PJM TO/TOP Matrix of Shared or Assigned Tasks

Revision 07
Approved by the TO/TOP Matrix Subcommittee: October 18, 2013
Approved by the Transmission Owners Agreement-Administrative Committee: November 27, 2013

Reference Documents are associated with the following PJM Manuals:

- Manual 1, Control Center and Data Exchange Requirements, Rev. 25 (Effective Date: September 26, 2013)
- Manual 3, Transmission Operations, Rev. 44 (Effective Date: November 1, 2013)
- Manual 3A, Energy Management System (EMS) Model Updates and Quality Assurance (QA), Rev. 7 (Effective Date: July 12, 2013)
- Manual 10, Pre-Scheduling Operations, Rev. 29 (Effective Date: November 1, 2013)
- Manual 12, Balancing Operations, Rev. 29 (Effective Date: November 1, 2013)
- Manual 13, Emergency Operations, Rev. 54 (Effective Date: September 26, 2013)
- Manual 14B, PJM Region Transmission Planning Process, Rev. 25 (Effective Date: October 24, 2013)
- Manual 14C, Generation and Transmission Interconnection Facility Construction, Rev. 8 (Effective Date: December 20, 2012)
- Manual 14D, Generator Operational Requirements, Rev. 26 (Effective Date: November 1, 2014)
- Manual 36, System Restoration, Rev. 19 (Effective Date: June 20, 2013)
- Manual 37, Reliability Coordination, Rev. 10 (Effective Date: April 1, 2013)
- Manual 38, Operations Planning, Rev. 7 (Effective Date: December 20, 2012)
- Manual 39, Nuclear Plant Interface Coordination, Rev. 6 (Effective Date: March 1, 2013)
- Manual 40, Certification and Training Requirements, Rev. 13 (Effective Date: March 1, 2013)

- PJM Compliance Bulletin on PRC-001, Rev. 3 (Effective Date: August 12, 2013)
- Operation Memo 32 - Dispatch Staffing Procedure, Rev. 3 (Effective Date: March 30, 2012)
- Operating Memo 45 - Plan for Loss of Control Room Functionality, Rev. 10 (Effective Date: September 15, 2008)
- PJM Relay Subcommittee Charter
- RFC MMWG Procedure
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<tr>
<td>BIL</td>
<td>BIL-005-1.b</td>
<td>Purpose</td>
<td>This standard establishes requirements for Balancing Authority Automatic Generation Control (AGC) necessary to calculate Area Control Error (ACE) and to routinely deploy the Regulating Reserve. The standard also ensures that all facilities and load electrically interconnected to the Interconnection are included within the metered boundary of a Balancing Area so that balancing of resources and demand can be achieved.</td>
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<td>1. Provide list of metered BES tie lines with other PJM Member T&amp;D. 2. Provide a list of metered tie lines with T&amp;Ds external to PJM. If applicable 3. Provide an attestation that all remaining owned transmission facilities are within the metered tie lines from above.</td>
<td>M-1 Control Center and Data Exchange Requirements (Rev. 25), Section 5.3.7, Balancing Authority Tie Circuits Reliability Assurance Agreement, Schedule 2, Section 8, Item 1</td>
<td>No</td>
<td>5/11/2009</td>
<td>None</td>
</tr>
<tr>
<td>BIL</td>
<td>BIL-005-1.2b</td>
<td>R1.2.</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>A</td>
<td>All of the Member TO’s BES facilities shall be within metered boundaries.</td>
<td></td>
<td>Are all of your BES facilities within metered boundaries?</td>
<td>M-1 General Information Exchange Requirements (Rev. 25), Section 5.3.3</td>
<td>Yes</td>
<td>4/4/2007</td>
<td>CIP-001-1</td>
</tr>
<tr>
<td>CP</td>
<td>CIP-001-2a</td>
<td>Purpose</td>
<td>Disturbances or unusual occurrences, suspected or determined to be caused by sabotage, shall be reported to the appropriate systems, governmental agencies, and regulatory bodies.</td>
<td></td>
<td>No changes necessary for Interpretation.</td>
<td></td>
<td>Do you have procedures for the recognition of and for making their operating personnel aware of sabotage events on its facilities?</td>
<td>M-13 Emergency Operations (Rev. 54), Section 1.3-General Information Exchange Requirements, Section 1.3.2-Transmission Authority, Section 1.3.3-Transmission Operator, Section 1.3.4-Load Serving Entity</td>
<td>Yes</td>
<td>4/4/2007</td>
<td>CIP-001-1</td>
</tr>
<tr>
<td>CP</td>
<td>CIP-001-2a</td>
<td>R.1.</td>
<td>Each Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator, and Load Serving Entity shall have procedures for the recognition of and for making their operating personnel aware of sabotage events on its facilities and multi-site sabotage affecting larger portions of the Interconnection.</td>
<td>S</td>
<td>Each Member TO shall have procedures for the recognition of and for making their operating personnel aware of sabotage events on its facilities.</td>
<td></td>
<td>Do you have procedures for the recognition of and for making your operating personnel aware of sabotage events on your facilities?</td>
<td>M-13 Emergency Operations (Rev. 54), Section 1.3-General Information Exchange Requirements, Section 1.3.2-Transmission Authority, Section 1.3.3-Transmission Operator, Section 1.3.4-Load Serving Entity</td>
<td>Yes</td>
<td>4/4/2007</td>
<td>CIP-001-1</td>
</tr>
<tr>
<td>CP</td>
<td>CIP-001-2a</td>
<td>R2.</td>
<td>Each Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator, and Load Serving Entity shall have procedures for the communication of information concerning sabotage events to appropriate parties in the Interconnection.</td>
<td>S</td>
<td>Each Member TO shall have procedures for the communication of information concerning sabotage events to PIM.</td>
<td></td>
<td>Do you have procedures in place to communicate information concerning sabotage events to PIM?</td>
<td>M-13 Emergency Operations (Rev. 54), Section 1.3-General Information Exchange Requirements, Section 1.3.2-Transmission Authority, Section 1.3.3-Transmission Operator, Section 1.3.4-Load Serving Entity</td>
<td>Yes</td>
<td>4/4/2007</td>
<td>CIP-001-1</td>
</tr>
<tr>
<td>CP</td>
<td>CIP-001-2a</td>
<td>R3.</td>
<td>Each Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator, and Load Serving Entity shall provide its operating personnel with sabotage response guidelines, including personnel to contact, for reporting disturbances due to sabotage events.</td>
<td>S</td>
<td>Each Member TO shall provide its operating personnel with sabotage response guidelines, including personnel to contact for reporting disturbances due to sabotage events.</td>
<td></td>
<td>Do you provide your operating personnel with sabotage response guidelines, including a list of personnel to contact for reporting disturbances due to sabotage events?</td>
<td>M-13 Emergency Operations (Rev. 54), Section 1.3-General Information Exchange Requirements, Section 1.3.2-Transmission Authority, Section 1.3.3-Transmission Operator, Section 1.3.4-Load Serving Entity</td>
<td>Yes</td>
<td>4/4/2007</td>
<td>CIP-001-1</td>
</tr>
<tr>
<td>CP</td>
<td>CIP-001-2a</td>
<td>R.4.</td>
<td>Each Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator, and Load Serving Entity shall establish communications contacts, as applicable, with local Federal Bureau of Investigation (FBI) or Royal Canadian Mounted Police (RCMP) officials and develop reporting procedures as appropriate to their circumstances.</td>
<td>S</td>
<td>Each Member TO shall establish communications contacts, as applicable, with local Federal Bureau of Investigation (FBI) or Royal Canadian Mounted Police (RCMP) officials and develop reporting procedures as appropriate to their circumstances.</td>
<td></td>
<td>Have you established communication contacts, as applicable, with local Federal Bureau of Investigation (FBI) or Royal Canadian Mounted Police (RCMP) officials and developed procedures as appropriate to your circumstances to report sabotage events?</td>
<td>M-13 Emergency Operations (Rev. 54), Section 1.3-General Information Exchange Requirements, Section 1.3.2-Transmission Authority, Section 1.3.3-Transmission Operator, Section 1.3.4-Load Serving Entity</td>
<td>Yes</td>
<td>4/4/2007</td>
<td>CIP-001-1</td>
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## NERC Reliability Standards

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<tr>
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<th>Purpose</th>
<th>Standard Number</th>
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<th>Shared PIM Tasks</th>
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<th>Evidence of Compliance (What auditors will be looking for)</th>
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<th>End Date</th>
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<tr>
<td>COM</td>
<td>COM-001-1.1</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 necessary to maintain reliability.</td>
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<tr>
<td>COM</td>
<td>COM-001-1.1</td>
<td>R1. (Heading) Each Reliability Coordinator, Transmission Operator and Balancing Authority shall provide adequate and reliable telecommunications facilities for the exchange of interconnection and operating information.</td>
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<tr>
<td>COM</td>
<td>COM-001-1.1</td>
<td>R 1.1</td>
<td>Internally.</td>
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<td>1. Member TO shall have All Call equipment, ring down circuits (or simulated ring down), normal dial circuits, satellite telephone and a facsimile machine. Member TO shall provide appropriate power supply, appropriate environmental conditions and dial up modem lines for out of band router access for the PIMnet connection provided by PIM. 2. The Member TO shall make EMS information available to PIM via PIMnet. PIMnet is a dual redundant frame relay network using the Inter-control Center Communications Protocol (ICCP).</td>
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<td>1. PIM shall have All Call equipment, ring down circuits (or simulated ring down), normal dial circuits, satellite telephone and a facsimile machine. PIM shall provide appropriate power supply, appropriate environmental conditions and dial up modem lines for out of band router access for the PIMnet connection provided by PIM. 2. PIM shall make EMS information available to the Member TO via PIMnet. PIMnet is a dual redundant frame relay network using the Inter-control Center Communications Protocol (ICCP).</td>
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<td>Describe your communication systems for voice and data communication with PIM.</td>
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<tr>
<td>COM</td>
<td>COM-001-1.1</td>
<td>R 1.1</td>
<td>With other Reliability Coordinators, Transmission Operators, and Balancing Authorities as necessary to maintain reliability.</td>
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<td>1. Each Member TO with ties external to PIM shall have voice communications with its adjacent TOs external to PIM. 2. Each Member TO with ties external to PIM shall exchange EMS data on the lines and other data as necessary to maintain reliability with its adjacent TOs external to PIM.</td>
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<td>1. PIM has no Shared Task for voice communications between neighboring TOs. 2. PIM shall exchange external TO EMS information with adjacent Member TOs via PIMnet, if available. PIMnet is a dual redundant frame relay network using the Inter-control Center Communications Protocol (ICCP). PIM shall provide adequate and reliable telecommunications facilities for the exchange of interconnection and operating information with other Reliability Coordinators, Transmission Operators and Balancing Authorities as necessary to maintain reliability.</td>
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<td>1. Describe your voice communication systems with your adjacent TOs external to PIM. 2. Describe your data communication systems with your adjacent TOs external to PIM.</td>
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<td>COM</td>
<td>COM-001-1.1</td>
<td>R 1.4</td>
<td>Where applicable, these facilities shall be redundant and diversely routed.</td>
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<td>1. Voice communications with PIM shall be redundant and diversely routed. 2. TOs shall use PIMnet to communicate EMS data to PIM. PIMnet is a dual redundant frame relay network using the Inter-control Center Communications Protocol (ICCP). 3. Voice communications with adjacent neighboring (both internal and external) TOs shall be redundant and diversely routed. 4. Exchange of EMS data with adjacent TOs external to PIM shall be redundant and diversely routed.</td>
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<td>1. Are your voice communication systems with PIM redundant and diversely routed? 2. Do you use PIMnet? 3. Are your voice communications with adjacent neighboring (both internal and external) TOs redundant and diversely routed? 4. Are your data communications with adjacent neighboring external TOs redundant and diversely routed?</td>
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<td>COM</td>
<td>COM-001-1.1</td>
<td>R.2.</td>
<td>Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall manage, alarm, test, and/or actively monitor total telecommunications facilities. Special attention shall be given to emergency telecommunications facilities and equipment used for routine communications.</td>
<td>5</td>
<td>The Member TO shall respond to all applicable All Call messages. 2. The Member TO shall participate in the PJM satellite phone tests. 3. Voice communications with neighboring (both internal and external) TOs shall be managed, alarmed, tested or actively monitored. 4. Data exchange with neighboring (both internal and external) TOs shall be managed, alarmed, tested or actively monitored.</td>
<td>1. No Shared Task for All Call. 2. PJM shall initiate the PJM satellite phone tests. 3. PJM has no Shared Task related to voice communications with neighboring (both internal and external) TOs. 4. Member TOs may use PJMnet to exchange EMS data with TOs external to PJM. If such information is available. PJMnet is a dual redundant frame relay network using the Inter-control Center Communications Protocol (ICCP). Each TO Member's communications shall be staffed and available for addressing a real-time emergency condition.</td>
<td>1. Describe your facilities used to participate in a PJM All Call. 2. Do you participate in the PJM satellite phone tests? 3. Do you manage, alarm, test and/or actively monitored voice communications with neighboring (both internal and external) TOs? 4. Do you manage, alarm, test and/or actively monitored voice communications with neighboring (both internal and external) TOs? 5. Do you manage, alarm, test and/or actively monitored voice communications with neighboring (both internal and external) TOs? 6. Do you manage, alarm, test and/or actively monitored voice communications with neighboring (both internal and external) TOs?</td>
<td>Show logs of tests and logs of participation in IPM tests. Show logs of management, alarming, testing and/or active monitoring of voice communications with neighboring (both internal and external) TOs.</td>
<td>Section 1</td>
<td>November 27, 2013</td>
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<tr>
<td>COM</td>
<td>COM-001-1.1</td>
<td>R.4.</td>
<td>Unless agreed to otherwise, each Reliability Coordinator, Transmission Operator, and Balancing Authority shall use English as the language for all communications between and among operating personnel responsible for the real-time generation control and operation of the interconnected Bulk Electric System.</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>PJM operators shall use English as the language for all communications with Member TOs.</td>
<td>1. Do you use only English when communicating with PJM TOs? 2. Do your system operators use only English when communicating with your operating personnel?</td>
<td>Documentation showing that for the Member TO system operators that English is used as the language for all communications among operating personnel responsible for the real-time generation control, when applicable, and operation of the interconnected Bulk Electric System.</td>
<td>Section 1</td>
<td>November 27, 2013</td>
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</tr>
<tr>
<td>COM</td>
<td>COM-001-1.1</td>
<td>R.5.</td>
<td>Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall have written operating instructions and procedures to enable continued operation of the system during the loss of telecommunications facilities.</td>
<td>5</td>
<td>Each TO member shall have written operating instructions and procedures to enable continued operation of the Member TO's system during the loss of EMS data exchange. 2. The written operating instructions and procedures shall specifically address sending data to PJM as required by PJM Manual 1 Section 3.2.3 EMS Data Exchange during the loss of EMS data exchange.</td>
<td>During a loss of EMS data exchange with a Member TO, PJM operators shall be prepared to receive and use data, by non-EMS means, specifically addressed in PJM Manual 1 Section 3.2.3 EMS Data Exchange.</td>
<td>1. Do you have written operating instructions and procedures that enable continued operation of the system during the loss of EMS data exchange? 2. Do you address sending data to PJM? 3. Have you had to stop or delay actions without EMS data exchange procedures since the last audit?</td>
<td>Operating Instructions and procedures that enable continued operation of the system during the loss of EMS data exchange.</td>
<td>Section 1</td>
<td>November 27, 2013</td>
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<tr>
<td>COM</td>
<td>COM-002-2</td>
<td>Purpose</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>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.</td>
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<td>Section 1</td>
<td>November 27, 2013</td>
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<tr>
<td>COM</td>
<td>COM-002-2</td>
<td>R.1.</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>Each Member TO shall have voice communications with its adjacent neighboring (both inside and outside of PJM) TOs and PJM. Each Member TO shall use PJMnet or other protocols/mediums to access EMS data with its adjacent neighboring (both inside and outside) TOs. PJMnet is a dual redundant frame relay network using the Inter-control Center Communications Protocol (ICCP). Each TO Member's communications shall be staffed and available for addressing a real-time emergency condition.</td>
<td>PJM shall have voice communications with an adjacent neighboring (both inside and outside of PJM) TOs and PJM. PJM shall use PJMnet to exchange EMS data with Member TOs. PJM has no Shared Task related to voice communications with neighboring (both internal and external) TOs. Each Member TOs may use PJMnet or other protocols/mediums to exchange EMS data with TOs external to PJM. If such information is available. PJMnet is a dual redundant frame relay network using the Inter-control Center Communications Protocol (ICCP). PJMnet is a dual redundant frame relay network using the Inter-control Center Communications Protocol (ICCP). Each TO Member's communications shall be staffed and available for addressing a real-time emergency condition.</td>
<td>1. Describe your voice communications with your adjacent neighboring (both inside and outside of PJM) TOs and PJM. 2. Describe your data communications with your adjacent neighboring (both inside and outside of PJM) TOs and PJM. 3. Are your communications staffed and available for addressing a real-time emergency condition?</td>
<td>Description or drawing of your voice communications with your adjacent neighboring (both inside and outside of PJM) TOs. Description or drawing of your data communications with your adjacent neighboring (both inside and outside of PJM) TOs. Description or drawing of your voice communications with your adjacent neighboring (both inside and outside of PJM) TOs. Description or drawing of your data communications with your adjacent neighboring (both inside and outside of PJM) TOs. Description or drawing of your data communications with your adjacent neighboring (both inside and outside of PJM) TOs.</td>
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<td>EOF</td>
<td>EOF-001.0.1b</td>
<td>R3.2.</td>
<td></td>
<td>5</td>
<td>The Member TD shall comply with PIM instructions and PIM Directives unless such actions would violate safety, equipment, or regulatory or statutory requirements.</td>
<td>PIM is responsible for developing and maintaining the plans to mitigate operating emergencies on the transmission system. PIM shall issue PIM Directives and PIM instructions to implement plans to ensure mitigation of operating emergencies on the transmission system.</td>
<td>Did you comply with any PIM instructions or PIM Directives unless such actions would violate safety, equipment, or regulatory or statutory requirements.</td>
<td>Evidence such as system operator logs, voice recordings or incident reports etc., for any incidents where your operators had to follow PIM Directives or PIM instructions.</td>
<td>PM OA, Schedule 1, 1.7.6 - Scheduling and Dispatching: 1.7.5 - Corrective Action, M-11 Emergency Operations (Rev. 54), Section 5-Index of Operating Procedures for PJM RTO Operation TDA Article 4.7, M-3 Transmission Operations (Rev. 44), Section 5-Index of Operating Procedures for PJM RTO Operation</td>
<td>Yes</td>
<td>EOF-001-0</td>
<td>8/6/2005</td>
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<tr>
<td>EOF</td>
<td>EOF-001.0.1b</td>
<td>R3.3.</td>
<td></td>
<td>5</td>
<td>The Member TD shall develop and maintain a set of plans for implementation of load shedding on its system. 2. The Member TD shall comply with PIM Directives for implementation of load shedding unless such actions would violate safety, equipment, or regulatory or statutory requirements.</td>
<td>PIM is responsible for developing and maintaining the plans for the issuing of Directives for load shedding.</td>
<td>1. Do you have and maintain a set of plans for implementation of load shedding on your system? 2. Did you comply with any PIM Directives for load shedding unless such actions would violate safety, equipment, or regulatory or statutory requirements.</td>
<td>1. Exhibit a set of plans for implementation of load shedding on your system. 2. Evidence such as system operator logs, voice recordings or incident reports etc., for any incidents where your operators had to follow PIM Directives for load shedding.</td>
<td>M-3 Transmission Operations (Rev. 44), Transmission Operations, Section 1 - Voltage &amp; Stability Operating Guidelines; Section 5-Index of Operating Procedures for PJM RTO Operation PM OA, Schedule 1, 1.7.6 - Scheduling and Dispatching: 1.7.5 - Corrective Action, M-11 Emergency Operations (Rev. 54), Section 1.1-Policy Statements; Section 2; Attachment E: Manual Load Dump Allocation Tables; Attachment F: PIM Manual Load Dump Capability TDA Article 4.7</td>
<td>Yes</td>
<td>EOF-001-0</td>
<td>8/6/2005</td>
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<tr>
<td>EOF</td>
<td>EOF-001.0.1b</td>
<td>R3.4.</td>
<td></td>
<td>5</td>
<td>See EOF-005-1 for requirements of TO members to develop, maintain, and implement a set of plans for system restoration.</td>
<td>See EOF-005-1</td>
<td>See EOF-005-1</td>
<td>Covered by EOF-005-1</td>
<td>Yes</td>
<td>EOF-001-0</td>
<td>8/6/2005</td>
<td>EOF-003-0</td>
</tr>
<tr>
<td>EOF</td>
<td>EOF-001.0.1b</td>
<td>R4.1 (Heading)</td>
<td></td>
<td></td>
<td>Each Transmission Operator and Balancing Authority shall have emergency plans that will enable it to mitigate operating emergencies. At a minimum, Transmission Operator and Balancing Authority emergency plans shall include:</td>
<td>See EOF-005-1</td>
<td>See EOF-005-1</td>
<td>Covered by EOF-005-1</td>
<td>Yes</td>
<td>EOF-001-0</td>
<td>8/6/2005</td>
<td>EOF-003-0</td>
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<tr>
<td>EOF</td>
<td>EOF-001.0.1b</td>
<td>R4.4 (Heading)</td>
<td></td>
<td></td>
<td>Staffing levels for the emergency.</td>
<td>The Member TD's Emergency Plans shall include staffing levels for the emergency.</td>
<td>Are staffing levels for the emergency part of your Emergency Plans?</td>
<td>Exhibit the part of your Emergency Plans that indicates staffing levels for the emergency.</td>
<td>M-11 Emergency Operations (Rev. 54), Section 3-Weather and Environmental Emergencies Operation Memo 32 - Dispatch Staffing Procedure</td>
<td>Yes</td>
<td>EOF-001-0</td>
<td>8/6/2005</td>
</tr>
<tr>
<td>EOF</td>
<td>EOF-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>Each Transmission Operator and Balancing Authority shall:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>EOF-001-0</td>
<td>8/6/2005</td>
</tr>
<tr>
<td>EOF</td>
<td>EOF-001.2.1b</td>
<td>R2 (Heading)</td>
<td>Each Transmission Operator and Balancing Authority shall:</td>
<td></td>
<td></td>
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</table>

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### NERC Reliability Standards

<table>
<thead>
<tr>
<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 TO Tasks</th>
<th>Shared PIM Tasks</th>
<th>Audit Questions</th>
<th>Evidence of Compliance (What auditors will be looking for)</th>
<th>Reference Documents</th>
<th>Audited by RFC</th>
<th>Start Date</th>
<th>End Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>EOP</td>
<td>EOP-001-2.1b</td>
<td>R2.2</td>
<td></td>
<td>5</td>
<td>The Member TO shall comply with PIM instructions unless such actions would violate safety, equipment, or statutory requirements.</td>
<td>PIM is responsible for developing and maintaining the plans to mitigate operating emergencies on the transmission system.</td>
<td>Did you comply with any PIM instructions unless such actions would violate safety, equipment, or statutory requirements?</td>
<td>Evidence such as system operator logs, voice recordings or incident reports etc., for any incidents where your operators had to follow PIM instructions.</td>
<td>PIM OA, Schedule 1, Section 1.7.6 - Scheduling and Dispatching; 1.7.15 Corrective Action</td>
<td>Yes</td>
<td>7/1/2013</td>
<td>None</td>
</tr>
<tr>
<td>EOP</td>
<td>EOP-001-2.2b</td>
<td>R2.3</td>
<td></td>
<td>5</td>
<td>The Member TO shall comply with PIM Directives unless such actions would violate safety, equipment, or statutory requirements.</td>
<td>PIM is responsible for developing and maintaining the plans for load shedding.</td>
<td>Did you comply with any PIM Directives unless such actions would violate safety, equipment, or statutory requirements?</td>
<td>Evidence such as system operator logs, voice recordings or incident reports etc., for any incidents where your operators had to follow PIM Directives.</td>
<td>PIM OA, Transmission Operations (Rev. 44) Transmissions Operations; Section 5-Voltage &amp; Stability Operating Guidelines; Section 5-Index of Operating Procedures for PIM RTO Operation</td>
<td>Yes</td>
<td>7/1/2013</td>
<td>None</td>
</tr>
<tr>
<td>EOP</td>
<td>EOP-001-2.1b</td>
<td>R3 (Heading)</td>
<td></td>
<td>5</td>
<td>Each Transmission Operator and Balancing Authority shall have emergency plans that will enable it to mitigate operating emergencies. At a minimum, Transmission Operator and Balancing Authority emergency plans shall include:</td>
<td>PIM is responsible for developing and maintaining the plans to mitigate operating emergencies on the transmission system.</td>
<td></td>
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<tr>
<td>EOP</td>
<td>EOP-001-2.1b</td>
<td>R3.4</td>
<td></td>
<td>A</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?</td>
<td>Exhibit the part of your Emergency Plans that indicates staffing levels for the emergency.</td>
<td>M-13 Emergency Operations (Rev. 54) Section 5-Weather and Environmental Emergencies Operation Memo 32 - Dispatch Staffing Procedure</td>
<td>Yes</td>
<td>7/1/2013</td>
<td>None</td>
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<tr>
<td>EOP</td>
<td>EOP-001-2.1b</td>
<td>R4 (Heading)</td>
<td></td>
<td></td>
<td>Each Transmission Operator and Balancing Authority shall include the applicable elements in Attachment 1-EOP-001-Db when developing an emergency plan.</td>
<td>Each Transmission Operator and Balancing Authority shall include the applicable elements in Attachment 1-EOP-001-Db when developing an emergency plan.</td>
<td></td>
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</table>
## NERC Reliability Standards

### EOF EOP-003-1

**Purpose**

A Balancing Authority and Transmission Operator operating with insufficient generation or transmission capacity must have the capability and authority to shed load rather than risk an uncontrolled failure of the interconnection.

<table>
<thead>
<tr>
<th>Question</th>
<th>Evidence of Compliance (What auditors will be looking for)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S The Member TO shall shed load at the direction of PJM.</td>
<td>PIM is responsible for developing and maintaining the plans for load shedding.</td>
</tr>
<tr>
<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>Documentation of the event that required you to shed load at the direction of PJM, including evidence that directions were followed as required.</td>
</tr>
</tbody>
</table>

### EOF EOP-003-2

**R3**

After taking all other remedial steps, a Transmission Operator or Balancing Authority operating with insufficient generation or transmission capacity shall shed customer load rather than risk an uncontrolled failure of components or cascading outages of the interconnection.

<table>
<thead>
<tr>
<th>Question</th>
<th>Reference Documents</th>
</tr>
</thead>
<tbody>
<tr>
<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>PIM Operating Agreement, Section 13.1.1.1- Member Responsibilities, General Transmission Owners Agreement, Section 4.5 M-3 Transmission Operations (Rev. 44), Sections 1.2-Responsibilities for Transmission Owner’s Operating Entity, 1.3-Transmission Operating Guidelines M-11 Emergency Operations (Rev. 54), Section 5.5-Interconnection Reliability Operating Limits (IROLs) Manual Load Dump Warning/Action; Attachment F-PJM Manual Load Dump Capability; Attachment H-IROL Load Dump Tables M-17 Reliability Coordination (Rev. 10), Section 1- Roles and Responsibilities, Policy Statements; Section 3 - SOL and IROL Limits, SOL and IROL Limit Determination (PJM Member Actions)</td>
</tr>
</tbody>
</table>

### EOF EOP-003-2

**R5**

A Transmission Operator or Balancing Authority shall implement load shedding, excluding automatic under-frequency load shedding, in steps established to minimize the risk of further uncontrolled separation, loss of generation, or system shutdown.

<table>
<thead>
<tr>
<th>Question</th>
<th>Evidence of Compliance (What auditors will be looking for)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S The Member TO shall shed load at the direction of PJM.</td>
<td>PIM is responsible for developing and maintaining the plans for load shedding.</td>
</tr>
<tr>
<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>Documentation of the event that required you to shed load at the direction of PJM, including evidence that directions were followed as required.</td>
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### Audited by RFC

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<td>7/1/2013</td>
<td>None</td>
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<td>10/1/2013</td>
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<td>EOP</td>
<td>EOP-005-1</td>
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NERC Reliability Standards


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<table>
<thead>
<tr>
<th>Category</th>
<th>Standard Number</th>
<th>Requirement Number</th>
<th>Approved DOT/NERC Standards</th>
<th>A/S</th>
<th>Assigned or Shared TO Tasks</th>
<th>Shared PJM Tasks</th>
<th>Audit Questions</th>
<th>Evidence of Compliance (What auditors will be looking for)</th>
<th>Reference Documents</th>
<th>Audited by RFC</th>
<th>Start Date</th>
<th>End Date</th>
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<tbody>
<tr>
<td>EOP</td>
<td>EOP-005-1</td>
<td>R2</td>
<td></td>
<td>5</td>
<td>Each Member TO shall have a restoration plan to reestablish its electric system in a stable and orderly manner in the event of a partial or total shutdown of its system, including necessary operating instructions and procedures to cover emergency conditions, and the loss of vital telecommunications channels. Each Transmission Operator shall include the applicable elements listed in Attachment 1- EOP-005 in developing a restoration plan.</td>
<td>FIM shall have a restoration plan to coordinate with Member TOs when Member TOs are synching together with other Member TOs or with external TOs in a stable and orderly manner in the event of a partial or total shutdown of its system, including necessary operating instructions and procedures to cover emergency conditions, and the loss of vital telecommunications channels.</td>
<td>Do you have a restoration plan to coordinate with Member TOs when Member TOs are synching together with other Member TOs or with external TOs in a stable and orderly manner in the event of a partial or total shutdown of its system, including necessary operating instructions and procedures to cover emergency conditions, and the loss of vital telecommunications channels.</td>
<td>Exhibit your restoration plan and show that it covers a plan to reestablish its electric system in a stable and orderly manner in the event of a partial or total shutdown of its system, including necessary operating instructions and procedures to cover emergency conditions, and the loss of vital telecommunications channels.</td>
<td>M-3 Transmission Operations (Rev. 49), Section 1.2-Responsibilities for Transmission Owner's Operating Entity, Section 5-Notification for Loss of FIM EMS Capacity</td>
<td>Yes</td>
<td>5/2/2007</td>
<td>7/1/2013</td>
</tr>
<tr>
<td>EOP</td>
<td>EOP-005-1</td>
<td>Attachment 5-001</td>
<td></td>
<td>5</td>
<td>Each Member TO Restoration Plan must outline the relationships and responsibilities of the personnel necessary to implement system restoration.</td>
<td>FIM's operations are fully responsible for implementing the PJM System Restoration Plan in Manual 36 and for communicating with the Member TOs as necessary.</td>
<td>Does your plan include the relationships and responsibilities of the personnel who will implement your plan?</td>
<td>Exhibit the parts of your restoration plan that shows the relationships and responsibilities of the personnel who will implement your plan.</td>
<td>M-6 System Restoration (Rev. 19), Section 1.1-Policy Statements, PJM Member Actions; M-6 System Restoration Plan Guidelines; Attachment 4-Transmission Owner and Blackstart Supporting Documentation References, Figure 1: TO Restoration Document References</td>
<td>Yes</td>
<td>5/2/2007</td>
<td>7/1/2013</td>
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<tr>
<td>EOP</td>
<td>EOP-005-1</td>
<td>Attachment 5-002</td>
<td></td>
<td>5</td>
<td>The Member TO Restoration Plan must outline the relationships and responsibilities of the personnel necessary to implement system restoration.</td>
<td>FIM requires that a black-start unit have at least 10 hours of fuel. (see Manual 36 - Attachment 4: Minimum Critical Black Start Requirement)</td>
<td>1. Does your Restoration Plan provide for a reliable black-start capability plan including: available cranking and transmission paths? 2. Is adequate communication capability with blackout units defined in your Restoration Plan? 3. Are proper communication protocols with blackstart units listed within the your Restoration Plan? 4. Are power supply requirements for communication with blackstart units during a blackout listed in the Member TO Restoration Plan?</td>
<td>Exhibit the parts of your Restoration Plan that show: Available cranking and transmission paths - Communication adequacy (what methods do you use to communicate with blackstart units in your Restoration Plan during a blackout) - Communication protocol (how do you communicate with blackstart units in your Restoration Plan) - Communication power supplies (do you have adequate power supplies to communicate with blackstart units in your Restoration Plan during a blackout)</td>
<td>M-6 System Restoration (Rev. 19), Section 1.1-Policy Statements, Section 6 - Generation</td>
<td>Yes</td>
<td>5/2/2007</td>
<td>7/1/2013</td>
</tr>
<tr>
<td>EOP</td>
<td>EOP-005-1</td>
<td>Attachment 5-003</td>
<td></td>
<td>5</td>
<td>The necessary operating instructions and procedures for synchronizing areas of the system that have become separated.</td>
<td>FIM shall coordinate with Member TOs when Member TOs are synching together with other Member TOs or with external TOs and if a Member TO needs to deviate from the Member TO Restoration Plan.</td>
<td>1. Does your Restoration Plan include the necessary operating instructions and procedures for synchronizing areas of the system (within the Member TO area) that have become separated? 2. Does your Restoration Plan require coordination with FIM if the Member TO is synchronizing their area with another TO (within or external to FIM)? 3. Does your Restoration Plan require notification of FIM if you have to deviate from your Restoration Plan?</td>
<td>Exhibit in the section in the Member TO Restoration Plan that shows: The necessary operating instructions and procedures for synchronizing areas of the system (within the Member TO area) that have become separated. The section that requires coordination with FIM if the Member TO is synchronizing their area with another TO (within or external to FIM). The section that requires coordination with FIM if the Member TO must deviate from the Member TO Restoration Plan.</td>
<td>M-6 System Restoration (Rev. 19), Section 1.7-Synchronization, Attachment B- Restoration Forms</td>
<td>Yes</td>
<td>5/2/2007</td>
<td>7/1/2013</td>
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<tr>
<td>EOP</td>
<td>EOP-005-1</td>
<td>Attachment 5-004</td>
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<td>5</td>
<td>The necessary operating instructions and procedures for restoring loads, including identification of critical load requirements.</td>
<td>Some critical loads may need neighboring Member TOs to help restore. FIM would get involved during this part of the restoration.</td>
<td>1. Describe how load is restored within your area. 2. How do you identify critical loads?</td>
<td>Exhibit the necessary operating instructions and procedures for: Restoring loads - Identification of critical load requirements</td>
<td>M-6 System Restoration (Rev. 19), Section 1.1.5-Implement Restoration Procedures</td>
<td>Yes</td>
<td>5/2/2007</td>
<td>7/1/2013</td>
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</table>
NERC Reliability Standards

Category: EOF
Approved DOT/FERC Standards: EOF-005-1
Attachment 5 #57

EOF-005-1

5. Each Member TO Restoration Plan shall include requirements that each Member TO's operating personnel have been trained annually in the implementation of the Member TO Restoration Plan and have participated in restoration exercises.

EOF-005-1

5. Each Member TO shall annually review and update their Restoration Plan and as required by changes in the power system network. Each Member TO shall correct deficiencies found during the simulated restoration exercises. The annual review and update shall reflect changes in FIM Manual 36.

EOF-005-1

5. Each Member TO's Restoration Plan shall state the priority of restoring the integrity of the Interconnection. FIM's Restoration Plan states the priority of restoration as the integrity of the Interconnection. Does your Restoration Plan clearly state the priority of restoring the integrity of the Interconnection?

EOF-005-1

5. Each Member TO shall participate in FIM tests to test telecommunication facilities with PJM needed to implement its Restoration Plan. Each Member TO shall periodically test any other communication facilities needed during a system restoration including communication with its operating personnel and neighboring TDs (internal and external to PJM).

EOF-005-1

3. The required Member TO's personnel shall participate in FIM sponsored restoration training or an equivalent as required by Manual 40. 2. The required Member TO's personnel shall participate in FIM sponsored restoration drills (simulated exercises) or an equivalent as required by Manual 40. 3. The Member TO shall also provide all required operating personnel with training in the implementation of the Member TO Restoration Plan. 4. Member TO shall retain training records in FIM LMS or their own training records.

EOF-005-1

5. The Member TO shall verify the Restoration Plan by actual testing or by simulation. PJM shall perform simulation exercises of system restoration at least annually.

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NERC Reliability Standards

Requirement Category Standard

Shared

Tasks

Audit Questions

Evidence of Compliance (What auditors will be looking for)

Reference Documents

Audited by

EOP EOP-051-1 R8. Each Transmission Operator shall verify that the number, size, availability, and location of system Blackstart generating units are sufficient to meet Regional Reliability Organization restoration plan requirements for the Transmission Operator's area.

A

1. The Member TO shall identify Priority 1 critical loads (See Manual 46). 2. In conjunction with the Member TO, PIM uses the critical loads to define the minimum number, size and location of the Blackstart resources. 3. Member TO in conjunction with PIM shall secure the required Blackstart resources.

1. In conjunction with the Member TO, PIM uses the Member TO defined Priority 1 critical loads to define the number, size and location of the required Blackstart resources. 2. PIM shall offer adequate Blackstart resources in the Blackstart Service Auxiliary Service Market. 3. PIM in conjunction with the Member TO shall secure the required Blackstart resources. 4. PIM shall determine the availability of the critical Blackstart resources.

1. Have you identified your Priority 1 critical loads as defined in Manual 46? 2. Have you worked with PIM to define the number, size and location of the required Blackstart resources? 3. Have you worked with PIM to secure the required Blackstart resources?

Provide a list of critical loads as defined in Manual 46. 2. Provide a list of critical Blackstart generators (include their size and location).

M-16 System Restoration (Rev. 19), Section 1.1 Policy Statements; PIM Member Actions, Attachment A-Minimum Critical Black Start Requirement

M-12 Balancing Operations (Rev. 29) Section 4.1.6.3 Objectives of Determining Black Start Criticality

M-140 Generation Operational/Requirements (Rev. 26) Section 10-Black Start Replacement Process

Yes 5/2/2007 7/1/2013

EOP EOP-051-1 R9. The Transmission Operator shall document the Cranking Paths, including initial switching requirements, between each Blackstart generating unit and the unit(s) to be started and shall provide this documentation for review by the Regional Reliability Organization upon request. Such documentation may include Cranking Path diagrams.

A Each Member TO shall document the Cranking Paths, including initial switching requirements, between each Blackstart generating unit and the unit(s) to be started.

1. Have you documented initial switching requirements between each Blackstart generating unit and the unit(s) to be started? 2. Do you have cranking path diagrams?

Documentation of initial switching requirements and cranking paths.

M-16 System Restoration (Rev. 19), Section 1.1 Policy Statements; Section 6.2-Cranking Power: Attachment E-Transmission Owner and Blackstart Supporting Documentation

Yes 5/2/2007 7/1/2013

EOP EOP-051-1 R11. Following a disturbance in which one or more areas of the Bulk Electric System become isolated or blacked out, the affected Transmission Operators and Balancing Authorities shall begin immediately to return the Bulk Electric System to normal.

S Each Member TO shall take actions as instructed by PIM. 2. Use the Member TO restoration plan to restore the system and coordinate with PIM if any deviations from the plan are required.

1. Since the last audit you have had a disturbance in which one or more areas of the Bulk Electric System become isolated or blacked out? 2. Did you take actions as instructed by PIM? 3. Did you use the Member TO restoration plan to restore the system and coordinate with PIM if any deviations from the plan are required?

If following a disturbance in which one or more areas of the Bulk Electric System become isolated or blacked out, PIM shall begin immediately to return the Bulk Electric System to normal by directing or instructing Member TOs.

If you have had a disturbance in which one or more areas of the Bulk Electric System become isolated or blacked out since the last audit? 2. If so, did you work with PIM to determine the extent and condition of the isolated area(s)?

M-16 System Restoration (Rev. 19), Section 1.1 Policy Statements

Yes 5/2/2007 7/1/2013

EOP EOP-051-1 R11.1. The affected Transmission Operators and Balancing Authorities shall work in conjunction with their Reliability Coordinator(s) to determine the extent and condition of the isolated area(s).

S Each Member TO shall work with PIM to determine the extent and condition of the isolated area(s).

PIM shall work with each Member TO to determine the extent and condition of the isolated area(s).

1. Have you had a disturbance in which one or more areas of the Bulk Electric System become isolated or blacked out since the last audit? 2. If so, did you work with PIM to determine the extent and condition of the isolated area(s)?

A report of the event.

M-36 System Restoration (Rev. 19), Section 1.1.2 Alerting System Status; Section 8.1.1 Alerting System Status

Yes 5/2/2013

EOP EOP-051-1 R11.2. The affected Transmission Operators and Balancing Authorities shall take the necessary actions to restore Bulk Electric System frequency to normal, including adjusting generation, placing additional generators on line, or adjusting load shedding.

Each Member TO shall take actions as instructed by PIM to restore the Bulk Electric System frequency to normal, including adjusting generation, placing additional generators on line, or adjusting load shedding.

PIM shall instruct the necessary actions to restore Bulk Electric System frequency to normal, including adjusting generation, placing additional generators on line, or adjusting load shedding.

1. Have you had a disturbance in which PIM had to take actions to restore Bulk Electric System frequency to normal since the last audit? 2. If so, did you take actions to restore the BES as instructed by PIM?

A report of the event.

M-36 System Restoration (Rev. 19), Section 3 System Restoration

Yes 5/2/2013

EOP EOP-051-1 R11.4. The affected Transmission Operators shall give high priority to restoration of off-site power to nuclear stations.

Each Member TO shall give high priority to restoration of off-site power to nuclear stations.

PIM shall give high priority to restoration of off-site power to nuclear stations.

1. Have you had a disturbance in which an area of the BES become isolated or blacked out and a nuclear station was within the isolated area? 2. If so, was high priority given to establishing off-site power to the nuclear unit?

A report of the event.

M-36 System Restoration (Rev. 19), Section 1.1.1 Restoration Process; Section 3.1.5 Implement Restoration Procedure

Yes 5/2/2013
<table>
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<th>Category</th>
<th>Standard Number</th>
<th>Requirement Number</th>
<th>Approved BOT/ERC Standards</th>
<th>A/S</th>
<th>Assigned or Shared TO Tasks</th>
<th>Shared PMI Tasks</th>
<th>Audit Questions</th>
<th>Evidence of Compliance (What auditors will be looking for)</th>
<th>Reference Documents</th>
<th>Audited by RFC</th>
<th>Start Date</th>
<th>End Date</th>
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<tr>
<td>EOP</td>
<td>EOP-005-1</td>
<td>R11.5.3</td>
<td></td>
<td>5</td>
<td>Each Member TO shall take actions as instructed by PMI. 2. Each Member TO shall assure PMI that the listed conditions are met before reconnecting a Member TO with another TO (internal or external to PMI) to prevent another collapse.</td>
<td></td>
<td></td>
<td>1. Have you had a disturbance in which one or more areas of the Bulk Electric System became isolated or blacked out since the last audit? 2. If so, were all the listed requirements met before re-establishing connections to neighbors?</td>
<td>Exhibit evidence (voice recordings or log) that demonstrates that all the requirements were met before re-establishing connections to neighbors?</td>
<td>M-36 System Restoration (Rev. 19); Section 3.1-Restoration Policy-Synchronization of Areas/Subsystems Within a Local Control Center; Section 7.1-Blackout - Reactivating System</td>
<td>Yes</td>
<td>5/2/2007</td>
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<td>EOP</td>
<td>EOP-005-2</td>
<td>Purpose</td>
<td></td>
<td></td>
<td>Ensure plans, facilities, and personnel are prepared to enable System restoration from Blackstart resources to assure reliability is maintained during restoration and priority is placed on restoring the Interconnection.</td>
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<td>R21</td>
<td></td>
<td>5</td>
<td>Each Member TO shall have a restoration plan that supports re-establishing the Transmission Operator's System following a Disturbance in which one or more areas of the Bulk Electric System (BES) shut down.</td>
<td></td>
<td></td>
<td>1. Do you have a restoration plan that supports for restoring the Transmission Operator’s System following a Disturbance in which one or more areas of the Member TO’s BES shut down? 2. Is it approved by PMI?</td>
<td>Exhibit your restoration plan and show that it covers a plan to re-establish the electric system in a stable and orderly manner in the event of a partial or total shutdown of the system, including necessary operating instructions and procedures to cover emergency conditions, and the loss of vital telecommunications channels. 2. Show evidence of approval by PMI which may include emails or logging on the PERCS website.</td>
<td>M-4 Transmission Operations (Rev. 44); Section 2.6-PERCS Process; Section 1.1-Policy Statements, Member Actions, Attachment G: Coordination of Restoration Plan with PMI Internal and External Neighboring Entities</td>
<td>Yes</td>
<td>7/1/2013</td>
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<tr>
<td>EOP</td>
<td>EOP-005-2</td>
<td>R3.1.3</td>
<td></td>
<td>5</td>
<td>Strategies for system restoration that are coordinated with the Reliability Coordinator’s high level strategy for restoring the Interconnection.</td>
<td></td>
<td></td>
<td>Does your restoration plan clearly emphasize the high level strategy of restoring the integrity of the Interconnection?</td>
<td>Show that the Member TO’s Restoration Plan has a high level strategy of restoring the integrity of the Interconnection.</td>
<td>M-36 System Restoration (Rev. 19); Section 1.1-Policy Statements</td>
<td>Yes</td>
<td>7/1/2013</td>
</tr>
<tr>
<td>EOP</td>
<td>EOP-005-2</td>
<td>R2.2.2</td>
<td></td>
<td></td>
<td>A description of how all Agreements or mutually agreed upon procedures or protocols for off-site power requirements of nuclear power plants, including priority of restoration, will be fulfilled during System restoration.</td>
<td></td>
<td></td>
<td>If applicable, exhibit the parts of your restoration plan that has a description of how all Agreements or mutually agreed upon procedures or protocols for off-site power requirements of nuclear power plants, including priority of restoration, will be fulfilled during System restoration.</td>
<td>M-36 System Restoration (Rev. 19); Section 3.1-Restoration Process, Section 3.1.5-Implementation Restoration Procedure-Frequency Control and Synchronization of Areas/Subsystems Within a Local Control Center; Section 7.1-Blackout - Reactivating System</td>
<td>M-39 Nuclear Plant Interface Coordination (Rev. 6); Section 2.6-System Restoration</td>
<td>Yes</td>
<td>7/1/2013</td>
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NERC Reliability Standards

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## NERC Reliability Standards

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<td>EOF</td>
<td>EOF-005-2</td>
<td>R1.4</td>
<td></td>
<td>5</td>
<td>The Member TO restoration plan shall list each critical Blackstart Resource, if applicable, and its characteristics including but not limited to the following: the name of the Blackstart Resource, location, megawatt and megavar capacity, and type of unit.</td>
<td>PIM shall define the details about critical Blackstart units upon request from a Member TO.</td>
<td>4. Do you list in your restoration plan each critical Blackstart Resource, if applicable, and its characteristics including but not limited to the following: the name of the Blackstart Resource, location, megawatt and megavar capacity, and type of unit?</td>
<td>M-36 System Restoration (Rev. 19); Section 1.1 Policy Statements; PJM Member Actions; Attachment A-Minimum Critical Black Start Requirement</td>
<td>Yes</td>
<td>7/1/2013</td>
<td>None</td>
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<td>EOF</td>
<td>EOF-005-2</td>
<td>R1.5</td>
<td></td>
<td>A</td>
<td>Each Member TO shall document the Cranking Paths, including initial switching requirements, between each Blackstart generating unit and the units to be started in the restoration plan.</td>
<td></td>
<td>1. Have you documented initial switching requirements and cranking paths in your restoration plan?</td>
<td>Exhibit documentation of initial switching requirements and cranking paths in your restoration plan.</td>
<td>Yes</td>
<td>7/1/2013</td>
<td>None</td>
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<td>EOF</td>
<td>EOF-005-2</td>
<td>R1.6</td>
<td></td>
<td>5</td>
<td>Each Member TO shall, in their restoration plan, identify acceptable operating voltage and frequency limits during restoration.</td>
<td></td>
<td>1. 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.</td>
<td>Yes</td>
<td>7/1/2013</td>
<td>None</td>
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<td>EOF</td>
<td>EOF-005-2</td>
<td>R2</td>
<td></td>
<td>5</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 date of the plan.</td>
<td></td>
<td>1. If PIM shall provide the entities identified in its approved restoration plan with a description of any changes to their roles and specific tasks prior to the implementation date of the plan. 2. Submit the restoration plan to PJM through eDART application according to the schedule in PIM Manual 36: System Restoration, Attachment G.</td>
<td>M-36 System Restoration (Rev. 19); Section 1.1 Policy Statements; Section 6.3 Cranking Power; Attachment F-Transmission Owner and Blackstart Supporting Documentation References</td>
<td>Yes</td>
<td>7/1/2013</td>
<td>None</td>
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<td>EOF-005-2</td>
<td>R4</td>
<td></td>
<td>A</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></td>
<td>1. Did you need to update your restoration plan more than annually? 2. Did you update your restoration plan within 90 calendar days after identifying any unplanned permanent system modifications, or prior to implementing a planned BES modification, that would change the implementation of its restoration plan?</td>
<td>M-36 System Restoration (Rev. 19); Section 1.1-Policy Statements; Section 6.2-Cranking Power; Attachment F-Transmission Owner and Blackstart Supporting Documentation References, Attachment G: Coordination of Restoration Plan with PJM Internal and External Neighboring Entities - PJM Approval Process for TD Restoration Plans.</td>
<td>Yes</td>
<td>7/1/2013</td>
<td>None</td>
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<td>EOF</td>
<td>EOF-005-2</td>
<td>R4.1</td>
<td></td>
<td>S</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></td>
<td>1. Receive the submitted Member TO restoration plan to PJM for approval within the same 90 calendar day period. 2. Notify TO of disposition of submitted restoration plans.</td>
<td>Did you submit your revised restoration plan to PJM for approval within the same 90 calendar day period?</td>
<td>M-36 System Restoration (Rev. 19); Attachment G: Coordination of Restoration Plan with PJM Internal and External Neighboring Entities</td>
<td>Yes</td>
<td>7/1/2013</td>
<td>None</td>
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### NERC Reliability Standards

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<tr>
<td>EOF</td>
<td>EOF-D05-2</td>
<td>R5</td>
<td>Each Transmission Operator shall have a copy of its latest Reliability Coordinator approved restoration plan within its primary and backup control rooms so that it is available to all of its System Operators prior to its implementation date. [Violation Risk Factor = Lower] [Time Horizon = Operations Planning]</td>
<td>5</td>
<td>Each Member TO shall have a copy of its latest PMI approved restoration plan within its primary and backup control rooms so that it is available to all of its system operators prior to its implementation date. 2. Have a copy of the latest PMI Manual 36 – System Restoration within your primary and backup control rooms so that it is available to all of your system operators prior to PMI Manual 36 – System Restoration implementation date.</td>
<td>Provide a copy of Manual 36 - System Restoration to each Member TO so that it can be placed within the Member TO’s primary and backup control rooms so that it is available to all of its system operators prior to its implementation date. 2. PMI shall offer simulation exercises (PMI Restoration Drills) of system restoration at least annually. 2. PMI 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 have a copy of your latest PMI approved restoration plan within your primary and backup control rooms prior to their implementation date? 2. Did you have a copy of the latest PMI Manual 36 – System Restoration within your primary and backup control rooms prior to its implementation date.</td>
<td>M-36 System Restoration (Rev. 19), Section 1.1-Policy Statements</td>
<td>Yes</td>
<td>7/1/2013</td>
<td>None</td>
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<tr>
<td>EOF</td>
<td>EOF-D05-2</td>
<td>R6</td>
<td>Each Transmission Operator shall verify through analysis of actual events, steady state and dynamic simulations, or testing that its restoration plan accomplishes its intended function. This shall be completed every five years at a minimum. Such analysis, simulation, or testing shall verify: [Violation Risk Factor = Medium] [Time Horizon = Long-term Planning]</td>
<td>5</td>
<td>Each Member TO shall participate in the simulation exercises (PMI Restoration Drills) of system restoration at least annually. 2. PMI 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 (PMI Restoration Drills) of system restoration at least annually? 2. Did you provide PMI 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. Exhibit documentation (drill logs, voice recordings, reports, etc.) of the verification through analysis of actual events, steady state and dynamic simulations, or testing that its restoration plan accomplishes its intended function. 2. Provide evidence of provided requested information to PMI to support the analysis of Blackstart generation.</td>
<td>M-36 System Restoration (Rev. 19), Attachment D: Restoration Drill Guide M-40 Certification and Training Requirements (Rev. 13)</td>
<td>Yes</td>
<td>7/1/2013</td>
<td>None</td>
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<td>EOF</td>
<td>EOF-D05-2</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>5</td>
<td>Each Member TO shall provide requested information to support analysis of Blackstart Resources to meet the Real and Reactive Power requirements of the Cranking Paths and the dynamic capability to supply initial loads at least every five years.</td>
<td>Each Member TO 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 PMI 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>Provide evidence of providing requested information to PMI to support the analysis of Blackstart generation.</td>
<td>PJM OA Tariff; Schedule 5A-Black Start Service M-12 Balancing Operations (Rev. 29), Section 4.6-Black Start Service M-140 Generation Operational Requirements (Rev. 26); Section 7.1.5-Black Start</td>
<td>Yes</td>
<td>7/1/2013</td>
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<td>EOF-D05-2</td>
<td>R6.2</td>
<td>The location and magnitude of Loads required to control voltages and frequency within acceptable operating limits.</td>
<td>5</td>
<td>Each Member TO shall provide requested information to support analysis of Blackstart Resources to meet the Real and Reactive Power requirements of the Cranking Paths and the dynamic capability to supply initial loads at least every five years.</td>
<td>Each Member TO 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 PMI 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>Provide evidence of providing requested information to PMI to support the analysis of Blackstart generation.</td>
<td>PJM OA Tariff; Schedule 5A-Black Start Service M-12 Balancing Operations (Rev. 29), Section 4.6-Black Start Service M-140 Generation Operational Requirements (Rev. 26); Section 7.1.5-Black Start</td>
<td>Yes</td>
<td>7/1/2013</td>
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<td>EOF</td>
<td>EOF-D05-2</td>
<td>R6.3</td>
<td>The capability of generating resources required to control voltages and frequency within acceptable operating limits.</td>
<td>5</td>
<td>Each Member TO shall provide requested information to support analysis of Blackstart Resources to meet the Real and Reactive Power requirements of the Cranking Paths and the dynamic capability to supply initial loads at least every five years.</td>
<td>Each Member TO 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 PMI 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>Provide evidence of providing requested information to PMI to support the analysis of Blackstart generation.</td>
<td>PJM OA Tariff; Schedule 5A-Black Start Service M-12 Balancing Operations (Rev. 29), Section 4.6-Black Start Service M-140 Generation Operational Requirements (Rev. 26); Section 7.1.5-Black Start</td>
<td>Yes</td>
<td>7/1/2013</td>
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<td>EOF</td>
<td>EOF-D05-2</td>
<td>R7</td>
<td>Following a Disturbance in which one or more areas of the BES shuts down and the use of Blackstart Resources is required to restore the shut down area to service, each affected Transmission Operator shall implement its restoration plan. If the restoration plan cannot be executed as expected the Transmission Operator shall utilize its restoration strategy to facilitate restoration. [Violation Risk Factor = High] [Time Horizon = Real-time Operations]</td>
<td>5</td>
<td>Use the Member TO restoration plan to restore the system and coordinate with PJM if any deviations from the plan are required.</td>
<td>Each Member TO shall ensure that the New Electric System is restored to service. PJM may request the New Electric System to be restored in a manner that is acceptable to PJM.</td>
<td>1. Since the last audit have you had a disturbance in which one or more areas of the Bulk Electric System became isolated or blacked out? 2. Did you use the Member TO restoration plan to restore the system and coordinate with PJM if any deviations from the plan are required?</td>
<td>M-36 System Restoration (Rev. 19), Section 1.1-Policy Statements</td>
<td>PJM OA Tariff; Schedule 5A-Black Start Service M-12 Balancing Operations (Rev. 29), Section 4.6-Black Start Service M-140 Generation Operational Requirements (Rev. 26); Section 7.1.5-Black Start</td>
<td>Yes</td>
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<td>EOF-005-2</td>
<td>R30</td>
<td>Each Transmission Operator shall include within its operations training program, annual System restoration training for its System Operators to assure the proper execution of its restoration plan. This training program shall include training on the following: (Violation Risk Factor = Medium) [Time Horizon = Operations Planning]</td>
<td>5</td>
<td>Each Member TO shall include within its operations training program, annual System restoration training for its system operators to assure the proper execution of its restoration plan.</td>
<td>Annually provide the PIM System Operator Seminar: The PIM AnnualSystem 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?</td>
<td>Exhibit the section of your operations training program that includes training on your restoration plan including how and when to coordinate with PIM and Generator Operators included in your restoration plan.</td>
<td>M-40 Certification and Training Requirements (Rev. 19) Section 2.2.3-Training Requirements for LLC Operators; Appendix 1- Transmission Owner Reliability Related Tasks</td>
<td>Yes</td>
<td>7/1/2013</td>
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<td>EOF</td>
<td>EOF-005-2</td>
<td>R30.1</td>
<td>Each Member TO operations training program shall include training on its restoration plan including how and when to coordinate with PIM and Generator Operators included in your 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 PIM and Generator Operators included in your restoration plan.</td>
<td>Annually provide the PIM System Operator Seminar: The PIM 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 restoration priorities?</td>
<td>Exhibit the section of your operations training program that includes training on your restoration plan including how and when to coordinate with PIM and Generator Operators included in your restoration plan.</td>
<td>M-40 Certification and Training Requirements (Rev. 19) Section 2.2.3-Training Requirements for LLC Operators; Appendix 1- Transmission Owner Reliability Related Tasks</td>
<td>Yes</td>
<td>7/1/2013</td>
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<td>EOF-005-2</td>
<td>R30.2</td>
<td>Restoration priorities.</td>
<td>5</td>
<td>Each Member TO operations training program shall include training on restoration priorities.</td>
<td>Annually provide the PIM System Operator Seminar: The PIM 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 includes training on your restoration plan including how and when to coordinate with PIM and Generator Operators included in your restoration plan.</td>
<td>M-40 Certification and Training Requirements (Rev. 19) Section 2.2.3-Training Requirements for LLC Operators; Appendix 1- Transmission Owner Reliability Related Tasks</td>
<td>Yes</td>
<td>7/1/2013</td>
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<td>EOF-005-2</td>
<td>R30.3</td>
<td>Building of cranking paths.</td>
<td>5</td>
<td>Each Member TO operations training program shall include training on building of cranking paths.</td>
<td>Annually provide the PIM System Operator Seminar: The PIM 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 includes training on your restoration plan including how and when to coordinate with PIM and Generator Operators included in your restoration plan.</td>
<td>M-40 Certification and Training Requirements (Rev. 19) Section 2.2.3-Training Requirements for LLC Operators; Appendix 1- Transmission Owner Reliability Related Tasks</td>
<td>Yes</td>
<td>7/1/2013</td>
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<td>EOF-005-2</td>
<td>R30.4</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 PIM.</td>
<td>Annually provide the PIM System Operator Seminar: The PIM 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 includes training on your restoration plan including how and when to coordinate with PIM and Generator Operators included in your restoration plan.</td>
<td>M-40 Certification and Training Requirements (Rev. 19) Section 2.2.3-Training Requirements for LLC Operators; Appendix 1- Transmission Owner Reliability Related Tasks</td>
<td>Yes</td>
<td>7/1/2013</td>
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<td>EOF</td>
<td>EOF-005-2</td>
<td>R32</td>
<td>Each Transmission Operator shall participate in its Reliability Coordinator’s restoration drills, exercises, or simulations as requested by its Reliability Coordinator. (Violation Risk Factor = Medium) [Time Horizon = Operations Planning]</td>
<td>5</td>
<td>Each Member TO shall participate in PIM’s restoration drills, exercises, or simulations as mentioned in Manual 40.</td>
<td>Does your operations training program have a requirement that all of your system operators have annual training in synchronization?</td>
<td>Exhibit training records that show that you meet PIM’s restoration drill requirements mentioned in Manual 40.</td>
<td>M-40 Certification and Training Requirements (Rev. 19) Section 2.2.3-Training Requirements for LLC Operators; Appendix 1- Transmission Owner Reliability Related Tasks</td>
<td>Yes</td>
<td>7/1/2013</td>
<td>None</td>
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<td>EOF</td>
<td>EOF-008-0</td>
<td>Purpose</td>
<td>Each reliability entity must have a plan to continue reliability operations in the event its control center becomes inoperable.</td>
<td>A</td>
<td>Each Member TO shall develop a plan to continue reliability operations in the event its primary control center becomes inoperable.</td>
<td>Does you have a plan to continue reliability operations in the event your primary control center becomes inoperable?</td>
<td>TO shall provide a copy of their Plans for loss of primary control center functionality.</td>
<td>M-1 Control Center and Data Exchange Requirements (Rev. 25), Section 2.5.6-Backup Recovery Procedures</td>
<td>Yes</td>
<td>4/1/2005</td>
<td>7/1/2013</td>
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<td>EOF</td>
<td>EOF-DB-0</td>
<td>R1.1.</td>
<td></td>
<td>A</td>
<td>Each Member TO must have a plan for loss of primary control center functionality that is viable without data or voice communication from the primary control center.</td>
<td></td>
<td>Is your plan for loss of primary control center functionality viable without data or voice communication from the primary control center?</td>
<td>1. Exhibit a copy of the voice communications system illustrating that the plan for loss of primary control center functionality does not rely on voice communication from the primary facility. 2. Exhibit a copy of the data communications system illustrating that the plan for loss of primary control center functionality does not rely on data communication from the primary facility.</td>
<td>M-1 Control Center and Data Exchange Requirements (Rev. 25), Section 2.5.6-Backup Recovery Procedures</td>
<td>Yes</td>
<td>4/1/2005</td>
<td>7/1/2013</td>
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<td>EOF</td>
<td>EOF-DB-0</td>
<td>R1.2.</td>
<td></td>
<td>S</td>
<td>The plan shall include procedures and responsibilities for providing basic tie line control and procedures and for maintaining the status of all inter-area schedules, such that there is an hourly accounting of all schedules.</td>
<td></td>
<td>F applicable, exhibit the part of the plan for loss of primary control center functionality to provide basic tie line data (between Member TOs and external TOs) and control at the instruction of PFM to maintain the status of all inter-area schedules, such that there is an hourly accounting of all schedules.</td>
<td></td>
<td>M-1 Control Center and Data Exchange Requirements (Rev. 25), Section 2.5.6-Backup Recovery Procedures</td>
<td>Yes</td>
<td>4/1/2005</td>
<td>7/1/2013</td>
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<td>EOF</td>
<td>EOF-DB-0</td>
<td>R1.3.</td>
<td></td>
<td>S</td>
<td>The contingency plan must address monitoring and control of critical transmission facilities, generation control, voltage control, time and frequency control, control of critical substation devices, and logging of significant power system events. The plan shall list the critical facilities.</td>
<td></td>
<td>1. Each Member TO must have a contingency plan for loss of primary control center functionality that addresses monitoring and control of critical facilities. 2. The list of PFM critical facilities is contained in the PFM OM 45 - Plan for loss of Control Room Functionality.</td>
<td></td>
<td>M-1 Control Center and Data Exchange Requirements (Rev. 25), Section 2.6.1-Staffing Upon Loss of an EMS or a 765 kV, 345 kV, or 345 kV 815, Attachment B-Schedule of Data Submittals, Section 2.7-PFM Member Back Up Capability Required to Support PFM in its TOP Role PFM Operating Memo 45- Plan for Loss of Control Room Functionality</td>
<td>Yes</td>
<td>4/1/2005</td>
<td>7/1/2013</td>
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<tr>
<td>EOF</td>
<td>EOF-DB-0</td>
<td>R1.4.</td>
<td></td>
<td>S</td>
<td>The plan shall include procedures and responsibilities for maintaining basic voice communication capabilities with PIM and neighboring TOs.</td>
<td></td>
<td>Does your plan include procedures and responsibilities for maintaining basic voice communication capabilities with PIM and neighboring TOs?</td>
<td></td>
<td>M-1 Control Center and Data Exchange Requirements (Rev. 25), Section 2.4-Communications Requirements M-13 Emergency Operations (Rev. 54) Section 1.3-Communications</td>
<td>Yes</td>
<td>4/1/2005</td>
<td>7/1/2013</td>
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<td>EOF</td>
<td>EOF-DB-0</td>
<td>R1.5.</td>
<td></td>
<td>S</td>
<td>The plan shall include procedures and responsibilities for conducting periodic tests, at least annually, to ensure viability of the plan.</td>
<td></td>
<td>Does your plan for loss of primary control center functionality include procedures and responsibilities for conducting periodic tests at least annually?</td>
<td></td>
<td>M-1 Control Center and Data Exchange Requirements (Rev. 25), Attachment B-Schedule of Data Submittals</td>
<td>Yes</td>
<td>4/1/2005</td>
<td>7/1/2013</td>
</tr>
<tr>
<td>EOF</td>
<td>EOF-DB-0</td>
<td>R1.6.</td>
<td></td>
<td>A</td>
<td>Each Member TO must have a plan for loss of primary control center functionality that includes procedures and responsibilities for providing annual training to ensure that operating personnel are able to implement the contingency plan.</td>
<td></td>
<td>Does your plan for loss of primary control center functionality include procedures and responsibilities for providing annual training to ensure that operating personnel are able to implement the plans.</td>
<td></td>
<td>M-1 Control Center and Data Exchange Requirements (Rev. 25), Attachment B-Schedule of Data Submittals</td>
<td>Yes</td>
<td>4/1/2005</td>
<td>7/1/2013</td>
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<td>EOF</td>
<td>EOF-DB-0</td>
<td>R1.7.</td>
<td></td>
<td>A</td>
<td>The plan shall be reviewed and updated annually.</td>
<td></td>
<td>1. When was the last time that your backup plan was updated? 2. When is it scheduled to be reviewed next?</td>
<td></td>
<td>M-1 Control Center and Data Exchange Requirements (Rev. 25), Attachment B-Schedule of Data Submittals</td>
<td>Yes</td>
<td>4/1/2005</td>
<td>7/1/2013</td>
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<td>Category</td>
<td>Standard Number</td>
<td>Requirement Number</td>
<td>Approved BPS/ERC Standards</td>
<td>A/S</td>
<td>Assigned or Shared TO Tasks</td>
<td>Shared PFM Tasks</td>
<td>Audit Questions</td>
<td>Evidence of Compliance</td>
<td>Reference Documents</td>
<td>Audited by</td>
<td>Start Date</td>
<td>End Date</td>
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<tr>
<td>EOP</td>
<td>EOP-008-0 R1.2.8</td>
<td>Interim provisions must be included if it is expected to take more than one hour to implement the contingency plan for loss of primary control facility.</td>
<td>Each TO must have a plan for loss of primary control center functionality that includes interim provisions if it is expected to take more than one hour to implement the plan for loss of a control center functionality.</td>
<td>A</td>
<td>Each TO must have a plan for loss of primary control center functionality that includes interim provisions if it is expected to take more than one hour to implement the plan for loss of primary control center functionality.</td>
<td>1. Do you expect that it will take more than one hour to implement the plan for loss of primary control facility? 2. If so, do you have interim measures in your plan for loss of primary control center functionality? 3. Describe the measures.</td>
<td>The TO shall provide the plan for loss of primary control center functionality that includes interim provisions if it is expected to take more than one hour to implement the plan for loss of a control center functionality.</td>
<td>X-1 Control Center and Data Exchange Requirements (Rev. 25), Section 2.3.3 - Backup Recovery Procedures</td>
<td>Yes</td>
<td>7/1/2013</td>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>

| EOP     | EOP-008-1 R1.2. | Purpose | Ensure continued reliable operations of the Bulk Electric System (BES) in the event that a control center becomes inoperable. | A | Each Reliability Coordinator, Balancing Authority, and Transmission Operator shall have a current Operating Plan describing the manner in which it continues to meet its functional obligations with regard to the reliable operations of the BES in the event that its primary control center functionality is lost. | 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. | 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. | X-1 Control Center and Data Exchange Requirements (Rev. 25), Section 2.5.6 - Backup Recovery Procedures | Yes | 7/1/2013 | None |

| EOP     | EOP-008-1 R1.2.1 | Location and method of implementation for providing backup functionality for the time it takes to restore the primary control center functionality. | A | The TO must have a plan for 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. | Does your plan for the loss of primary control center functionality include a summary description of tools and applications to ensure that System Operators have situational awareness of the BES? | Exhibit your plan for the loss of primary control center functionality that includes a summary description of tools and applications to ensure that System Operators have situational awareness of the BES. | X-1 Control Center and Data Exchange Requirements (Rev. 25), Section 2.5.6 - Backup Recovery Procedures | Yes | 7/1/2013 | None |

| EOP     | EOP-008-1 R1.2.2 | A summary description of the elements required to support the backup functionality. These elements shall include, at a minimum: | A | The TO must have a plan for loss of primary control center functionality that includes a summary description of data communications including a description of how PMRnet is used. | Does your plan for the loss of primary control center functionality include a summary description of data communications including a description of how PMRnet is used? | Exhibit your plan for the loss of primary control center functionality that includes a summary description of data communications including a description of how PMRnet is used. | X-1 Control Center and Data Exchange Requirements (Rev. 25), Section 2.3.1 - Transmission Monitoring Capability | Yes | 7/1/2013 | None |

| EOP     | EOP-008-1 R1.2.3 | Voice communications. | A | The TO must have a plan for loss of primary control center functionality that includes a summary description of voice communications. | Does your plan for the loss of primary control center functionality include a summary description of voice communications? | Exhibit your plan for the loss of primary control center functionality that includes a summary description of voice communications. | X-1 Control Center and Data Exchange Requirements (Rev. 25), Section 2.3.1 - Transmission Monitoring Capability | Yes | 7/1/2013 | None |

| EOP     | EOP-008-1 R1.2.4 | Power sources. | A | The TO must have a plan for loss of primary control center functionality that includes a summary description of power sources. | Does your plan for the loss of primary control center functionality include a summary description of power sources? | Exhibit your plan for the loss of primary control center functionality that includes a summary description of power sources. | X-1 Control Center and Data Exchange Requirements (Rev. 25), Section 2.3.1 - Transmission Monitoring Capability | Yes | 7/1/2013 | None |

<p>| EOP     | EOP-008-1 R1.2.5 | Physical and cyber security. | A | The TO must have a plan for loss of primary control center functionality that includes a summary description of physical and cyber security. | Does your plan for the loss of primary control center functionality include a summary description of physical and cyber security? | Exhibit your plan for the loss of primary control center functionality that includes a summary description of physical and cyber security. | X-1 Control Center and Data Exchange Requirements (Rev. 25), Section 2.3.1 - Transmission Monitoring Capability | Yes | 7/1/2013 | None |</p>
<table>
<thead>
<tr>
<th>Category</th>
<th>Standard Number</th>
<th>Requirement Number</th>
<th>Approved D/B/ERC Standards</th>
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<th>Assigned or Shared TO Tasks</th>
<th>Shared PM Tasks</th>
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<th>Evidence of Compliance (What auditors will be looking for)</th>
<th>Reference Documents</th>
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<tr>
<td>EOF</td>
<td>EOF-008-1</td>
<td>R1.3</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.</td>
<td></td>
<td>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 with an Operating Process for keeping the backup functionality consistent with the primary control center?</td>
<td>M-1 Control Center and Data Exchange Requirements (Rev. 25), Section 2.3.1- Transmission Monitoring Capability</td>
<td>Yes</td>
<td>7/1/2013</td>
<td>None</td>
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<td>EOF</td>
<td>EOF-008-1</td>
<td>R1.4</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.</td>
<td></td>
<td>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 with Operating Procedures, including decision authority, for use in determining when to implement the Operating Plan for backup functionality?</td>
<td>M-1 Control Center and Data Exchange Requirements (Rev. 25), Section 2.3.1- Transmission Monitoring Capability</td>
<td>Yes</td>
<td>7/1/2013</td>
<td>None</td>
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<td>EOF</td>
<td>EOF-008-1</td>
<td>R1.5</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.</td>
<td></td>
<td>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>M-1 Control Center and Data Exchange Requirements (Rev. 25), Section 2.3.1- Transmission Monitoring Capability</td>
<td>Yes</td>
<td>7/1/2013</td>
<td>None</td>
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<td>EOF</td>
<td>EOF-008-1</td>
<td>R1.6</td>
<td>An Operating Process describing the actions to be taken during the transition period between the loss of primary control center functionality and the time to fully implement backup functionality elements identified in Requirement R1, Part 1.2. The Operating Process shall include at a minimum:</td>
<td>A</td>
<td>The Member TO plan for the loss of primary control center functionality shall include an Operating Process describing the actions to be taken during the transition period between the loss of primary control center functionality and the time to fully implement backup functionality elements identified in Requirement R1, Part 1.2.</td>
<td></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 with 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 (Rev. 25), Section 2.3.1- Transmission Monitoring Capability</td>
<td>Yes</td>
<td>7/1/2013</td>
<td>None</td>
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<tr>
<td>EOF</td>
<td>EOF-008-1</td>
<td>R1.6.1</td>
<td>A list of all entities to notify when there is a change in operating locations.</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 PAM, to notify when there is a change in operating locations.</td>
<td></td>
<td>PAM, at the request of the Member TO, shall monitor a Member TO’s system during the change of 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 PAM, 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 when there is a change in operating locations?</td>
<td>M-1 Control Center and Data Exchange Requirements (Rev. 25), 2.6.1 Staffing Upon Loss of an EMS or a 765 kV, 500 kV, or 345 kV RTU</td>
<td>Yes</td>
<td>7/1/2013</td>
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<td>EOF</td>
<td>EOF-008-1</td>
<td>R1.6.2</td>
<td>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>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></td>
<td>PAM will monitor all lines available for monitoring and take appropriate actions.</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 outage 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 (Rev. 25), 2.6.1 Staffing Upon Loss of an EMS or a 765 kV, 500 kV, or 345 kV RTU</td>
<td>Yes</td>
<td>7/1/2013</td>
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<td>Category</td>
<td>Standard Number</td>
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<td>Approved BES/ERC Standards</td>
<td>Assigned or Shared TO Tasks</td>
<td>Shared PIM Tasks</td>
<td>Audit Questions</td>
<td>Evidence of Compliance</td>
<td>Reference Documents</td>
<td>Audited by BES</td>
<td>Start Date</td>
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<td>EO5</td>
<td>EO5-008-1</td>
<td>R3.6.3</td>
<td></td>
<td>A The Member TO Operating Process describing the actions to be taken during the transition period between the loss of primary control center functionality and the time to fully implement backup functionality elements identified in Requirement R1, Part 1.2 shall include an identification of the roles for personnel involved during the initiation and implementation of the Operating Plan for backup functionality.</td>
<td></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 (Rev. 205), Section 2.6.1 Staffing Upon Loss of an EMS or a 765 kV, 500 kV, or 345 kV RTU</td>
<td>Yes</td>
<td>7/1/2013</td>
<td>None</td>
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<td>EO5</td>
<td>EO5-008-1</td>
<td>R3</td>
<td>Each Reliability Coordinator, Balancing Authority, and Transmission Operator shall have a copy of its current Operating Plan for backup functionality available at its primary control center and at the location providing backup functionality.</td>
<td>A Each Member TO shall have a copy of its current Operating Plan for backup functionality available at its primary control center and at the location providing backup functionality.</td>
<td></td>
<td>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?</td>
<td>Exhibit a copy of your current Operating Plan for backup functionality available at your primary control center and at the location providing backup functionality.</td>
<td>M-1 Control Center and Data Exchange Requirements (Rev. 205), Section 2.7.9 Member Back Up Capability Required to Support PIM in its TOP Role</td>
<td>Yes</td>
<td>7/1/2013</td>
<td>None</td>
<td></td>
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<td>EO5</td>
<td>EO5-008-1</td>
<td>R4</td>
<td>Each Reliability Coordinator, Balancing Authority, and Transmission Operator shall have backup functionality provided either through a facility or contracted services staffed by applicable certified operators when control has been transferred to the backup functionality location (that includes monitoring, control, logging, and alarming sufficient for maintaining compliance with all Reliability Standards that depend on a Balancing Authority and Transmission Operator’s primary control center functionality respectively. To avoid requiring tertiary functionality, backup functionality is not required during: (1) Planned outages of the primary or backup functionality of two hours or less; (2) Unplanned outages of the primary or backup functionality.</td>
<td>A Each Member TO shall have backup functionality provided either through a facility or contracted services staffed by applicable certified operators when control has been transferred to the backup functionality location (that includes monitoring, control, logging, and alarming sufficient for maintaining compliance with all Reliability Standards that depend on a Member TO’s primary control center functionality. To avoid requiring tertiary functionality, backup functionality is not required during: (1) Planned outages of the primary or backup functionality of two hours or less; (2) Unplanned outages of the primary or backup functionality.</td>
<td></td>
<td>Do you have backup functionality provided either through a facility or contracted services staffed by applicable certified operators when control has been transferred to the backup functionality location (that includes monitoring, control, logging, and alarming sufficient for maintaining compliance with all Reliability Standards that depend on a Member TO’s primary control center functionality.</td>
<td>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.</td>
<td>M-1 Control Center and Data Exchange Requirements (Rev. 205), Section 2.7.9 Member Back Up Capability Required to Support PIM in its TOP Role</td>
<td>Yes</td>
<td>7/1/2013</td>
<td>None</td>
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<td>EO5</td>
<td>EO5-008-1</td>
<td>R5</td>
<td>Each Reliability Coordinator, Balancing Authority, and Transmission Operator shall annually review and approve its Operating Plan for backup functionality.</td>
<td>A Each Member TO shall annually review and approve its Operating Plan for backup functionality.</td>
<td></td>
<td>Do you annually review and approve your Operating Plan for backup functionality?</td>
<td>Exhibit your Operating Plan for backup functionality showing in the revision history the annual review and approval.</td>
<td>M-1 Control Center and Data Exchange Requirements (Rev. 205), Section 2.7.9 Member Back Up Capability Required to Support PIM in its TOP Role</td>
<td>Yes</td>
<td>7/1/2013</td>
<td>None</td>
<td></td>
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<tr>
<td>EO5</td>
<td>EO5-008-1</td>
<td>R5.1</td>
<td>An update and approval of the Operating Plan for backup functionality shall take place within sixty calendar days of any changes to any part of the Operating Plan described in Requirement R1.</td>
<td>A 1. Each Member TO shall update their Operating Plan for backup functionality within sixty calendar days of any changes to any part of the Operating Plan described in Requirement R1. 2. Submit the updated Operating Plan described in Requirement R1 to PJM through the PERCS secure website.</td>
<td></td>
<td>Did you update your Operating Plan for backup functionality within sixty calendar days of any changes to any part of the Operating Plan described in Requirement R1?</td>
<td>Exhibit your Operating Plan for backup functionality showing any changes to any part of the Operating Plan described in Requirement R1 done within sixty calendar days.</td>
<td>M-1 Control Center and Data Exchange Requirements (Rev. 205), Section 2.7.9 Member Back Up Capability Required to Support PIM in its TOP Role</td>
<td>Yes</td>
<td>7/1/2013</td>
<td>None</td>
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## NERC Reliability Standards

### FAC FAC-001-0

**Purpose**

To avoid adverse impacts on reliability, Transmission Owners must establish facility connection and performance requirements.

**FAC FAC-001-0**

- **Purpose:** To avoid adverse impacts on reliability, Transmission Owners must establish facility connection and performance requirements.
- **FAC FAC-001-0**

### FAC FAC-001-0

- **Heading R1:** The Transmission Owner shall document, maintain, and publish facility connection requirements to ensure compliance with NERC Reliability Standards and applicable Regional Reliability Organizations, subregional, Power Pool, and individual Transmission Owner planning criteria and facility connection requirements. The Transmission Owner’s facility connection requirements shall address connection requirements for:

### FAC FAC-001-0

- **PIM shall post the Member T&Ds specific planning criteria and interconnection requirements on the PIM web site.**
- **Member T&D shall confirm that the current Interconnection Requirements are posted on the PIM website.**

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<th>Requirement Number</th>
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<th>Assigned or Shared TO Tasks</th>
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<th>Evidence of Compliance (What auditors will be looking for)</th>
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<th>Start Date</th>
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<tr>
<td>EOF</td>
<td>EOF-008-1</td>
<td>R6</td>
<td>Each Reliability Coordinator, Balancing Authority, and Transmission Operator shall have primary and backup functionality that does not depend on each other for the control center functionality required to maintain compliance with Reliability Standards. (Violation Risk Factor = Medium)</td>
<td>A</td>
<td>Each Member T&amp;D shall have primary and backup functionality that does not depend on each other for the control center functionality required to maintain compliance with Reliability Standards.</td>
<td>Do you have primary and backup functionality that does not depend on each other for the control center functionality required to maintain compliance with Reliability Standards?</td>
<td>Show evidence that the primary and backup functionality does not depend on each other for the control center functionality required to maintain compliance with Reliability Standards such as drawings showing their independence. Attestations are also valid evidence.</td>
<td>M-1 Control Center and Data Exchange Requirements (Rev. 25), Section 2.7 PIM Member Back Up Capability Required to Support PIM in its TOP Role</td>
<td>Yes</td>
<td>7/1/2013</td>
<td>None</td>
<td></td>
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<tr>
<td>EOF</td>
<td>EOF-008-1</td>
<td>R7</td>
<td>Each Reliability Coordinator, Balancing Authority, and Transmission Operator shall conduct and document results of an annual test of its Operating Plan that demonstrates:</td>
<td>A</td>
<td>Each Member T&amp;D shall conduct and document results of a test of its Operating Plan for backup functionality at least annually.</td>
<td>Did you conduct and document results of a test of your Operating Plan at least annually?</td>
<td>Reports of the test of your Operating Plan performed at least annually.</td>
<td>M-1 Control Center and Data Exchange Requirements (Rev. 25), Section 2.7 PIM Member Back Up Capability Required to Support PIM in its TOP Role</td>
<td>Yes</td>
<td>7/1/2013</td>
<td>None</td>
<td></td>
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<tr>
<td>EOF</td>
<td>EOF-008-1</td>
<td>R7.1</td>
<td>The transition time between the simulated loss of primary control center functionality and the time to fully implement the backup functionality.</td>
<td>S</td>
<td>During the test of the Member T&amp;D’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.</td>
<td>PIM, at the request of the Member T&amp;D, shall monitor a Member T&amp;D’s system during the change of operating locations. Have you, during the test of the Member T&amp;D’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?</td>
<td>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.</td>
<td>M-1 Control Center and Data Exchange Requirements (Rev. 25), Section 2.7 PIM Member Back Up Capability Required to Support PIM in its TOP Role</td>
<td>Yes</td>
<td>7/1/2013</td>
<td>None</td>
<td></td>
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<tr>
<td>EOF</td>
<td>EOF-008-1</td>
<td>R7.2</td>
<td>The backup functionality for a minimum of two continuous hours.</td>
<td>A</td>
<td>During the test of the Member T&amp;D’s Operating Plan, demonstrate backup functionality for a minimum of two continuous hours.</td>
<td>Have you, during the test of the Member T&amp;D’s Operating Plan, demonstrated backup functionality for a minimum of two continuous hours?</td>
<td>Reports showing that you, during the test of the Member T&amp;D’s Operating Plan, demonstrated backup functionality for a minimum of two continuous hours.</td>
<td>M-1 Control Center and Data Exchange Requirements (Rev. 25), Section 2.7 PIM Member Back Up Capability Required to Support PIM in its TOP Role</td>
<td>Yes</td>
<td>7/1/2013</td>
<td>None</td>
<td></td>
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<tr>
<td>EOF</td>
<td>EOF-008-1</td>
<td>R8</td>
<td>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. (Violation Risk Factor = Medium)</td>
<td>S</td>
<td>Each Member T&amp;D 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 PIM so that PIM can meet its reporting requirements.</td>
<td>PIM will provide a plan to RFC or SEC as necessary, within six calendar months of the date when the functionality is lost, showing how the Member T&amp;D will re-establish primary or backup functionality.</td>
<td>1. Have you experienced a loss of your primary or backup functionality that you anticipated would last for more than six calendar months? 2. Did you report the anticipated six-month loss showing how you re-established primary or backup functionality to PIM within 3 months?</td>
<td>M-1 Control Center and Data Exchange Requirements (Rev. 25), Section 2.7 PIM Member Back Up Capability Required to Support PIM in its TOP Role</td>
<td>Yes</td>
<td>7/1/2013</td>
<td>None</td>
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</tbody>
</table>

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## FAC FAC-004-2

### Requirement

- **R2**: The Transmission Operator shall establish SOLs (as directed by its Reliability Coordinator) for its portion of the Reliability Coordinator Area that are consistent with its Reliability Coordinator’s SOL methodology.

### Evidence of Compliance

- **A/S**: Each Member TD shall establish facility ratings for its portion of PIM.
- **Auditors**: Have you established ratings for your portion of PIM?
- **Evidence**: Exhibit example evidence establishing your ratings.

### Reference Documents

- PJM Operating Agreement, Section 11.1.1e – Member Responsibilities, General
- Transmission Owners Agreement, Section 4.5
- M-3 Transmission Operations (Rev. 46), Sections 1.2 Responsibilities for Transmission Owner’s Operating Entity, 1.3 Transmission Operating Guidelines, 3.5 Voltage Control Actions
- M-17 Reliability Coordination (Rev. 10), Sections 1.1 Policy Statements, 3-SOL and IROL Limits
- M-13 Emergency Operations (Rev. 54), Section 5.5 Interconnection Reliability Operating Limits (IROL)/Manual Load Dump Warning/Action
- M-12 Balancing Operations (Rev. 29), Section 1.1.3-PJM Member Control Implementation, Section 5-T Transmission Facility Control

## RDO RDO-001-1.1

### Purpose

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

### Evidence of Compliance

- **A/S**: The Member TD shall comply with PIM Directives unless such actions would violate safety, equipment, or regulatory or statutory requirements.
- **Auditors**: Have you had any incidents when you were not able to comply with the PIM Reliability Coordinator Directives due to safety, equipment, or regulatory or statutory requirements?
- **Evidence**: 1. Documentation of procedures that require the Member TD system operators to comply with PIM Directives.
  2. Examples of the Member TD system operator following PIM Directives 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 PIM Directives, the evidence that for safety, equipment, regulatory or statutory requirements they could not comply and that they informed the PIM as soon as practical.

### Reference Documents

- PJM GA 1.13, Schedule 1, 1.5.9 TDA
- M-3 Transmission Operations (Rev. 46), Section 1.2 Responsibilities for Transmission Owner’s Operating Entity
- M-17 Reliability Coordination (Rev. 10), Section 1-Roles and Responsibilities
- M-1 Control-Center and Data Exchange Requirements (Rev. 25), Section 4-Voice Communications

### Audited by

- **Start Date**: 4/10/2009
- **End Date**: None
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<tr>
<td>R10</td>
<td>ERO-004-1</td>
<td>R1</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 overload transmission lines and transformers, voltage and stability limits, etc.</td>
<td>5</td>
<td>The Member TO shall, in conjunction with PIM, develop plans to reconfigure the system or reduce load to return transmission loading to within acceptable SCOs or IROLs.</td>
<td>PIM shall, in conjunction with the Member TO, develop plans to reconfigure the transmission system or reduce load to return transmission loading to within acceptable SCOs or IROLs.</td>
<td>Have you developed plans in conjunction with PIM to reconfigure the transmission system, or reduce or curtailled Interchange Transactions, or reduced load to return transmission loading to within acceptable SCOs or IROLs?</td>
<td>Evidence that you developed plans in conjunction with PIM to reconfigure the transmission system, reduce or curtailed Interchange Transactions, or reduced load to return transmission loading to within acceptable SCOs or IROLs? This may include PCLRRW emails or voice recording.</td>
<td>M-1 Transmission Operations (Rev. 44), Section 1.2-Responsibilities for Transmission Owner’s Operating Entity</td>
<td>Yes</td>
<td>11/1/2006</td>
<td>10/1/2011</td>
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<tr>
<td>R10</td>
<td>ERO-004-1</td>
<td>R7</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 with PIM instructions and PIM Directives based on the next day assessments in the same manner in which it would comply during real time operating events unless such actions would violate safety, equipment, or regulatory or statutory requirements.</td>
<td>PIM shall have remedial plans if the Member TO cannot follow the PIM Directives.</td>
<td>Have you had any incidents when you were not able to comply with the PIM Reliability Coordinator Directives based on the next day assessments in the same manner in which it would comply during real time operating events due to safety, equipment, or regulatory or statutory requirements?</td>
<td>Documentation of procedures that requires the Member TO system operators to comply with PIM Directives 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 PIM Directives 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 PIM Directives 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 PIM immediately.</td>
<td>PIM OA 11.3, Schedule 1, 1.9.9</td>
<td>Yes</td>
<td>11/1/2006</td>
<td>10/1/2011</td>
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<td>Requirement Number</td>
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<td>Shared PIM Tasks</td>
<td>Audit Questions</td>
<td>Evidence of Compliance (What auditors will be looking for)</td>
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<td>IRD</td>
<td>IRD-004-2</td>
<td>R.1.</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 with PIM Directives based on the next day assessments in the same manner in which it would comply during real time operating events unless such actions would violate safety, equipment, or regulatory or statutory requirements.</td>
<td>PIM shall have remedial plans if the Member TO cannot follow the PIM Directives.</td>
<td>Have you had any incidents when you were not able to comply with the PIM Reliability Coordinator Directives based on the next day assessments in the same manner in which it would comply during real time operating events due to safety, equipment, or regulatory or statutory requirements?</td>
<td>1. Documentation of procedures that requires the Member TO system operators to comply with PIM Directives based on the next day assessments in the same manner in which it would during real time operating events. 2. Examples of the Member TO system operator following PIM Directives 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 PIM immediately.</td>
<td>PM OA 11.3, Schedule 1, 1.9/9</td>
<td>Yes</td>
<td>10/2/2011</td>
<td>None</td>
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<td>IRD</td>
<td>IRD-005-2</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></td>
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<td>IRD</td>
<td>IRD-005-2</td>
<td>R.1.</td>
<td>Each Reliability Coordinator shall monitor system frequency and its Balancing Authorities’ performance and direct any necessary rebalancing to return to CPS and DCS compliance. The Transmission Operators and Balancing Authorities shall utilize all resources, including firm load shedding, as directed by its Reliability Coordinator to relieve the emergent condition.</td>
<td>5</td>
<td>The Member TO shall comply with PIM Directives, including firm load shedding, unless such actions would violate safety, equipment, or regulatory or statutory requirements.</td>
<td>PIM shall monitor system frequency and issue a PIM Directive (load shedding) or PIM instruction (generation redispatch to GOs or GEPs) for any necessary rebalancing to return to CPS and DCS compliance. PIM shall utilize all resources, including firm load shedding, to relieve the emergent condition.</td>
<td>Have you complied with PIM Directives issued by PIM unless such actions violated safety, equipment, regulatory or statutory requirements?</td>
<td>Evidence such as operator logs, voice recordings or incident reports etc., for any incidents where your system operators had to follow PIM Directives.</td>
<td>PRT Operating Agreement, Section 11.3, Member Responsibilities, General</td>
<td>Yes</td>
<td>1/1/2007</td>
<td>12/2/2011</td>
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<tr>
<td>IRO</td>
<td>IRO-005-2</td>
<td>R1.2.</td>
<td></td>
<td>A</td>
<td>Each Member TO shall inform PIM as soon as possible of the status change of any Special Protection Systems including any degradation or potential failure to operate as expected.</td>
<td></td>
<td>1. Do you have any Member TO owned SPSs within your Member TO area? 2. If so, do you have procedures to notify PIM of SPS status? 3. Have you informed PIM of the status change of your SPSs?</td>
<td>1. Exhibit documented procedures that require notifying PIM of SPS status. 2. Exhibit records that indicate PIM has been informed of the status of the SPSs.</td>
<td>M-17 Reliability Coordination (Rev. 10), Attachment A-PIM Reliability Plan, Section 5.1-SOL and IROL Limit Determination</td>
<td>Yes</td>
<td>1/1/2007</td>
<td>10/1/2011</td>
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<td>IRO</td>
<td>IRO-005-2</td>
<td>R2.1.</td>
<td></td>
<td>S</td>
<td>Each Reliability Coordinator shall ensure that all Transmission Operators, Balancing Authorities, Generator Operators, Transmission Service Providers, Load-Serving Entities, and Purchasing-Selling Entities operate to prevent the likelihood that a disturbance, action, or nonaction in its Reliability Coordinator Area will result in a SOL or IROL violation in another area of the interconnection. In instances where there is a difference in derived limits, the Reliability Coordinator and its 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></td>
<td>2. Have you documented that states you will always operate Bulk Electric System elements to the most limiting parameter? 3. Has there been a discrepancy between the Member TO limit and the limit PIM is using since the last audit?</td>
<td>1. Exhibit documentation (examples) that show that you operate the Bulk Electric System to the most limiting parameter. 2. List of instances of Member TO and PIM limits not matching since the last audit, if any. 3. Evidence (trace log) of informing PIM of any RES limit (including SOLs) is exceeded.</td>
<td>M-4 Transmission Operations (Rev. 40), Section 1.3-Transmission Operating Guidelines</td>
<td>Yes</td>
<td>1/1/2007</td>
<td>10/1/2011</td>
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<td>IRO</td>
<td>IRO-005-3</td>
<td>R1.1.</td>
<td></td>
<td>S</td>
<td>A Reliability Coordinator shall monitor system frequency and its Balancing Authorities’ performance and direct any necessary relasanching 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></td>
<td>4. Do you have procedures to notify PIM of V1, V2, or V3 of any events related to the frequency requirement?</td>
<td>1. Exhibit documented procedures that require notifying PIM of V1, V2, or V3 of any events related to the frequency requirement.</td>
<td>M-17 Reliability Coordination (Rev. 10), Section 5.5-Interconnection, Section 5.5-Transmission Facility Control</td>
<td>Yes</td>
<td>10/2/2011</td>
<td>None</td>
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### NERC Reliability Standards

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<th>Category</th>
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<tr>
<td>RI0</td>
<td>RI0-051-3a</td>
<td>RS</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 PIM instructions and PIM Directives unless such actions would violate safety, equipment, or regulatory or statutory requirements. 2. The Member TO shall coordinate pending transmission maintenance outages with Member TOs and GOs as needed in both the real time and next-day reliability analysis timeframes.</td>
<td>PIM shall 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 PIM instructions and PIM Directives? 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 operational logs, voice recordings or incident reports, etc., for any incidents where you had to follow PIM instructions or PIM Directives.</td>
<td>RI Operating Agreement, Section 11.1.1- Member Responsibilities, General Transmission Owners Agreement, Section 4.5 M-3 Transmission Operations (Rev. 41), Sections 1.2-Responsibilities for Transmission Owner Operating Entity, Section 1.3-Transmission Operating Guidelines, Section 1.5-Voltage Control Actions M-37 Reliability Coordination (Rev. 10), Sections 1-1-Policy Statements, Section 3-SOL and IROL Limits M-11 Emergency Operations (Rev. 54), Section 5.5-Interconnection Reliability Operating Limits (IROL) Manual Load Dump Warning/Action M-12 Balancing Operations (Rev. 29) Section 1-3-PJM Member Control Implementation, Section 5-Transmission Facility Control</td>
<td>Yes</td>
<td>10/2/2011</td>
<td>None</td>
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<tr>
<td>RI0</td>
<td>RI0-051-3a</td>
<td>RS</td>
<td>Otherwise 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>5</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>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>2. 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 SPS 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 SPS including any degradation or potential failure to operate as expected.</td>
<td>M-37 Reliability Coordination (Rev. 10), Attachment A-PIM Reliability Plan, Section 5.1-SOL and IROL Limit Determination</td>
<td>Yes</td>
<td>10/2/2011</td>
<td>None</td>
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<tr>
<td>RI0</td>
<td>RI0-051-3a</td>
<td>RS</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>5</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>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 (Rev. 41), Section 1.3-Transmission Operating Guidelines M-37 Reliability Coordination (Rev. 10), Section 5.3-Mitigating Operational Problems, Attachment A-PIM Reliability Plan, Section 2.2-Common Tasks for Next-Day and Current-Day Operations</td>
<td>Yes</td>
<td>10/2/2011</td>
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<td>FE0</td>
<td>PER-001-0.1</td>
<td>Purpose</td>
<td>Transmission Operator and Balancing Authority operating personnel must have the responsibility and authority to implement real-time actions to ensure the stable and reliable operation of the Bulk Electric System.</td>
<td></td>
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<td>PER</td>
<td>PER-001-0.1</td>
<td>R1.1</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>Member TO system operators shall have the responsibility and authority to implement real-time actions at the direction of PIM. Unless immediate actions are required to avoid loss of life, ensure safety or protect equipment. Such non-PIM approved actions shall be communicated to PIM as soon as practical.</td>
<td>-</td>
<td>Do your system operators have the authority and responsibility to take real-time actions, including load shedding at the direction of PIM unless immediate actions are required to avoid loss of life, ensure safety or protect equipment. Such non-PIM approved actions shall be communicated to PIM as soon as practical? 1. Exhibit the document that states your system operators have the authority and responsibility to take real-time actions, including load shedding. 2. Job descriptions of operating personnel that includes the authority and responsibility to take real-time actions.</td>
<td>-</td>
<td>PIM Open Access Transmission Tariff, Schedule U- Independent Transmission Companies, Section 2- Security Coordination M-3 Transmission Operations (Rev. 44), Section 1.2 Responsibilities for Transmission Owner’s Operating Entity PIM OA, 11.3.1 (a) Member Responsibilities-General</td>
<td>Yes</td>
<td>4/1/2005</td>
<td>None</td>
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<td>PER</td>
<td>PER-002-0</td>
<td>Purpose</td>
<td>Each Transmission Operator and Balancing Authority must provide their personnel with a coordinated training program that will ensure reliable system operation.</td>
<td>S</td>
<td>Ensure that all Member TO system operators are adequately trained by meeting the requirements of Manual 40 Section 2.</td>
<td>-</td>
<td>FIM Manual 40 Section 2 defines adequate training.</td>
<td>-</td>
<td>Exhibit training records to verify that TO system operators meet the FIM training requirements as outlined in M-40 Certification and Training Requirements Section 2- Training Requirements.</td>
<td>-</td>
<td>PIM OA, 11.3.1(c) Member Responsibilities-General N-40 Certification and Training Requirements (Rev. 13); Section 1 Certification Requirements, Section 2, Training Requirements N-2 Control Center and Data Exchange Requirements (Rev. 25), Section 2.6 Control Center Staffing; Attachment B-Schedule of Data Submittals M-3 Transmission Operations (Rev. 44), Section 1.2 Responsibilities for Transmission Owner’s Operating Entity</td>
<td>No</td>
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<td>PER</td>
<td>PER-002-0</td>
<td>R2.1.</td>
<td>Positions that have the primary responsibility, either directly or through communications with others, for the real-time operation of the interconnected Bulk Electric System.</td>
<td>A</td>
<td>The Member TO shall identify positions that have the primary responsibility, either directly or through communications with others, for the real-time operation of the interconnected Bulk Electric System.</td>
<td>-</td>
<td>Have you identified positions that have the primary responsibility, either directly or through communications with others, for the real-time operation of the interconnected Bulk Electric System?</td>
<td>-</td>
<td>Evidence that you have identified positions that have the primary responsibility, either directly or through communications with others, for the real-time operation of the interconnected Bulk Electric System.</td>
<td>-</td>
<td>N-40 Certification and Training Requirements (Rev. 13); Section 1, Certification Requirements, Section 2, Training Requirements DA Section 11.3.1(c) Member Responsibilities-General</td>
<td>No</td>
</tr>
<tr>
<td>PER</td>
<td>PER-002-0</td>
<td>R3.1.</td>
<td>A set of training program objectives must be defined, based on NERC and Regional Reliability Organization standards, entity operating procedures, and applicable regulatory requirements. These objectives shall reference the knowledge and competencies needed to apply those standards, procedures, and requirements to normal, emergency, and restoration conditions for the Transmission Operator and Balancing Authority operating positions.</td>
<td>S</td>
<td>Each Member TO’s training program for their system operators shall meet the training requirements outlined in the parts of PIM Manual 40 that refer to Member TO operators.</td>
<td>-</td>
<td>Does your training plan for your system operators required to meet the training requirements of the parts of PIM Manual 40 that refer to Member TO operators?</td>
<td>-</td>
<td>Exhibit training records for each of your system operators that show they have met the requirements of the parts of PIM Manual 40 that refer to Member TO operators.</td>
<td>-</td>
<td>DA 10.4, OA 11.3.1 N-40 Certification and Training Requirements (Rev. 13); Section 2 Certification Overview; Section 3.3 Compliance Monitoring Process for Training and Certification Requirements N-1 Control Center and Data Exchange Requirements (Rev. 25), Section 2.6 Control Center Staffing; Attachment B-Schedule of Data Submittals M-3 Transmission Operations (Rev. 44), Section 1.2 Responsibilities for Transmission Owner’s Operating Entity</td>
<td>No</td>
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<tr>
<td>Category</td>
<td>Standard Number</td>
<td>Requirement Number</td>
<td>Approved BOT/FERC Standards</td>
<td>A/S</td>
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<td>Audit Questions</td>
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<td>PER</td>
<td>PER-002-0</td>
<td>R3.2</td>
<td>The training program must include a plan for the initial and continuing training of Transmission Operator and Balancing Authority operating personnel. That plan shall address knowledge and competencies required for reliable system operations.</td>
<td>5</td>
<td>Each Member TO's training plan for their system operators shall meet the Member TO training requirements outlined in the parts of PIM Manual 40 that refer to Member TO operators.</td>
<td>PIM Manual 40 includes a plan for the initial and continuing training of Transmission Operator and Balancing Authority operating personnel. PIM Manual 40 addresses knowledge and competencies required for reliable system operations.</td>
<td>Does your training plan for your system operators meet the training requirements of the parts of PIM Manual 40 that refer to Member TO operators?</td>
<td>Exhibit training plans that meet the requirements of the parts of PIM Manual 40 that refer to Member TO operators.</td>
<td>OA 10.4, OA 11.3.1; M-40 Certification and Training Requirements (Rev. 15); Section 3 Certification Overview; Section 3.3 Compliance Monitoring Process for Training and Certification Requirements</td>
<td>No</td>
<td>4/1/2005</td>
<td>4/1/2013</td>
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<td>PER</td>
<td>PER-002-0</td>
<td>R3.3</td>
<td>The training program must include training time for all Transmission Operator and Balancing Authority operating personnel to ensure their operating proficiency.</td>
<td>5</td>
<td>Each Member TO's training program for their system operators shall meet the training requirements outlined in the parts of PIM Manual 40 that refer to Member TO operators.</td>
<td>PIM Manual 40 includes a plan for training time for all PIM operating personnel to ensure their operating proficiency.</td>
<td>Does your training plan for system operators required to meet the training requirements of the parts of PIM Manual 40 that refer to Member TO operators?</td>
<td>1. Exhibit dates that each Member TO System Operator attended the PIM System Operator Seminar prior to last audit. 2. Exhibit a training schedule that allows sufficient training time for all TD system operating personnel to ensure their operating proficiency, if necessary.</td>
<td>OA 10.4, OA 11.3.1; M-40 Certification and Training Requirements (Rev. 15); Section 3 Certification Overview; Section 3.3 Compliance Monitoring Process for Training and Certification Requirements</td>
<td>No</td>
<td>4/1/2005</td>
<td>4/1/2013</td>
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<tr>
<td>PER</td>
<td>PER-002-0</td>
<td>R3.4</td>
<td>Training staff must be identified, and the staff must be competent in both knowledge of system operations and instructional capabilities.</td>
<td>A</td>
<td>The Member TO training staff must be competent in both knowledge of system operations and instructional capabilities.</td>
<td></td>
<td>1. What experience does your training staff have? 2. What training do your training staff attend?</td>
<td></td>
<td>OA 10.4, OA 11.3.1; M-40 Certification and Training Requirements (Rev. 15); Section 2 Certification Overview; Section 3.3 Compliance Monitoring Process for Training and Certification Requirements</td>
<td>No</td>
<td>4/1/2005</td>
<td>4/1/2013</td>
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### NERC Reliability Standards

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<tr>
<th>Category</th>
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<tr>
<td>PER</td>
<td>PER-002-0</td>
<td>R4.</td>
<td>For personnel identified in Requirement R2, each Transmission Operator and Balancing Authority shall provide its operating personnel at least five days per year of training and drills using realistic simulations of system emergencies, in addition to other training required to maintain qualified operating personnel.</td>
<td>S</td>
<td>Each Member TO system operator shall meet the training requirements outlined in the parts of PIM Manual 40 that refer to Member TO operators.</td>
<td>PIM Manual 40 includes a plan for at least five days per year of training and drills using realistic simulations of system emergencies, in addition to other training required to maintain qualified operating personnel.</td>
<td>Are all of your system operators required to meet the training requirements of the parts of PIM Manual 40 that refer to Member TO operators?</td>
<td>1. Training records for all system operators showing how they met the 32 hour emergency preparedness training requirement 2. Documentation of the training program to verify that the training used realistic simulation of system emergencies 3. If there is additional training requirements for emergency preparedness, provide the program documentation and records that verify that personnel have received the additional training.</td>
<td>OA 10.4, OA 11.3.1 M-40 Certification and Training Requirements (Rev. 15); Section 2 Certification Overview; Section 3.3 Compliance Monitoring Process for Training and Certification Requirements M-1 Control Center and Data Exchange Requirements (Rev. 25); Section 2.6-Control Center Staffing; Attachment B-Schedule of Data Submittals M-3 Transmission Operations (Rev. 44); Section 1.2-Responsibilities for Transmission Owner's Operating Entity M-16 System Restoration (Rev. 19), Section 1 Policy Statements, Attachment D-Restoration Drill Guide</td>
<td>No</td>
<td>4/1/2005</td>
<td>4/1/2013</td>
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| PER      | PER-003-0       | Purpose            | Certification of operating personnel is necessary to ensure minimum competencies for operating a reliable Bulk Electric System. |     |                             |                  |                |                                                             |                   |             |           |         |

| PER      | PER-003-0       | RI. 1.             | Positions that have the primary responsibility, either directly or through communications with others, for the real-time operation of the interconnected Bulk Electric System. | A   | All Member TO system operators must be PIM Transmission certified or under the direct supervision of a PIM Certified system operator. | PIM Transmission certified or under the direct supervision of a PIM Certified system operator. | Are all your current system operators PIM certified? Are all your system operators PIM certified since the last audit? | Exhibit a list of TO system operators that have operated your system since the last audit. The list should include PIM certification numbers and dates when certifications were renewed and when they need to be renewed in the future. | M-40 Certification and Training Requirements (Rev. 15); Section 2-Certification Overview N-1 Control Center and Data Exchange Requirements (Rev. 25); Section 2.6-Control Center Staffing M-3 Transmission Operations (Rev. 44); Section 1.2-Responsibilities for Transmission Owner's Operating Entity | Yes | 4/1/2005 | 12/31/2011 |

| PER      | PER-003-0       | RI. 1.             | Positions that have the primary responsibility, either directly or through communications with others, for the real-time operation of the interconnected Bulk Electric System. | A   | All Member TO system operators must be PIM Transmission certified and NERC Transmission Operator or Reliability Coordinator certified or under the direct supervision of a PIM and NERC Certified system operator. | PIM Transmission certified and NERC Transmission Operator or Reliability Coordinator certified or under the direct supervision of a PIM and NERC Certified system operator. | Are all your current system operators PIM and NERC certified? Are all your system operators PIM and NERC certified since the last audit? | Exhibit a list of TO system operators that have operated your system since the last audit. The list should include PIM and NERC certification numbers and dates when certifications were renewed and when they need to be renewed in the future. | M-40 Certification and Training Requirements (Rev. 15); Section 2-Certification Overview N-1 Control Center and Data Exchange Requirements (Rev. 25); Section 2.6-Control Center Staffing M-3 Transmission Operations (Rev. 44); Section 1.2-Responsibilities for Transmission Owner's Operating Entity | Yes | 1/1/2012 | 10/1/2012 |

| PER      | PER-003-1       | Purpose            | To ensure that System Operators performing the reliability-related tasks of the Reliability Coordinator, Balancing Authority and Transmission Operator are certified through the NERC System Operator Certification Program when filling a real-time operating position responsible for control of the Bulk Electric System. |     |                             |                  |                |                                                             |                   |             |           |         |

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**Table Note:**
- **PER**: Performance Requirement
- **RI**: Rationale
- **A/S**: Assigned or Shared TO
- **Shared PIM Tasks**: PIM Manual 40 includes a plan for at least five days per year of training and drills using realistic simulations of system emergencies, in addition to other training required to maintain qualified operating personnel.
- **Audit Questions**: Requirements and procedures for ensuring that all System Operators are certified as required.
- **Evidence of Compliance (What auditors will be looking for)**: Documentation and records that verify that personnel have received the additional training.
- **Reference Documents**: Required documents and standards for training and certification.

**Date:** November 27, 2013
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<tr>
<td>PER</td>
<td>PER-001-1</td>
<td>R2</td>
<td>Each Transmission Operator shall staff its real-time operating positions performing Transmission Operator reliability-related tasks with System Operators who have demonstrated minimum competency in the areas listed by obtaining and maintaining one of the following valid NERC certifications: 2.1. Areas of Competency 2.1.1. Transmission operations 2.1.2. Emergency preparedness and operations 2.1.3. System operations 2.1.4. Protection and control 2.1.5. Voltage and reactive 2.2. Certificates • Reliability Operator • Balancing, Interchange and Transmission Operator • Transmission Operator</td>
<td>A</td>
<td>All Member TO system operators must be: * PIM Transmission certified and * NERC Transmission Operator or * Balancing, Interchange and Transmission Operator or * Reliability Operator Certified</td>
<td>1. Are all your current System operators PIM and NERC certified? 2. Have all your system operators PIM and NERC certified since the last audit? Exhibit a list of TO system operators that have operated your system since the last audit. The list should include PIM and NERC certification numbers and dates when certifications were renewed and when they need to be renewed in the future.</td>
<td>M-40 Certification and Training Requirements (Rev. 15); Section 1.2 - Certification Overview M-1 Control Center and Data Exchange Requirements (Rev. 25); Section 2.6-Control Center Staffing M-3 Transmission Operations (Rev. 44) Section 1.2-Responsibilities for Transmission Owner’s Operating Entity</td>
<td>Yes</td>
<td>10/1/2012</td>
<td>None</td>
<td></td>
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<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. The competency of System Operators is critical to the reliability of the North American Bulk Electric System.</td>
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<tr>
<td>PER</td>
<td>PER-005-1</td>
<td>R2</td>
<td>Each Reliability Coordinator, Balancing Authority and Transmission Operator shall use a systematic approach to training to establish a training program for the BES company-specific reliability-related tasks performed by its System Operators and shall implement the program.</td>
<td>S</td>
<td>Each Member TO shall establish a training program for the BES company-specific reliability-related tasks performed by its System Operators and that meets the training requirements outlined in PIM Manual 40 which includes requirements to use a systematic approach to training. 1. Have you established a training program for the BES company-specific reliability-related tasks performed by your System Operators and that meets the training requirements outlined in PIM Manual 40 which include requirements to use a systematic approach to training? 2. Have you implemented the training program? 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 that meets the training requirements outlined in PIM Manual 40 which include requirements to use a systematic approach to training? 2. Have you implemented the training program? 3. Description of the 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 include requirements to use a systematic approach to training: 3) Sample training modules 4) Training records showing implementation of the training program.</td>
<td>DA 10.4, DA 12.3.1 M-40 Certification and Training Requirements (Rev. 15); Section 1.2 - Training for Member Operating Personnel; Section 1.2 - Member Systematic Approach to Training; Section 1.4.2 - Task Lists Section 1.4.3 - Reliability-Related Tasks; Section 1.9 - Development of Training Programs; Section 1.5.2 - Initial Training Program; 1.5.3 - Continuing Training Program; 1.6 Implementation of Program Activities M-1 Control Center and Data Exchange Requirements (Rev. 25); Section 2.6-Control Center Staffing; Attachment B-Schedule of Data Submittals M-3 Transmission Operations (Rev. 44) Section 1.2-Responsibilities for Transmission Owner’s Operating Entity M-36 System Restoration (Rev. 19); Section 1.1 Policy Statement; Attachment D-Restoration Drill Guide; Attachment F-Transmission Owner and Blackstart Supporting Documentation References</td>
<td>Yes</td>
<td>4/1/2013</td>
<td>None</td>
<td></td>
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<tr>
<td>PER</td>
<td>PER-005-1</td>
<td>R1.1</td>
<td>Each Reliability Coordinator, Balancing Authority and Transmission Operator shall create a list of BES company-specific reliability-related tasks performed by its System Operators.</td>
<td>S</td>
<td>Each Member TO, in coordination with PIM, shall create a list of BES company-specific and common reliability-related tasks performed by its system operators. PIM, in coordination with each member TO, shall create a list of BES common reliability-related tasks and common objectives performed by its system operators. Have you, in coordination with PIM, created a list of BES company-specific reliability-related tasks performed by your system operators? 1. Exhibit the list of BES company- specific reliability-related tasks performed by your system operators. 2. Show evidence of coordination with PIM such as emails or minutes of meetings.</td>
<td>1. Exhibit the list of BES company-specific reliability-related tasks performed by your system operators as of [insert date].</td>
<td>M-40 Certification and Training Requirements (Rev. 15); Section 1.4.2 Task Lists; Section 1.4.3 - Reliability-Related Tasks</td>
<td>Yes</td>
<td>4/1/2013</td>
<td>None</td>
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<tr>
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<tr>
<td>PER</td>
<td>PER-005-1</td>
<td>R1.1.</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>5</td>
<td>In coordination with PIM, update the list created in R1.1 each calendar year to identify new or modified tasks for inclusion in training.</td>
<td>In coordination with each Member TO, update the list created in R1.1 each calendar year to identify new or modified tasks for inclusion in training.</td>
<td>Have you, in coordination with PIM, 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 PIM such as emails or minutes of meetings.</td>
<td>M-40 Certification and Training Requirements (Rev. 13) - Section 1.1.4.4 Task List Maintenance; Section 1.4.5 Task Modification</td>
<td>Yes</td>
<td>4/1/2013</td>
<td>None</td>
</tr>
<tr>
<td>PER</td>
<td>PER-005-1</td>
<td>R1.2.</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 R1.1.</td>
<td>5</td>
<td>In coordination with each Member TO, PJM shall design and develop learning objectives and training materials based on the common task list created in R1.1.</td>
<td>In coordination with each Member TO, PJM shall design and develop learning objectives and training materials based on the common task list created in R1.1.</td>
<td>Have you, in coordination with PIM, 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 design and development of learning objectives and training materials based on your company-specific tasks?</td>
<td>M-40 Certification and Training Requirements (Rev. 13) - Section 1.2.1 - 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>Yes</td>
<td>4/1/2013</td>
<td>None</td>
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<tr>
<td>PER</td>
<td>PER-005-1</td>
<td>R1.3.</td>
<td>Each Reliability Coordinator, Balancing Authority and Transmission Operator shall deliver the training established in R1.2.</td>
<td>5</td>
<td>Individual TOs will provide training on their company-specific tasks that meets the requirements of R1.2.</td>
<td>PJM 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 your company-specific tasks, meeting the requirements of R1.2, was delivered.</td>
<td>M-40 Certification and Training Requirements (Rev. 13) - Section 1.2.1 - 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>Yes</td>
<td>4/1/2013</td>
<td>None</td>
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<td>PER</td>
<td>PER-005-1</td>
<td>R1.4.</td>
<td>Each Reliability Coordinator, Balancing Authority and Transmission Operator shall conduct an annual evaluation of the training program established in R1.2, to identify any needed changes to the training program and shall implement the changes identified.</td>
<td>5</td>
<td>1) Each Member TO shall participate in annual evaluations of the PJM training program established in R1.1, to identify any needed changes to the PJM training program. 2) Each Member TO shall conduct an annual evaluation of their training program established in R1.1, to identify any needed changes to the training program and shall implement the changes identified.</td>
<td>PJM shall conduct an annual evaluation of its training program, established in R1.1, 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 PJM training program? 2) Did you have an annual evaluation of your training program established in R1.1, to identify any needed changes to the training program?</td>
<td>1. Show evidence of participation in the PJM training program evaluation, such as emails or minutes of meetings. 2. Show evidence of an annual evaluation of your training program established in R1.1, to identify any needed changes to the training program, and any changes that have been implemented.</td>
<td>M-40 Certification and Training Requirements (Rev. 13) - Section 1.2.1 - 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>Yes</td>
<td>4/1/2013</td>
<td>None</td>
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<td>PER</td>
<td>PER-005-1</td>
<td>R2.</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 R1.2 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 R1.2 at least one time.</td>
<td>The Member TO shall verify each of its system operator’s capabilities to perform each assigned task identified in R1.2 at least one time.</td>
<td>Have you verified each of your system operator’s capabilities to perform each assigned task identified in R1.2 at least one time?</td>
<td>Show records for each of your system operators exhibiting verification of each assigned task identified in R1.2.</td>
<td>M-40 Certification and Training Requirements (Rev. 13) - Section 1.2.1 - Member Systematic Approach to Training; Section 3.2.1 - Task Verification: Section 3.2.1.4 - Task Verification</td>
<td>Yes</td>
<td>4/1/2013</td>
<td>None</td>
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<tr>
<td>PER</td>
<td>PER-005-1</td>
<td>R2.1.</td>
<td>Each of the BES company-specific reliability-related tasks, each Reliability Coordinator, Balancing Authority and Transmission Operator shall verify each 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, each Reliability Coordinator, Balancing Authority and Transmission Operator shall verify each 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 tasks, each Reliability Coordinator, Balancing Authority and Transmission Operator shall verify each system operator’s capabilities to perform the new or modified tasks.</td>
<td>Within six months of a modification of the BES company-specific or common reliability-related task, or the 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>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 (Rev. 13) - Section 1.5.4 - Task Verification</td>
<td>Yes</td>
<td>4/1/2013</td>
<td>None</td>
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<td>Category</td>
<td>Standard Number</td>
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<tr>
<td>PRR</td>
<td>PRC-001-1</td>
<td>R1.1</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>1. Each Member TO shall be familiar with the purpose and limitations of protection system schemes applied in its area as noted in PMI Compliance Bulletin on PRC-001. 2. Each Member TO shall provide PMI protection system information on request.</td>
<td>1. PMI operators shall be familiar with the purpose and limitations of protection system schemes applied in its area. 2. If more information is needed, the PMI operator shall request the Member TO operator to supply additional information.</td>
<td>1. Where is the information with regards to the purpose and limitations of protection system schemes located? 2. Have you provided protection scheme information to PMI when requested?</td>
<td>1. Documented protection scheme information. 2. Evidence that you provided information about protection schemes within your area to PMI when requested. 3. Describe any training on protection systems provided to each operator.</td>
<td>M-4 Transmission Operations (Rev. 45); Section 1.2-Responsibilities for Transmission Owner’s Operating Entity, Section 4.2- Protection System Coordination</td>
<td>No</td>
<td>None</td>
<td>Yes</td>
</tr>
<tr>
<td>PRR</td>
<td>PRC-001-1</td>
<td>R2.2</td>
<td>If a protective relay or equipment failure reduces system reliability, the Transmission Operator shall notify its Reliability Coordinator and affected Transmission Operators and Balancing Authorities. The Transmission Operator shall take corrective action as soon as possible.</td>
<td>5</td>
<td>1. The Member TO must report all protection system failures and protection system outages on EHV facilities (345 kV and above) through the PMI eAlert tool. The Member TO shall report to PMI Operations any protection system failures and outages on any other Reportable Facilities that are a part of the Bulk Electric System requiring PMI to modify PJM EMS Network Application Contingencies. 2. Take corrective action as instructed by PMI as soon as possible.</td>
<td>1. Instruct Member TO to take corrective actions as soon as possible. 2. Notify affected TO and RLS of relay failure that reduces system reliability as noted in PJM Compliance Bulletin on PRC-001.</td>
<td>2. Did you report all protection system failures and protection system outages on EHV facilities (345 kV and above) through the PMI eAlert tool? Did you report to PMI Operations any protection system failures and outages on any other Reportable Facilities that are a part of the Bulk Electric System requiring PMI to modify PJM EMS Network Application Contingencies? 2. Have you taken any corrective action as instructed by PMI as soon as possible?</td>
<td>2. Exhibit evidence (logs, voice recordings, reports etc.) that you reported all protection system failures and protection system outages on EHV facilities (345 kV and above) through the PMI eAlert tool. Exhibit evidence (logs, voice recordings, reports etc.) that you reported to PMI Operations any protection system failures and outages on any other Reportable Facilities that are a part of the Bulk Electric System requiring PMI to modify PJM EMS Network Application Contingencies. 2. Evidence that you took corrective action as instructed by PMI as soon as possible.</td>
<td>M-4 Transmission Operations (Rev. 44); Section 1.5.4- Reportable Transmission Facility, Section 4.2- Protection System Coordination</td>
<td>Yes</td>
<td>11/1/2006</td>
<td>None</td>
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<tr>
<td>PRC</td>
<td>PRC-001-1</td>
<td>R3</td>
<td></td>
<td>5</td>
<td>A Member TO shall coordinate new protective systems and changes as follows.</td>
<td>Facility the PIM Relay Subcommittee.</td>
<td>1. Do you coordinate new protective systems and changes as follows?</td>
<td>See below.</td>
<td>N-3 Transmission Operations (Rev. 4); Section 4.2 Scheduling Transmission-Outlet Requests, Protection System Coordination</td>
<td>Yes</td>
<td>11/1/2005</td>
<td>None</td>
</tr>
<tr>
<td>PRC</td>
<td>PRC-001-1</td>
<td>R3.2</td>
<td></td>
<td>5</td>
<td>Each Transmission-Operator shall coordinate new protective systems and all protective system changes with neighboring Transmission Operators and Balancing Authorities.</td>
<td>Facility the PIM Relay Subcommittee.</td>
<td>1. Have you coordinated new protective systems and protective system changes with neighboring Transmission Operators and Balancing Authorities as noted in PIM Compliance Bulletin on PRC-001.</td>
<td>See below.</td>
<td>N-3 Transmission Operations (Rev. 4); Section 4.2 Scheduling Transmission-Outlet Requests, Protection System Coordination</td>
<td>Yes</td>
<td>11/1/2005</td>
<td>None</td>
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<tr>
<td>PRC</td>
<td>PRC-001-1</td>
<td>R4</td>
<td></td>
<td>5</td>
<td>Each Transmission-Operator shall coordinate protective systems on major transmission lines and interconnections with neighboring Generator Operators, Transmission Operators, and Balancing Authorities.</td>
<td>Facility the PIM Relay Subcommittee.</td>
<td>1. Have you coordinated new protective systems and protective system changes with neighboring Transmission Operators, Generator Operators, Transmission Operators, and Balancing Authorities as noted in PIM Compliance Bulletin on PRC-001.</td>
<td>See below.</td>
<td>N-3 Transmission Operations (Rev. 4); Section 4.2 Scheduling Transmission-Outlet Requests, Protection System Coordination</td>
<td>Yes</td>
<td>11/1/2005</td>
<td>None</td>
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<tr>
<td>PRC</td>
<td>PRC-001-1</td>
<td>R.2.</td>
<td>Each Transmission Operator shall notify neighboring Transmission Operators in advance of changes in generation, transmission, load, or operating conditions that could require changes in the other Transmission Operators' protection systems.</td>
<td>5</td>
<td>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.</td>
<td>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.</td>
<td>Do you participate in normal Operations and Planning processes as noted in PIM Compliance Bulletin on PRC-001?</td>
<td>Evidence of participation in normal Operations and Planning processes as noted in PIM Compliance Bulletin on PRC-001 such as emails.</td>
<td>M-3 Transmission Operations (Rev. 4); Section 4-3 Scheduling Transmission Outage Requests, Protection System Coordination and Construction Requirements</td>
<td>Yes</td>
<td>11/1/2005</td>
<td>None</td>
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<td>PRC</td>
<td>PRC-001-1</td>
<td>R8.</td>
<td>Each Transmission Operator and Balancing Authority shall monitor the status of each Special Protection System in their area, and shall notify affected Transmission Operators and Balancing Authorities of each change in status.</td>
<td>5</td>
<td>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 BAs of each change in status of SPSs.</td>
<td>1. 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>Exhibit evidence that you monitor the status of each Special Protection System in your TO area. 2. Show evidence that you notify PIM of changes in status of your SPSs such as logs, emails, etc.?</td>
<td>M-3 Transmission Operations (Rev. 4); Section 1.2-Responsibilities for Transmission Owner’s Operating Entity, Section 5- Automatic Special Protection Scheme (SPS) Operating Criteria</td>
<td>Yes</td>
<td>11/1/2005</td>
<td>None</td>
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<tr>
<td>PRC</td>
<td>PRC-002-0</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>5</td>
<td>The UVLS program shall periodically (at least every five years or as required by 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).</td>
<td>The Member TO that owns a UVLS program shall periodically (at least every five years or as required by changes in system conditions) conduct and document an assessment of the effectiveness of the UVLS program.</td>
<td>1. Do you own a UVLS program? 2. Have you conducted an assessment of the effectiveness of the UVLS program?</td>
<td>Demonstrate that the UVLS program is effective. 1. Show the UVLS program. 2. Show a list of any UVLS relays on the system. 3. Evidence includes reports of the effectiveness analysis performed.</td>
<td>M-3 Generator and Transmission Facility Construction (Rev. 4); Section 4.2.1. Data Management and Security</td>
<td>Yes</td>
<td>4/1/2005</td>
<td>None</td>
</tr>
<tr>
<td>PRC</td>
<td>PRC-002-0</td>
<td>R1.1.1</td>
<td>This assessment shall include, but is not limited to:</td>
<td>5</td>
<td>The Member TO assessment shall include a review of the coordination of the UVLS programs with other protection and control systems in the region and with other Regional Reliability Organizations, as appropriate.</td>
<td>PIM shall participate in the periodic analysis required to assess the effectiveness of the UVLS program with each Member TO that owns or operates a UVLS program.</td>
<td>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?</td>
<td>Show 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.</td>
<td>Yes</td>
<td>4/1/2005</td>
<td>None</td>
<td></td>
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<tr>
<td>PRC</td>
<td>PRC-002-0</td>
<td>R1.1.2</td>
<td>Simulations that demonstrate that the UVLS programs performance is consistent with Reliability Standards TPL-001-0, TPL-002-0, TPL-003-0 and TPL-004-0.</td>
<td>5</td>
<td>The Member TO assessment shall include simulations that demonstrate that the UVLS programs performance is consistent with Reliability Standards TPL-001-0, TPL-002-0, TPL-003-0 and TPL-004-0.</td>
<td>PIM shall participate in the periodic analysis required to assess the effectiveness of the UVLS program with each Member TO that owns or operates a UVLS program.</td>
<td>Does your assessment include simulations that demonstrate that the UVLS programs performance is consistent with Reliability Standards TPL-001-0, TPL-002-0, TPL-003-0 and TPL-004-0?</td>
<td>Show current UVLS assessment and highlight the section on simulations that demonstrate that the UVLS programs performance is consistent with Reliability Standards TPL-001-0, TPL-002-0, TPL-003-0 and TPL-004-0.</td>
<td>Yes</td>
<td>4/1/2005</td>
<td>None</td>
<td></td>
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</table>
## NERC Reliability Standards

### PRC

**PRC-001-0**  
**R1.1.3**  
A review of the voltage set points and timing.  

<table>
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<tr>
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<tr>
<td>PRC</td>
<td>PRC-001-0</td>
<td>R1.1.3</td>
<td></td>
<td>5</td>
<td>The Member TO assessment shall include a review of the voltage set points and timing.</td>
<td>PIM shall participate in the periodic analysis required to assess the effectiveness of the UVLS program with each Member TO that owns or operates a UVLS program.</td>
<td>Does your assessment include a review of the voltage set points and timing?</td>
<td>Show most current UVLS assessment and highlight the section on a review of the voltage set points and timing.</td>
<td></td>
<td>Yes</td>
<td>4/1/2005</td>
<td>None</td>
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### 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.  

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<tr>
<td>TOP</td>
<td>TOP-001-1</td>
<td>R1.3</td>
<td>Each Transmission Operator shall have the responsibility and clear decision-making authority to take whatever actions are needed to ensure the reliability of its area and shall exercise specific authority to allocate operating emergencies.</td>
<td>5</td>
<td>The Member TO system operators shall have the responsibility and authority to implement whatever actions are needed to ensure the reliability of its area and shall exercise specific authority to allocate operating emergencies, at the instruction (PJM Directive or PIM instruction) of PIM.</td>
<td>PIM shall have the responsibility and clear decision-making authority to take whatever actions are needed to ensure the reliability of its area and shall exercise specific authority to allocate operating emergencies, at the instruction (PJM Directive or PIM instruction) of PIM.</td>
<td>Do your system operators have the authority and responsibility to take real time actions to ensure the reliability of its area and shall exercise specific authority to allocate operating emergencies, including load shedding, at the instruction of PIM?</td>
<td>Exhibit the document that states system operators have the authority and responsibility to take real time actions to ensure the reliability of its area and shall exercise specific authority to allocate operating emergencies, including load shedding, at the instruction (PJM Directive or PIM instruction) of PIM.</td>
<td></td>
<td>Yes</td>
<td>TOP-001-1</td>
<td>11/31/11</td>
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**TOP-001-1a**  
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<td>The Member TO system operators shall have the responsibility and authority to implement whatever actions are needed to ensure the reliability of its area and shall exercise specific authority to allocate operating emergencies, at the instruction (PJM Directive or PIM instruction) of PIM.</td>
<td>PIM shall have the responsibility and clear decision-making authority to take whatever actions are needed to ensure the reliability of its area and shall exercise specific authority to allocate operating emergencies, at the instruction (PJM Directive or PIM instruction) of PIM.</td>
<td>Do your system operators have the authority and responsibility to take real time actions to ensure the reliability of its area and shall exercise specific authority to allocate operating emergencies, including load shedding, at the instruction (PJM Directive or PIM instruction) of PIM?</td>
<td>Exhibit the document that states system operators have the authority and responsibility to take real time actions to ensure the reliability of its area and shall exercise specific authority to allocate operating emergencies, including load shedding, at the instruction (PJM Directive or PIM instruction) of PIM.</td>
<td></td>
<td>Yes</td>
<td>TOP-001-1</td>
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<td>5</td>
<td>The Member TO system operators shall have the responsibility and authority to implement whatever actions are needed to ensure the reliability of its area and shall exercise specific authority to allocate operating emergencies, at the instruction (PJM Directive or PIM instruction) of PIM.</td>
<td>PIM shall have the responsibility and clear decision-making authority to take whatever actions are needed to ensure the reliability of its area and shall exercise specific authority to allocate operating emergencies, at the instruction (PJM Directive or PIM instruction) of PIM.</td>
<td>Do your system operators have the authority and responsibility to take real time actions to ensure the reliability of its area and shall exercise specific authority to allocate operating emergencies, including load shedding, at the instruction (PJM Directive or PIM instruction) of PIM?</td>
<td>Exhibit the document that states system operators have the authority and responsibility to take real time actions to ensure the reliability of its area and shall exercise specific authority to allocate operating emergencies, including load shedding, at the instruction (PJM Directive or PIM instruction) of PIM.</td>
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<td>Yes</td>
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<tr>
<td>TOP</td>
<td>TOP-001-1a</td>
<td>R2.</td>
<td></td>
<td>5</td>
<td>All Member TO actions impacting BPS facilities (operating equipment e.g., phase shifters, breakers), and or load shedding shall be at the direction (PJM Directive or PIM instruction) of PIM unless immediate actions are required to avoid loss of life, ensure safety or protect equipment. Such non-PIM directed (PJM Directive or PIM instruction) actions shall be communicated to PIM as soon as practical. See PIM Manual 3 Section 5 for ComEd 138 kV Phase Shifting Transformer Operations allowances.</td>
<td>PIM shall issue PIM instructions or PIM Directives 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 (PIM Directive or PIM Instruction) of PIM to alleviate operating emergencies, operating equipment (e.g., phase shifters, breakers), shedding firm load, etc.? Evidence such as example system operator logs or voice recordings of actions taken during emergencies that support compliance to this requirement.</td>
<td>PIM OA Schedule 1: 1.7.15-Corrective Actions</td>
<td>N-1 Control Center and Data Exchange Requirements (Rev. 25), Section 2.6-Control Center Staffing</td>
<td>Yes</td>
<td>TOP-001-1</td>
<td>11/21/11</td>
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<td>TOP</td>
<td>TOP-001-1a</td>
<td>R3.</td>
<td></td>
<td>5</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>Member TO system operators shall comply with PIM (reliability) Directives issued by PIM unless such actions would violate safety, equipment, regulatory or statutory requirements. If, because of the reasons mentioned above, the PIM Directives cannot be complied with, the Member TO system operator shall inform PIM as soon as possible.</td>
<td>1. PIM shall issue PIM Directives to ensure the stable and reliable operation of the Bulk Electric System. 2. PIM shall be prepared to implement alternate remedial actions if necessary.</td>
<td>1. Do you have documented procedures that require the your system operators to comply with PIM (reliability) Directives? 2. Have you had any incidents where your system operators were not able to comply with PIM (reliability) Directives because such actions would violate safety, equipment, regulatory or statutory requirements?</td>
<td>PIM OA Schedule 1: 1.7.15-Corrective Actions</td>
<td>N-1 Control Center and Data Exchange Requirements (Rev. 25), Section 2.6-Control Center Staffing</td>
<td>Yes</td>
<td>TOP-001-1</td>
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<td>TOF</td>
<td>TCP-001.1a</td>
<td>R5.</td>
<td></td>
<td>5</td>
<td>Each Member TO shall inform their PIM of real time or anticipated emergency conditions. Through discussion with Member TO, decide on actions to avoid, when possible, or mitigate the emergency unless immediate actions are required to avoid loss of life, to ensure safety or protect equipment. Such non-PIM approved actions shall be communicated to PIM as soon as practical.</td>
<td>Have you had discussions with PIM 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 PIM to decide on actions taken to avoid, when possible, or mitigate an emergency.</td>
<td>N-17 Reliability Coordination (Rev. 10), Section 1.1-Policy Statements</td>
<td>PJM OA 11.3-Member Responsibilities</td>
<td>Yes</td>
<td>TCP-001-1</td>
<td>11/21/11</td>
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<tr>
<td>TOF</td>
<td>TCP-001.1a</td>
<td>R7.</td>
<td></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>PIM 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 unless:</td>
<td>N-17 Reliability Coordination (Rev. 10), Section 1.1-Policy Statements</td>
<td>PJM OA Section 10.4-Duties and Responsibilities, Schedule 1.9.1-Outlet Switching</td>
<td>Yes</td>
<td>TCP-001-1</td>
<td>11/21/11</td>
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<td>TOF</td>
<td>TCP-001.1a</td>
<td>R7.2.</td>
<td></td>
<td>5</td>
<td>For a transmission facility, the Transmission Operator shall notify and coordinate with its Reliability Coordinator. The Transmission Operator shall notify other affected Transmission Operators, and coordinate the impact of removing the Bulk Electric System facility.</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 PIM about the impact of removing a Bulk Electric System facility?</td>
<td>N-17 Reliability Coordination (Rev. 10), Section 1.1-Policy Statements</td>
<td>PJM OA Section 10.4-Duties and Responsibilities, Schedule 1.9.1-Outlet Switching</td>
<td>Yes</td>
<td>TCP-001-1</td>
<td>11/21/11</td>
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<tr>
<td>TOF</td>
<td>TCP-001.1a</td>
<td>R7.3.</td>
<td></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 a transmission element from service to prevent a hazard to the public, lengthy customer service interruption, or damage to facilities, without prior coordination with PIM?</td>
<td>N-17 Reliability Coordination (Rev. 10), Section 1.1-Policy Statements</td>
<td>M-13 Transmission Operations (Rev. 44), Section 1.1-Responsibilities for Transmission Owner’s Operating Entity</td>
<td>Yes</td>
<td>TCP-001-1</td>
<td>11/21/11</td>
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<td>TOP</td>
<td>TCP-001-1a</td>
<td>R8.</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>5</td>
<td>The Member TD shall comply with PIM Directives and PIM instructions to restore the real and reactive power balance including firm load shedding.</td>
<td>PIM shall issue PIM Directives and PIM instructions unless such actions would violate safety, equipment, or regulatory or statutory requirements.</td>
<td>Have you had an incident where you had to comply with PIM Directives and PIM instructions unless such actions would violate safety, equipment, or regulatory or statutory requirements.</td>
<td>Evidence such as system operator logs, voice recordings or incident reports etc. for any incidents where your operators at the direction (Directives or instructions) of PIM had to implement shedding of firm load.</td>
<td>O&amp;A Section 11.3, Member Responsibilities M-3 Transmission Operations (Rev. 44), Section 1.2-Responsibilities for Transmission Owner’s Operating Entity</td>
<td>Yes</td>
<td>TCP-001-1 1/1/2007</td>
<td>TCP-001-1 11/21/11</td>
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<td>TOP</td>
<td>TCP-002-2b</td>
<td>Purpose</td>
<td>Current operations plans and procedures are essential to being prepared for reliable operations, including response for unplanned events.</td>
<td>5</td>
<td>Each Member TD shall support PIM by providing PIM with expected transmission status, operating conditions and TO zone specific operating procedures, to facilitate the preparation of a set of current plans for reliable operation. 2. In addition, each Member TD 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>PIM shall work with the Member TD to maintain a current set of plans that are designed to evaluate options and set procedures for reliable operation through a reasonable future time period.</td>
<td>1. Have you supported PIM by providing expected transmission status, operating conditions and TO zone specific operating procedures to PIM? 1. Can the plans be implemented as required?</td>
<td>Exhibit procedural documents for planning future operations. 2. Be prepared to explain the operational planning process to the auditors. 3. How do the plans use available personnel and system equipment.</td>
<td>O&amp;A 44, 11.3-Member Responsibilities, Schedule 1, 1.7.15 Corrective Action M-3 Transmission Operations, (Rev. 44), Section 5-Index and Operating Procedures for PIM RTO Operation M-10 Pre-Scheduling Operations, (Rev. 29), Section 2.3-Planned Outages M-17 Reliability Coordination (Rev. 10), Section 1.1-Policy Statements M-38, Operations Planning (Rev. 7), Section 1.1-Seasonal Operating Studies, Section 3-Next Day Reliability Analysis, Attachment A-PIM DataScope and Procedures</td>
<td>Yes</td>
<td>TCP-002-2a 6/14/2007</td>
<td>TCP-002-2a 10/20/2011</td>
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<td>TOP</td>
<td>TCP-002-2b</td>
<td>R15.</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 capabilities and characteristics including but not limited to changes in transmission facility status.</td>
<td>5</td>
<td>The Member TD shall notify PIM of any changes in transmission facility status.</td>
<td>PIM shall provide changes of status of other TOs’ (internal or external) transmission facilities to Member TDs.</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? 3. Examples of informing PIM of a change in transmission facility status. 4. Why did you not inform PIM of a change in transmission facility status, if applicable?</td>
<td>M-1 Transmission Operations (Rev. 44), Section 1.2-Responsibilities for Transmission Owner’s Operating Entity, Section 4. Reportable Transmission Facility Outages M-38 Operations Planning (Rev. 7), Section 2 Outage Coordination TDA - Article 4.6-Interconnection Facilities PIM OA Section 1.9.4-Forced Outages</td>
<td>Yes</td>
<td>TCP-002-2a 6/14/2007</td>
<td>TCP-002-2a 10/20/2011</td>
<td>TCP-002-2b None</td>
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<td>TOP</td>
<td>TOP-002-2b</td>
<td>R15.2</td>
<td></td>
<td>5</td>
<td>The Member TO shall notify PFM of any changes in transmission facility rating through TERM or by other means agreed to by PFM.</td>
<td>Make TERM available for use by Member TOs.</td>
<td>1. How do you inform PFM of changes in transmission facility rating? 2. Have you ever not informed PFM of a change in transmission facility rating? Reason?</td>
<td>Examples of informing PFM of a change in transmission facility ratings. 2. Explanation of why you did not inform PFM of a change in transmission facility rating?</td>
<td>M-3 Transmission Operations (Rev. 44), Section 1.2-Responsibilities for Transmission Owner’s Operating Entity</td>
<td>Yes</td>
<td>TOP-002-2a</td>
<td>6/14/2007</td>
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<td>TOP</td>
<td>TOP-002-2b</td>
<td>R13.7</td>
<td></td>
<td>A</td>
<td>The Member TO system operators shall, without any intentional time delay, communicate the information described in the requirements R1 to R15 above to their Reliability Coordinator.</td>
<td></td>
<td>The system operators ever intentionally delayed communications as described in the requirements R1 and R16?</td>
<td>Description of the reasons why communications were intentionally delayed or at least that there were no delays.</td>
<td>M-3 Transmission Operations (Rev. 44), Section 1.2-Transmission Operations Requirements; Section 4-Reportable Transmission Facility Outages</td>
<td>Yes</td>
<td>TOP-002-2a</td>
<td>6/14/2007</td>
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<tr>
<td>TOP</td>
<td>TOP-002-2b</td>
<td>R13.8</td>
<td></td>
<td>5</td>
<td>Each Member TO shall maintain and provide PFM with accurate modeling data to support the PFM operating models.</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 PFM operations models? 3. Do you let PFM know of significant changes between updates?</td>
<td>2. 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>PFM OA, Section 5.3.2(b)-Designation of Local Transmission Facilities</td>
<td>Yes</td>
<td>TOP-002-2a</td>
<td>6/14/2007</td>
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**TOP-003-0** | Purpose | Scheduled generator and transmission outages that may affect the reliability of interconnected operations must be planned and coordinated among Balancing Authorities, Transmission Operators, and Reliability Coordinators. |
## NERC Reliability Standards

<table>
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<tr>
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<th>Standard Number</th>
<th>Requirement Number</th>
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<tr>
<td>TOP</td>
<td>TOP-003-1</td>
<td>R.1</td>
<td></td>
<td>5</td>
<td>The Member TD must submit transmission outage information to PIM based on the procedures in PIM Manual 3.</td>
<td>PIM shall inform Member TDs and external TOs of planned transmission and generation outage information.</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; PIM day ahead email); and day-ahead discussion with PIM Reliability Engineer)</td>
<td>PIM OA; 11.3-Member Responsibilities, Schedule 1, 1.7.15 Corrective Action; M-3 Transmission Operations, (Rev. 44); Section 5-Index and Operating Procedures for PIM RTO Operation</td>
<td>Yes</td>
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<td>The Member TD must submit transmission outage information to PIM based on the procedures in PIM Manual 3.</td>
<td>PIM shall inform Member TDs and external TOs of planned transmission and generation outage information.</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; PIM day ahead email); and day-ahead discussion with PIM Reliability Engineer)</td>
<td>PIM OA; 11.3-Member Responsibilities, Schedule 1, 1.7.15 Corrective Action; M-3 Transmission Operations, (Rev. 44); Section 5-Index and Operating Procedures for PIM RTO Operation</td>
<td>Yes</td>
<td>6/18/2007</td>
<td>10/1/2011</td>
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<td>TOP</td>
<td>TOP-003-1</td>
<td>R.1</td>
<td></td>
<td>5</td>
<td>The Member TD must submit transmission outage information to PIM based on the procedures in PIM Manual 3.</td>
<td>PIM shall inform Member TDs and external TOs of planned transmission and generation outage information.</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; PIM day ahead email); and day-ahead discussion with PIM Reliability Engineer)</td>
<td>PIM OA; 11.3-Member Responsibilities, Schedule 1, 1.7.15 Corrective Action; M-3 Transmission Operations, (Rev. 44); Section 5-Index and Operating Procedures for PIM RTO Operation</td>
<td>Yes</td>
<td>TOP-003-0</td>
<td>10/2/2011</td>
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</table>

### Notes
- For TOP-003-1, the requirement is related to the submission of transmission outage information to the PIM. It is essential for Members to ensure that they adhere to the procedures outlined in PIM Manual 3.
- The audit questions focus on the verification of proper submission and discussion of outage information with PIM Reliability Engineers.
- The evidence of compliance includes the provision of outage information through eDART Tickets and PIM day-ahead emails.

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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>5</td>
<td>The TO must submit transmission outage information based on the procedures in PIM Manual 3.</td>
<td>PIM shall inform Member TOs and external TOs of planned transmission and generation outage information by 1200 Central Standard Time.</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; PIM day ahead email); and day-ahead discussion with PIM Reliability Engineer).</td>
<td>PIM OA; 11.3-Member Responsibilities, Schedule 1, 7.15 Corrective Action M-3 Transmission Operations, (Rev. 44); Section 5-Index and Operating Procedures for PJM RTO Operation M-10 Pre-Scheduling Operations, (Rev. 29); Section 2.2-Planned Outages M-37 Reliability Coordination (Rev. 10), Section 1.1-Policy Statements M-38, Operations Planning (Rev. 7), Section 3-Next Day Reliability Analysis</td>
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<td>TOP-003-1</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 must 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 outage information 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 (eDART Tickets; PIM day ahead email); and day-ahead discussion with PIM Reliability Engineer).</td>
<td>PIM OA; 11.3-Member Responsibilities, Schedule 1, 7.15 Corrective Action M-3 Transmission Operations, (Rev. 44); Section 5-Index and Operating Procedures for PJM RTO Operation M-10 Pre-Scheduling Operations, (Rev. 29); Section 2.2-Planned Outages M-37 Reliability Coordination (Rev. 10), Section 1.1-Policy Statements M-38, Operations Planning (Rev. 7), Section 3-Next Day Reliability Analysis</td>
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<td>6/18/2007</td>
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<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 voltage regulating equipment and associated communication channels between the affected areas.</td>
<td>5</td>
<td>The Member TO shall inform PIM of scheduled outages of telemetering and control equipment and associated communication channels as required by PIM Manual 1, Attachment C.</td>
<td>PIM shall inform affected Member TOs and external TOs of scheduled outages of telemetering and control equipment and associated communication channels.</td>
<td>Do you submit scheduled outages of telemetering and control equipment and associated communication channels based on the procedures in PIM Manual 1, Attachment C?</td>
<td>Show examples that you provided scheduled telecommunications outage information to PIM.</td>
<td>PIM OA; 10.4-Outages and Responsibilities M-1 Control Center and Data Exchange Requirements (Rev. 25), Section 2.5.4-Information Flow to Control-Room Personnel; Section 3.2.3-EMS Data Exchange</td>
<td>Yes</td>
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<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>
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<td>R1</td>
<td>Each Transmission Operator shall operate within the Interconnection Reliability Operating Limits (IROLs) and System Operating Limits (SOLs).</td>
<td>5</td>
<td>1. Member TO system operators shall comply with PIM Directives to operate within the Interconnection Reliability Operating Limits (IROLs) or PIM instructions operate within the System Operating Limits (SOLs) unless such actions would violate safety, equipment, regulatory or statutory requirements. If, because of the reasons mentioned above, the PIM Directives or PIM instructions issued by PIM to operate so that instability, uncontrolled separation, or cascading outages will not occur as a result of the most severe single contingency, Member TO system operators shall inform PIM as soon as possible.</td>
<td>1. PIM shall issue PIM Directives to operate within the Interconnection Reliability Operating Limits (IROLs). 2. PIM shall issue PIM instructions to operate within the System Operating Limits (SOLs). 3. PIM shall be prepared to implement alternate remedial actions if Member TOs cannot comply with PIM Directives or PIM instructions for the listed reasons.</td>
<td>1. Have you complied with PIM Directives to operate within the Interconnection Reliability Operating Limits (IROLs) or PIM instructions operate within the System Operating Limits (SOLs) unless such actions violated safety, equipment, regulatory or statutory requirements? 2. Do you monitor SOLs or in your area?</td>
<td>1. Evidence such as system operator logs, voice recordings or incident reports etc., for any incidents where your system operators had to follow PIM Directives to operate within the Interconnection Reliability Operating Limits (IROLs) or PIM instructions operate within the System Operating Limits (SOLs). 2. Evidence that you monitor SOLs.</td>
<td>PJM Operating Agreement, Section 11.3.1e-Member Responsibilities, General Transmission Owners Agreement, Section 4.5 M-3 Transmission Operations (Rev. 48), Sections 1.2-Responsibilities for Transmission Owner’s Operating Entity, 1.3-Transmission Operating Guidelines, 5.5-Voltage Control Actions M-37 Reliability Coordination (Rev. 10), Sections 1.1-Policy Statements, Section 3-SOL and IROL Limits M-13 Emergency Operations (Rev 54), Section 5.5-Interconnection Reliability Operating Limits (IROLs) Manual Used Damp Warning/Action M-12 Balancing Operations (Rev. 29), Section 5.1-PJM Member Control Implementation, Section 5-Transmission Facility Control</td>
<td>Yes</td>
<td>12/10/2007</td>
<td>None</td>
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<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 PIM Directives or PIM instructions issued by PIM 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 PIM as soon as possible.</td>
<td>1. PIM shall issue PIM Directives or PIM instructions so that instability, uncontrolled separation, or cascading outages will not occur as a result of the most severe single contingency. 2. PIM shall be prepared to implement alternate remedial actions if Member TOs cannot comply with PIM Directives or PIM instructions for the listed reasons.</td>
<td>Have you complied with PIM Directives or PIM instructions issued by PIM unless such actions violated safety, equipment, regulatory or statutory requirements?</td>
<td>Evidence such as system operator logs, voice recordings or incident reports etc., for any incidents where your system operators had to follow PIM Directives or PIM instructions issued by PIM.</td>
<td>Same as R1</td>
<td>Yes</td>
<td>12/10/2007</td>
<td>None</td>
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<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 PIM Directives or PIM instructions unless such actions would violate safety, equipment, regulatory or statutory requirements. If, because of the reasons mentioned above, the PIM Directives or PIM 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 PIM as soon as possible.</td>
<td>1. PIM shall issue PIM Directives or PIM 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. PIM shall be prepared to implement alternate remedial actions if Member TO system operators cannot comply with PIM Directives or PIM 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 PIM Directives or PIM instructions unless such actions violated safety, equipment, regulatory or statutory requirements?</td>
<td>Evidence such as system operator logs, voice recordings or incident reports etc., for any incidents where your system operators had to follow PIM Directives or PIM instructions.</td>
<td>Same as R1</td>
<td>Yes</td>
<td>12/10/2007</td>
<td>None</td>
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<td>TOP-D04-2</td>
<td>R4.</td>
<td></td>
<td>5</td>
<td>If the Member TO analysis packages are unavailable for more than 15 minutes, the Member TO shall coordinate with PJM to see if the PIM analysis packages are available. This is not an unknown operating state. 1. PIM will rely on the Member TO to monitor the Member TO's BES facilities and supply operating information to PIM verbally, if appropriate. 3. Member TO system operators shall comply with instructions issued by PIM unless such actions would violate safety, equipment, regulatory or statutory requirements. If, because of the reasons mentioned above, the PIM instructions cannot be complied with, the Member TO system operator shall inform PIM as soon as possible.</td>
<td></td>
<td></td>
<td>1. Has your analysis packages been unavailable for more than 15 minutes and did you coordinate with PIM to see if the PIM analysis packages are available? 2. Have you had to monitor your BES facilities and supply operating information to PIM verbally, if appropriate? 3. Have you complied with instructions issued by PIM unless such actions would violate safety, equipment, regulatory or statutory requirements? If, because of the reasons mentioned above, the PIM instructions cannot be complied with, have you informed PIM as soon as possible?</td>
<td>Same as R1</td>
<td>M-39 Nuclear Plant Interface Coordination Section 2.3-Notification of Loss of Calculation Capability</td>
<td>Yes</td>
<td>12/10/2007</td>
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<td>TOP-D04-2</td>
<td>R5.</td>
<td></td>
<td>5</td>
<td>Each Transmission Operator shall make every effort to remain connected to the Interconnection. If the Transmission Operator determines that by remaining interconnected, it is in imminent danger of violating an IROL or SOL, the Transmission Operator may take such actions, as it deems necessary, to protect its area.</td>
<td></td>
<td></td>
<td>1. PIM shall issue PIM instructions or PIM Directives so that it remains connected to the rest of the Eastern Interconnection, unless it deems it necessary because PIM is in imminent danger of violating an IROL or SOL or to protect the PIM area. 2. PIM shall be prepared to implement alternate remedial actions if Member TOs cannot comply with PIM Directives or instructions so that PIM remains connected to the rest of the Eastern Interconnection, unless PIM deems necessary to separate because PIM is in imminent danger of violating an IROL or SOL or to protect the PIM area for the listed reasons.</td>
<td>have you complied with PIM instruction or PIM Directives unless such actions violated safety, equipment, regulatory or statutory requirements?</td>
<td>Evidence such as system operator logs, voice recordings or incident reports etc., for any incidents where your operators had to follow PIM Directives or PIM instructions.</td>
<td>Same as R1</td>
<td>M-39 Nuclear Plant Interface Coordination Section 2.3-Notification of Loss of Calculation Capability</td>
</tr>
<tr>
<td>TOP</td>
<td>TOP-D05-1.1</td>
<td>Purpose</td>
<td>To ensure reliability entities have the operating data needed to monitor system conditions within their area.</td>
<td>5</td>
<td>Each Transmission Operator and Balancing Authority shall provide its Reliability Coordinator with the operating data that the Reliability Coordinator requires to perform operational reliability assessments and to coordinate reliability operations within the Reliability Coordinator Area.</td>
<td></td>
<td></td>
<td>1. PIM shall use the operating data provided by the Member TOs to perform operational reliability assessments and to coordinate reliability operations within the PIM area.</td>
<td>Do you use all the listed methods to supply operating data to PIM?</td>
<td>Examples of sending operating data to PIM through modeling data, PIMnet, short, TERM and voice communications</td>
<td>M-3 Transmission Operations (Rev. 44), Section 1.2-Responsibilities for Transmission Owner's Operating Entity, Section 6-Reportable Transmission Facility Outages TOA - Article 4.6-Interconnection Facilities</td>
<td>No</td>
</tr>
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<td>TOP</td>
<td>TOP-005-2a</td>
<td>R2</td>
<td></td>
<td>Upon request, each Balancing Authority and Transmission Operator shall provide to other Balancing Authorities and Transmission Operators with immediate responsibility for operational reliability, the operating data that are necessary to allow those Balancing Authorities and Transmission Operators to perform operational reliability assessments and to coordinate reliable operations.</td>
<td>The Member TO shall provide operating information, as defined in PIM Manual 1 Section 3.5, to PIM that it requires to perform operational reliability assessments and to coordinate reliable operations through modeling data, PIMnet, eCart, TERM and, if necessary, voice communications. PIMnet is a dual redundant frame relay network using the Inter-control Center Communications Protocol (ICCP).</td>
<td>Do you use the listed methods to supply operating data to PIM? Examples of sending operating data to PIM through modeling data, PIMnet, eCart, TERM and, if necessary, voice communications.</td>
<td>M-1 Control Center and Data Exchange Requirements (Rev. 25), Section 3.5-Real-Time Analysis Monitoring Requirements for System Security M-3 Transmission Operations (Rev. 44), Section 1.2-Responsibilities for Transmission Owner’s Operating Entity, Section 4-Reportable Transmission Facility Outages M-18 Operations Planning (Rev. 7), Section 2-Operation Coordination TDA - Article 4.6-Interconnection Facilities FPA OA Section 1.9.4-Forced Outages</td>
<td>No</td>
<td>10/1/2011</td>
<td>None</td>
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<td>TOP</td>
<td>TOP-006-2</td>
<td>Purpose</td>
<td>Only changes from V1 to V2 were in R4.</td>
<td>Each Transmission Operator and Balancing Authority shall know the status of all transmission resources available for use.</td>
<td>1. PIM shall use information provided by Member TOs to know the status of all transmission resources available for use in their area and provide this information to PIM. 2. The Member TO shall know the status of all transmission resources available for use in their area.</td>
<td>1. Do you have any transmission resources that the status is not telemeasured into your EMS? 2. Do you pass information on status of all Member TO transmission resources to PIM? 1. Example demonstration that transmission and generation resources in the Member TO area are monitored. 2. Example demonstration that all transmission stations are sent to PIM.</td>
<td>M-1 Control Center and Data Exchange Requirements (Rev. 25), Section 3.5-Real-Time Analysis Monitoring Requirements for System Security M-3 Transmission Operations (Rev. 44), Section 1.2-Responsibilities for TO's Operating Entity</td>
<td>Yes</td>
<td>TOP-006-1</td>
<td>11/2/2006</td>
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<td>TOP</td>
<td>TOP-006-2</td>
<td>Purpose</td>
<td>Only changes from V1 to V2 were in R4.</td>
<td>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.</td>
<td>Each Member TO shall monitor PIM Monitored Facilities status, real and reactive power flows, voltage, load-tap-changer settings, and status of rotating and static reactive resources in their area. 2. Each Member TO shall provide to PIM its PIM Monitored Facilities status, real and reactive power flows, voltage, load-tap-changer settings, and status of static reactive resources for its area.</td>
<td>1. Do you have any of the following that is not monitored for your area? PIM Monitored Facilities status, real and reactive power flows, voltage, load-tap-changer settings, and status of rotating and static reactive resources? 2. Do you provide to PIM Monitored Facilities status, real and reactive power flows, voltage, load-tap-changer settings, and status of static reactive resources for your area? 1. Example demonstration that PIM Monitored Facilities status, real and reactive power flows, voltage, load-tap-changer settings, and status of rotating and static reactive resources in the Member TO area are monitored. 2. Example demonstration that all PIM Monitored Facilities status, real and reactive power flows, voltage, load-tap-changer settings, and status of static reactive resources are sent to PIM.</td>
<td>M-1 Control Center and Data Exchange Requirements (Rev. 25), Section 3.5-Real-Time Analysis Monitoring Requirements for System Security M-3 Transmission Operations (Rev. 44), Section 1.2-Responsibilities for TO's Operating Entity</td>
<td>Yes</td>
<td>TOP-006-1</td>
<td>11/2/2006</td>
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<tr>
<td>TOP</td>
<td>TOP-005-2</td>
<td>8.5</td>
<td>Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall provide appropriate technical information concerning protective relays to their operating personnel.</td>
<td>S 1</td>
<td>For protection systems applied at 345 kV and above each Member TD shall communicate via EDART any known conditions which increase the risk that protection systems will not perform as designed. Reportable conditions include protection system unavailability and any that reduce reliability (confidence that fault will be cleared), reduce security (confidence that only faulted zones will be interrupted), or reduce the speed of fault clearing. 2. For facilities below 345 kV designated as PIM Monitored Facility, Member TDs shall communicate known conditions which for a fault, without additional relay failures or other contingencies, will result in the tripping of additional zones of protection beyond the faulted zone. 3. Each Member TD shall provide appropriate technical information concerning protective relays as requested by PIM.</td>
<td>PIM shall modify contingency analysis if real-time changes to protective relays deemed it necessary.</td>
<td>Do you communicate via EDART any known conditions which increase the risk that protection systems will not perform as designed for protection systems applied at 345 kV and above? Reportable conditions include protection system unavailability and any that reduce reliability (confidence that fault will be cleared), reduce security (confidence that only faulted zones will be interrupted), or reduce the speed of fault clearing. Do you communicate known conditions which for a fault, without additional relay failures or other contingencies, will result in the tripping of additional zones of protection beyond the faulted zone? PIM 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.</td>
<td>Exhibit communication to PIM through EDART of information on protective relays installed at 345 kV and above.</td>
<td>yes</td>
<td>Top-006-1</td>
<td>11/2/2006</td>
<td>Top-006-1</td>
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<tr>
<td>TOP</td>
<td>TOP-005-2</td>
<td>8.5</td>
<td>Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall use monitoring equipment to bring to the attention of operating personnel important deviations in operating conditions and to indicate, if appropriate, the need for corrective action.</td>
<td>S 5</td>
<td>Each Member TD shall use monitoring equipment to bring to the attention (alarming) of operating personnel important deviations in operating conditions and to indicate, if appropriate, the need for corrective action.</td>
<td>PIM shall use monitoring equipment to bring to the attention (alarming) of operating personnel important deviations in operating conditions and to indicate, if appropriate, the need for corrective action.</td>
<td>Do you have monitoring equipment used to bring to the attention (alarming) of operating personnel important deviations in operating conditions and to indicate, if appropriate, the need for corrective action?</td>
<td>Describe the monitoring equipment used to bring to the attention (alarming) of operating personnel important deviations in operating conditions and to indicate, if appropriate, the need for corrective action?</td>
<td>Yes</td>
<td>Top-006-1</td>
<td>10/2/2011</td>
<td>Top-006-2</td>
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<td>TOP</td>
<td>TOP-005-2</td>
<td>8.6</td>
<td>Each Balancing Authority and Transmission Operator shall use sufficient metering of suitable range, accuracy and sampling rate (if applicable) to ensure accurate and timely monitoring of operating conditions under both normal and emergency situations.</td>
<td>S 5</td>
<td>Online metering requirements in PIM Manual M4 Sections 3.5, 5.4, 5.5, 5.6, 5.7 and 5.8 for BES equipment.</td>
<td>PIM shall keep PIM Manual 1 Section 5 up to date.</td>
<td>Do you have any metering that does not meet the N1 Sections 3.5, 5.4, 5.5, 5.6, 5.7 and 5.8 requirements for BES equipment at this time?</td>
<td>Exhibit example documentation (technical specifications, test reports, etc.) of meter meeting the requirements of N1 Sections 3.5, 5.4, 5.5, 5.6, 5.7 and 5.8 for BES equipment.</td>
<td>Yes</td>
<td>Top-006-1</td>
<td>10/2/2011</td>
<td>Top-006-2</td>
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<td>TOP</td>
<td>TOP-005-2</td>
<td>8.7</td>
<td>Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall monitor system frequency.</td>
<td>A 1</td>
<td>Each Member TD shall monitor system frequency in their zone.</td>
<td>PIM shall keep PIM Manual 1 Section 5 up to date.</td>
<td>Do you monitor system frequency in your zone? Do many locations?</td>
<td>Exhibit example output from frequency sources (screens or printouts). Multiple examples if available.</td>
<td>Exhibit information concerning protective relays at your facility and BES facilities. Refer to Exhibit information concerning protective relays at your facility and BES facilities.</td>
<td>No</td>
<td>Top-006-1</td>
<td>10/2/2011</td>
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<tr>
<td>TOP</td>
<td>TOP-037-0</td>
<td>R2</td>
<td>Following a Contingency or other event that results in an IROL violation, the Transmission Operator shall return its transmission system to within IROL as soon as possible, but not longer than 30 minutes.</td>
<td>5</td>
<td>Member TD system operators shall comply with PIM Directives unless such actions would violate safety, equipment, regulatory or statutory requirements. If, because of the reasons mentioned above, the PIM Directives cannot be complied with, the Member TD system operator shall inform PIM as soon as possible.</td>
<td>1. PIM shall issue PIM Directives so that following a Contingency or other event that results in an IROL violation, PIM shall return its transmission system to within the IROs as soon as possible, but not longer than 10 minutes. 2. PIM shall be prepared to implement alternate remedial actions if Member TDs cannot comply with PIM Directives for the listed reasons.</td>
<td>Have you complied with PIM Directives issued by PIM unless such actions violated safety, equipment, regulatory or statutory requirements?</td>
<td>Evidence such as system operator logs, voice recordings or incident reports etc., for any incidents where your operators had to follow PIM Directives.</td>
<td>PJM Operating Agreement, Section 11.3.1.e-Member Responsibilities, General Transmission Owners Agreement, Section 4.5 M-3 Transmission Operations (Rev. 44), Sections 1.2-Responsibilities for Transmission Owner’s Operating Entity, 1.3-Transmission Operating Guidelines, 3.5-Voltage Control Actions M-37 Reliability Coordination (Rev. 10), Sections 1.1-Policy Statements, Section 3.5OL and IROL Limits M-11 Emergency Operations (Rev. 54), Section 5.5-Interconnection Reliability Operating Limits (IROLs) Manual Load Damp Warning/Action M-12 Balancing Operations (Rev. 29), Section 1.3-PJM Member Control Implementation, Section 5-Transmission Facility Control</td>
<td>Yes</td>
<td>4/1/2005</td>
<td>None</td>
</tr>
<tr>
<td>TOP</td>
<td>TOP-037-0</td>
<td>R3</td>
<td>A Transmission Operator shall take all appropriate actions up to and including shedding firm load, or directing the shedding of firm load, in order to comply with Requirement R2.</td>
<td>5</td>
<td>Member TD system operators shall comply with PIM Directives unless such actions would violate safety, equipment, regulatory or statutory requirements. If, because of the reasons mentioned above, the PIM Directives cannot be complied with, the Member TD system operator shall inform PIM as soon as possible.</td>
<td>1. PIM shall issue PIM Directives up to and including directing the shedding of firm load, in order to comply with Requirement R2. 2. PIM shall be prepared to implement alternate remedial actions if Member TDs cannot comply with PIM Directives in order to comply with Requirement R2 for the listed reasons.</td>
<td>Have you complied with PIM Directives up to and including the shedding of firm load?</td>
<td>Evidence such as system operator logs, voice recordings or incident reports etc., for any incidents where your operators had to follow PIM Directives up to and including directing the shedding of firm load.</td>
<td>Same as R2</td>
<td>Yes</td>
<td>4/1/2005</td>
<td>None</td>
</tr>
<tr>
<td>TOP</td>
<td>TOP-068-1</td>
<td>Purpose</td>
<td>To ensure Transmission Operators take actions to mitigate SDL and IROL violations.</td>
<td>5</td>
<td>Member TD system operators shall comply with PIM Directives unless such actions would violate safety, equipment, regulatory or statutory requirements. If, because of the reasons mentioned above, the PIM Directives cannot be complied with, the Member TD system operator shall inform PIM as soon as possible. 2. Member TD will monitor SDLs within their area.</td>
<td>1. When experiencing or contributing to an IROL violation PIM shall issue directives to take immediate steps to relieve the condition, which may include shedding firm load. 2. PIM shall issue PIM instructions to operator to operate within the System Operating Limits (SDLs). 3. PIM shall be prepared to implement alternate remedial actions if Member TDs cannot comply with PIM Directives or PIM instructions for the listed reasons.</td>
<td>1. Have you complied with PIM Directives or the PIM instructions unless such actions violated safety, equipment, regulatory or statutory requirements since the last audit? 2. Do you monitor SDLs in your area?</td>
<td>2. Evidence such as system operator logs, voice recordings or incident reports etc., for any incidents where your operators had to follow PIM Directives or the PIM instructions since the last audit. 2. Evidence that you monitor SDLs.</td>
<td>PJM Operating Agreement, Section 11.3.1.e-Member Responsibilities, General Transmission Owners Agreement, Section 4.5 M-3 Transmission Operations (Rev. 44), Sections 1.2-Responsibilities for Transmission Owner’s Operating Entity, 1.3-Transmission Operating Guidelines, 3.5-Voltage Control Actions M-37 Reliability Coordination (Rev. 10), Sections 1.1-Policy Statements, Section 3.5OL and IROL Limits M-11 Emergency Operations (Rev. 54), Section 5.5-Interconnection Reliability Operating Limits (IROLs) Manual Load Damp Warning/Action M-12 Balancing Operations (Rev. 29), Section 1.3-PJM Member Control Implementation, Section 5-Transmission Facility Control</td>
<td>Yes</td>
<td>11/3/2006</td>
<td>None</td>
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TOP TOF-RB-1 R2. Each Transmission Operator shall operate to prevent the likelihood that a disturbance, action, or inaction will result in an RLD or SOL violation in its area or another area of the interconnected. 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.

5.1. Member TO system operators shall comply with PIM Directives or instructions unless such actions would violate safety, equipment, regulatory or statutory requirements. If, because of the reasons mentioned above, the PIM Directives or instructions cannot be complied with, the Member TO system operator shall inform PIM as soon as possible. Member TO will monitor SOLs within their area. 3. 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.

TOP TOF-RB-1 R3. The Transmission Operator shall disconnect the affected facility if the overload on a transmission facility or abnormal voltage or reactive condition persists and equipment is endangered. In doing so, the Transmission Operator shall notify its Reliability Coordinator and all neighboring Transmission Operators impacted by the disconnection prior to switching, if time permits, otherwise, immediately thereafter.

5.1. Member TO system operators shall comply with PIM instructions unless such actions would violate safety, equipment, regulatory or statutory requirements. If, because of the reasons mentioned above, the PIM instructions cannot be complied with, the Member TO system operator shall inform PIM as soon as possible. 2. If equipment is endangered, the Member TO shall inform PIM.

5.1. PIM shall issue PIM 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. PIM shall notify neighboring TOPs and RCs impacted by a disconnection prior to switching, if time permits, otherwise, immediately thereafter.

TOP TOF-RB-1 R4. Each Transmission Operator shall have sufficient information and analysis tools to determine the cause(s) of SOL violations. This analysis shall be conducted in all operating timeframes. The Transmission Operator shall use the results of these analyses to immediately mitigate the SOL violation.

5.1. Each Member TO shall maintain and provide PIM with accurate modeling data to support the PIM operating models. 2. The Member TO shall know the status of all transmission resources available for use in their area and provide this information to PIM. 3. Member TO system operators shall comply with PIM instructions unless such actions would violate safety, equipment, regulatory or statutory requirements. If, because of the reasons mentioned above, the PIM instructions cannot be complied with, the Member TO system operator shall inform PIM as soon as possible.

5.1. PIM shall have sufficient information and analysis tools to determine the cause(s) of SOL violations. 2. PIM shall perform analysis to determine the cause of SOL violations in all operating timeframes. 3. PIM shall issue PIM instructions to the Member TO to immediately mitigate an SOL violation. 4. Share results analysis to determine the cause(s) of SOL violations conducted in all operating timeframes.

VAE VAR-001-3 Purpose To ensure that voltage levels, reactive flows, and reactive resources are monitored, controlled, and maintained within limits in real time to protect equipment and the reliable operation of the Interconnection.

5.1. Follow PIM Manual 3, Sections 3.3 and 3.5. 2. Member TO may also establish complementary policies and procedures.

VAE VAR-001-3 R1. Each Transmission Operator, individually and jointly with other Transmission Operators, shall ensure that formal policies and procedures are developed, maintained, and implemented for monitoring and controlling voltage levels and MVAR flows within their individual areas and with the areas of neighboring Transmission Operators.

PIM shall ensure that formal policies and procedures are developed, maintained, and implemented in Manual 3 - Sections 3.3 and 3.5 for monitoring and controlling voltage levels and MVAR flows within the Member TO areas and with the areas of neighboring Transmission Operators.

VAR VAR-001-3 R2. Each Transmission Operator shall provide documented evidence, voice recordings etc. of any such incident and your compliance with PIM Directions or PIM instructions since your last audit.

1. Provide documented evidence, voice recordings etc. of any such incident and your compliance with PIM Directions or PIM instructions since your last audit. 2. Evidence that you monitor SOLs. 3. Provide documentation evidence, voice recordings etc. of any such incident and your compliance with PIM Directions or PIM 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.

Additional references:

- N-3 Transmission Operations (Rev. 44), Section 1.5 - Transmission Operating Guidelines
- N-37 Reliability Coordination (Rev. 10), Section 5.2 - Monitoring of SOL and IRLD Limits, Section 5.3 - Mitigating Operational Problems, Attachment A - PIM Reliability Plan, Section C.2 - Common Tasks for Next-Day and Current-Day Operations

- PJM Manual 1 (Rev. 25), Section 3.5 - PJM Manual 1 (Rev. 44), Section 3.5 - PJM Manual 12 (Rev. 29), Sections 5.2 and 5.3 - PJM Manual 13 (Rev. 54), Sections 5.1

- N-3 Transmission Operations (Rev. 44), Section 3.5 - Voltage Limits, Section 3.5 - Voltage Control Actions

- VAR-001-1 8/15/2007
- VAR-001-2 10/1/2011
- VAR-001-3 1/1/2014
- VAR-001-1 10/2/2011
- VAR-001-2 1/1/2014
- VAR-001-3 None
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<td>VAR</td>
<td>VAR-001-3</td>
<td>R4.</td>
<td>Each Transmission Operator shall specify a voltage or Reactive Power schedule at the interconnection between the generator facility and the Transmission Owner's facilities to be maintained by each generator. The Transmission Operator shall provide the voltage or Reactive Power schedule to the associated Generator Operator and direct the Generator Operator to comply with the schedule in automatic voltage control mode (AVR in service and controlling voltage). The voltage schedule is a target voltage to be maintained within a tolerance band during a specified period.</td>
<td>5</td>
<td>1. Each Member TO shall use PIM Manual 3, Section 3.3.6 default schedule or establish and coordinate voltage schedules for all generators within their zone with PIM and the Generator Operator. 2. If necessary to change the voltage schedule, coordinate with PIM and the Generator Operator. 3. Direct the Generator Operator to comply with the schedule in automatic voltage control mode (AVR in service and controlling voltage).</td>
<td>PIM shall maintain eDart.</td>
<td>1. Have you established and coordinated voltage schedules for all generators within your zone with PIM and the Generator Operator? If necessary to change the voltage schedule, did you coordinate with PIM and the Generator Operator? 3. Have you instructed the Generator Operator to comply with the schedule in automatic voltage control mode (AVR in service and controlling voltage)?</td>
<td>Example evidence that you know the status of all transmission Reactive Power resources, including the status of voltage regulators and power system stabilizers</td>
<td>PM Operating Agreement; Section 11.3.3d Electric Distributors, 1.7.20b Communication and Operating Requirements</td>
<td>VAR-001-1</td>
<td>8/23/2007</td>
<td>VAR-001-1</td>
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<td>VAR</td>
<td>VAR-001-3</td>
<td>R4.</td>
<td>The Transmission Operator shall know the status of all transmission Reactive Power resources, including the status of voltage regulators and power system stabilizers.</td>
<td>5</td>
<td>1. Each Member TO shall know the status of all rotating reactive resources, voltage regulators and power system stabilizers.</td>
<td>PIM shall maintain eDart.</td>
<td>Do you know the status of all transmission Reactive Power resources, including the status of voltage regulators and power system stabilizers?</td>
<td>Example evidence that you know the status of all transmission Reactive Power resources, including the status of voltage regulators and power system stabilizers</td>
<td>PM Operating Agreement; Section 11.3.3d Electric Distributors, 1.7.20b Communication and Operating Requirements</td>
<td>VAR-001-1</td>
<td>8/23/2007</td>
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<tr>
<td>VAR</td>
<td>VAR-001-3</td>
<td>R4.</td>
<td>When notified of the loss of a reactive voltage regulator control, the Transmission Operator shall direct the Generator Operator to maintain or change either its voltage schedule or its Reactive Power schedule.</td>
<td>5</td>
<td>1. When notified by PIM of the loss of an automatic voltage regulator control, the Member TO shall, if necessary, instruct the Generator Operator to change its voltage schedule/bandwidth.</td>
<td>PIM shall maintain eDart.</td>
<td>1. Have you had an incident where you were notified that an AVR or an AVR on your or another Member TO's control was out of service? 2. If so, did you have to instruct the Generator Operator to maintain or change its voltage schedule/bandwidth? 3. Did you coordinate voltage schedules with PIM Dispatch?</td>
<td>Provide example evidence of instances where a generator voltage regulator was out of service. Provided example evidence of instructing, if necessary, the Generator Operator to change its voltage schedule/bandwidth upon the loss of an AVR, as well as adjustments to voltage schedules with PIM Dispatch</td>
<td>PM Operating Agreement; Section 11.3.3d Electric Distributors, 1.7.20b Communication and Operating Requirements</td>
<td>VAR-001-1</td>
<td>8/23/2007</td>
<td>VAR-001-1</td>
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<tr>
<td>VAR</td>
<td>VAR-001-3</td>
<td>R4.</td>
<td>The Transmission Operator shall be able to operate or direct the operation of devices necessary to regulate transmission voltage and reactive flow</td>
<td>5</td>
<td>1. At the instruction of PIM, the Member TO shall be able to operate the devices under its control necessary to regulate transmission voltage and reactive flow.</td>
<td>PIM shall maintain eDart.</td>
<td>Do you have the capability to operate or instruct the operation of devices necessary to regulate transmission voltage and reactive flow within your area?</td>
<td>Provide documented evidence that you can operate the devices necessary to regulate transmission voltage and reactive flow</td>
<td>PM Operating Agreement; Section 11.3.3d Electric Distributors, 1.7.20b Communication and Operating Requirements</td>
<td>VAR-001-1</td>
<td>8/23/2007</td>
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<th>Shared P M Tasks</th>
<th>Audit Questions</th>
<th>Evidence of Compliance (What auditors will be looking for)</th>
<th>Reference Documents</th>
<th>Audited by RFC</th>
<th>Start Date</th>
<th>End Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>VAR</td>
<td>VAR-001-3</td>
<td>R8.</td>
<td>Each Transmission Operator shall operate or direct the operation of capacitive and inductive reactive resources within its area – which may include, but is not limited to, reactive generation scheduling; transmission line and reactive resource switching; controllable load; and, if necessary, load shedding – to maintain system and interconnection voltages within established limits.</td>
<td>1.</td>
<td>At the instruction of P M, the Member TO shall operate the devices under its control necessary to regulate transmission voltage and reactive flow including reactive generation scheduling; transmission line and reactive resource switching. Note: P M shall instruct operations to regulate reactive resources when the system is within its area under these circumstances.</td>
<td>PM will instruct the operation of inductive and reactive resources when the system is within its area to maintain system and interconnection voltages within established limits.</td>
<td>1. Have you, at the instruction of P M, operated devices to regulate transmission voltage and reactive flow?</td>
<td>1. Provide examples of operating reactive resources within your area at the instruction of P M. 2. Provide examples of load shedding to comply with a P M Directive since the last audit.</td>
<td>PM Operating Agreement, Section 11.1.3d – Electric Distributors, 1.7.20b – Communication and Operating Requirements</td>
<td>Yes</td>
<td>VAR-001-1</td>
<td>8/23/2007</td>
</tr>
<tr>
<td>VAR</td>
<td>VAR-001-3</td>
<td>R20.</td>
<td>Each Transmission Operator shall correct IROL or SOL violations resulting from reactive resource deficiencies (IROL violations must be within 180 minutes) and complete the required IROL or SOL violation reporting.</td>
<td>1.</td>
<td>Follow P M Directives to operate reactive resources.</td>
<td>1. P M will issue P M Directives to operate reactive resources to correct violations of IROLs within 180 minutes. 2. P M will issue instructions to operate reactive resources to correct violations of IOLs within 30 minutes. 3. P M will complete the required IROL or SOL violation reporting.</td>
<td>1. Have you had any incidents where you had to follow P M Directives since the last audit?</td>
<td>1. Provide documented evidence, voice recordings etc. of any such incident to operate reactive resources and your compliance with P M Directives since the last audit.</td>
<td>PM Operating Agreement, Section 11.1.3d – Electric Distributors, 1.7.20b – Communication and Operating Requirements</td>
<td>Yes</td>
<td>VAR-001-1</td>
<td>8/23/2007</td>
</tr>
<tr>
<td>VAR</td>
<td>VAR-001-3</td>
<td>R12.</td>
<td>The Transmission Operator shall correct corrective action, including load reduction, necessary to prevent voltage collapse when reactive resources are insufficient.</td>
<td>1.</td>
<td>At the instruction of P M, the Member TO shall operate the devices under its control necessary to regulate transmission voltage and reactive flow including reactive generation scheduling; transmission line and reactive resource switching. Note: P M shall authorize the Member TO to automatically or manually switch/adjust reactive devices connected to 138 kV and below without notifying P M. 2. Member TO system operators shall comply with P M Directives to shed load unless such actions would violate safety, equipment, regulatory or statutory requirements. If, because of the reasons mentioned above, the P M Directives to shed load cannot be complied with, the Member TO system operator shall inform P M as soon as possible.</td>
<td>PM will instruct the operation of inductive and reactive resources when the system is within its area to maintain system and interconnection voltages within established limits.</td>
<td>1. Have you, at the instruction of P M, operated devices to regulate transmission voltage and reactive flow?</td>
<td>1. Provide examples of operating reactive resources within your area at the instruction of P M. 2. Provide examples of load shedding to comply with a P M Directive since the last audit.</td>
<td>PM Operating Agreement, Section 11.1.3d – Electric Distributors, 1.7.20b – Communication and Operating Requirements</td>
<td>Yes</td>
<td>VAR-001-1</td>
<td>8/23/2007</td>
</tr>
</tbody>
</table>
Governance

1. The Matrix shall be reviewed and revised, if necessary, by PJM’s NERC and Regional Coordination department with guidance from the PJM TO/TOP Matrix Subcommittee at least annually.

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

3. The Matrix will be used as a basis (defines the scope, Member TO assigned and shared tasks) for the PJM TO Audit.

4. 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.

5. The Matrix may be used as an audit tool by RFC and SERC.

6. Compliance to Assigned or Shared Member TO Tasks is expected starting on the Start Date (the NERC-assigned effective date after FERC approval) as listed in the Matrix for each Requirement. Compliance ends on the End Date (the date that the Standard is retired or is replaced by another Standard). Corresponding to the Start and End Dates for each Requirement in the current version of the Matrix, evidence of compliance is expected to be available back to the Member TO’s last PJM TO/TOP Audit.