Market Participants (b), Section 5.3 Outage Authority and Coordination TOP-001-1a 11/21/2011 TOP-001-1a 3/31/2017</td>
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<td>TOP</td>
<td>TOP-001-1a</td>
<td>R7</td>
<td>Each Transmission Operator and Generator Operator shall not remove Bulk Electric System facilities from service if removing those facilities would burden neighboring systems unless:</td>
<td>5</td>
<td>Each Member TO shall not remove Bulk Electric System facilities from service if removing those facilities would burden neighboring systems unless:</td>
<td>FIM shall not remove Bulk Electric System facilities from service if removing those facilities would burden neighboring systems unless:</td>
<td>Have you had to remove Bulk Electric System facilities from service if removing those facilities would burden neighboring systems? Provide examples of coordinating, with FIM, the removal of facilities from service.</td>
<td>M-37 Reliability Coordination, Section 1.1-Policy Statements FIM 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 1.1-Policy Statements TOP-001-1a 11/21/2011 TOP-001-1a 3/31/2017</td>
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<td>TOP</td>
<td>TOP-001-1a</td>
<td>R7.2.</td>
<td>5</td>
<td>The Member TO shall notify and coordinate with FIM about the impact of removing a Bulk Electric System facility.</td>
<td>PIM shall notify other affected Transmission Operators, and coordinate the impact of removing the Bulk Electric System facility.</td>
<td>Have you had to notify and coordinate with FIM about the impact of removing a Bulk Electric System facility?</td>
<td>Provide examples of coordinating the removal of facilities from service.</td>
<td>NERC Reliability Coordination, Section 1.1-Policy Statements</td>
<td>TOP-001-1a</td>
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<td>TOP</td>
<td>TOP-001-1a</td>
<td>R7.3.</td>
<td>5</td>
<td>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.</td>
<td>PIM shall notify other adjacent Transmission Operators, and coordinate the impact of removing the Bulk Electric System facility.</td>
<td>Have you had any incidents where you have removed transmission elements from service without first coordinating with FIM?</td>
<td>Evidence such as system operator logs, voice recordings, 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 coordinating with FIM.</td>
<td>OA Section 11.3, Member Responsibilities</td>
<td>TOP-001-1a</td>
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<td>TOP</td>
<td>TOP-001-1a</td>
<td>R8.</td>
<td>5</td>
<td>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.</td>
<td>PIM shall issue Operating Instructions to restore the real and reactive power balance including firm load shedding.</td>
<td>Have you had an incident where you had to comply with Operating Instructions unless such actions would violate safety, equipment, or regulatory or statutory requirements.</td>
<td>Evidence such as system operator logs, voice recordings, incident reports, etc., for any incidents where your operators at the direction (Operating Instruction) of PIM had to implement shedding of firm load.</td>
<td>OA Section 11.3, Member Responsibilities</td>
<td>TOP-001-1a</td>
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TOP TOP-001-4

Purpose 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.
### TOT - TOP-001-4

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<tr>
<th>Category</th>
<th>Standard Number</th>
<th>Requirement Number</th>
<th>Approved BDT/NERC Standards</th>
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<td>TOT</td>
<td>TOP-001-4</td>
<td>R3</td>
<td>Each Transmission Operator shall act to maintain the reliability of its Transmission Operator Area via its own actions or by issuing Operating Instructions.</td>
<td>5</td>
<td>1. The Member TO System Operators shall comply with PIM Operating Instructions unless compliance with the Operating Instructions cannot be physically implemented or unless such actions would violate safety, equipment, regulatory, or statutory requirements.</td>
<td>1. PIM shall issue Operating Instructions to maintain the reliability of its Transmission Operator Area. 2. PIM shall be prepared to implement alternate remedial actions when the Member TO cannot comply with PIM 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.</td>
<td>1. Do you have documented procedures that require your System Operators to comply with PIM Operating Instructions? 2. Have you had any incidents when your System Operators were not able to comply with PIM 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?</td>
<td>1. Documentation of procedures that require the Member TO System Operators to comply with PIM Operating Instructions. 2. Examples of the Member TO System Operator following PIM 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 PIM 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 PIM as soon as possible.</td>
<td>PIM OA, Section 11.3 Member Responsibilities, 11.3.1 General [a] M-3 Transmission Operations, Section 1.2- Responsibilities for Transmission Owner’s Entity, 1.3-Transmission Operating Guidelines M-13 Emergency Operations, Section 1.3- Policy Statements M-37 Reliability Coordinator, Section 1.1- Policy Statements MAA - Schedule 2-Standards for Integrating an Entity into the PJM Region-B.3, Schedule 6- Procedures for Demand Resources ILR, and Energy Efficiency-A.5. Open Access Transmission Tariff, Section 1.7.4-General Obligations of the Market Participants [b], Section 5.3 Outage Authority and Coordination, 5.3.A-Load Shedding, Section 5.3.3-Load Sheding and Curtailments</td>
<td>TOP-001-3 4/1/2017 TOP-001-3 6/30/2018</td>
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| TOT      | TOP-001-4       | 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. | 5   | 1. The Member TO System Operators shall comply with PIM Operating Instructions unless compliance with the Operating Instructions cannot be physically implemented or unless such actions would violate safety, equipment, regulatory, or statutory requirements. | 1. PIM shall issue Operating Instructions to ensure the stable and reliable operation of the Bulk Electric System. 2. PIM shall be prepared to implement alternate remedial actions when the Member TO cannot comply with PIM 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 PIM Operating Instructions? 2. Have you had any incidents when your System Operators were not able to comply with PIM Operating Instructions because compliance with the Operating Instructions could not be physically implemented or unless such actions would have violated safety, equipment, regulatory, or statutory requirements? | 1. Documentation of procedures that require the Member TO System Operators to comply with PIM Operating Instructions. 2. Examples of the Member TO System Operator following PIM 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 PIM 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 PIM as soon as possible. | PIM OA, Section 11.3 Member Responsibilities, 11.3.1 General [a] M-3 Transmission Operations, Section 1.2- Responsibilities for Transmission Owner’s Entity, 1.3-Transmission Operating Guidelines M-13 Emergency Operations, Section 1.3- Policy Statements M-37 Reliability Coordinator, Section 1.1- Policy Statements MAA - Schedule 2-Standards for Integrating an Entity into the PJM Region-B.3, Schedule 6- Procedures for Demand Resources ILR, and Energy Efficiency-A.5. Open Access Transmission Tariff, Section 1.7.4-General Obligations of the Market Participants [b], Section 5.3 Outage Authority and Coordination, 5.3.A-Load Shedding, Section 5.3.3-Load Sheding and Curtailments | TOP-001-3 4/1/2017 TOP-001-3 6/30/2018 |
## NERC Reliability Standards

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<td>TOP</td>
<td>TOP-001-4</td>
<td>R8</td>
<td>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.</td>
<td>5</td>
<td>If the FIM 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.</td>
<td>FIM 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.</td>
<td>1. Have you had any incidents when your System Operators were not able to comply with FIM 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 FIM Operating Instructions, did your System Operators inform FIM as soon as possible?</td>
<td>Exhibit evidence; if applicable, of any instances when your System Operators did not comply with FIM 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 FIM as soon as possible.</td>
<td>FIM OA, Section 11.3 Member Responsibilities, 11.3.1 General (e) M-3 Transmission Operations, Section 1.2 Responsibilities for Transmission Owner's Entity, Section 1.3-Transmission Operating Guidelines M-13 Emergency Operations, Section 1.1 Policy Statements M-37 Reliability Coordination, Section 1.1 Policy Statements TAA - Schedule 2-Standards for Integrating an Entity into the FIM Region B-3, Schedule &amp; Procedures for Demand Resources IRL, 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 13-Load Shedding and Curtailments</td>
<td>TOP-001-3 4/1/2017</td>
<td>TOP-001-3 6/30/2018</td>
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<td>TOP</td>
<td>TOP-001-4</td>
<td>R8</td>
<td>Each Transmission Operator shall inform its Reliability Coordinator, known impacted Balancing Authorities, and known impacted Transmission Operators of its actual or expected outages, if the outage result in, or could result in, an Emergency.</td>
<td>5</td>
<td>Each Member TO shall inform FIM of its actual or expected operations that result in, or could result in, an Emergency.</td>
<td>FIM will inform any other potentially impacted Transmission Operators or Balancing Authorities.</td>
<td>Have you informed FIM of any actual or expected operations that result in, or could result in, an Emergency?</td>
<td>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.</td>
<td>FIM OA 11.3-Member Responsibilities M-12 Balancing Operations; Attachment B-Transmission Constraint Control Guidelines, B.1.5-Maintaining System Reliability M-12 Emergency Operations, Section 1.1 Policy Statements TDA Article 4.7-Actions in an Emergency M-3 Transmission Operations, Section 1.2 Responsibilities for Transmission Owner’s Operating Entity</td>
<td>TOP-001-3 4/1/2017</td>
<td>TOP-001-3 6/30/2018</td>
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<td>TOP</td>
<td>TOP-001-4</td>
<td>R9</td>
<td>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 telemetrying and control equipment, monitoring and assessment capabilities, and associated communication channels between the affected entities.</td>
<td>5</td>
<td>Each Member TO shall inform FIM of all planned outages and unplanned outages of 30 minutes or more, of its data communication channels (e.g., ICCP link) between the following affected entities: (i) Member TO and PJM (ii) Where applicable, Member TO and a Member TO (iii) Where applicable, Member TO and an entity external to PJM</td>
<td>FIM shall inform known impacted interconnected entities of all planned outages and unplanned outages of 30 minutes or more, of its data communication channels (e.g., ICCP link) between the following affected entities: (i) Member TO and PJM (ii) Where applicable, Member TO and a Member TO (iii) Where applicable, Member TO and an entity external to PJM</td>
<td>Have you informed FIM of all planned outages and unplanned outages of 30 minutes or more, of its data communication channels (e.g., ICCP link) between the following affected entities: (i) Member TO and PJM (ii) Where applicable, Member TO and a Member TO (iii) Where applicable, Member TO and an entity external to PJM</td>
<td>Exhibit examples where you informed FIM of planned outages and unplanned outages of 30 minutes or more, of its data communication channels (e.g., ICCP link) between the following affected entities: (i) Member TO and PJM (ii) Where applicable, Member TO and a Member TO (iii) Where applicable, Member TO and an entity external to PJM</td>
<td>FIM 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 2.3.EMS Data Exchange, Section 1.8 Planning, Coordination and Notification of System Changes</td>
<td>TOP-001-3 4/1/2017</td>
<td>TOP-001-3 6/30/2018</td>
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<td>TOP</td>
<td>TOP-001-4</td>
<td>R10</td>
<td>Each Transmission Operator shall perform the following for determining System Operating Limit (SOL) exceedances within its Transmission Operator Area:</td>
<td></td>
<td>TOP-001-4 R10 has split TOP-001-3 R10.1 into two subrequirements (10.1 &amp; 10.2); 10.1-monitor facilities, 10.2-monitor RASs. R10 also adds 4 more subrequirements: R10.3-monitoring of non-BES facilities deemed necessary by TOP. R10.4-R10.6 deal with the TOP obtaining and utilizing information from outside the TOP area as necessary.</td>
<td>PIM shall monitor the status of all Transmission Facilities, identified in PIM Manual 3: Transmission Operations, Section 1.5.6: Monitored Transmission Facility, within its area and submit PIM of any change in status.</td>
<td>1. Do you monitor the status of each facility identified in PIM Manual 3: Transmission Operations, Section 1.5.6: Monitored Transmission Facility in your TO area?</td>
<td>1. Exhibit evidence, such as screenshots, logs, etc., that you monitor the status of BES Facility in your TO area.</td>
<td>TOP-001-3 4/1/2017</td>
<td>TOP-001-3 6/30/2018</td>
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<td>TOP</td>
<td>TOP-001-4</td>
<td>R10.1</td>
<td>Monitor facilities within its Transmission Operator Area;</td>
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<td>Each Member TO shall monitor Transmission Facilities, identified in PIM Manual 3: Transmission Operations, Section 1.5.6: Monitored Transmission Facility, within its area and submit PIM of any change in status.</td>
<td>PIM shall monitor the status of all Transmission Facilities, identified in PIM Manual 3: Transmission Operations, Section 1.5.6: Monitored Transmission Facility, within its Transmission Operator Area.</td>
<td>1. Do you monitor the status of each facility identified in PIM Manual 3: Transmission Operations, Section 1.5.6: Monitored Transmission Facility in your TO area?</td>
<td>1. Exhibit evidence, such as screenshots, logs, etc., that you monitor the status of each facility identified in PIM Manual 3: Transmission Operations, Section 1.5.6: Monitored Transmission Facility in your TO area.</td>
<td>M-3 Transmission Operations; Section 1.2-Responsibilities for Transmission Owner’s Operating Entity, Section 1.5-Transmission Operating Guidelines, Section 1.5-Reportable Transmission Facility, Section 1.5-Monitored Transmission Facility M-14C Generation and Transmission Interconnection Facility Construction M-14D Generation and Transmission Interconnection Facility Construction M-17 Responsibility Coordination, Section 3-1-Monitoring of SOL and RDL Limits, Attachment A-PIM Reliability Plan, Section 1.2-Common Tasks for Next-Day and Current-Day Operations</td>
<td>1/2/2018</td>
<td>None</td>
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### Notes:
- **TOP-001-4** is the core standard, while **TOP-001-3** covers monitoring of non-BES facilities.
- **TOP-001-4 R10.1** involves monitoring of facilities and submitting PIM data.
- **TOP-001-4 R10.2** focuses on monitoring Remedial Action Schemes within the Transmission Operator Area.
- **TOP-001-4 R10.3** addresses non-BES facilities, which are crucial for ensuring operational limits and system reliability. 

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**Recommended Reading:**
- NERC Reliability Standards
- PJM Staff Responsibilities, Section 4.9.4
- Transmission Facilities, Section 4.9.3-TO and Operating Guidelines, Section 1.5.4-Operating Entity, Section 1.3-Transmission Operating Procedures for PJM RTO Operating Entity, Section 5-Index & Operating Guidelines for PJM RTO Operating Entity M-3 Transmission Operations; Section 1.2-Responsibilities for Transmission Owner’s Operating Entity, Section 1.3-Transmission Operating Procedures for PJM RTO Operating Entity M-37 Reliability Coordination, Section 3-1-Monitoring of SOL and RDL Limits, Attachment A-PIM Reliability Plan, Section 1.2-Common Tasks for Next-Day and Current-Day Operations

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**Key Terms:***
- **SOL (System Operating Limit)**: The maximum limits for system operating conditions.
- **BES (Balancing Energy Supply)**: The portion of the grid responsible for maintaining system balance and reliability.
- **PIM (Performance Information Model)**: The model used by Transmission Owners to report performance data to PJM.
- **RAS (Remote Area Switch)**: Equipment used to isolate or reconnect parts of a system.

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**Additional Resources:**
- PJM’s Transmission Operating Guidelines.
- NERC’s Compliance Program for Electric Reliability.
- PJM’s Operating Guidelines for PJM RTO Operating Entity.
1. The Member TO System Operators shall inform PJM as soon as possible.

2. The Member TO System Operators shall inform PJM as soon as possible.

3. The Member TO System Operators shall inform PJM as soon as possible.

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7. The Member TO System Operators shall inform PJM as soon as possible.

8. The Member TO System Providers shall inform PJM as soon as possible.

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86. The Member TO System Providers shall inform PJM as soon as possible.

87. The Member TO System Providers shall inform PJM as soon as possible.

88. The Member TO System Providers shall inform PJM as soon as possible.

89. The Member TO System Providers shall inform PJM as soon as possible.

90. The Member TO System Providers shall inform PJM as soon as possible.

91. The Member TO System Providers shall inform PJM as soon as possible.

92. The Member TO System Providers shall inform PJM as soon as possible.

93. The Member TO System Providers shall inform PJM as soon as possible.

94. The Member TO System Providers shall inform PJM as soon as possible.

95. The Member TO System Providers shall inform PJM as soon as possible.

96. The Member TO System Providers shall inform PJM as soon as possible.

97. The Member TO System Providers shall inform PJM as soon as possible.

98. The Member TO System Providers shall inform PJM as soon as possible.

99. The Member TO System Providers shall inform PJM as soon as possible.

100. The Member TO System Providers shall inform PJM as soon as possible.
### NERC Reliability Standards

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<tr>
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<tr>
<td>TOP</td>
<td>TOP-001-1</td>
<td>R13</td>
<td>5</td>
<td>Each Transmission Operator shall ensure that a Real-time Assessment is performed at least once every 30 minutes.</td>
<td>1. If PJM experiences a failure of its Real-time Assessment capability that lasts longer than 15 minutes, PJM will inform the Member TOs that PJM’s Real-time Assessment capability is restored.</td>
<td>1. Have you had any instances when PJM informed you that PJM experienced a failure of its Real-time Assessment capability that lasted longer than 15 minutes?</td>
<td>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.</td>
<td>PJM Operating Agreement, Section 11.3.1e-Member Responsibilities, General</td>
<td>TOP-001-1</td>
<td>4/1/2017</td>
</tr>
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<td>2. The Member TO System Operators shall comply with PIM Operating Instructions unless compliance with the Operating Instructions cannot be physically implemented or unless such actions would violate safety, equipment, regulatory, or statutory requirements.</td>
<td>2. If applicable, evidence that you performed a Real-time Assessment at least once every 20 minutes until PJM informed the Member TOs that PJM’s Real-time Assessment capability is restored.</td>
<td>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.</td>
<td>Transmission-Owners Agreement, Section 4.5-M-13 Transmission Operations, Sections 1.2-Responsibilities for Transmission Owner’s Operating Entity, 1.3-Transmission Operating Guidelines, 3.5-Voltage Control Actions</td>
<td>TOP-001-4</td>
<td>7/1/2018</td>
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<td>3. Examples of the Member TO System Operators following PJM Operating Instructions in the form of logs, voice recordings or transcripts of voice recordings, or other equivalent evidence.</td>
<td>3. If the Member TO System Operators could not comply with PIM 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.</td>
<td>3. Examples of the Member TO System Operators following PJM Operating Instructions in the form of logs, voice recordings or transcripts of voice recordings, or other equivalent evidence.</td>
<td>M-37 Reliability Coordination, Sections 3.1-Policy Statements, Section 3-SOL and RGS Limits</td>
<td>TOP-001-4</td>
<td>7/1/2018</td>
</tr>
<tr>
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<td>4. If the Member TO System Operators could not comply with PIM 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.</td>
<td>4. If the Member TO System Operators could not comply with PIM 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.</td>
<td>4. If the Member TO System Operators could not comply with PIM 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.</td>
<td>M-13 Emergency Operations, Section 5.5-Interconnection Reliability Operating Limits (RLO) Manual Load Dump Warning/Action</td>
<td>TOP-001-4</td>
<td>7/1/2018</td>
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January 11, 2018
Each Transmission Operator shall have data exchange capabilities with the entities it has identified it needs data from in order to perform its Operational Planning Analyses.

In instances where there is a difference in SOLs between the Member TO and PJM, FM 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?

The Member TO System Operators shall always operate the Bulk Electric System to the most limiting parameter where there is a difference in SOLs.

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.

The Member TO System Operators shall comply with PJM Operating Instructions to approve or deny planned outages and maintenance of data communication channels (e.g. ICCP link) between the following affected entities:

(i) Member TO and PJM
(ii) Where applicable, Member TO and a Member TO
(iii) Where applicable, Member TO and an entity external to PJM

PJM shall issue Operating Instructions to approve or deny planned outages and maintenance of data communication channels (e.g. ICCP link) between the following affected entities:

(i) Member TO and PJM
(ii) Where applicable, Member TO and a Member TO
(iii) Where applicable, Member TO and an entity external to PJM

Have you complied with PJM Operating Instructions to approve or deny planned outages and maintenance of data communication channels (e.g. ICCP link) between the following affected entities:

(i) Member TO and PJM
(ii) Where applicable, Member TO and a Member TO
(iii) Where applicable, Member TO and an entity external to PJM

Exhibit evidence, such as, system operator logs, voice recordings, incident reports, emails, etc., demonstrating that you complied with any PJM Operating Instructions to approve or deny planned outages and maintenance of data communication channels (e.g., ICCP link) between the following affected entities:

(i) Member TO and PJM
(ii) Where applicable, Member TO and a Member TO
(iii) Where applicable, Member TO and an entity external to PJM

Communications Protocol (ICCP). Inter-control Center Communications Services, Manual 1: Attachment A, Part B EMS Services, Inputs to PJM

(inputs to PJM via PJMnet. PJMnet is a dual redundant frame relay network to the Member TO via PJMnet. PJMnet is a dual redundant frame relay network using the Inter-control Center Communications Protocol (ICCP).

1. PJM shall perform Operational Planning Analyses.
2. PJM shall make any identified data that FM 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, Inputs to PJM) 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, Inputs to PJM available to PJM via PJMnet.

Enforcement

January 11, 2019

TOP-001-3

4/1/2017

TOP-001-3

6/30/2018

TOP-001-3

None

TOP-001-3

6/30/2018

TOP-001-4

None

TOP-001-4

6/30/2018

TOP-001-4

None
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<tr>
<td>TOP</td>
<td>TOP-002-2.1b</td>
<td>TOP-002-2.1b</td>
<td>Purpose</td>
<td></td>
<td>Current operations plans and procedures are essential to being prepared for reliable operations, including response for unplanned events.</td>
<td></td>
<td></td>
<td>To exhibit evidence, such as, lists and/or diagrams of data communication facilities or other data exchange infrastructure, demonstrating that you have data exchange capabilities, with redundant and diversified exchange infrastructure, within your primary Control Center, for the exchange of Real-time data with PIM and, if applicable, those entities where the Member TO exchanges Real-time data directly with another entity, to allow you and PIM to perform Real-time monitoring and Real-time Assessments.</td>
<td>Schedule 1, 1.7.15 Corrective Action</td>
<td>TOP-002-2.1b</td>
<td>09/13/2012</td>
</tr>
<tr>
<td>TOP</td>
<td>TOP-002-2.1b</td>
<td>RL.</td>
<td>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, such 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.</td>
<td></td>
<td>1. Each Member TO shall support PIM by providing current plans for reliable operation.</td>
<td></td>
<td></td>
<td>1. Exhibit procedural documents for planning future operations.</td>
<td>M-10 Pre-Scheduling Operations; Section 2.2-Planned Outages</td>
<td>3/31/2017</td>
<td></td>
</tr>
<tr>
<td>TOP</td>
<td>TOP-002-2.1b</td>
<td>R16.</td>
<td>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 capability and characteristics including but not limited to:</td>
<td></td>
<td>1. Have you supported PIM by providing expected transmission status, operating conditions and TO zone specific operating procedures to PIM?</td>
<td></td>
<td></td>
<td>2. Be prepared to explain the operational planning process to the auditors.</td>
<td>M-10 Pre-Scheduling Operations; Section 2.2-Planned Outages</td>
<td>3/31/2017</td>
<td></td>
</tr>
<tr>
<td>TOP</td>
<td>TOP-002-2.1b</td>
<td>TOP-001-4</td>
<td>Each Transmission Operator shall have data exchange capabilities, with redundant and diversified routed exchange infrastructure, within the Transmission Operator’s primary Control Center, for the exchange of Real-time data with its Reliability Coordinator, Balancing Authority, and the entities it has identified it needs data from in order to perform its Real-time monitoring and Real-time Assessments.</td>
<td></td>
<td>1. Each Member TO shall have data exchange capabilities, with redundant and diversified routed exchange infrastructure within the Member TO’s primary Control Center, for the exchange of Real-time data with PIM and, if applicable, those entities where the Member TO exchanges Real-time data directly with another entity, to allow the Member TO and PIM to perform Real-time monitoring and Real-time Assessments.</td>
<td></td>
<td></td>
<td>3. Show how the plans use available personnel and system equipment.</td>
<td>M-10 Pre-Scheduling Operations; Section 2.2-Planned Outages</td>
<td>3/31/2017</td>
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<td>R01.</td>
<td>Each Balancing Authority and Transmission Operator shall have data exchange capabilities, with redundant and diversified routed exchange infrastructure within the Member TO’s primary Control Center, for the exchange of Real-time data with PIM and, if applicable, those entities where the Member TO exchanges Real-time data directly with another entity, to allow the Member TO and PIM to perform Real-time monitoring and Real-time Assessments.</td>
<td></td>
<td>1. Each Member TO shall have data exchange capabilities, with redundant and diversified routed exchange infrastructure within the Member TO’s primary Control Center, for the exchange of Real-time data with PIM and, if applicable, those entities where the Member TO exchanges Real-time data directly with another entity, to allow the Member TO and PIM to perform Real-time monitoring and Real-time Assessments.</td>
<td></td>
<td></td>
<td>4. Demonstrate that you maintain a current set of plans that are designed to evaluate options and set procedures for reliable operation through a reasonable future time period.</td>
<td>M-10 Pre-Scheduling Operations; Section 2.2-Planned Outages</td>
<td>3/31/2017</td>
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<td></td>
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<td>TOP-001-4</td>
<td>Each Transmission Operator shall have data exchange capabilities, with redundant and diversified routed exchange infrastructure, within the Transmission Operator’s primary Control Center, for the exchange of Real-time data with its Reliability Coordinator, Balancing Authority, and the entities it has identified it needs data from in order to perform its Real-time monitoring and Real-time Assessments.</td>
<td></td>
<td>1. Each Member TO shall have data exchange capabilities, with redundant and diversified routed exchange infrastructure within the Member TO’s primary Control Center, for the exchange of Real-time data with PIM and, if applicable, those entities where the Member TO exchanges Real-time data directly with another entity, to allow the Member TO and PIM to perform Real-time monitoring and Real-time Assessments.</td>
<td></td>
<td></td>
<td>5. Demonstrate that you maintain a current set of plans that are designed to evaluate options and set procedures for reliable operation through a reasonable future time period.</td>
<td>M-10 Pre-Scheduling Operations; Section 2.2-Planned Outages</td>
<td>3/31/2017</td>
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**NERC Reliability Standards**

- **Category:** TOP
- **Standard Number:** TOP-002-2.1b
- **Requirement Number:** TOP-001-4
- **Approved DOT/NERC Standards:**
  - Schedule 1, 1.7.15 Corrective Action
- **A/S:** Assigned or Shared Member TO Tasks
- **PIM Tasks:** PIM shall have data exchange capabilities, with redundant and diversified routed exchange infrastructure within its primary Control Center, for the exchange of Real-time data with PIM and, if applicable, those entities where the Member TO exchanges Real-time data directly with another entity, to allow the Member TO and PIM to perform Real-time monitoring and Real-time Assessments.
- **Audit Questions:**
  - Do you have data exchange capabilities, with redundant and diversified routed exchange infrastructure within your primary Control Center, for the exchange of Real-time data with PIM and, if applicable, those entities where the Member TO exchanges Real-time data directly with another entity, to allow you and PIM to perform Real-time monitoring and Real-time Assessments?
  - Do you have data exchange capabilities, with redundant and diversified routed exchange infrastructure, within the Transmission Operator’s primary Control Center, for the exchange of Real-time data with its Reliability Coordinator, Balancing Authority, and the entities it has identified it needs data from in order to perform its Real-time monitoring and Real-time Assessments?

**Reference Documents**

- 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, Attachment A-DAF

**Evidence of Compliance**

- Exhibit evidence, such as, lists and/or diagrams of data communication facilities or other data exchange infrastructure, demonstrating that you have data exchange capabilities, with redundant and diversified routed exchange infrastructure, within your primary Control Center, for the exchange of Real-time data with PIM and, if applicable, those entities where the Member TO exchanges Real-time data directly with another entity, to allow you and PIM to perform Real-time monitoring and Real-time Assessments.

**Inactive Date:** None

**Enforcement Date:** 3/31/2017

**Date:** July 1, 2018

**Day Reliability Analysis, Attachment A- OATF**

**Seasonal Operating Studies, Section 3-Next Day Reliability Analysis, Attachment A- OATF**

**Policy Statements**

- M-37 Reliability Coordination, Section 1.1-Policy Statements
- M-38, Operations Planning; Section 3-Next Day Reliability Analysis, Attachment A-DAF

**Schedule 1, 1.7.15 Corrective Action**

**M-10 Pre-Scheduling Operations; Section 2.2-Planned Outages**

**M-3 Transmission Operations; 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, Attachment A-DAF**

**TOP-002-2.1b**

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- 3/31/2017
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<tr>
<td>TOP</td>
<td>TOP-002-2.1b</td>
<td>R16.1.</td>
<td></td>
<td>The Member TO shall notify PIM of any changes in transmission facility status.</td>
<td>PIM shall provide changes of status of other TO's (internal or external) transmission facilities to Member TOs.</td>
<td>1. How do you inform PIM of changes in transmission facility status? 2. Have you ever not informed PIM of a change in transmission facility status? Reason? 1. Examples of informing PIM of a change in transmission facility status. 2. Why did you not inform PIM of a change in transmission facility status, if applicable.</td>
<td>M-3 Transmission Operations, Section 1.2- Responsibilities for Transmission Owner's Operating Entity, Section 4-Reportable Transmission Facility Outages M-38 Operations Planning, Section 2-Outage Coordination TDA - Article 4.6-Interconnection Facilities PIM OA Section 1.9.4-Forced Outages</td>
<td>TOP-002-2.1b 09/13/2012</td>
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<tr>
<td>TOP</td>
<td>TOP-002-2.1b</td>
<td>R16.2.</td>
<td></td>
<td>The Member TO shall notify PIM of any changes in transmission facility rating through TERM or by other means agreed to by PIM.</td>
<td>Make TERM available for use by Member TOs.</td>
<td>1. How do you inform PIM of changes in transmission facility ratings? 2. Have you ever not informed PIM of a change in transmission facility rating? Reason? 1. Examples of informing PIM of a change in transmission facility ratings. 2. Explanation of why you did not inform PIM of a change in transmission facility ratings.</td>
<td>M-3 Transmission Operations, Section 1.2- Responsibilities for Transmission Owner's Operating Entity, Section 2.1.1-Facility Ratings M-38 Operations Planning, Section 2-Outage Coordination TDA - Article 4.11-Transmission Facility Ratings</td>
<td>TOP-002-2.1b 09/13/2012</td>
<td>TOP-002-2.1b 3/31/2017</td>
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<td>TOP</td>
<td>TOP-002-2.1b</td>
<td>R17.</td>
<td></td>
<td>The Member TO system operators shall, without any intentional time delay, communicate the information described in the requirements R1 to R16 above to their Reliability Coordinator.</td>
<td>Have your system operators ever intentionally delayed communications as described in the requirements R1 and R16 above to PIM.</td>
<td>Description of the reasons why communications were intentionally delayed in the instance that there were delays.</td>
<td>M-3 Transmission Operations, Section 1-Transmission Operations Requirements; Section 4-Reportable Transmission Facility Outages M-38 Operations Planning, Section 2-Outage Coordination TDA - Article 4 PIM OA Section 11.3.2, Sheet 43-44</td>
<td>TOP-002-2.1b 09/13/2012</td>
<td>TOP-002-2.1b 3/31/2017</td>
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<td>TOP</td>
<td>TOP-002-2.1b</td>
<td>R19.</td>
<td></td>
<td>Each Member TO shall maintain and provide PIM with accurate modeling data of your equipment? 3. Do you support the periodic update of the PIM operations models? 3. Do you let PIM know of significant changes between updates?</td>
<td>Notify Member TO of periodic model build due dates.</td>
<td>1. Do you maintain accurate modeling data of your equipment? 2. Do you support the periodic update of the PIM operations models? 3. Do you let PIM 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.</td>
<td>PIM 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-Basis on the PIM EMS System Model Updates M-3 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</td>
<td>TOP-002-2.1b 09/13/2012</td>
<td>TOP-002-2.1b 3/31/2017</td>
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<tr>
<td>TOP</td>
<td>TOP-003-1</td>
<td>R1.</td>
<td>The Member TO must submit transmission outage information to PIM based on the procedures in PIM Manual 3.</td>
<td>Do you submit transmission outage information based on the procedures in PIM Manual 3?</td>
<td>show examples that you provide outage information based on the procedures in PIM Manual 3 (EDART Tickets; PJM day ahead email; and day-ahead discussion with PIM Reliability Engineer).</td>
<td>PJM OA, 11.3-Member Responsibilities, Schedule 1, 1.7.15 Corrective Action M-3 Transmission Operations; Section 4-Reportable Transmission Facility Outages 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</td>
<td>TOP-001-1 10/1/2011 TOP-003-1 3/31/2017</td>
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<td></td>
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<td>TOP</td>
<td>TOP-003-1</td>
<td>R1.2.</td>
<td>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 foreseeable 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.</td>
<td>Do you submit transmission outage information based on the procedures in PIM Manual 3?</td>
<td>show examples that you provide outage information based on the procedures in PIM Manual 3 (EDART Tickets; PJM day ahead email; and day-ahead discussion with PIM Reliability Engineer).</td>
<td>PJM OA, 11.3-Member Responsibilities, Schedule 1, 1.7.15 Corrective Action M-3 Transmission Operations; Section 4-Reportable Transmission Facility Outages 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</td>
<td>TOP-001-1 10/1/2011 TOP-003-1 3/31/2017</td>
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<td></td>
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<td>TOP</td>
<td>TOP-003-1</td>
<td>R1.3.</td>
<td>Such information shall be available by 1200 Central Standard Time for the Eastern Interconnection and 1200 Pacific Standard Time for the Western Interconnection.</td>
<td>Do you submit transmission outage information based on the procedures in PIM Manual 3?</td>
<td>show examples that you provide outage information based on the procedures in PIM Manual 3 (EDART Tickets; PJM day ahead email; and day-ahead discussion with PIM Reliability Engineer).</td>
<td>PJM OA, 11.3-Member Responsibilities, Schedule 1, 1.7.15 Corrective Action M-3 Transmission Operations; Section 4-Reportable Transmission Facility Outages 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</td>
<td>TOP-001-1 10/1/2011 TOP-003-1 3/31/2017</td>
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<td>TOP</td>
<td>TOP-002-1</td>
<td>R2.</td>
<td>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.</td>
<td>5</td>
<td>The TO shall submit transmission system voltage regulating equipment outage information based on the procedures in PIM Manual 3.</td>
<td>PIM shall plan and coordinate scheduled system voltage regulating equipment outages with Member TOs and external TOs.</td>
<td>Do you submit transmission system voltage regulating equipment outage information based on the procedures in PIM Manual 3?</td>
<td>Show examples that you provide system voltage regulating equipment outage information based on the procedures in PIM Manual 3 (eGART Tickets; PIM day ahead email; and day-ahead discussion with PIM Reliability Engineer).</td>
<td>PIM OA; 11.3-Member Responsibilities, Schedule 1, 1.7.5 Corrective Action</td>
<td>TOP-003-1</td>
<td>10/1/2011</td>
</tr>
<tr>
<td>TOP</td>
<td>TOP-003-1</td>
<td>R3.</td>
<td>Each Transmission Operator, Balancing Authority, and Generator Operator shall plan and coordinate scheduled outages of telecommunication and control equipment and associated communication channels between the affected areas.</td>
<td>5</td>
<td>The Member TO shall inform PIM of scheduled outages of telecommunication and control equipment and associated communication channels as required by PIM Manual 1 Section 3.8: Planning, Coordination and Notification of System Changes and Events.</td>
<td>PIM shall inform affected Member TOs and external TOs of scheduled outages of telecommunication and control equipment and associated communication channels.</td>
<td>Do you submit scheduled outages of telecommunication and control equipment and associated communication channels based on the procedures in PIM Manual 1 Section 3.8: Planning, Coordination and Notification of System Changes and Events?</td>
<td>Show examples that you provided scheduled telecommunications outage information to PIM.</td>
<td>PIM OA; 12.4-Duties and Responsibilities</td>
<td>M-1 Control Center and Data Exchange Requirements, Section 2.5.4-Information Flow to Control Room Personnel; Section 12.2.3-EMS Data Exchange; Section 13.8: Planning, Coordination and Notification of System Changes and Events</td>
<td>TOP-003-1</td>
</tr>
<tr>
<td>TOP</td>
<td>TOP-004-2</td>
<td>Purpose</td>
<td>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.</td>
<td>5</td>
<td>The Member TO system operators shall comply with Operating Instructions to operate within the Interconnection Reliability Operating Limits (IROLs) or Operating Instructions to 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 to operate within the Interconnection Reliability Operating Limits (IROLs) or PIM Instructions operate within the System Operating Limits (SOLs) cannot be complied with, the Member TO system operator shall inform PIM as soon as possible.</td>
<td>1. PIM shall issue Operating Instructions to operate within the Interconnection Reliability Operating Limits (IROLs). 2. PIM shall issue Operating Instructions to operate within the System Operating Limits (SOLs). 3. PIM shall be prepared to implement alternative remedial actions if Member TO cannot comply with Operating Instructions for the listed reasons.</td>
<td>1. Have you complied with Operating Instructions to operate within the Interconnection Reliability Operating Limits (IROLs) or Operating Instructions to 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?</td>
<td>1. Evidence such as system operator logs, voice recordings, incident reports, etc., for any incidents where your system operators had to follow Operating Instructions to operate within the Interconnection Reliability Operating Limits (IROLs) or Operating Instructions to operate within the System Operating Limits (SOLs). 2. Evidence that you monitor SOLs.</td>
<td>PIM Operating Agreement, Section 11.3.1-Member Responsibilities, General</td>
<td>Transmission Owners Agreement, Section 4.5: Transmission Operations, Section 1.2-Responsibilities for Transmission Owner’s Operating Entities, 1.5-Transmission Operating Guidelines, 3.5-Voltage Control Actions</td>
<td>TOP-003-1</td>
</tr>
</tbody>
</table>

**Additional Notes:**
- **TOP-002-1** Reference Documents:
  - M-2 Transmission Operations; Section 4-Reportable Transmission Facility Outages
  - 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** Reference Documents:
  - M-1 Control Center and Data Exchange Requirements, Section 2.5.4-Information Flow to Control Room Personnel
  - Section 12.2.3-EMS Data Exchange
  - Section 13.8: Planning, Coordination and Notification of System Changes and Events

- **TOP-004-2** Reference Documents:
  - M-3 Transmission Operations, Section 1.2-Responsibilities for Transmission Owner’s Operating Entities, 1.5-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 3.3-PIM Member Control Implementation, Section 5-Transmission Facility Control

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### NERC Reliability Standards

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<tr>
<td>TOP</td>
<td>TOP-004-2</td>
<td>R2</td>
<td>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.</td>
<td>5</td>
<td>Member TO system operators shall comply with Operating Instructions issued by FIM unless such actions would violate safety, equipment, regulatory or statutory requirements. If, because of the reasons mentioned above, the Operating Instructions issued by FIM 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 FIM as soon as possible.</td>
<td>1. FIM shall issue Operating Instructions so that instability, uncontrolled separation, or cascading outages will not occur as a result of the most severe single contingency. 2. FIM shall be prepared to implement alternate remedial actions if Member TO cannot comply with Operating Instructions for the listed reasons. 3. FIM shall determine their most severe single contingency.</td>
<td>Have you complied with Operating Instructions issued by FIM unless such actions violated safety, equipment, regulatory or statutory requirements?</td>
<td>Evidence such as system operator logs, voice recordings, incident reports, etc., for any incidents where your system operators had to follow Operating Instructions issued by FIM.</td>
<td>Reference Documents</td>
<td>Enforcement Date</td>
<td>Inactive Date</td>
</tr>
<tr>
<td>TOP</td>
<td>TOP-004-2</td>
<td>R3</td>
<td>Each Transmission Operator shall operate to protect against instability, uncontrolled separation, or cascading outages resulting from multiple outages, as specified by its Reliability Coordinator.</td>
<td>5</td>
<td>Member TO system operators shall comply with Operating Instructions unless such actions would violate safety, equipment, regulatory or statutory requirements. If, because of the reasons mentioned above, the Operating Instructions 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 FIM as soon as possible.</td>
<td>1. FIM shall issue Operating Instructions 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. FIM shall be prepared to implement alternate remedial actions if Member TOs cannot comply with Operating Instructions 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.</td>
<td>Have you complied with Operating Instructions issued by FIM unless such actions violated safety, equipment, regulatory or statutory requirements?</td>
<td>Evidence such as system operator logs, voice recordings, incident reports, etc., for any incidents where your operators had to follow Operating Instructions.</td>
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<tr>
<td>TOP</td>
<td>TOP-004-2</td>
<td>4.</td>
<td></td>
<td>5</td>
<td>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 PFM analysis packages are available. This is not an unknown operating state. 2. If the Member TO analysis packages are unavailable for more than 15 minutes, the Member TO shall coordinate with PJM to see if the PFM analysis packages are available. This is not an unknown operating state.</td>
<td>1. If the PFM analysis packages are unavailable (possibly because of an EMS outage), PFM shall coordinate with the appropriate Member TOs to see if their analysis packages are available. This is not an unknown operating state. 2. If both the Member TO and PFM analysis packages are not functioning or unavailable, then PFM shall be considered to be in an unknown operating state, then PFM will work with the Member TO to return the system to a known operating condition within 30 minutes.</td>
<td>1. Have you complied with Operating Instructions unless such actions violated safety, equipment, regulatory or statutory requirements? If, because of the reasons mentioned above, the Operating Instructions cannot be complied with, the Member TO system operator shall inform PFM as soon as possible. 2. Have you monitored your BES facilities and supply operating information to PFM verbally, if appropriate? 3. Have you complied with Operating Instructions unless such actions violated safety, equipment, regulatory or statutory requirements? If, because of the reasons mentioned above, the Operating Instructions cannot be complied with, have you informed PFM as soon as possible?</td>
<td>1. Example logs or reports about your analysis packages being unavailable for more than 15 minutes and your coordination with PFM to see if the PFM analysis packages are available. 2. Example logs or reports about when you had to monitor your BES facilities and supply operating information to PFM verbally, if appropriate.</td>
<td>PFM Operating Agreement, Section 11.3.1c-Member Responsibilities, General</td>
<td>1/22/2009</td>
<td>3/31/2017</td>
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<tr>
<td>TOP</td>
<td>TOP-004-2</td>
<td>5.</td>
<td></td>
<td>5</td>
<td>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 PFM analysis packages are available. This is not an unknown operating state. 2. If the Member TO analysis packages are unavailable for more than 15 minutes, the Member TO shall coordinate with PJM to see if the PFM analysis packages are available. This is not an unknown operating state.</td>
<td>1. If the PFM analysis packages are unavailable (possibly because of an EMS outage), PFM shall coordinate with the appropriate Member TOs to see if their analysis packages are available. This is not an unknown operating state. 2. If both the Member TO and PFM analysis packages are not functioning or unavailable, then PFM shall be considered to be in an unknown operating state, then PFM will work with the Member TO to return the system to a known operating condition within 30 minutes.</td>
<td>1. Have you complied with Operating Instructions unless such actions violated safety, equipment, regulatory or statutory requirements? If, because of the reasons mentioned above, the Operating Instructions cannot be complied with, the Member TO system operator shall inform PFM as soon as possible. 2. Have you monitored your BES facilities and supply operating information to PFM verbally, if appropriate? 3. Have you complied with Operating Instructions unless such actions violated safety, equipment, regulatory or statutory requirements? If, because of the reasons mentioned above, the Operating Instructions cannot be complied with, have you informed PFM as soon as possible?</td>
<td>1. Example logs or reports about your analysis packages being unavailable for more than 15 minutes and your coordination with PFM to see if the PFM analysis packages are available. 2. Example logs or reports about when you had to monitor your BES facilities and supply operating information to PFM verbally, if appropriate.</td>
<td>PFM Operating Agreement, Section 11.3.1c-Member Responsibilities, General</td>
<td>1/22/2009</td>
<td>3/31/2017</td>
</tr>
<tr>
<td>TOP</td>
<td>TOP-006-2</td>
<td>Purpose</td>
<td></td>
<td>5</td>
<td>1. 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.</td>
<td>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 PFM analysis packages are available. This is not an unknown operating state. 2. If the Member TO analysis packages are unavailable for more than 15 minutes, the Member TO shall coordinate with PJM to see if the PFM analysis packages are available. This is not an unknown operating state.</td>
<td>1. Have you complied with Operating Instructions unless such actions violated safety, equipment, regulatory or statutory requirements? If, because of the reasons mentioned above, the Operating Instructions cannot be complied with, the Member TO system operator shall inform PFM as soon as possible. 2. Have you monitored your BES facilities and supply operating information to PFM verbally, if appropriate? 3. Have you complied with Operating Instructions unless such actions violated safety, equipment, regulatory or statutory requirements? If, because of the reasons mentioned above, the Operating Instructions cannot be complied with, have you informed PFM as soon as possible?</td>
<td>1. Example logs or reports about your analysis packages being unavailable for more than 15 minutes and your coordination with PFM to see if the PFM analysis packages are available. 2. Example logs or reports about when you had to monitor your BES facilities and supply operating information to PFM verbally, if appropriate.</td>
<td>PFM Operating Agreement, Section 11.3.1c-Member Responsibilities, General</td>
<td>1/22/2009</td>
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</table>
1. The Member TO shall know the status of all transmission resources available for use in their area and provide this information to PJM. 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 in their area. Each Member TO shall provide to PJM real-time changes to monitoring equipment used to bring to the attention of operating personnel important deviations in operating conditions and to indicate, if appropriate, the need for corrective action.

2. For facilities below 345 kV designated as PJM Monitored Facilities status, real and reactive power flows, voltage, load-tap-changer settings, and status of static reactive resources. Each Member TO shall provide real-time changes to monitoring equipment used to bring to the attention of operating personnel important deviations in operating conditions and to indicate, if appropriate, the need for corrective action.

3. The Member TO shall know the status of all transmission resources available for use in their area. Each Member TO shall monitor applicable transmission line status, real and reactive power flows, voltage, load-tap-changer settings, and status of static reactive resources. Each Member TO shall provide to PJM real-time changes to monitoring equipment used to bring to the attention of operating personnel important deviations in operating conditions and to indicate, if appropriate, the need for corrective action.

4. PJM 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. The Member TO shall monitor applicable transmission line status, real and reactive power flows, voltage, load-tap-changer settings, and status of static reactive resources. Each Member TO shall provide real-time changes to monitoring equipment used to bring to the attention of operating personnel important deviations in operating conditions and to indicate, if appropriate, the need for corrective action.

5. PJM 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. Each Member TO shall provide real-time changes to monitoring equipment used to bring to the attention of operating personnel important deviations in operating conditions and to indicate, if appropriate, the need for corrective action.

6. Exhibit communication to PJM of information that effects normal fault clearing on protective relays installed at below 345 kV examples. Exhibit communication to PJM of information on protective relays installed at 345 kV and above. Each Member TO shall provide appropriate technical information concerning protective relays as requested by PJM. Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall provide appropriate technical information concerning protective relays to their operating personnel.
### NERC Reliability Standards

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<tr>
<td>TOF</td>
<td>TOP-006-2</td>
<td>R7</td>
<td>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.</td>
<td>Each Member TO shall monitor system frequency in their zone.</td>
<td>1. Do you monitor system frequency in your zone? 2. How many locations?</td>
<td>Exhibit example output from frequency source (screens or printouts). Multiple examples if available.</td>
<td>TOP-006-2 10/1/2011</td>
<td>TOPOF-006-2 3/31/2017</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOF</td>
<td>TOP-007-0</td>
<td>Purpose</td>
<td>Among the requirements for Member TOs are the obligation to monitor system frequency. Each Member TO shall monitor system frequency. Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall return its transmission system to within IROL as soon as possible, but not longer than 30 minutes.</td>
<td>Each Member TO shall monitor system frequency in their zone.</td>
<td>1. Do you monitor system frequency in your zone? 2. An interconnection reliability operating limit (IROL) violation is occurring.</td>
<td>Exhibit example output from frequency source (screens or printouts). Multiple examples if available.</td>
<td>TOP-006-2 10/1/2011</td>
<td>TOPOF-007-0 3/31/2017</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOF</td>
<td>TOP-007-0</td>
<td>R2</td>
<td>Rule 2 among the requirements for Member TOs is the obligation to return its transmission system to within IROL as soon as possible, but not longer than 30 minutes.</td>
<td>Each Member TO system operators shall comply with Operating Instructions unless such actions would violate safety, equipment, regulatory or statutory requirements. 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.</td>
<td>1. PJM shall issue Operating Instructions so that following a Contingency or other event that results in an IROL violation, the Transmission Operator 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 for the listed reasons.</td>
<td>Have you complied with Operating Instructions issued by PJM unless such actions violated safety, equipment, regulatory or statutory requirements?</td>
<td>TOP-006-2 10/1/2011</td>
<td>TOPOF-007-0 3/31/2017</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOF</td>
<td>TOP-007-0</td>
<td>R3</td>
<td>Rule 3 among the requirements for Member TOs is the obligation to return its transmission system to within IROL as soon as possible, but not longer than 30 minutes.</td>
<td>A Transmission Operator shall take all appropriate actions up to and including the shedding of firm load, or directing the shedding of firm load, in order to comply with Requirement R2.</td>
<td>1. PJM shall issue Operating Instructions up to and including directing the shedding of firm load, or to comply with Requirement R2. 2. PJM shall be prepared to implement alternate remedial actions if Member TOs cannot comply with Operating Instructions in order to comply with Requirement R2 for the listed reasons.</td>
<td>Evidence such as system operator logs, voice recordings, incident reports, etc., for any incidents where your operators had to follow Operating Instructions.</td>
<td>TOP-006-2 10/1/2011</td>
<td>TOPOF-007-0 3/31/2017</td>
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<tr>
<td>TOP</td>
<td>TOP-008-1</td>
<td>R1</td>
<td>Interconnection Reliability Operating Limits</td>
<td>5</td>
<td>1. Member TO system operators shall comply with Operating Instructions unless such actions would violate safety, equipment, regulatory or statutory requirements. If, because of the reasons mentioned above, the Operating Instructions cannot be complied with, the Member TO system operator shall inform FIM as soon as possible. 2. Member TO will monitor SOLs within their area.</td>
<td>1. When experiencing or contributing to an IROL or SOL violation FIM shall issue Operating Instructions to take immediate steps to relieve the condition, which may include shedding firm load. 2. FIM shall issue Operating Instructions to operate within the System Operating Limits (SOLs). 3. FIM shall be prepared to implement alternate remedial actions if Member TOs cannot comply with Operating Instructions for the listed reasons.</td>
<td>Have you complied with Operating Instructions unless such actions violated safety, equipment, regulatory or statutory requirements since the last audit? 2. Do you monitor SOLs in your area?</td>
<td>TOP 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</td>
<td>6/18/2007</td>
<td>3/31/2017</td>
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<td>TOP</td>
<td>TOP-008-1</td>
<td>R2</td>
<td>Interconnection Reliability Operating Limits</td>
<td>5</td>
<td>1. Each Transmission Operator shall operate to prevent the likelihood that a disturbance, action, or inaction will result in an IRODS 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.</td>
<td>1. PJM shall operate and issue Operating Instructions to prevent the likelihood that a disturbance, action, or inaction will result in an IRODS 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 FIM, FIM shall operate the Bulk Electric System to the most limiting parameter/rating.</td>
<td>Have you complied with Operating Instructions unless such actions violated safety, equipment, regulatory or statutory requirements? 2. Have you had to coordinate with FIM because of a difference in derived operating limits between you and FIM? 3. Did you then operate to the most limiting parameter/rating?</td>
<td>Provide documented evidence, voice recordings etc. of any such incident and your compliance with Operating 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.</td>
<td>M-3 Transmission Operations, Section 1.2- Responsibilities for Transmission Owner's Operating Entity, Section 1.3-Transmission Operating Guidelines</td>
<td>6/18/2007</td>
<td>3/31/2017</td>
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<tr>
<td>TOP</td>
<td>TOP-008-1</td>
<td>R3</td>
<td>Interconnection Reliability Operating Limits</td>
<td>5</td>
<td>1. 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. If 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.</td>
<td>1. PJM shall issue Operating 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.</td>
<td>Have you had any incidents where your system operator had to comply with Operating Instructions since the last audit? 2. Have you had any incidents where equipment was endangered and you informed FIM?</td>
<td>Provide documented evidence, voice recordings etc. of any such incident and your compliance with Operating Instructions since your last audit. 2. Evidence that you informed FIM when equipment was endangered.</td>
<td>M-3 Transmission Operations, Section 1.2- Responsibilities for Transmission Owner's Operating Entity, Section 1.3-Transmission Operating Guidelines</td>
<td>6/18/2007</td>
<td>3/31/2017</td>
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<td>TOP</td>
<td>TOP-008-1</td>
<td>R4.</td>
<td>The Member TO’s Operating Process or Operating Procedure shall include actions to provide the data when data quality affects Real-time Assessments.</td>
<td>5</td>
<td>Each Member TO shall maintain and provide PJM with accurate modeling data to support the PJM operating models.</td>
<td>1. PIM shall have sufficient information and analysis tools to determine the cause(s) of SOL violations.</td>
<td>1. Do you maintain and provide PJM with accurate modeling data to support the PJM operating models?</td>
<td>1. Example evidence that you maintain and provide PJM with accurate modeling data to support the PJM operating models.</td>
<td>M-5 Transmission Operations, Section 1.2-Transmission Operator’s Operating Entity, Section 1.3-Transmission Operating Guidelines, Section 1.5-4 Reportable Transmission Facility</td>
<td>6/18/2007</td>
<td>3/31/2017</td>
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<tr>
<td>TOP</td>
<td>TOP-010-1(i)</td>
<td>A/S</td>
<td>Each Member TO shall have sufficient information and analysis tools to determine the cause(s) of SOL violations.</td>
<td>2</td>
<td>Does your Operating Process or Operating Procedure include actions to provide the data when data quality affects Real-time Assessments?</td>
<td>1. The Member TO shall know the status of all transmission resources available for use in their area and provide this information to PJM.</td>
<td>1. Does your Operating Process or Operating Procedure include actions to address Real-time data quality issues when data quality affects Real-time Assessments?</td>
<td>1. If you perform Real-time Assessments, exhibit your Operating Process or Operating Procedure that includes actions to address Real-time data quality issues when data quality affects Real-time Assessments.</td>
<td>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</td>
<td>4/1/2018</td>
<td>None</td>
</tr>
<tr>
<td>TOP</td>
<td>TOP-010-1(ii)</td>
<td>Purpose</td>
<td>Establish requirements for Real-time monitoring and analysis capabilities to support reliable System operation</td>
<td>2</td>
<td>1. Do you indicate the quality of Real-time data to PJM?</td>
<td>1. Have you determined data quality indicators for all data transmitted to PJM through different methods (e.g., ICCP, DMP, etc.)?</td>
<td>1. Exhibit evidence, such as, screenshots or other evidence, indicating the quality of Real-time data to PJM.</td>
<td>1. Exhibit evidence, such as, screenshots or other evidence, indicating the quality of Real-time data to PJM.</td>
<td>M-1 Control Center and Data Exchange Requirements, Section 2.3.1 Monitoring Capability, 2.3.6-Data Integrity, 3.3.2-Synchrophasor Data Exchange, 3.6-Real-Time Analysis Monitoring Requirements for System Security</td>
<td>4/1/2018</td>
<td>None</td>
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<tr>
<td>TOP</td>
<td>TOP-010-1(iii)</td>
<td>R1.2</td>
<td>Provisions to indicate the quality of Real-time data to the System Operator; and</td>
<td>5</td>
<td>Each Member TO shall indicate the quality of real-time data to PJM.</td>
<td>1. Using Member TO quality of real-time data to PJM - shall indicate the quality of real-time data to PJM.</td>
<td>1. Do you indicate the quality of real-time data to PJM?</td>
<td>1. I. Exhibit evidence, such as, screenshots or other evidence, demonstrating that you indicated the quality of real-time data to your System Operators.</td>
<td>M-1 Control Center and Data Exchange Requirements, Section 2.3.1 Transmission Monitoring Capability, 2.3.6-Data Integrity, 3.3.2-Synchrophasor Data Exchange, 3.6-Real-Time Analysis Monitoring Requirements for System Security</td>
<td>4/1/2018</td>
<td>None</td>
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<td>TOP</td>
<td>TOP-010-1(iv)</td>
<td>R1.3</td>
<td>Actions to address Real-time data quality issues with the entities responsible for providing the data when data quality affects Real-time Assessments.</td>
<td>A</td>
<td>Each Member TO’s Operating Process or Operating Procedure shall include actions to address Real-time data quality issues when data quality affects Real-time Assessments, if performed.</td>
<td>1. Do you perform Real-time Assessments?</td>
<td>1. Do you perform Real-time Assessments?</td>
<td>1. If you perform Real-time Assessments, exhibit your Operating Process or Operating Procedure that includes actions to address Real-time data quality issues when data quality affects Real-time Assessments.</td>
<td>M-1 Control Center and Data Exchange Requirements, Section 2.3.1 Transmission Monitoring Capability, 2.3.6-Data Integrity, 3.3.2-Synchrophasor Data Exchange, 3.6-Real-Time Analysis Monitoring Requirements for System Security</td>
<td>4/1/2018</td>
<td>None</td>
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<td>Requirement Number</td>
<td>Approved DOT/FERC Standards</td>
<td>A/S</td>
<td>Assigned or Shared Member TO Tasks</td>
<td>PIM Tasks</td>
<td>Audit Questions</td>
<td>Evidence of Compliance</td>
<td>Reference Documents</td>
<td>Enforcement Date</td>
<td>Inactive Date</td>
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<tr>
<td>TOP</td>
<td>TOP-010-1[i]</td>
<td>R3</td>
<td>Each Transmission Operator shall implement an Operating Process or Operating Procedure to address the quality of analysis used in its Real-time Assessments. The Operating Process or Operating Procedure shall include:</td>
<td>5</td>
<td>If a Member TO performs Real-time Assessments, the Member TO shall implement an Operating Process or Operating Procedure to address the quality of analysis used in its Real-time Assessments. PIM shall maintain PIM's Operating Process to address the quality of State Estimator and Contingency Analysis in Manual 3A.</td>
<td>1. If you perform Real-time Assessments, does your Operating Process or Operating Procedure to address the quality of analysis used in your Real-time Assessments include the following: (i) criteria for evaluating the quality of analysis used in your Real-time Assessments; (ii) provisions to indicate the quality of analysis used in your Real-time Assessments; (iii) criteria for evaluating the quality of analysis used in your Real-time Assessments; (iv) provisions to indicate the quality of analysis used in your Real-time Assessments?</td>
<td>1. If you perform Real-time Assessments, exhibit evidence that your Operating Process or Operating Procedure to address the quality of analysis used in your Real-time Assessments include the following: (i) criteria for evaluating the quality of analysis used in your Real-time Assessments; (ii) provisions to indicate the quality of analysis used in your Real-time Assessments?</td>
<td>Manual 3A: Energy Management System Model Updates and Quality Assurance, Section 5.2.2 State Estimator [14] Solution Quality and ECP Links, Section 5.5</td>
<td>4/1/2018</td>
<td>None</td>
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<td>TOP</td>
<td>TOP-010-1[i]</td>
<td>R3.3</td>
<td>Provisions to indicate the quality of analysis used in its Real-time Assessments; and</td>
<td>5</td>
<td>If a Member TO performs Real-time Assessments, the Member TO's Operating Process or Operating Procedure to address the quality of analysis used in its Real-time Assessments shall include: (i) criteria for evaluating the quality of analysis used in its Real-time Assessments; (ii) provisions to indicate the quality of analysis used in its Real-time Assessments; (iii) criteria for evaluating the quality of analysis used in its Real-time Assessments; (iv) provisions to indicate the quality of analysis used in its Real-time Assessments. If a Member TO performs Real-time Assessments, the Member TO shall follow the notification process identified in PIM Manual 3A, Section 5.6 Quality of Analysis Used in Real-time Assessments to notify PIM when analysis quality issues affecting the Member TO's Real-time Assessment have existed for 30 minutes and when the Member TO's Real-time Assessment quality is back to normal.</td>
<td>2. If you perform Real-time Assessments, do you follow the notification process identified in PIM Manual 3A, Section 5.6 Quality of Analysis Used in Real-time Assessments to notify PIM when analysis quality issues affecting your Real-time Assessment have existed for 30 minutes and when your Real-time Assessment quality was back to normal?</td>
<td>If you perform Real-time Assessments, exhibit evidence that your Operating Process or Operating Procedure to address the quality of analysis issues affecting your Real-time Assessment existed for 30 minutes and when your Real-time Assessment quality was back to normal.</td>
<td>Manual 3A: Energy Management System Model Updates and Quality Assurance, Section 5.2.2 State Estimator [14] Solution Quality and ECP Links, Section 5.5</td>
<td>4/1/2018</td>
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<td>TOP-010-1[i]</td>
<td>R3.3</td>
<td>A Member TO proceeds to address analysis quality issues affecting its Real-time Assessments.</td>
<td>5</td>
<td>If a Member TO performs Real-time Assessments, the Member TO's Operating Process or Operating Procedure shall include actions to address analysis quality issues affecting its Real-time Assessments.</td>
<td>2. If you perform Real-time Assessments, exhibit an Operating Process or Operating Procedure that includes actions to address analysis quality issues affecting your Real-time Assessments? If you perform Real-time Assessments, exhibit evidence that your Operating Process or Operating Procedure to address the quality of analysis issues affecting your Real-time Assessment?</td>
<td>Manual 3A: Energy Management System Model Updates and Quality Assurance, Section 5.2.2 State Estimator [14] Solution Quality and ECP Links, Section 5.5</td>
<td>4/1/2018</td>
<td>None</td>
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## NERC Reliability Standards

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<th>Approved B 0/ FERC Standards</th>
<th>A/S</th>
<th>Assigned or Shared Member TO Tasks</th>
<th>FIM Tasks</th>
<th>Audit Questions</th>
<th>Evidence of Compliance (What auditors will be looking for)</th>
<th>Reference Documents</th>
<th>Enforcement Date</th>
<th>Inactive Date</th>
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<td>TOP</td>
<td>TOP-001-I(l)</td>
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<td>4</td>
<td>Each Transmission Operator and Balancing Authority shall have an alarm process monitor that provides notification(s) to its System Operators when a failure of its real-time monitoring alarm processor has occurred.</td>
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### VAR

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<th>A/S</th>
<th>Assigned or Shared Member TO Tasks</th>
<th>FIM Tasks</th>
<th>Audit Questions</th>
<th>Evidence of Compliance (What auditors will be looking for)</th>
<th>Reference Documents</th>
<th>Enforcement Date</th>
<th>Inactive Date</th>
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<tr>
<td>VAR</td>
<td>VAR-001-4.1</td>
<td>Purpose</td>
<td>4</td>
<td>Each Transmission Operator shall operate or direct the real-time operation of devices to regulate transmission voltage and reactive flow as necessary.</td>
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<td>VAR</td>
<td>VAR-001-4.2</td>
<td>Purpose</td>
<td>5</td>
<td>When PJM issues an Operating Instruction the Member TO shall be able to operate the devices under its control necessary to regulate transmission voltage and reactive flow.</td>
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<td>VAR</td>
<td>VAR-001-5</td>
<td>Purpose</td>
<td>5</td>
<td>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.</td>
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<td>A/S</td>
<td>Assigned or Shared Member TO Tasks</td>
<td>FIM Tasks</td>
<td>Audit Questions</td>
<td>Evidence of Compliance</td>
<td>Reference Documents</td>
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<td>VAR</td>
<td>VAR-001-244</td>
<td>R5.1</td>
<td>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 (AVR is in service and controlling voltage).</td>
<td>5</td>
<td>1. Each Member TO shall notify all Generator Operators and PPA within its zone of the specified voltage schedule (PJM default schedule as specified in PJM Manual 3, Section 3.11 or Member TO voltage schedule)</td>
<td>Keep P/JM Manual 3 Section 3.11 up to date</td>
<td>1. Did you notify all Generator Operators within your zone and PPA regarding the specified voltage schedule (PJM default schedule as specified in PJM Manual 3, Section 3.11 or your voltage schedule)</td>
<td>1. Exhibit evidence, such as, email, notes, etc., that you notified all Generator Operators within your zone and PAA regarding the specified voltage schedule (PJM default schedule as specified in PJM Manual 3, Section 3.11 or your voltage schedule).</td>
<td>*</td>
<td>VAR-001-244</td>
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<td></td>
<td>2. When necessary to change the specified voltage schedule (PJM default schedule as specified in PJM Manual 3, Section 3.11 or your voltage schedule), did you coordinate with PPA and the Generator Operator?</td>
<td>Maintain current</td>
<td>2. Did you notify the Generator Operator to comply with the schedule (PJM default schedule as specified in PJM Manual 3, Section 3.11 or your voltage schedule)</td>
<td>2. Exhibit evidence, such as, emails, or voice recordings, demonstrating that you coordinated with PPA and the Generator Operator when necessary to change the schedule (PJM default schedule as specified in PJM Manual 3, Section 3.11 or your voltage schedule).</td>
<td>*</td>
<td>VAR-001-244</td>
</tr>
<tr>
<td></td>
<td>VAR-001-244</td>
<td>R5.3</td>
<td>The Transmission Operator shall provide the criteria used to develop voltage schedule or Reactive Power schedule (which is either a range or a target value with an associated tolerance band) to the Generator Operator within 30 days of receiving a request.</td>
<td>5</td>
<td>1. Each Member TO shall provide the criteria used to develop 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 its area within 30 days of receiving a request.</td>
<td>FIM shall keep P/JM Manual 3, Section 3.11 up to date</td>
<td>1. Did you provide the criteria used to develop the voltage schedule (PJM default schedule as specified in PJM Manual 3, Section 3.11 or your voltage schedule) to the Generator Operator in your area within 30 days of receiving a request?</td>
<td>1. Exhibit evidence (logs, emails, or other form of communication) that you provided the criteria used to develop the voltage schedule (PJM default schedule as specified in PJM Manual 3, Section 3.11 or your voltage schedule) to the Generator Operator in your area within 30 days of receiving a request.</td>
<td>*</td>
<td>VAR-001-244</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>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 PPA.</td>
<td>*</td>
<td>2. If you were not able to provide the criteria used to develop the voltage schedule to the Generator Operator within 30 days of receiving a request, did you notify PPA?</td>
<td>2. Exhibit evidence (logs, emails, or other form of communication) that you were not able to provide the criteria used to develop the voltage schedule to the Generator Operator within 30 days of receiving a request.</td>
<td>*</td>
<td>VAR-001-244</td>
</tr>
</tbody>
</table>
The following Reference Documents are utilized in the TO/TOP Matrix:

- Manual 1 Control Center and Data Exchange Requirements, Rev. 3 (Effective Date: September 27, 2018)
- Manual 3, Transmission Operations, Rev. 5 (Effective Date: December 10, 2018)
- Manual 10, Pre-Scheduling Operations, Rev. 375 (Effective Date: December 10, 2018)
- Manual 12, Balancing Operations, Rev. 38 (Effective Date: April 20, 2018)
- Manual 13, Emergency Operations, Rev. 685 (Effective Date: January 1, 2018)
- Manual 14D, Generator Operational Requirements, Rev. 474 (Effective Date: December 20, 2018)
- Manual 36, System Restoration, Rev. 25 (Effective Date: June 8, 2018)
- Manual 37, Reliability Coordination, Rev. 15 (Effective Date: April 1, 2018)
- Manual 38, Operations Planning, Rev. 11 (Effective Date: February 1, 2018)
- Manual 39, Nuclear Plant Interface Coordination, Rev. 175 (Effective Date: December 5, 2018)
- Manual 40, Certification and Training Requirements, Rev. 19 (Effective Date: February 1, 2018)

PJM Compliance Bulletin CB 001 NERC Standard PRC-001-1, Rev. 5 (Effective Date: January 24, 2017)
Reliability Assurance Agreement Among Load Serving Entities in the PJM Region (Effective Date: September 17, 2010)
Consolidated Transmission Owners Agreement Rate Schedule FERC No. 42 referenced as TOA in the TO/TOP Matrix (Effective Date: June 16, 2012)
Amended And Restated Operating Agreement of PJM Interconnection, L.L.C referenced as PJM OA in the TO/TOP Matrix (Effective Date: July 14, 2011)
PJM Open Access Transmission Tariff (Effective Date: September 17, 2010)
PJM Compliance Bulletin CB026 Coordination with External Transmission Operators (TOPs) Rev. 1 (Effective Date: June 2, 2017)
**Revision History**

**Version 13**
Effective: April 1, 2019
Finalized by TO/TOP Matrix Subcommittee: December 14, 2018
Approved by the Transmission Owners Agreement Administrative Committee:

### Changes
- **New NERC Reliability Standard**
  - Standard 10: PJM Reliability Standard
  - Standard 16: PJM Reliability Standard

#### Additions
- **EOP-004-4**
  - 4/1/2019
- **EOP-005-3**
  - 4/1/2019
- **VAR-001-3**
  - 4/1/2019
- **VAR-001-4**
  - 4/1/2019

#### Revisions to existing requirements
- **COM-001-3**
  - 9/30/2015
- **TOP-001-4**
  - 12/31/2015
- **TOP-004-1**
  - 12/31/2015
- **VAR-001-4**
  - 12/31/2015
- **VAR-001-5**
  - 12/31/2015

#### Inactive Date Changes
- **VAR-001-2**
  - 3/31/2017
- **VAR-001-3**
  - 3/31/2017
- **VAR-001-4**
  - 3/31/2017
- **VAR-001-5**
  - 3/31/2017

#### Evidence of Compliance Updates
- **EOP-005-3**
  - 3/31/2017
- **EOP-008-2**
  - 3/31/2017

#### Administrative Changes
- **EOP-001-2.1b**
  - 12/31/2015
- **PRC-001-1.1(ii)**
  - 3/31/2017
- **COM-001-3**
  - 3/31/2017
- **R5.2**
  - 4/1/2019
- **R6.2**
  - 4/1/2019
- **R8.5**
  - 4/1/2019

### Revision Notes
- **Evidence of Compliance Updates**
  - Added assigned task to notify PJM of change of status in RAS schemes
  - Added assigned task to notify PJM of change of status for monitored facilities
  - Updated Reference Documents to current versions

**Version 12**
Effective: July 1, 2018
Finalized by TO/TOP Matrix Subcommittee: March 16, 2018
Approved by the Transmission Owners Agreement Administrative Committee:

### Changes
- **New NERC Reliability Standard**
  - Standard 10: PJM Reliability Standard
  - Standard 16: PJM Reliability Standard

#### Additions
- **COM-001-1.1**
  - 5/28/2015
- **VAR-001-3**
  - 9/30/2014
- **VAR-001-4**
  - 6/30/2018
- **COM-001-3**
  - 9/30/2015
- **VAR-001-3**
  - 3/31/2017
- **VAR-001-4**
  - 3/31/2017

#### Revisions to existing requirements
- **BAL-005-0.2b**
  - 7/1/2018
- **EOP-006-1**
  - 7/1/2018
- **TOP-010-1(i)**
  - 7/1/2018
- **TOP-010-1(i)**
  - 7/1/2018
- **TOP-010-1(i)**
  - 7/1/2018
- **TOP-010-1(i)**
  - 7/1/2018
- **TOP-010-1(i)**
  - 7/1/2018
- **VAR-001-4**
  - 9/25/2017

#### Inactive Date Changes
- **BAL-005-0.2b**
  - 12/31/2018
- **EOP-006-1**
  - 12/31/2018
- **TOP-010-1(i)**
  - 12/31/2018
- **VAR-001-4**
  - 12/31/2018

#### Evidence of Compliance Updates
- **EOP-006-1**
  - 3/31/2017
- **VAR-001-3**
  - 3/31/2017
- **VAR-001-4**
  - 3/31/2017
- **VAR-001-5**
  - 3/31/2017
- **VAR-001-6**
  - 3/31/2017

#### Administrative Changes
- **EOP-001-2.1b**
  - 12/31/2015
- **PRC-001-1.1(ii)**
  - 3/31/2017
- **COM-001-3**
  - 3/31/2017
- **R5.2**
  - 4/1/2019
- **R6.2**
  - 4/1/2019
- **R8.5**
  - 4/1/2019

### Revision Notes
- **Evidence of Compliance Updates**
  - Added assigned task to request process change in communication of voltage schedules
  - Updated assigned task to include PJM in the list of entities to be notified of voltage
  - Updated assigned task to indicate PJM shall maintain
  - Updated assigned task to update list of Transmission

**Version 11**
Effective: October 1, 2017
Finalized by TO/TOP Matrix Subcommittee: June 16, 2017
Approved by the Transmission Owners Agreement Administrative Committee: September 20, 2017

### Changes
- **New NERC Reliability Standard**
  - Standard 10: PJM Reliability Standard
  - Standard 16: PJM Reliability Standard

#### Additions
- **EOP-004-2**
  - 3/31/2017
- **TOP-001-1(i)**
  - 3/31/2017
- **TOP-010-1(i)**
  - 3/31/2017

#### Revisions to existing requirements
- **COM-001-1.1**
  - 3/31/2017
- **EOP-003-2**
  - 3/31/2017
- **COM-001-3**
  - 3/31/2017
  - 3/31/2017

#### Inactive Date Changes
- **BAL-005-0.2b**
  - 9/30/2015
- **EOP-006-1**
  - 9/30/2014
- **TOP-010-1(i)**
  - 9/30/2014
- **VAR-001-4**
  - 9/30/2014
- **COM-001-3**
  - 9/30/2015
- **VAR-001-6**
  - 9/30/2015

#### Evidence of Compliance Updates
- **EOP-006-1**
  - 3/31/2017
- **VAR-001-3**
  - 3/31/2017
- **VAR-001-4**
  - 3/31/2017
- **VAR-001-5**
  - 3/31/2017
- **VAR-001-6**
  - 3/31/2017

#### Administrative Changes
- **EOP-001-2.1b**
  - 12/31/2015
- **PRC-001-1.1(ii)**
  - 3/31/2017
- **COM-001-3**
  - 3/31/2017
- **R5.2**
  - 4/1/2019
- **R6.2**
  - 4/1/2019
- **R8.5**
  - 4/1/2019

### Revision Notes
- **Evidence of Compliance Updates**
  - Added PJM task to perform Operational
  - Added PJM task to indicate PJM shall use
  - Revised PJM task to indicate that PJM shall maintain
  - Revised PJM task to update list of Transmission

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Revised Task Updates

Inactivated Date Changes
1 COM-001-3 R.3.5 Increased includes communication with neighboring TOPs external to PJM
2 COM-001-3 R.4.3 Increased now includes communication with neighboring TOPs external to PJM
3 EOP-005-2 R.1 Evidence of Compliance section updated
4 TOP-001-3 R.9 Clarified that assigned tasks deal with data communication channels
5 TOP-001-3 R.16 Clarified that assigned tasks deal with data communication channels
6 TOP-006-2 R.6 Updated Manual 1 reference in the assigned task
7 VAR-001-3 R.4.1 Updated Manual 3 reference in the assigned task
8 VAR-001-4.1 R.5 Updated Manual 3 reference in the assigned task
9 VAR-001-4.1 R.5.1 Updated Manual 3 reference in the assigned task
10 VAR-001-4.1 R.5.2 Updated Manual 3 reference in the assigned task
11 VAR-001-4.1 R.5.3 Updated Manual 3 reference in the assigned task

Spelling and Grammar Updates
12 EOP-003-2 Updated Manual 3 reference in the assigned task
13 EOP-004-1 Updated Manual 3 reference in the assigned task
14 EOP-005-2 Updated Manual 3 reference in the assigned task
15 EOP-005-2 Updated Manual 3 reference in the assigned task
16 EOP-008-1 Updated Manual 3 reference in the assigned task
17 EOP-009-1 Updated Manual 3 reference in the assigned task
18 EOP-010-1 Updated Manual 3 reference in the assigned task
19 EOP-012-1.2b Updated Manual 3 reference in the assigned task

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

New NERC Reliability

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Revision History

- EOP-001-0.1b DJ 12/31/2013
- EOP-001-2.1b DJ 3/31/2017
- EOP-005-2 DJ 6/30/2013
- EOP-009-1 DJ 6/30/2013
- EOP-010-1 DJ 9/30/2013
- EOP-004-1 DJ 12/31/2013
- EOP-005-1 DJ 6/30/2013
- EOP-008-0 DJ 6/30/2013
- EOP-001-2.1 DJ 3/31/2017
- VAR-001-3 R.5.1 DJ 3/31/2017
- VAR-001-3 R.5.2 DJ 3/31/2017
- VAR-001-3 R.5.3 DJ 3/31/2017

Version 10
- Effective: January 1, 2017
- Approved by TO/TOP Matrix Subcommittee: September 16, 2016
- Approved by the Transmission Owners Agreement Administrative Committee: November 9, 2016

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Revision History

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

Version 9
- Effective: October 1, 2015
- Approved by TO/TOP Matrix Subcommittee: August 20, 2015
- Approved by the Transmission Owners Agreement Administrative Committee: September 15, 2015