PJM TO/TOP Matrix of Shared Responsibilities

Revision 03

Approved by the Transmission Owners Agreement Administrative Committee: [D 12/15/09

THIS REVISION IS THE CURRENT APPROVED VERSION

Reference Documents are associated with the following PJM Manuals:

Manual 1 *Control Center and Data Exchange Requirements* , Rev. 16 (Effective Date: October 5, 2009)
Manual 3, *Transmission Operations* , Rev. 35 (Effective Date: October 5, 2009)
Manual 10, *Pre-Scheduling Operations* , Rev. 24 (Effective Date: October 1, 2009)
Manual 11, *Scheduling Operations* , Rev. 43 (Effective Date: September 24, 2009)
Manual 12, *Balancing Operations* , Rev. 20 (Effective Date: October 5, 2009)
Manual 13, *Emergency Operations* , Rev. 38 (Effective Date: October 5, 2009)
Manual 36, *System Restoration* , Rev. 11 (Effective Date: October 5, 2009)
Manual 37, *Reliability Coordination* , Rev. 5 (Effective Date: October 1, 2009)
Manual 40, *Certification and Training Requirements* , Rev. 8 (Effective Date: October 1, 2009)

Standards Groupings

Group 1/ Tab 1 - Operating Standards

BAL	Resource and Demand Balancing
COM	Communications
EOP	Emergency Preparedness and Operations
INT	Interchange Scheduling and Coordination
IRO	Interconnection Reliability Operations and Coordination
PER	Personnel Performance, Training and Qualifications
TOP	Transmission Operations
VAR	Voltage and Reactive

Group 2/ Tab 2 - Planning Standards

FAC	Facilities Design, Connections and Maintenance
MOD	Modeling, Data and Analysis
PRC	Protection and Control
TPL	Transmission Planning

Group 3/ Tab 3 - CIP Standards

CIP	Critical Infrastructure Protection

Group 4/ Tab 4 - Reliability*First* Standards

Operations Standards

Category	Standard Number	Requirement Number	Approved BOT/FERC Standards	Assigned Tasks	Audit Question	Evidence of Compliance (What auditors will be looking for)	Reference Documents
BAL	**BAL-005-0**	**Purpose**	**This standard establishes requirements for Balancing Authority Automatic Generation Control (AGC) necessary to calculate Area Control Error (ACE) and to routinely deploy the Regulating Reserve. The standard also ensures that all facilities and load electrically synchronized to the Interconnection are included within the metered boundary of a Balancing Area so that balancing of resources and demand can be achieved.**				
BAL	BAL-005-0	R1.2.	Each Transmission Operator with transmission facilities operating in an Interconnection shall ensure that those transmission facilities are included within the metered boundaries of a Balancing Authority Area.	Member TO must provide PJM with all of the BES and tie line elements.	Is the information you provided to PJM up to date?	PJM computer printout of Control Area tie lines for the Balancing Authority Area, will define the outer boundaries of the BA. (T0 be provided by PJM). The Transmission Owner information provided for the MMWG model will be evidence that the Transmission Owner facilities are electrically within the boundaries of the PJM Balancing Authority area.	M-1 Control Center Requirements (Rev. 16), Section 5.3.7, Balancing Authority Tie Circuits Reliability Assurance Agreement, Schedule 2, Section B, item 1, Original Sheet page 26
BAL	BAL-005-0	R17	Each Balancing Authority shall at least annually check and calibrate its time error and frequency devices against a common reference. The Balancing Authority shall adhere to the minimum values for measuring devices as listed below: -Device Accuracy -Digital frequency transducer 0.001 Hz -MW, MVAR, and voltage transducer 0.25 % of full scale -Remote terminal unit 0.25 % of full scale -Potential transformer 0.30 % of full scale -Current transformer 0.50 % of full scale				M-1 Control Center Requirements (Rev. 16), Section 5.7, Primary Metering Accuracy, and Attachment B, p. 47
COM	**COM-001-1**	**Purpose**	**Each Reliability Coordinator, Transmission Operator and Balancing Authority needs adequate and reliable telecommunications facilities internally and with others for the exchange of Interconnection and operating information necessary to maintain reliability.**				
COM	COM-001-1	**R1. (Heading)**	Each Reliability Coordinator, Transmission Operator and Balancing Authority shall provide adequate and reliable telecommunications facilities for the exchange of Interconnection and operating information:				
COM	COM-001-1	R 1.1.	Internally.	Member TO shall have All Call equipment, Ring Down circuits, normal dial circuits, satellite telephone and a facsimile machine. Member TO shall provide appropriate power supply, appropriate environmental conditions and dial up modem lines for out of band router access for the PJMnet connection provided by PJM.	1. Describe your primary and back-up communication systems for voice and data communication with PJM. 2. Describe the processes you follow to ensure that your internal communication facilities are reliable.	1) Provide evidence that TO uses ALL CALL SYSTEM, RING DOWN CIRCUITS, MANUAL DIAL, FACSIMILE COMMUNICATIONS, ALTERNATIVE VOICE COMMUNICATIONS, SATELLITE TELEPHONES.	PJM OA 11.3.1(b). General 11.6 Membership Requirements M-1 Control Center Requirements (Rev. 16), Section 3.2.4 M-1 Control Center Requirements (Rev. 16), Section 4, Voice Communications
COM	COM-001-1	R 1.4.	Where applicable, these facilities shall be redundant and diversely routed.	1. PJM and PJM Members shall exchange EMS information between their respective EMS computer systems via PJMNet, which is a dual redundant frame relay network using the Inter-Control Center Communications Protocol (ICCP). 2. The TO shall support the Fail Over Test. 3. TO shall cooperate in the PJM satellite phone test.	1. Explain any lack of redundancy (communications equipment and/or routing) of telecommunication facilities between the PJM and the LCCs.	List and/or diagram of telecommunication facilities showing redundancy where practical. Reasonable reasons shall be provided for any telecommunication facilities that are not redundant and diversely routed.	M1 Control Center Requirements (Rev. 16); Section 3.2.1, EMS Communication System; Section 3.2.4, PJMnet Communications System M-36 System Restoration (Rev. 11), Attachment E

Operations Standards

Category	Standard Number	Requirement Number	Approved BOT/FERC Standards	Assigned Tasks	Audit Question	Evidence of Compliance (What auditors will be looking for)	Reference Documents
COM	COM-001-1	R 2.	Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall manage, alarm, test and/or actively monitor vital telecommunications facilities. Special attention shall be given to emergency telecommunications facilities and equipment not used for routine communications.	TO members shall support all PJM-initiated satellite phone tests and shall respond to all ALL-CALL messages.	1. Describe your facilities used to participate in an ALL CALL.	PJM provides a report of logs of responses and response times through their Performance Compliance Department.	TOA, 4.9 Data, Information and Metering M-36 System Restoration (Rev. 11), Attachment E, Communications, Protocols and Testing. M-1 Control Center Requirements (Rev. 16), Section 2.4, Communication Requirements; Section 3 Data Exchange Requirements
COM	COM-001-1	R 4.	Unless agreed to otherwise, each Reliability Coordinator, Transmission Operator, and Balancing Authority shall use English as the language for all communications between and among operating personnel responsible for the real-time generation control and operation of the interconnected Bulk Electric System. Transmission Operators and Balancing Authorities may use an alternate language for internal operations.	Member TO shall use English as the language for all communications among operating personnel responsible for the real-time operation of the interconnected Bulk Electric System.	Do you follow the PJM requirement to only use English when communicating with PJM?	1. Documented instruction to shift operators that English is used as the language for all communications among operating personnel responsible for the real-time generation control and operation of the interconnected Bulk Electric Grid.	M-1 Control Center Requirements (Rev. 16), Section 4.1
COM	COM-001-1	R 5.	Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall have written operating instructions and procedures to enable continued operation of the system during the loss of telecommunications facilities.	Each TO member shall have written operating instructions and procedures to enable continued operation of the system during the loss of telecommunications facilities.	Describe and provide copies of your written operating instructions and procedures that enable continued operation of the system during the loss of voice communication facilities.	Operating instructions and procedures that enable continued operation of the system during the loss of voice telecommunication facilities. (Data communication procedures are covered in the manual.)	TOA, 4.9 Data, Information and Metering M-1 Control Center Requirements (Rev. 16), Section 2.3.1; Section 2.6.1 - Staffing Upon Loss of an EMS or a 765kV, 500 kV, or 345 kV RTU; Section 2.5.6 - Backup Recovery Procedures; Section 3.2.3 - EMS Data Exchange; Section 4.2
COM	**COM-002-2**	**Purpose**	**To ensure Balancing Authorities, Transmission Operators, and Generator Operators have adequate communications and that these communications capabilities are staffed and available for addressing a real-time emergency condition. To ensure communications by operating personnel are effective.**				
COM	COM-002-2	R.2.	Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall issue directives in a clear, concise, and definitive manner; shall ensure the recipient of the directive repeats the information back correctly; and shall acknowledge the response as correct or repeat the original statement to resolve any misunderstandings.	When PJM issues a directive (as defined in Manual 01) the TO member shall repeat the information back correctly where the use of three-part communications is required.	Do you have procedures for three-part communications? When receiving directives TO Member operating staff shall repeat the information back correctly to ensure their is no misunderstanding.	Voice transcripts or other types of proof that the requirement was followed. (Examples -Auditor selection of days to provide examples.)	M-1 Control Center Requirements (Rev. 16) , Section 4.2.3
EOP	**EOP-001-0**	**Purpose**	**Each Transmission Operator and Balancing Authority needs to develop, maintain, and implement a set of plans to mitigate operating emergencies. These plans need to be coordinated with other Transmission Operators and Balancing Authorities, and the Reliability Coordinator.**				
EOP	EOP-001-0	R2.	The Transmission Operator shall have an emergency load reduction plan for all identified IROLs. The plan shall include the details on how the Transmission Operator will implement load reduction in sufficient amount and time to mitigate the IROL violation before system separation or collapse would occur. The load reduction plan must be capable of being implemented within 30 minutes.	Load reduction within each Member TO shall be capable of being implemented without delay, but no longer than 30 minutes as directed by PJM. (Load reduction capability may be the responsibility of an entity other than the TO. Prior to an on-site audit by PJM, the responsible entity must be identified by PJM and the TO.)	Are you capable of assigned load reduction within 30 minutes if directed by PJM? Have you had any incidents since the last PJM audit or three years?	Explain/simulate load reduction capability, and/or provide documented evidence of having implemented load reduction within established time frames of a PJM request.	M-13 Emergency Operations (Rev. 38), Load Reduction, Section 2 - Capacity Emergencies; Attachment F M-37 Reliability Coordination (Rev. 5), Section 1 - Roles and Responsibilities, Policy Statements; Section 3 - SOL and IROL Limits, SOL and IROL Limit Determination (PJM Member Actions)
EOP	EOP-001-0	**R3. (Heading)**	**Each Transmission Operator and Balancing Authority shall have emergency plans as follows:**				

Operations Standards

Category	Standard Number	Requirement Number	Approved BOT/FERC Standards	Assigned Tasks	Audit Question	Evidence of Compliance (What auditors will be looking for)	Reference Documents
EOP	EOP-001-0	R3.1.	Develop, maintain, and implement a set of plans to mitigate operating emergencies for insufficient generating capacity.	PJM is responsible for developing and maintaining the plans, while the Transmission Owners must be cabable of implementing actions as directed by PJM	Have you had any incidents that have required you to follow the direction of PJM to mitigate operating emergencies for insufficient generating capacity since the last PJM audit?	Documentation of the event that required you to follow the direction of PJM to mitigate operating emergencies for insufficient generating capacity, including evidence that directions were followed as required.	PJM OA Schedule 1, Section 1.7.6- Scheduling and Dispatching; Section 1.7.15 -Corrective Action M-13 Emergency Operations (Rev. 38), Section 2.3 - Capacity Shortages TOA Article 4.7
EOP	EOP-001-0	R3.2.	Develop, maintain, and implement a set of plans to mitigate operating emergencies on the transmission system.	PJM is responsible for developing and maintaining the plans, while the Transmission Owners must be cabable of implementing actions as directed by PJM	Have you had any incidents that have required you to follow the direction of PJM to mitigate operating emergencies on the transmission system since the last PJM audit?	Documentation of the event that required you to follow the direction of PJM to mitigate operating emergencies on the transmission system. The evidence that you followed PJM directions may include but is not limited to logs, graphs and tapes.	PJM OA , Schedule 1, Section 1.7.6 - Scheduling and Dispatching; Schedule 1, 1.7.15 Corrective Action M-13 Emergency Operations (Rev. 38), Section 5 TOA Article 4.7 M-3 Transmission Operations (Rev. 35), Section 5 M-12 Balancing Operations (Rev. 20), Section 5
EOP	EOP-001-0	R3.3.	Develop, maintain, and implement a set of plans for load shedding.	PJM is responsible for developing and maintaining the plans, while the Transmission Owners must be cabable of implementing actions as directed by PJM	Have you had any incidents of shedding load at the direction of PJM since the last PJM audit?	Documentation of the event that required you to shed load at the direction of PJM, including evidence that directions were followed as required.	M-3 Transmission Operations(Rev. 35) Transmission Operations, Section 3, p. 29; Section 5 PJM OA, Schedule 1, 1.7.6 -Scheduling and Dispatching; 1.7.15- Corrective Action M-13 Emergency Operations (Rev. 37), Section 2 TOA Article 4.7
EOP	EOP-001-0	R3.4.	Develop, maintain, and implement a set of plans for system restoration.	See EOP-005-1 for requirements of TO members to develop, maintain, and implement a set of plans for system restoration.	See EOP-005-1	See EOP-005-1	See EOP-005-1
EOP	**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.**	The TO must have documentation as evidence that the operators have the capability and authority to shed load.	1. Where is the authority to shed load documented?	1. Documentation that TO has authority to shed load. 2. Evidence of capability to shed load.	
EOP	EOP-003-1	R1.	After taking all other remedial steps, a Transmission Operator or Balancing Authority operating with insufficient generation or transmission capacity shall shed customer load rather than risk an uncontrolled failure of components or cascading outages of the Interconnection.	At the direction of PJM, the Member TO shall shed customer load rather than risk an uncontrolled failure of components or cascading outages of the Interconnection.	Have you had an incident where you have shed customer load at the direction of PJM?	Records of load shedding events since the last audit of your TO function.	PJM OA , Schedule 1, 1.7.11 (B). M-13 Emergency Operations (Rev. 38), Section 2, Step 8 - Manual Load Dump TOA Article 4.7 M-3 Transmission Operations (Rev. 35) (for Load Dump Ratings), Section 3, p. 29
EOP	EOP-003-1	R2.	Each Transmission Operator and Balancing Authority shall establish plans for automatic load shedding for underfrequency or undervoltage conditions.	The Transmission Planner establishes the plans for automatic load shedding for underfrequency. (Prior to the PJM audit, PJM will confirm who will provide evidence that the requirement is met.)	Is your automatic load shedding scheme set up to meet the Regional requirements?	TO shall provide a copy of the most recent EOP-003 data request submitted to PJM during their audit and/or EMS UFLS Display. Note: PJM does not have an UVLS Program.	M-13 Emergency Operations (Rev. 38), Section 2 - Capacity Emergencies, pgs. 28-30 step 8 M-36 System Restoration (Rev. 11), Section 2 - Disturbance Conditions M-3 Transmission Operations (Rev. 35), Section 3 - Voltage and Stability Operating Guidelines
EOP	EOP-003-1	R5.	A Transmission Operator or Balancing Authority shall implement load shedding in steps established to minimize the risk of further uncontrolled separation, loss of generation, or system shutdown.	Member TO shall shed assigned load as directed by PJM.	Since your last audit, have you implemented load shedding as directec by PJM?	Logs and other documentation and evidence compiled during a load shedding event.	Region Agreement, Region Guide B8; to be replaced by RFC standard on UFLS; SERC Supplements (when issued) M-13 Emergency Operations (Rev. 37), Attachment F

Operations Standards

Category	Standard Number	Requirement Number	Approved BOT/FERC Standards	Assigned Tasks	Audit Question	Evidence of Compliance (What auditors will be looking for)	Reference Documents
EOP	EOP-003-1	R6.	After a Transmission Operator or Balancing Authority Area separates from the Interconnection, if there is insufficient generating capacity to restore system frequency following automatic underfrequency load shedding, the Transmission Operator or Balancing Authority shall shed additional load.	Member TO shall shed assigned load as directed by PJM.	Since your last audit, have you implemented load shedding as directec by PJM?	Logs and other documentation and evidence compiled during a load shedding event.	M-13 Emergency Operations (Rev. 38), Section 2 - Capacity Emergencies
EOP	EOP-003-1	R8.	Each Transmission Operator or Balancing Authority shall have plans for operator-controlled manual load shedding to respond to real-time emergencies. The Transmission Operator or Balancing Authority shall be capable of implementing the load shedding in a timeframe adequate for responding to the emergency.	Member TO shall shed assigned load as directed by PJM.	Does the TO have plans for operator-controlled manual load shedding to respond to real-time emergencies that can be implemented in a timeframe adequate for responding to the emergency?	Plans for manual load shedding that meet the timing requirements as specified in M-13, Emergency Operations, Section 5, Transmission Security Emergencies and Section 2, Step 8	TOA Article 4.7 M-3 (Rev. 35) Transmission Operations, Section 2 - Thermal Operating Limits (Exhibit 1: PJM Actual Overload Thermal Operating Guidelines and Exhibit 2: PJM Post-Contingency Simulated Thermal Operating Guidelines) M-13 Emergency Operations (Rev. 38), Section 2 - Capacity Emergencies
EOP	**EOP-005-1**	**Purpose**	**To ensure plans, procedures, and resources are available to restore the electric system to a normal condition in the event of a partial or total shut down of the system.**				
EOP	EOP-005-1	**R1. (Heading)**	**Each Transmission Operator shall have a restoration plan to reestablish its electric system in a stable and orderly manner in the event of a partial or total shutdown of its system, including necessary operating instructions and procedures to cover emergency conditions, and the loss of vital telecommunications channels. Each Transmission Operator shall include the applicable elements listed in Attachment 1-EOP-005 in developing a restoration plan.**	**Each member restoration plan must meet each of the requirements below:**			M1 Control Center Requirements (Rev. 16), Section 2.5.6 Backup Recovery Procedures M-3 Transmission Operations (Rev. 35), Section 1.2; Section 5, p. 99, Notification for Loss of PJM EMS Capacity M-36 System Restoration (Rev. 10) Section 8, System Restoration Plan Guidelines; Section 1.1 Policy Statements, PJM Member Actions
EOP	EOP-005-1	Attachment 1 #01	Plan and procedures outlining the relationships and responsibilities of the personnel necessary to implement system restoration		Describe your plan including the relationships and responsibilities of the personnel wjo will implement your plan.	Plans and procedures outlining the relationships and responsibilities of the personnel necessary to implements system restoration	M36 System Restoration (Rev. 11), Section 1.1 Policy Statements, PJM Member Actions; Section 8 System Restoration Plan Guidelines; Attachment F Transmission Owner and Blackstart Supporting Documentation References, Figure 1: TO Restoration Document References
EOP	EOP-005-1	Attachment 1 #02	The provision for a reliable black-start capability plan including: fuel resources for black start power for generating units, available cranking and transmission paths, and communication adequacy and protocol and power supplies		Describe your black start capability. How are cranking paths determined and evaluated?	Provisions for a reliable black-start capability plan including: -Fuel resources for black-start power for generating units. -Available cranking and transmission paths -Communication adequacy -Communication protocol -Communication power supplies	M-36 System Restoration (Rev. 11), Section 1
EOP	EOP-005-1	Attachment 1 #04	The necessary operating instructions and procedures for synchronizing areas of the system that have become separated.	Each TO restoration plan shall include the necessary operating instructions and procedures for synchronizing areas of the system (within the TO area) that have become separated.	Describe your procedures for synchronizing portions of your system together.	Necessary operating instructions and procedures for: -Synchronizing areas of your system that have become separated	M-36 System Restoration (Rev. 11), Section 7.2, pp. 41-32 and Attachment B, p. 60-61; Section 1, p. 5-6 and Attachment D M-40 Certification and Training Requirements (Rev. 8), Section 2.1, and Appendix 1.C, Power System Restoration Philosophy and Practices
EOP	EOP-005-1	Attachment 1 #05	The necessary operating instructions and procedures for restoring loads, including identification of critical load requirements.	Each TO restoration plan shall include the necessary operating instructions and procedures for restoring loads, including identification of critical load requirements.	Describe how load is restored within your area. What restrictions do you have for load restoration?	Necessary operating instructions and procedures for: -Restoring loads -Identification of critical load requirements	M-36 System Restoration (Rev. 11), Section 3, pp. 14-17, PJM Member Actions, Attachment A
EOP	EOP-005-1	Attachment 1 #07	Documentation must be retained in the personnel training records that operating personnel have been trained annually in the implementation of the plan and have participated in restoration exercises.	Operating personnel shall be trained annually in the implementation of the plan and shall have participated in restoration exercises.	Have all of your operators been trained in system restoration? Has the training been documented in their official training records?	Documentation of the following training is retained in the personnel training records:	M-40 Certification and Training Requirements (Rev. 8), Section 2.3

Operations Standards

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EOP	EOP-005-1	R2.	Each Transmission Operator shall review and update its restoration plan at least annually and whenever it makes changes in the power system network, and shall correct deficiencies found during the simulated restoration exercises.	*Each TO shall review and update its restoration plan at least annually and as required by changes in the power system network, and shall correct deficiencies found during the simulated restoration exercises.*	Explain your process for annually reviewing and updating your System Restoration plan? How do you take into account configuration changes within your Transmission Zone? Changes within Neighboring Transmsision Zones? How do you take into consideration changes within the PJM plan as defined in Manual 36? When was your internal procedure (if applicable) last updated? When is it scheduled to be reviewed and updated next?'How do you take into account Lessons Learned and feedback from drill simulations and exercises (M-36 p. 4)?	Documented history of the restoration plan that shows that the plan has been reviewed and updated at least annually, or whenever the Transmission Operator has made changes to the power system network. Evidence that deficiencies found during simulated restoration exercises have been corrected.	M36 System Restoration (Rev. 11), Section 1, p. 5, PJM Member Actions M-36 System Restoration Section 8, System Restoration Plan Guidelines, 3rd bullet under 8.1 M-36 System Restoration, Attachment D: Restoration Drill Guide, Drill Logistics, 6th paragraph
EOP	EOP-005-1	R3.	Each Transmission Operator shall develop restoration plans with a priority of restoring the integrity of the Interconnection.	Each Member TO must have a restoration plan that states the priority of restoring the integrety of the interconnection takes priority over restoration of the internal system.	Does your restoration plan clearly emphasize the priority of restoring the integrity of the Interconnection as directed by PJM	Evidence that the entity to verify that the entity's restoration plan has restoring the interconnection listed as a high priority as directed by PJM.	M-36 System Restoration (Rev. 11), section 1.1
EOP	EOP-005-1	R5.	Each Transmission Operator and Balancing Authority shall periodically test its telecommunication facilities needed to implement the restoration plan.	Each TO shall periodically test its telecommunication facilities needed to implement the restoration plan.	Do you participate in Sattelite phone and all-call system testing? Do you conduct tests of emergency communication systems with sub-operating entities?	Evidence of: TO member participation in the PJM satellite phone test, participating in the all-call system tests, and records showing emergency communication facility testing from TO to sub-operating entities.	M-1 Control Center Reuirements (Rev. 16), Section 4 M-36 System Restoration (Rev. 11), p. 70, Attachment E
EOP	EOP-005-1	R6.	Each Transmission Operator and Balancing Authority shall train its operating personnel in the implementation of the restoration plan. Such training shall include simulated exercises, if practicable.	TO shall participate in PJM sponsored restoration drills and training, and provide all required operating personnel with training in the implementation of the TO restoration plan. TO shall retain training records.	Does your training program meet the requirements of Manual 40 for restoration training? Please provide us copies of and review with us training modules you used most recently to accomplish annual System Operator Refresher Training on System Restoration. Please show us your training records for when each System Operator completed the annual training.	Copies of training modules you used most recently to accomplish annual System Operator Refresher Training on System Restoration. Training records for when each System Operator completed the annual training Documentation of all system operators' training records for verification of initial training for the implementation of the system restoration plan Evidence that all system operators have participated in system restoration training exercises.	Manual 36 - System Restoration (Rev. 11), Section 4 M-40 Certification and Training Requirements (Rev. 8), Section 2.1, Appendix 1, p. 49 M-1 Control Center Requirements (Rev. 16), Attachment B
EOP	EOP-005-1	R7.	Each Transmission Operator and Balancing Authority shall verify the restoration procedure by actual testing or by simulation.	Each member TO shall verify their restoration procedure as part of the PJM simulation of system restoration at least annually.	How do you validate your restoration plans?	Documented evidence that the entity has verified the restoration procedure by either actual testing of the procedure or simulated implementation of the procedure	Manual 36 - System Restoration (Rev. 11), Attachment D, page 67 and Section 1, p. 5 and Attachment D, pp. 67-69 M-40 Certification and Training Requirements (Rev. 8), Section 2.1, Appendix 1, p. 49 M-1 Control Center Requirements (Rev. 16), Attachment B
EOP	EOP-005-1	R 8.	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.	Each member TO shall provide PJM with the design basis of black start components of their system restoration plan.		Provide system restoration studies or other documents that support the basis of your system restoration plan.	M-36 System Restoration (Rev. 11), Section 1.1 Policy Statements; PJM Member Actions p. 5; Attachment F; Attachment A
EOP	EOP-005-1	R 9.	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.	Each member TO shall document the Cranking Paths, including initial switching requirements, between each blackstart generating unit and the unit(s) to be started, and provide the information to the RRO (when requested), either directly or through PJM.	Does your restoration plan include initial switching requirements, between each blackstart generating unit and the unit(s) to be started? Has the Regional Reliability Organization requested this information?	Restoration plan clearly indicating the initial switching requirements and cranking paths. Documented evidence that this documentation was provided for review to the Regional Reliability Organization upon request, either directly or through PJM.	M-36 System Restoration (Rev. 11), Attachment F and Section 1.1 p. 5-6; Section 6.2.3, Attachment A

Operations Standards

Category	Standard Number	Requirement Number	Approved BOT/FERC Standards	Assigned Tasks	Audit Question	Evidence of Compliance (What auditors will be looking for)	Reference Documents
EOP	EOP-005-1	R10.	The Transmission Operator shall demonstrate, through simulation or testing, that the blackstart generating units in its restoration plan can perform their intended functions as required in the regional restoration plan.	Each member TO must provide PJM with the transmission information to simulate the operation of blackstart generating units in its restoration plan, to ensure the units can perform their intended functions as required in the regional restoration plan. (GO provides generator information)	How have you confirmed that the blackstart generating units in your restoration plan can perform their intended functions as required in the regional restoration plan?	Documented evidence that shows that the entity has verified that blackstart generating unit's performance will meet the intended functions required in the regional restoration plan.	M-36 System Restoration (Rev. 11), Attachment F; Section 1.1, p. 5-6; Section 6.2.3, Attachment A
EOP	EOP-005-1	R10.1.	The Transmission Operator shall perform this simulation or testing at least once every five years.	Testing as required by R10 shall be done at least once every five years.	Have you met the five year requirement?	Documentation of tests to verify each blackstart generating unit has been tested via simulation and/or actual performance and testing within the past five years.	M-36 System Restoration (Rev. 11), Attachment F; Section 1.1, pp. 4-6
EOP	EOP-005-1	**R11. (Heading)**	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.				
EOP	EOP-005-1	R11.1.	The affected Transmission Operators and Balancing Authorities shall work in conjunction with their Reliability Coordinator(s) to determine the extent and condition of the isolated area(s).	Each TO shall work in conjunction with PJM (as TOP and RC) to determine the extent and condition of the isolated area(s).	Have you had a disturbance in which one or more areas of the Bulk Electric System become isolated or blacked out? Did you work in conjunction with their the PJM RC to determine the extent and condition of the isolated area(s)?	1. A report of the event and actions to restore the system to normal. 2. Documentation that shows that you worked in conjunction with the PJM Reliability Coordinator to determine the extent and condition of the isolated area?	M-36 System Restoration (Rev. 11), Section 3.1.2
EOP	EOP-005-1	R11.2.	The affected Transmission Operators and Balancing Authorities shall take the necessary actions to restore Bulk Electric System frequency to normal, including adjusting generation, placing additional generators on line, or load shedding.	Each TO shall take the actions as directed by PJM to restore the Bulk Electric System.	Have you had a disturbance in which one or more areas of the Bulk Electric System become isolated or blacked out?	1. A report of the event and actions to restore the system to normal. 2. Evidence that the entity took the necessary actions to restore the Bulk Electric System frequency to normal.	M-36 System Restoration (Rev. 11); PJM Member Actions, p. 5-6
EOP	EOP-005-1	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.	Have you had a disturbance in which one or more areas of the Bulk Electric System became isolated or blacked out, and a nuclear station was within the blacked out area?	1. A report of the event and actions to restore the system to normal. 2. Evidence that the entity restored the off site power to the Nuclear station as a priority.	PJM OA 10.4 M-36 System Restoration (Rev. 11), Section 3.1
EOP	EOP-005-1	R11.5.	The affected Transmission Operators may resynchronize the isolated area(s) with the surrounding area(s) when the following conditions are met: R11.5.1. Voltage, frequency, and phase angle permit. R11.5.2. The size of the area being reconnected and the capacity of the transmission lines effecting the reconnection and the number of synchronizing points across the system are considered. R11.5.3. Reliability Coordinator(s) and adjacent areas are notified and Reliability Coordinator approval is given. R11.5.4. Load is shed in neighboring areas, if required, to permit successful interconnected system restoration.			TOs are to implement actions as directed by PJM to manage, alleviate, or end the disturbance or blackout.	M-36 System Restoration (Rev. 11), Section 1
EOP	**EOP-008-0**	**Purpose**	**Each reliability entity must have a plan to continue reliability operations in the event its control center becomes inoperable.**				
EOP	EOP-008-0	**R1. (Heading)**	Each Reliability Coordinator, Transmission Operator and Balancing Authority shall have a plan to continue reliability operations in the event its control center becomes inoperable. The contingency plan must meet the following requirements:	Each Member TO shall develop a backup recovery plan to continue reliability operations in the event its control center becomes inoperable. The recovery plan must meet the Requirements R1.1 through R1.8	1. Do you have a backup recovery plan to continue reliability operations in the event your control center becomes inoperable? 2. Does the recovery plan meet the Requirements R1.1 through R1.8?	1.TO shall provide a copy of their Plans for Loss of Control Center Functionality and documentation of training, testing and review of plan.. 2. Verification that requirements R1.1 through R1.8 are met. (See specifics below)	M-1 Control Center Requirements (Rev. 16), Section 2.5.6 Backup Recovery Procedures
EOP	EOP-008-0	R1.1.	The contingency plan shall not rely on data or voice communications from the primary control facility to be viable.	Each TO must have a contingency plan that is viable without data or voice communication from the primary control center.	Is your contingency plan viable without data or voice communication from the primary control facility?	1.TO shall provide a copy of their communication system illustrating that the back up facility does not rely on communication from the primary facility.	M-1 Control Center Requirements (Rev. 16), Section 2.5.6 M-36 System Restoration (Rev. 11), Section 4

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Category	Standard Number	Requirement Number	Approved BOT/FERC Standards	Assigned Tasks	Audit Question	Evidence of Compliance (What auditors will be looking for)	Reference Documents
EOP	EOP-008-0	R1.2.	The plan shall include procedures and responsibilities for providing basic tie line control and procedures and for maintaining the status of all inter-area schedules, such that there is an hourly accounting of all schedules.			Each TO shall provide PJM with system control data to ensure reliability. If such data is interrupted by unavailability of the TO's EMS, then the TO is required to have a backup capability to ensure that the necessary data contineus to be provided to PJM.	M-1 Control Center Requirements (Rev. 16), Section 5.8, p. 36; Section 2.7; Attachment B
EOP	EOP-008-0	R1.3.	The contingency plan must address monitoring and control of critical transmission facilities, generation control, voltage control, time and frequency control, control of critical substation devices, and logging of significant power system events. The plan shall list the critical facilities.	Each TO must have a contingency plan that addresses monitoring and control of BES facilities.	Does your recovery plan address the requirement to monitor and control of BES facilities?	1. TO shall provide a copy of their Plans for Loss of Control Center Functionality 2. Specific information that addresses the requirement to monitor and control of BES facilities for loss of Primary Control Center.	M-1 Control Center Requirements (Rev. 16), Attachment B, p. 47; Section 2.7, p. 19
EOP	EOP-008-0	R1.5.	The plan shall include procedures and responsibilities for conducting periodic tests, at least annually, to ensure viability of the plan.	Each TO must have a contingency plan that includes procedures and responsibilities for conducting periodic tests, at least annually, to ensure viability of the plan.	Does your contingency plan include procedures and responsibilities for conducting periodic tests, at least annually, to ensure viability of the plan?	1. TO shall provide a copy of their Plans for Loss of Control Center Functionality and testing records. 2. Specific information that addresses the requirement to conduct periodic tests, at least annually, to ensure viability of the plan.	M-1 Control Center Requirements (Rev. 16), Attachment B, p. 47
EOP	EOP-008-0	R1.6.	The plan shall include procedures and responsibilities for providing annual training to ensure that operating personnel are able to implement the contingency plans.	Each TO must have procedures for providing annual training to ensure that operating personnel are able to implement the contingency plans that addresses monitoring and control of critical substation devices,	Does your contingency plan include procedures and responsibilities for providing annual training to ensure that operating personnel are able to implement the contingency plans?	1. TO shall provide a copy of their Plans for Loss of Control Center Functionality and training records. 2. Specific information that addresses the requirement to provide annual training to ensure that operating personnel are able to implement the contingency plans	M-1 Control Center Requirements (Rev. 16), Attachment B, p. 47
EOP	EOP-008-0	R1.7.	The plan shall be reviewed and updated annually.	Each TO contingency plan must include a procedure to review and update the plan on at least an annual basis.	When was the last time that your backup recovery plan was updated? When is it scheduled to be updated next?	1. TO shall provide a copy of their Plans for Loss of Control Center Functionality 2. Specific information that addresses the requirement to review and update the plan annually.	M-1 Control Center Requirements (Rev. 16), Attachment B, p. 47
EOP	EOP-008-0	R1.8.	Interim provisions must be included if it is expected to take more than one hour to implement the contingency plan for loss of primary control facility.	If it is expected to take more than one hour to implement the contingency plan for loss of primary control facility, there must be interim measures developed to meet the requirements.	Do you expect that it will take more than one hour to implement the contingency plan for loss of primary control facility? If so, do you have interim measures to meet the loss of primary facility requirements.	1. TO shall provide a copy of their Plans for Loss of Control Center Functionality 2. Specific information that addresses the requirement for interim provisions if it is expected to take more than one hour to implement the contingency plan for loss of primary control facility.	M-1 Control Center Requirements (Rev. 16), Section 2.7, p. 19
IRO	IRO-004-1	**Purpose**	**Each Reliability Coordinator must conduct next-day reliability analyses for its Reliability Coordinator Area to ensure the Bulk Electric System can be operated reliably in anticipated normal and Contingency conditions. System studies must be conducted to highlight potential interface and other operating limits, including overloaded transmission lines and transformers, voltage and stability limits, etc. Plans must be developed to alleviate System Operating Limit (SOL) and Interconnection Reliability Operating Limit (IROL) violations.**				
IRO	IRO-004-1	**R3**	Each Reliability Coordinator shall, in conjunction with its Transmission Operators and Balancing Authorities, develop action plans that may be required, including reconfiguration of the transmission system, re-dispatching of generation, reduction or curtailment of Interchange Transactions, or reducing load to return transmission loading to within acceptable SOLs or IROLs.	TO internal procedures			M-3 Transmission Operations (Rev. 35), Section 1.2 M-38 (Rev. 38), Section 3 Next Day Reliability Analysis, PJM Actions (2nd Bullet), PJM Member Actions
IRO	IRO-004-1	R7.	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.	Member TO shall comply with PJM directives unless such actions would violate safety, equipment, or regulatory or statutory requirements.	Have you had any incidents when you were not be able to comply with the PJM Reliability Coordinator directives due to safety, equipment, or regulatory or statutory requirements?	1. Documentation of procedures that requires the TO operators to comply with RC directives. 2. Examples of the TO operator following directives in the form of logs, voice recordings or transcripts of voice recordings, or other equivalent evidence, or in the case of refusal to follow the directives, the evidence that for safety, equipment, regulatory or statutory requirements they could not comply and that they informed the Reliability Coordinator immediately.	PJM OA 11.3, Schedule 1, 1.9.9 TOA M-3 Transmission Operations (Rev. 35), Section 1.2 M-37 Reliability Coordination (Rev. 5), Section 1, p. 5 PJM Manual 1 (Rev. 16), Section 4

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Category	Standard Number	Requirement Number	Approved BOT/FERC Standards	Assigned Tasks	Audit Question	Evidence of Compliance (What auditors will be looking for)	Reference Documents
IRO	IRO-005-2	**Purpose**	**The Reliability Coordinator must be continuously aware of conditions within its Reliability Coordinator Area and include this information in its reliability assessments. The Reliability Coordinator must monitor Bulk Electric System parameters that may have significant impacts upon the Reliability Coordinator Area and neighboring Reliability Coordinator Areas.**				
IRO	IRO-005-2	R12.	Whenever a Special Protection System that may have an inter-Balancing Authority, or inter-Transmission Operator impact (e.g., could potentially affect transmission flows resulting in a SOL or IROL violation) is armed, the Reliability Coordinators shall be aware of the impact of the operation of that Special Protection System on inter-area flows. The Transmission Operator shall immediately inform the Reliability Coordinator of the status of the Special Protection System including any degradation or potential failure to operate as expected.	Each member TO shall immediately inform the PJM of the status of the Special Protection System including any degradation or potential failure to operate as expected.	1. Do you have any SPSs? If so, do you have procedures to notify PJM of SPS status?	Documented procedures that require notifying PJM RC of SPS status	M-3 Transmission Operations (Rev. 35), Section 1.7 PJM Procedure to Review SPSs, Section 1.2, Responsibilities for Transmission Owner's Operating Entity M-37 Reliability Coordination (Rev. 5), Attachment A, Section 4.11
IRO	IRO-005-2	R13.	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.	PJM will operate BES element(s) to the most limiting of derived limits. The TO will also monitor the BES element and will inform PJM if the limit is exceeded.	Do you have a document that indicates that you will always operate the Bulk Electric System to the most limiting parameter?	Documentation (examples) that shows that you operate the Bulk Electric System to the most limiting parameters, monitoring and informing PJM of any limit violations.	PJM OA 1.7.6 Scheduling and Dispatching M-3 Transmission Operations (Rev. 35), Sec 1, p. 9, Transmission Operating Guidelines M-12 Balancing Operations (Rev. 20), Attachment B, Section B.3.3 M-37 Reliability Coordination (Rev. 5), Section 5.3
PER	**PER-001-0**	**Purpose**	**Transmission Operator and Balancing Authority operating personnel must have the responsibility and authority to implement real-time actions to ensure the stable and reliable operation of the Bulk Electric System.**				
PER	PER-001-0	R1.	Each Transmission Operator and Balancing Authority shall provide operating personnel with the responsibility and authority to implement real-time actions to ensure the stable and reliable operation of the Bulk Electric System.	Member TO operating personnel shall have the responsibility and authority to implement real-time actions to ensure the stable and reliable operation of the Bulk Electric System.	Do your operators have the authority to take real time actions up to and including primary load shedding to ensure the stable and reliable operation of the Bulk Electric System?	Copy of the document to verity that operators have the authority to take real time actions up to and including primary load shedding to ensure the stable and reliable operation of the Bulk Electric System.	PJM Open Access Transmission Tariff, Attachment U -Independent Transmission Companies, Section 2 - Security Coordination M-1 Control Center Requirements (Rev. 16), Secion 2.3.1 M-3 Transmission Operations (Rev. 35), Section 3 PJM OA, 11.3(e)
PER	**PER-002-0**	**Purpose**	**Each Transmission Operator and Balancing Authority must provide their personnel with a coordinated training program that will ensure reliable system operation.**				
PER	PER-002-0	R1.	Each Transmission Operator and Balancing Authority shall be staffed with adequately trained operating personnel.		1. Do all of your operators meet the requirements of Manual 40 Section 2 - Training Requirements? 2. Are any of your operators working on shift under the "Temporary Waiver of PJM Training Requirements' guidelines? 3. Since the last audit, how many hours have been worked by staff who have not met the training requirements? (For positions requiring trained staff)	Training records to verity that TO staff meet the PJM training requirements as outlined in M-40 Certification and Training Requirements, "Section 2- Training Requirements". Shift training and assignment records.	OA 10.4, OA 11.3.1 M-40 Certification and Training Requirements (Rev. 8) 1) Section 1, Certification Requirements 2) Section 2, LCC Compliance Monitoring M-1 Control Center Requirements (Rev. 16), Section 2.6; Attachment B, B24.2 M-3 Transmission Operations (Rev. 35), Section 1.2
PER	**PER-002-0**	**R2. (Heading)**	**Each Transmission Operator and Balancing Authority shall have a training program for all operating personnel that are in:**				

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Category	Standard Number	Requirement Number	Approved BOT/FERC Standards	Assigned Tasks	Audit Question	Evidence of Compliance (What auditors will be looking for)	Reference Documents
PER	PER-002-0	R2.1.	Positions that have the primary responsibility, either directly or through communications with others, for the real-time operation of the interconnected Bulk Electric System.	TO members 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.	Do you have any operating personnel working 24/7 positions in the control room environment, that **you have not identified** as having primary responsibility, either directly or through communications with others, for the real-time operation of the interconnected Bulk Electric System?	Evidence that TO staff that have the primary responsibility, either directly or through communications with others, for the real-time operation of the interconnected Bulk Electric System have completed the training programs as per M-40 Certification and Training Requirements.	M-40 Certification and Training Requirements (Rev. 8) 1) Section 2, Minimum Required 2) Section 2 Annual LCC SO Continuing Training M-14D Generator Operational Requirements (Rev. 16) OA Section 11.3
PER	PER-002-0	R2.2.	Positions directly responsible for complying with NERC standards.	Identify positions directly responsible for complying with NERC standards.	Do you have any operating personnel working 24/7 positions in the control room that you **have not identified** as directly responsible for complying with NERC standards.	Evidence that TO staff in positions directly responsible for complying with NERC standards have completed the training as per M-40 Certification and Training Requirements and PJM OA 10.4	PJM OA 10.4 M-40 Certification and Training Requirements (Rev. 8), Section 1, Certification Requirements M-1 Control Center Requirements (Rev. 16), Section 2.6, Control Center Staffing M-14D Generator Operational Requirements (Rev. 16), Section 2, p. 9 M-3 Transmission Operations (Rev. 35), Section 1.2
PER	**PER-002-0**	**R3. (Heading)**	**For personnel identified in Requirement R2, the Transmission Operator and Balancing Authority shall provide a training program meeting the following criteria:**				PJM OA 10.4 M-40 Certification and Training Requirements (Rev. 8)
PER	PER-002-0	R3.1.	A set of training program objectives must be defined, based on NERC and Regional Reliability Organization standards, entity operating procedures, and applicable regulatory requirements. These objectives shall reference the knowledge and competencies needed to apply those standards, procedures, and requirements to normal, emergency, and restoration conditions for the Transmission Operator and Balancing Authority operating positions.	TO members shall have a training program that identifies the general knowledge and competencies needed to operate the BES in normal, emergency, and restoration conditions for the LCC.		The member TO training program for the that describes the general knowledge and competencies needed to operate the BES in normal, emergency, and restoration conditions for the LCC.	OA 10.4, OA 11.3.1 M-40 Certification and Training Requirements (Rev. 8) 1) Section 1, Certification Requirements 2) Section 2, LCC Compliance Monitoring M-1 Control Center Requirements (Rev. 16), Section 2.6; Attachment B, B24.2 M-3 Transmission Operations (Rev. 35), Section 1.2
PER	PER-002-0	R3.2.	The training program must include a plan for the initial and continuing training of Transmission Operator and Balancing Authority operating personnel. That plan shall address knowledge and competencies required for reliable system operations.	The member TO training program shall include the initial training program and the continuing training program requirements.		The member TO training program that includes the initial training program and the continuing training program requirements.	OA 10.4, OA 11.3.1 M-40 Certification and Training Requirements (Rev. 8) 1) Section 1, Certification Requirements 2) Section 2, LCC Compliance Monitoring M-1 Control Center Requirements (Rev. 16), Section 2.6; Attachment B, B24.2 M-3 Transmission Operations (Rev. 35), Section 1.2 M-14D Generator Operational Requirements (Rev. 16), Section 2

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Category	Standard Number	Requirement Number	Approved BOT/FERC Standards	Assigned Tasks	Audit Question	Evidence of Compliance (What auditors will be looking for)	Reference Documents
PER	PER-002-0	R3.3.	The training program must include training time for all Transmission Operator and Balancing Authority operating personnel to ensure their operating proficiency.	The member TO training program shall allow sufficient training time for all LCC operating personnel to ensure their operating proficiency.		1. Training time records for all LCC operators from the last PJM audit to the present day. 2. Schedule for training for the next year.	OA 10.4, OA 11.3.1 M-40 Certification and Training Requirements (Rev. 8) 1) Section 1, Certification Requirements 2) Section 2, LCC Compliance Monitoring M-1 Control Center Requirements (Rev. 16), Section 2.6; Attachment B, B24.2 M-3 Transmission Operations (Rev. 35), Section 1.2 M-14D Generator Operational Requirements (Rev. 16), Section 2 M-36 System Restoration (Rev. 11), Section 1; Attachment D; Attachment F
PER	PER-002-0	R3.4.	Training staff must be identified, and the staff must be competent in both knowledge of system operations and instructional capabilities.	The member TO training staff must be competent in both knowledge of system operations and instructional capabilities.		List of training staff and their qualifications	OA 10.4, OA 11.3.1, OA Section 11.3(g), Sheet 43 M-40 Certification and Training Requirements (Rev. 8) 1) Section 1, Certification Requirements 2) Section 2, LCC Compliance Monitoring M-1 Control Center Requirements (Rev. 16), Section 2.6; Attachment B, B24.2 M-3 Transmission Operations (Rev. 35), Section 1.2
PER	PER-002-0	R4.	For personnel identified in Requirement R2, each Transmission Operator and Balancing Authority shall provide its operating personnel at least five days per year of training and drills using realistic simulations of system emergencies, in addition to other training required to maintain qualified operating personnel.	All LCC operators must complete at least 32 hours per year of Emergency Preparedness training.	Have all of your LCC operators completed at least 32 hours per year of Emergency Preparedness training, plus any additional training for Emergency Preparedness that is required in your program?	1. Training records for all system operators showing how they met the 32 hour emergency preparedness training requirement 2. Documentation of the training program to verify that the training used realistic simulation of system emergencies 3. If there is additional training requirements for emergency preparedness, provide the program documentation and records that verify that personnel have received the additional training.	OA 10.4, OA 11.3.1 M-40 Certification and Training Requirements (Rev. 8) 1) Section 1, Certification Requirements 2) Section 2, LCC Compliance Monitoring M-1 Control Center Requirements (Rev. 16), Section 2.5.6; Section 2.6; Attachment B, B24.2 M-3 Transmission Operations (Rev. 35), Section 1.2 M-14D Generator Operational Requirements (Rev. 16), Section 2 M-36 System Restoration (Rev. 11), Section 1; Attachment D; Attachment F
PER	PER-003	R1.2.	Positions directly responsible for complying with NERC standards.				PJM OA 10.4 M-40 Certification and Training Requirements (Rev. 8) M-1 Control Center Requirements (Rev. 16) M-14D Generator Operational Requirements (Rev. 16), Section 2 M-3 Transmission Operations (Rev. 35), Section 1.2

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Category	Standard Number	Requirement Number	Approved BOT/FERC Standards	Assigned Tasks	Audit Question	Evidence of Compliance (What auditors will be looking for)	Reference Documents
TOP	**TOP-001-1**	**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.**				

Operations Standards

Category	Standard Number	Requirement Number	Approved BOT/FERC Standards	Assigned Tasks	Audit Question	Evidence of Compliance (What auditors will be looking for)	Reference Documents
TOP	TOP-001-1	R1.	Each Transmission Operator shall have the responsibility and clear decision-making authority to take whatever actions are needed to ensure the reliability of its area and shall exercise specific authority to alleviate operating emergencies.		Do your operators have the responsibility and clear decision-making authority to take whatever actions are needed to ensure the reliability of its area and shall exercise specific authority to alleviate operating emergencies as directed by PJM?	Documented evidence that your operators have the responsibility and clear decision-making authority to take whatever actions are needed to ensure the reliability of its area and shall exercise specific authority to alleviate operating emergencies as directed by PJM?	PJM OA Sch 1: 1.7.15 M-1 Control Center Requirements (Rev. 16), Section 2.3.1 M-3 Transmission Operations (Rev. 35), Section 1.2 M-12 Balancing Operations (Rev. 20), Section 4 M-13 Emergency Operations (Rev. 38), Section 1, PJM Member Actions M-36 System Restoration (Rev. 11), Section 1.1 M-37 Reliability Coordination (Rev. 5), Section 1.1 TOA - Sheet 10, Section 4.7 RAA - Article 9, Section 9.1(f) Open Access Tariff, Section 13.6A; Sheet 56, Section 33.2; Sheet 91
TOP	TOP-001-2	R2.	Each Transmission Operator shall take immediate actions to alleviate operating emergencies including curtailing transmission service or energy schedules, operating equipment (e.g., generators, phase shifters, breakers), shedding firm load, etc.	Member TO operators shall take immediate actions to alleviate operating emergencies as directed by PJM.	Have you had iany incidents when the TO operator has had to take immediate actions to alleviate operating emergencies with action such as curtailing transmission service or energy schedules, operating equipment (e.g., generators, phase shifters, breakers), shedding firm load, etc?	Evidence such as operator logs or voice recordings of actions taken during emergencies that support compliance to this requirement.	PJM OA Sch 1: 1.7.15 M-1 Control Center Requirements (Rev. 16), Section 2.3.1 M-3 Transmission Operations (Rev. 35), Section 1.2 M-12 Balancing Operations (Rev. 20), Section 4 M-13 Emergency Operations (Rev. 38), Section 1, PJM Member Actions M-36 System Restoration (Rev. 11) M-37 Reliability Coordination (Rev. 5), Section 1.1 TOA - Sheet 10, Section 4.7 RAA - Article 9, Section 9.1(f) Open Access Tariff, Section 13.6A; Sheet 56, Section 33.2; Sheet 91
TOP	TOP-001-1	R3.	Each Transmission Operator, Balancing Authority, and Generator Operator shall comply with reliability directives issued by the Reliability Coordinator, and each Balancing Authority and Generator Operator shall comply with reliability directives issued by the Transmission Operator, unless such actions would violate safety, equipment, regulatory or statutory requirements. Under these circumstances the Transmission Operator, Balancing Authority or Generator Operator shall immediately inform the Reliability Coordinator or Transmission Operator of the inability to perform the directive so that the Reliability Coordinator or Transmission Operator can implement alternate remedial actions.	Member TO operators shall comply with reliability directives issued by the Reliability Coordinator unless such actions would violate safety, equipment, regulatory or statutory requirements.	1. Do you have documented procedures that require the TO operators to comply with reliability directives issued by the Reliability Coordinator? 2. Have you had any incidents where the TO operators were not able to comply with reliability directives issued by the Reliability Coordinator because such actions would violate safety, equipment, regulatory or statutory requirements?	1. Documented procedures that require the TO operators to comply with reliability directives issued by the Reliability Coordinator. 2. Evidence such as operator logs, voice recordings or incident reports etc, for any incidents where the TO operators were not able to comply with reliability directives issued by the Reliability Coordinator because such actions would violate safety, equipment, regulatory or statutory requirements.	PJM OA Sch 1: 1.7.15 M-1 Control Center Requirements (Rev. 16), Section 2.3.1 M-3 Transmission Operations (Rev. 35), Section 1.2 M-12 Balancing Operations (Rev. 20), Section 4 M-13 Emergency Operations (Rev. 38), Section 1, PJM Member Actions M-36 System Restoration (Rev. 11) M-37 Reliability Coordination (Rev. 5), Section 1.1 TOA - Sheet 10, Section 4.7 RAA - Article 9, Section 9.1(f) Open Access Tariff, Section 13.6A; Sheet 56, Section 33.2; Sheet 91

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Category	Standard Number	Requirement Number	Approved BOT/FERC Standards	Assigned Tasks	Audit Question	Evidence of Compliance (What auditors will be looking for)	Reference Documents
TOP	TOP-001-1	R5.	Each Transmission Operator shall inform its Reliability Coordinator and any other potentially affected Transmission Operators of real time or anticipated emergency conditions, and take actions to avoid, when possible, or mitigate the emergency.	Each member TO shall inform its Reliability Coordinator of real time or anticipated emergency conditions, and take actions to avoid, when possible, or mitigate the emergency. (The RC will inform any other potentially affected Transmission Operators)	Have you had any incidents that would support that you have met this requirement?	Evidence such as operator logs or voice recordings of actions taken during emergencies that support compliance to this requirement.	M-37 Reliability Coordination (Rev. 5), Attachment A M-14D Generator Operation Requirements (Rev. 16), Section 2; Section 4; Section 6; Section 7.3 PJM OA 11.3 M-12 Balancing Operations (Rev. 20), Section 2, Attachment B, B.3.6 M-13 Emergency Operations (Rev. 38), Section 1 TOA Article 4.7 RAA Article 9, Section 9.2 M-1 Control Center Requirements (Rev. 16), Section 2.3.1 M-3 Transmission Operations (Rev. 35), Section 1.2
TOP	TOP-001-1	**R7. (Heading)**	Each Transmission Operator and Generator Operator shall not remove Bulk Electric System facilities from service if removing those facilities would burden neighboring systems unless:				
TOP	TOP-001-1	R7.2.	For a transmission facility, the Transmission Operator shall notify and coordinate with its Reliability Coordinator. The Transmission Operator shall notify other affected Transmission Operators, and coordinate the impact of removing the Bulk Electric System facility.	For a transmission facility, the member TO shall notify and coordinate with PJM. PJM shall notify other affected Transmission Operators, and coordinate the impact of removing the Bulk Electric System facility.		Provide examples of corrdinating the removal of facililties from service to ensure there are no negative impacts on other entities.	M-37 Reliability Coordination (Rev. 5), Section 1 PJM OA Section 10.4, Schedule 1.9.1 M-3 Transmission Operations (Rev. 35), Section 1.2; Section 4 OA Schedule 1, 1.9.1 - Outage Scheduling M-13 Emergency Operations (Rev. 38), Section 1
TOP	TOP-001-1	R7.3.	When time does not permit such notifications and coordination, or when immediate action is required to prevent a hazard to the public, lengthy customer service interruption, or damage to facilities, the Generator Operator shall notify the Transmission Operator, and the Transmission Operator shall notify its Reliability Coordinator and adjacent Transmission Operators, at the earliest possible time.	The TO Member shall notify the PJM asap, if they have removed transmission facilities from service without pre-authorization from the PJM.	Have you had any incicents 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 approval from the RC?	Report of the incident.	M-14D Generator Operational Requirements (Rev. 16) OA Section 11.3, Member Responsibilities M-3 Transmission Operations (Rev. 35), Section 1.2, Note 1 M-37 Reliability Coordination (Rev. 5), Section 5.2
TOP	**TOP-002-2**	**Purpose**	**Current operations plans and procedures are essential to being prepared for reliable operations, including response for unplanned events.**				
TOP	TOP-002-2	R1.	Each Balancing Authority and Transmission Operator shall maintain a set of current plans that are designed to evaluate options and set procedures for reliable operation through a reasonable future time period. In addition, each Balancing Authority and Transmission Operator shall be responsible for using available personnel and system equipment to implement these plans to ensure that interconnected system reliability will be maintained.	Each member TO shall support PJM by providing PJM with expected transmission status, operating conditions and TO zone specific operating procedures, to facilitate the preparation of a set of current plans for reliable operation.		1. Procedural documents for planning future operations. 2. Be prepared to explain the planning process to the auditors. 3. Provide the output reports of the planning for one day in the past, as selected by the auditor. 3. Ensure that personnel and system equipment required to implement these plans are normally available.	PJM OA 10.3, Schedule 1, 1.7.15 Corrective Action M-3 Transmission Operations, Rev. 34, Section 5, p. 73; Section 4, p. 48; Section 5, p. 226 M-10 Pre-Scheduling Operations, Rev. 23, Section 2, p. 9 M-12 Balancing Operations (Rev. 20), Section 1 M-37 Reliability Coordination (Rev. 5), Section 1 PJM OATF Scope and Procedures M-38, Rev. 3, Section 1, p. 4; Attachment B, p. 11 PJM Reliability Report (Transmission Log)

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Category	Standard Number	Requirement Number	Approved BOT/FERC Standards	Assigned Tasks	Audit Question	Evidence of Compliance (What auditors will be looking for)	Reference Documents
TOP	**TOP-002-2**	**R16. (Heading)**	**Subject to standards of conduct and confidentiality agreements, Transmission Operators shall, without any intentional time delay, notify their Reliability Coordinator and Balancing Authority of changes in capabilities and characteristics including but not limited to:**				
TOP	TOP-002-2	R16.1.	Changes in transmission facility status.	Member TO shall notify PJM of any changes in transmission facility status.	Have there been any recorded complaints since your last audit, that you failed to notify either the RC and BA of changes in transmission facility status as required?	Reports of non-compliance and mitigation plans.	M-3 Transmission Operations (Rev. 35), Section 1; Section 4 M-38 Operations Planning (Rev. 30), Section 2 TOA - Article 4 PJM OA Section 11.3.2, Sheet 43-44
TOP	TOP-002-2	R16.2.	Changes in transmission facility rating.	Member TO shall notify PJM of any changes in transmission facility rating.	Have there been any recorded complaints since your last audit, that you failed to notify either the RC and BA of changes in transmission facility status as required?	Demonstrate using TERM, how you would submit a change in a facility rating (Manual 3).	M-3 Transmission Operations (Rev. 35), Section 2, How to change facility ratings OA - Section 1.9.8, Sheet 90 PJM Open Access Transmission Tariff, Section 1.9.8, Sheet 353 TOA - Article 4
TOP	TOP-002-2	R17.	Balancing Authorities and Transmission Operators shall, without any intentional time delay, communicate the information described in the requirements R1 to R16 above to their Reliability Coordinator.				M-3 Transmission Operations (Rev. 35), Section 1; Section 4 M-38 Operations Planning (Rev. 30), Section 2 TOA - Article 4 PJM OA Section 11.3.2, Sheet 43-44
TOP	TOP-002-2	R19.	Each Balancing Authority and Transmission Operator shall maintain accurate computer models utilized for analyzing and planning system operations.	Each Member TO shall provide PJM with accurate modeling data to support the PJM operating models.		Have evidence that you provide data as per Manual 3a section 2 and 3.	PJM OA, Section 6.3.2(b), Sheet 130 M-3A Energy Management System (EMS) Model Updates and Quality Assurance (QA) (Rev. 4), Section 1.2, p. 5; Section 3 M-5 Power System Application Data (Rev. 5), Section 1 M-1 Control Center Requirements (Rev. 16), Section 2; Section 3.2.3 M-37 Reliability Coordination (Rev. 5), Attachment A; Section E M-12 Balancing Operations (Rev. 20), Attachment B, B.3.3
TOP	**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.**				
TOP	TOP-003-0	R1.	Generator Operators and Transmission Operators shall provide planned outage information.	Each Transmission Owner shall submit the tentative dates of all planned transmission outages of Reportable Transmission Facilities to PJM via eDART as far in advance as possible and update PJM at least monthly.	Describe your process to provide PJM with operating information for day ahead studies.	1. Examples of outage schedules for transmission and compare to outage submissions. 2. Documented outage reporting procedures.	PJM Operating Agreement (8/11/09), Section 10.4; Section 11.3.2h, Schedule 1 Section 1.7.4 & 1.9.2 Transmission Owner Agreement (6/20/09), Sections 4.5 and 4.8 M-10 (Rev. 24), Section 1.3, Section 2 M-38 (Rev. 3), Section 2

Operations Standards

Category	Standard Number	Requirement Number	Approved BOT/FERC Standards	Assigned Tasks	Audit Question	Evidence of Compliance (What auditors will be looking for)	Reference Documents
TOP	TOP-003-0	R1.2.	Each Transmission Operator shall provide outage information daily to its Reliability Coordinator, and to affected Balancing Authorities and Transmission Operators for scheduled generator and bulk transmission outages planned for the next day (any foreseen outage of a transmission line or transformer greater than 100 kV or generator greater than 50 MW) that may collectively cause or contribute to an SOL or IROL violation or a regional operating area limitation. The Reliability Coordinator shall establish the outage reporting requirements.	The TO must shall submit transmission outage information based on the procedures in M3.		Please be prepared to show that you provide outage information based on the procedures in M3 (eDART Tickets; PJM day ahead email; and day-ahead discussion with PJM Reliability Engineer).	PJM Operating Agreement (8/11/09), Section 10.4; Section 11.3.2h, Schedule 1 Section 1.7.4 & 1.9.2 Transmission Owner Agreement (6/20/09), Sections 4.5 and 4.8 M-10 (Rev. 24), Section 1.3, Section 2 M-38 (Rev. 3), Section 2
(See R1.0	TOP-003-0	R1.3.	Such information shall be available by 1200 Central Standard Time for the Eastern Interconnection and 1200 Pacific Standard Time for the Western Interconnection.	Member TO shall provide transmssion outage plans as per defined procedures.	Have you had any complaints since the last audit that you are not meeting the time delivery requdirement? If so, what actions did you take to prevent a repeat of the problem?	Auditor will check with PJM to see that this requirment is met.	PJM Operating Agreement (8/11/09), Section 10.4; Section 11.3.2h, Schedule 1 Section 1.7.4 & 1.9.2 Transmission Owner Agreement (6/20/09), Sections 4.5 and 4.8 M-10 (Rev. 24), Section 1.3, Section 2 M-38 (Rev. 3), Section 2
TOP	TOP-003-0	R2.	Each Transmission Operator, Balancing Authority, and Generator Operator shall plan and coordinate scheduled outages of system voltage regulating equipment, such as automatic voltage regulators on generators, supplementary excitation control, synchronous condensers, shunt and series capacitors, reactors, etc., among affected Balancing Authorities and Transmission Operators as required.				PJM Operating Agreement (8/11/09), Section 10.4; Section 11.3.2h, Schedule 1 Section 1.7.4 & 1.9.2 Transmission Owner Agreement (6/20/09), Sections 4.5 and 4.8 M-10 (Rev. 24), Section 1.3, Section 2 M-38 (Rev. 3), Section 2
TOP	TOP-003-0	R3.	Each Transmission Operator, Balancing Authority, and Generator Operator shall plan and coordinate scheduled outages of telemetering and control equipment and associated communication channels between the affected areas.	Member TO shall inform PJM of scheduled outages of telemetering and control equipment and associated communication channels.			PJM OA, 10.4 Duties and Responsibilities M-1 Control Center Requirements (Rev. 16), Section 2.5.4; Section 3.2.3 M-3, Transmission Operations, Rev. 34, Section 4, pg. 50 last line before "energizing new facilities" M-10 Pre-Scheduling Operations (Rev. 24), Section 2 M-38 Operations Planning (Rev. 3), Section 2
TOP	**TOP-004-1**	**R6. (Heading)**	**Transmission Operators, individually and jointly with other Transmission Operators, shall develop, maintain, and implement formal policies and procedures to provide for transmission reliability. These policies and procedures shall address the execution and coordination of activities that impact inter- and intra-Regional reliability including:**	**There is no Member TO task associated with this reqt. which is applicable to PJM. However, Member TOs shall satisfy the following applicable sub-requirements.**			PJM OA, Schedule 1, 1.7.15 Corrective Action. M-3 Transmission Operations, Rev. 34, Section 1, Responsibilities for TO Operating Entity
	TOP-004-1	R1.	Each Transmission Operator shall operate within the Interconnection Reliability Operating Limits (IROSs) and System Operating Limits (SOLs).	Each member TO shall monitor the Interconnection Reliability Operating Limits (IROLs) and System OperatingLimits (SOLs) and take actions as directed by PJM.	Can you monitor all of the IROLs and SOLs associated with your operating footprint?	Demonstration of evidence of monitoring applicable IROLs and SOLs.	PJM Operating Agreement (8/11/09), Section 11.3e Transmission Owners Agreement (6/20/09), Section 4.5 M-3 Transmission Operations (Rev. 35), Sections 1.2, 3.5 M-37 Reliability Coordination (Rev. 5), Sections 1.1, 3 M-13 Emergency Operations (Rev. 38), Section 5 M-12 Balancing Operations (Rev. 20), Section 5

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Category	Standard Number	Requirement Number	Approved BOT/FERC Standards	Assigned Tasks	Audit Question	Evidence of Compliance (What auditors will be looking for)	Reference Documents
TOP	TOP-004-1	R2.	Each Transmission Operator shall operate so that instability, uncontrolled separation, or cascading outages will not occur as a result of the most severe single contingency.	PJM shall direct the operation of the BES so that instability, uncontrolled separation, or cascading outages will not occur as a result of the most severe single contingency, and the TO member shall take actions as directed by PJM.	Have you had any incidents where PJM has directed specific actions to ensure that uncontrolled separation, or cascading outages would not occur as a result of the most severe single contingency?	Provide documented evidence, voice recordings etc. of any such incident (if there was one).	PJM Operating Agreement (8/11/09), Section 11.3e Transmission Owners Agreement (6/20/09), Section 4.5 M-3 Transmission Operations (Rev. 35), Sections 1.2, 3.5 M-37 Reliability Coordination (Rev. 5), Sections 1.1, 3 M-13 Emergency Operations (Rev. 38), Section 5 M-12 Balancing Operations (Rev. 20), Section 5
TOP	TOP-004-1	R3.	Each Transmission Operator shall, when practical, operate to protect against instability, uncontrolled separation, or cascading outages resulting from multiple outages, as specified by Regional Reliability Organization policy.	PJM shall direct the operation of the BES and the TO member shall take actions as directed by PJM.	Have you had any incidents where PJM has directed specific actions to protect against instability, uncontrolled separation, or cascading outages resulting from multiple outages?	Provide documented evidence, voice recordings etc. of any such incident.	PJM Operating Agreement (8/11/09), Section 11.3e Transmission Owners Agreement (6/20/09), Section 4.5 M-3 Transmission Operations (Rev. 35), Sections 1.2, 3.5 M-37 Reliability Coordination (Rev. 5), Sections 1.1, 3 M-13 Emergency Operations (Rev. 38), Section 5 M-12 Balancing Operations (Rev. 20), Section 5
TOP	TOP-004-1	R4.	If a Transmission Operator enters an unknown operating state (i.e. any state for which valid operating limits have not been determined), it will be considered to be in an emergency and shall restore operations to respect proven reliable power system limits within 30 minutes.	PJM shall restore operations to respect proven reliable power system limits within 30 minutes if an unknown operating state has been entered into. TO members will take actions as directed by PJM	Have you had any incidents where PJM has directed specific actions to restore operations to respect proven reliable power system limits within 30 minutes?	Provide documented evidence, voice recordings etc. of any such incident.	PJM Operating Agreement (8/11/09), Section 11.3e Transmission Owners Agreement (6/20/09), Section 4.5 M-3 Transmission Operations (Rev. 35), Sections 1.2, 3.5 M-37 Reliability Coordination (Rev. 5), Sections 1.1, 3 M-13 Emergency Operations (Rev. 38), Section 5 M-12 Balancing Operations (Rev. 20), Section 5
TOP	TOP-004-1	R6.1.	Equipment ratings.	Member TO shall provide equipment ratings to PJM in accordance with TOA 4.11.3 and M-3, Section 2, pg. 30	Have you provided equipment ratings to PJM to support model building and system studies?	Evidence that ratings were provided to PJM as required to support the model building and updating processes.	M-3 Transmission Operations (Rev. 35), Section 1.2; Section 1.5 M-37 Reliability Coordination (Rev. 5), Section 3.2 Transmission Owners Agreement (6/20/09), Section 4.11 Operating Agreement (8/11/09), Section 11.3.2h

Operations Standards

Category	Standard Number	Requirement Number	Approved BOT/FERC Standards	Assigned Tasks	Audit Question	Evidence of Compliance (What auditors will be looking for)	Reference Documents
TOP	TOP-004-1	R6.2.	Monitoring and controlling voltage levels and real and reactive power flows.	Member TO shall implement actions as directed by PJM in accordance with M-3, Transmission Operations, Section 3, pgs. 32-37. No changes without PJM approval.	Do your policies and/or procedures address the requirement?	Provide the documented policies and/or procedures.	PJM Operating Agreement (8/11/09), Section 11.3e Transmission Owners Agreement (6/20/09), Section 4.5 M-3 Transmission Operations (Rev. 35), Section 1.2; Section 3.5; Section 5 M-37 Reliability Coordination (Rev. 5), Sections 1.1, 3 M-13 Emergency Operations (Rev. 38), Section 5 M-12 Balancing Operations (Rev. 20), Section 5
TOP	TOP-004-1	R6.3.	Switching transmission elements.	Member TO shall implement actions as directed by PJM in accordance with M-3, Transmission Operations, Section 1	Do your policies and/or procedures address the requirement?	Provide the documented policies and/or procedures.	PJM Operating Agreement (8/11/09), Section 11.3e Transmission Owners Agreement (6/20/09), Section 4.5 M-3 Transmission Operations (Rev. 35), Section 1.2, Note 1 M-37 Reliability Coordination (Rev. 5), Section 1.1
TOP	TOP-004-1	R6.4.	Planned outages of transmission elements.	Member TO shall provide transmission outage and maintenance information and update it as it changes in accordance with TOA Article 4.8, and M-3, Section 4, pg. 56, "Scheduling Transmission Outage Requests" Requirement Table	Do your policies and/or procedures address the requirement?	Provide the documented policies and/or procedures.	PJM Operating Agreement (8/11/09), Sections 11.3.2h, Schedule 1, Sections 1.7.4, 1.9.2 Transmission Owners Agreement (6/29/09), Section 4.8 M-3 Transmission Operations (Rev. 35), Section 4
TOP	TOP-004-1	R6.6.	Responding to IROL and SOL violations.	Member TO shall implement actions as directed by PJM in accordance with M-3, Transmission Operations, Section 1, page 13, bullets 8, 9, 10, 13	Do your policies and/or procedures address the requirement?	Provide the documented policies and/or procedures.	PJM Operating Agreement (8/11/09), Sections 11.3e Transmission Owners Agreement (6/20/09), Section 4.5 M-3 Transmission Operations (Rev. 35), Sections 1.2; Section 3.5; Section 3.10 M-37 Reliability Coordination (Rev. 5), Section 1.1; Section 3.5 M-13 Emergency Operations (Rev. 38), Section 5 M-12 Balancing Operations (Rev. 20), Section 5
TOP	**TOP-005-1**	**Purpose**	**To ensure reliability entities have the operating data needed to monitor system conditions within their areas.**				
TOP	TOP-005-1	R1.	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 reliable operations within the Reliability Coordinator Area.	Each member TO shall provide PJM with the operating data that the Reliability Coordinator requires to perform operational reliability assessments and to coordinate reliable operations within the Reliability Coordinator Area.	Have you had any complaints since the last audit that you failed to provide PJM with the operating data that the Reliability Coordinator requires to perform operational reliability assessments and to coordinate reliable operations within the Reliability Coordinator Area? If so, what actions did you take to prevent a repeat of the problem?	Confirm with PJM that the operating data needed to perform operational reliability assessments and to coordinate reliable operations within the Reliability Coordinator Area is being provided. If the RC has not identified any problems, this requirment will not be looked at on-site. Prior to the on-site audit, you will be notified of any data problems identified by the Reliability Coordinator. You must be prepared to discuss and problems including mitigation plans.	M-1 Control Center Requirements (Rev. 16), Section 2.2: PJM Member Data Exchange, and Section 3.5: Real-Time Anaylsis Monitoring Requirements for System Security M-3 Transmission Operations (Rev. 35), Section 1.2: Responsibilities for TO's Operating Entity, and Section 1.5: PJM's Real-Time Reliability Model
TOP	**TOP-006-1**	**Purpose**	**To ensure critical reliability parameters are monitored in real-time.**				

Operations Standards

Category	Standard Number	Requirement Number	Approved BOT/FERC Standards	Assigned Tasks	Audit Question	Evidence of Compliance (What auditors will be looking for)	Reference Documents
TOP	TOP-006-1	R1.	Each Transmission Operator and Balancing Authority shall know the status of all generation and transmission resources available for use.	Member TO shall shall know the status of all transmission resources available for use in their area and provide this information to PJM..	Do you have any generation or transmission resources that are critical to the operation of the BES, that you are not monitoring in real time? (Automatic updates of status changes)	Demonstration that all critical-to-the-BES facilities are monitored.	M-1 Control Center Requirements (Rev. 16), Section 3.5: Real-Time analysis Monitoring Requirements for System Security M-3 Transmission Operations (Rev. 35), Section 1: Responsibilities for TO's Operating Entity; Section 4
TOP	TOP-006-1	R2.	Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall monitor applicable transmission line status, real and reactive power flows, voltage, load-tap-changer settings, and status of rotating and static reactive resources.			Each TO shall provide PJM with system control data to ensure reliability. If such data is interrupted by unavailability of the TO's EMS, then the TO is required to have a backup capability to ensure that the necessary data continues to be provided to PJM.	M-1 (Rev. 16), Section 2.7 M-3 Transmission Operations (Rev. 35), Section 1
TOP	TOP-006-1	R3.	Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall provide appropriate technical information concerning protective relays to their operating personnel.	Each member TO shall provide appropriate technical information concerning protective relays as requested by PJM, or as required through participation in the Relay Sub-committee.	1. Do you have examples of delivering relay information to PJM directly or through the relay sub-committee?	1. Provide ocumentation describing the technical information concerning protective relays you provide to PJM.	M-3 Transmission Operations (Rev. 35), Secion 1: Responsibilities of Operating Entities; Section 1.2; Section 4, p. 51
TOP	TOP-006-1	R6.	Each Balancing Authority and Transmission Operator shall use sufficient metering of suitable range, accuracy and sampling rate (if applicable) to ensure accurate and timely monitoring of operating conditions under both normal and emergency situations.	Each member TO 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 as per Manual 1 Section 3, page 26 and 27 and Section 5, page 37.	Do you have any metering that does not meet your requirements at this time? If so, what is your mitigation plan?	Follow up to any mitigation requirements.	PJM Operating Agreement, Schedule 1: 1.7.15 Corrective Action. OA Schedule 1, 1.7.6 (c) M-1 Control Center Requirements (Rev. 16), Attachment B, p. 47
TOP	TOP-006-1	R7.	Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall monitor system frequency.	PJM Manual 1 to be revised to require TOs to provide PJM with an annual self-certification of tie line meter accuracy. PJM SOS will identify details required (PTs, CTs, etc.). Current TO process can be used to certify.		Each member TO 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 conditions.	M-1 Control Center Requirements (Rev. 16), Section 1.2: Responsibilities for TO's Operating Entity; Section 3.5: Real-Time Anaylsis Monitoring Requirements for System Security; Section 5: Metering Requirements; Attachment B
TOP	**TOP-007-0**	**Purpose**	**This standard ensures SOL and IROL violations are being reported to the Reliability Coordinator so that the Reliability Coordinator may evaluate actions being taken and direct additional corrective actions as needed.**				
TOP	TOP-007-0	R1.	A Transmission Operator shall inform its Reliability Coordinator when an IROL or SOL has been exceeded and the actions being taken to return the system to within limits.	PJM TOP monitors the SOL and IROL limits and informs the RC when a limit has been exceeded. Each member TO will be aware of the SOL limits that are in effect in their area, and will confirm violation of limits with PJM by initiating a call to PJM or following a call from PJM.	Are you aware of the SOL and IROL limits in your area? Do you monitor the SOL and IROL limits? If PJM could not monitor the limits could you provide them with equipment status and data to help them manually determine if they are near limits?	Evidence that your operating staff are aware of SOLs and IROLs, and/or can monitor them directly, and/or are aware of the equipment and data information that they would provide to PJM if they could not monitor the limits.	M-37: Reliability Coordination (Rev. 5), Section 3.1; and Section 3.2 M-3 Transmission Operations (Rev. 35), Section 3.10
TOP	**TOP-008-1**	**Purpose**	**To ensure Transmission Operators take actions to mitigate SOL and IROL violations.**				
TOP	TOP-008-1	R2.	Each Transmission Operator shall operate to prevent the likelihood that a disturbance, action, or inaction will result in an IROL or SOL violation in its area or another area of the Interconnection. In instances where there is a difference in derived operating limits, the Transmission Operator shall always operate the Bulk Electric System to the most limiting parameter.	PJM monitors the IROL and would direct the member TO will follow PJM RC directions.		Docment directing the TO operations staff to always operate the Bulk Electric System to the most limiting parameter in instances where there is a difference in derived operating limits.	PJM Operating Agreement, Schedule 1: 1.7.15 Corrective Action M-13 Emergency Operations (Rev. 37), Section 5.5 M-37 Reliability Coordination (Rev. 5), Section 3: SOL and IROL Limits M-3 Transmission Operations (Rev. 35), Section 1.3 M-12 Balancing Operations (Rev. 20), Section B.3.3
TOP	TOP-008-1	R3.	The Transmission Operator shall disconnect the affected facility if the overload on a transmission facility or abnormal voltage or reactive condition persists and equipment is endangered. In doing so, the Transmission Operator shall notify its Reliability Coordinator and all neighboring Transmission Operators impacted by the disconnection prior to switching, if time permits, otherwise, immediately thereafter.	Member TO operating staff will disconnect facilities if an overload on a transmission facility or abnormal voltage or reactive condition persists and equipment is endangered without permission, but will seek permission from PJM to take action if time permits.	Have you had any incidents where your operator has had to disconnect facilities because of an overload on a BES transmission facility or abnormal voltage or reactive condition to prevent equipment damage? (With or without PJM approval)	Report of the incident.	M-37 Reliability Coordination (Rev. 5), Section 4: Transmission Loading Relief (TLR) Notification is PJM responsibility detailed in M-37 (Rev. 5), Section 5: Coordination with Neighboring Reliability Coordinators TOA, 4.7: Actions in an Emergency

Operations Standards

Category	Standard Number	Requirement Number	Approved BOT/FERC Standards	Assigned Tasks	Audit Question	Evidence of Compliance (What auditors will be looking for)	Reference Documents
VAR	**VAR-001-1**	**Purpose**	**To ensure that voltage levels, reactive flows, and reactive resources are monitored, controlled, and maintained within limits in real time to protect equipment and the reliable operation of the Interconnection.**			PJM Manual 3, Rev. 34, Section 3, p. 26 PJM Manual 12, Rev. 19, Section 5.2 and 5.3, p. 60 PJM Manual 13, Rev. 37, Section 5.1, p. 52	
VAR	VAR-001-1	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.	TO shall establish voltage schedules and coordinate with PJM as described in M-3, Section 3.5 for its area	Do you have do monitoring and controlling voltage levels and MVAR flows as per Manual 3, Section 3?	Demonstration of monitoring capability and examples of how voltages and MVAR flows are controlled. Be prepared to demonstrate in an area that requires close attention to voltage levels.	PJM Operating Agreement, Schedule 1: 1.7.15 Corrective Action. M-3 Transmission Operations (Rev. 35), Section 3.5: Voltage Control Actions
VAR	VAR-001-1	R4.	Each Transmission Operator shall specify a voltage or Reactive Power schedule at the interconnection between the generator facility and the Transmission Owner's facilities to be maintained by each generator. The Transmission Operator shall provide the voltage or Reactive Power schedule to the associated Generator Operator and direct the Generator Operator to comply with the schedule in automatic voltage control mode (AVR in service and controlling voltage). 1. The voltage schedule is a target voltage to be maintained within a tolerance band during a specified period.	Each Member TO shall establish and coordinate voltage schedules for all generators within that LCC zone and will direct generators to adjust voltage schedules after coordinating with PJM Dispatch	Do you have documented procedures directing the TO operators to direct generators to adjust voltages as required?	Provide documented evidence, voice recordings etc of directing generator adjustments for voltages.	M-3 Transmission Operations (Rev. 35), Section 3.5: Voltage Control Actions
VAR	VAR-001-1	R6.	The Transmission Operator shall know the status of all transmission Reactive Power resources, including the status of voltage regulators and power system stabilizers.	Each TO shall report scheduled and forced outages for reportable transmission facilities through eDART. TO shall ensure all bulk electric resources are part of reportable transmission facilities		Please provide examples of supplying PJM with the following information: A. Unit MVAR Reserve (The sum of the differences between the present operating points, leading or lagging, and the lagging MVAR capability of all synchronized units.) B. Lagging MVAR Reserve (The sum of the lagging MVAR capability of all online condensers and Static VAR Compensators (SVCs).) C. Transmission Capacitor/Reactor MVAR Reserve (The sum of the nameplate MVAR values of capacitors that are capable of being energized or reactors that can be removed from service.)	M-1 Control Center Requirements (Rev. 16), Section 3.5: Real-Time Analysis Monitoring Requirements for System Security M-3 Transmission Operations (Rev. 35), Section 1.5: PJMs Real-Time Reliability Model; Section 3.5: Voltage Control Actions
VAR	VAR-001-1	R7.	The Transmission Operator shall be able to operate or direct the operation of devices necessary to regulate transmission voltage and reactive flow.	At the direction of PJM each TO member shall be able to operate the devices under its control, necessary to regulate transmission voltage and reactive flow		Demonstrate capability to operate the devices necessary to regulate transmission voltage and reactive flow	M-3 Transmission Operations (Rev. 35), Section 1: Transmission Operations Requirements
VAR	VAR-001-1	R8.	Each Transmission Operator shall operate or direct the operation of capacitive and inductive reactive resources within its area – including reactive generation scheduling; transmission line and reactive resource switching; and, if necessary, load shedding	At PJM direction or with prior approval each TO member shall operate or direct the operation of capacitive and inductive reactive resources within its area – including generation reactive output; transmission line and reactive resource switching; and, if necessary, load shedding – to maintain system and Interconnection voltages within established limits."		Provide examples of coordinating the removal of operating or directing the operation of capacitive and inductive reactive resources within its area – including generation reactive output; transmission line and reactive resource switching; and, if necessary, load shedding – to maintain system and Interconnection voltages within established limits.	PJM OA, 10.4 Duties and Responsibilities M-3 Transmission Operations (Rev. 35), Section 3: Voltage and Stability Operating Guidelines

Planning Standards

Category	Standard Number	Requirement Number	Approved BOT/FERC Standards	Assigned Tasks	Audit Question	Evidence of Compliance (What auditors will be looking for)	Reference Documents
FAC	**FAC-001-0**	**Purpose**	**To avoid adverse impacts on reliability, Transmission Owners must establish facility connection and performance requirements.**				
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 Organization, 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:	PJM shall post the TOs specific interconnection requirements on the PJM web site.		Prior to the audit, the auditors will confirm that PJM posts the facility connection requirements as per the standard.	Open Access Transmission Tariff (8/11/09), Sections 1, 1.2c M-14C (Rev.5) Generation and Transmission Interconnection Facility Construction, Section 3
FAC	FAC-014	**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.	Confirm pre/post contingency flows and ratings.			M-3 (Rev. 35) Sections 1.2, 1.5 M-37 (Rev. 5), Section 3 (p. 10, 11), Sections 3.1& 3.2 Transmission Owners Agreement (6/20/09), Section 4.11 Operating Agreement (7/17/09), Section 11.3.2
MOD	**MOD-010-0**	**Purpose**	**To establish consistent data requirements, reporting procedures, and system models to be used in the analysis of the reliability of the Interconnected Transmission Systems.**				
MOD	MOD-010-0	R1.	The Transmission Owners, Transmission Planners Generator Owners, and Resource Planners (specified in the data requirements and reporting procedures of MOD-011-0_R1) shall provide appropriate equipment characteristics, system data, and existing and future Interchange Schedules in compliance with its respective Interconnection Regional steady-state modeling and simulation data requirements and reporting procedures as defined in Reliability Standard MOD-011-0_R 1.	Shared responsibility: Member TO provides transmission modeling information to the RRO; PJM supplies interchange and load forecast.		Provide evidence that you provided transmission modeling information to the RRO	M-5 (Rev. 5) Power System Application Data, p. 6 RFC MMWG Procedure
MOD	MOD-010-0	R2.	The Transmission Owners, Transmission Planners, Generator Owners, and Resource Planners (specified in the data requirements and reporting procedures of MOD-011-0_R1) shall provide this steady-state modeling and simulation data to the Regional Reliability Organizations, NERC, and those entities specified within Reliability Standard MOD-011-0_R 1. If no schedule exists, then these entities shall provide the data on request (30 calendar days).	Shared responsibility: Member TO provides transmission modeling information to the RRO; PJM supplies interchange and load forecast.		Provide evidence that you provided transmission modeling information to the RRO	M-5, (Rev. 5) Power System Application Data, Power Flow Data Guidelines, p.5 RFC MMWG Procedure
MOD	**MOD-012-0**	**Purpose**	**To establish consistent data requirements, reporting procedures, and system models to be used in the analysis of the reliability of the interconnected transmission systems.**				

Planning Standards

Category	Standard Number	Requirement Number	Approved BOT/FERC Standards	Assigned Tasks	Audit Question	Evidence of Compliance (What auditors will be looking for)	Reference Documents
MOD	MOD-012-0	R1.	The Transmission Owners, Transmission Planners, Generator Owners, and Resource Planners (specified in the data requirements and reporting procedures of MOD-013-0_R4) shall provide appropriate equipment characteristics and system data in compliance with the respective Interconnection-wide Regional dynamics system modeling and simulation data requirements and reporting procedures as defined in Reliability Standard MOD-013-0_R 4.	Member TO provides transmission system equipment characteristics and system data to the RRO either directly or through PJM; PJM supplies interchange and load forecast.	Do you provide the data directly or through PJM?	Be prepared to show that you provide transmission system equipment characteristics and system data to the RRO either directly or through PJM.	M-5, (Rev. 5) Power System Application Data, Power Flow Data Guidelines, p.5 RFC MMWG Procedure
	MOD-012-0	R2.	The Transmission Owners, Transmission Planners, Generator Owners, and Resource Planners (specified in the data requirements and reporting procedures of MOD-013-0_R4) shall provide dynamics system modeling and simulation data to its Regional Reliability Organization(s), NERC, and those entities specified within the applicable reporting procedures identified in Reliability Standard MOD-013-0_R 1. If no schedule exists, then these entities shall provide data on request (30 calendar days).	Member TO provides dynamics system modeling and simulation data for transmission to its Regional Reliability Organization(s), NERC either directly or through PJM; PJM supplies interchange and load forecast.	Do you provide the data directly or through PJM?	Be prepared to show evidence that you provided dynamics system modeling and simulation data in accordance with the procedures in the PJM Manuals.	M-5, (Rev. 5) Power System Application Data, Power Flow Data Guidelines, p.5 RFC MMWG Procedure
PRC	**PRC-001-1**	**Purpose**	**To ensure system protection is coordinated among operating entities.**				
PRC	PRC-001-1	R1.	Each Transmission Operator, Balancing Authority, and Generator Operator shall be familiar with the purpose and limitations of protection system schemes applied in its area.	Each member TO shall be familiar with the purpose and limitations of protection system schemes applied in its area. Each member TO shall provide PJM protection system information on request.	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 PJM?	1. Documented protection scheme information. 2. Evidence that you provided information about protection schemes within your area to PJM	M-3 Transmission Operations (Rev. 35), Section 1.2; Section 4: Protection System Coordination M-14D Generator Operational Requirements (Rev. 16), Section 2.1 M-40 Certification and Training Requirements (Rev. 8), Operator Training Simulation; Appendix 3.
PRC	PRC-001-1	**R2. (Heading)**	Each Generator Operator and Transmission Operator shall notify reliability entities of relay or equipment failures as follows:				
PRC	PRC-001-1	R2.2.	If a protective relay or equipment failure reduces system reliability, the Transmission Operator shall notify its Reliability Coordinator and affected Transmission Operators and Balancing Authorities. The Transmission Operator shall take corrective action as soon as possible.	TO must notify PJM Operations of any relay or equipment failures in accordance with M-3 Transmission operations, Section 4 Reportable Transmission facility outages, pg 65, 2nd paragraph	Have you notified PJM about all relay equipment and failures (since your last audit), in accordance with Manual 03.	Evidence (logs, voice recordings, reports etc) that you notified PJM about all relay equipment and failures in accordance with Manual 03.	M-3 Transmission Operations (Rev. 35), Section 4 Reportable Transmission facility outages, p. 58
PRC	PRC-001-1	R3.2	Each Transmission Operator shall coordinate all new protective systems and all protective system changes with neighboring Transmission Operators and Balancing Authorities.	Each member TO shall provide information as required and work with PJM to assist in the coordination of new protective systems or changes to systems.		Please be prepared to provide examples of information sharing with PJM to assist in the coordination as indicated.	M-3 Transmission Operations (Rev. 35), Section 4.2, p. 50-51 M-14C Generation and Transmission Facility Construction (Rev. 5), Section 3, page 40 M-14D Generator Operational Requirements (Rev. 16), Section 4.2.1

Planning Standards

Category	Standard Number	Requirement Number	Approved BOT/FERC Standards	Assigned Tasks	Audit Question	Evidence of Compliance (What auditors will be looking for)	Reference Documents
PRC	PRC-001-1	R4	Each Transmission Operator shall coordinate protection systems on major transmission lines and interconnections with neighboring Generator Operators, Transmission Operators, and Balancing Authorities.	Each member TO shall provide information as required and work with PJM to assist in the coordination protection systems on major transmission lines and interconnections.		Please be prepared to provide examples of information sharing with PJM to assist in the coordination as indicated.	M-3 Transmission Operations (Rev. 35), Section 4.2, p. 50-51 M-14C Generation and Transmission Facility Construction (Rev. 5), Section 3, page 40 M-14D Generator Operational Requirements (Rev. 16), Section 4.2.1
PRC	PRC-001-1	**R5. (Heading)**	A Generator Operator or Transmission Operator shall coordinate changes in generation, transmission, load or operating conditions that could require changes in the protection systems of others:				
PRC	PRC-001-1	R5.2.	Each Transmission Operator shall notify neighboring Transmission Operators in advance of changes in generation, transmission, load, or operating conditions that could require changes in the other Transmission Operators' protection systems.	PJM will notify neighboring TOPs of changes in generation, transmission, load, or operating conditions that, through the PJM study processes or experience, could require changes in the other Transmission Operators' protection systems. Member TO will work with PJM staff to identify changes in transmission, load, or operating conditions that may effect neighboring TOPs.		Procedural document For example: need documentation that PS coordinates with ConEd	M-3 Transmission Operations (Rev. 35), Section 4.2 M-14C Generation and Transmission Facility Construction (Rev. 5), Section 3, page 40.
PRC	PRC-001-1	R6.	Each Transmission Operator and Balancing Authority shall monitor the status of each Special Protection System in their area, and shall notify affected Transmission Operators and Balancing Authorities of each change in status.	Each member TO shall monitor the status of each Special Protection System in their area, and shall notify PJM of changes in status. PJM will notify affected TOPs..	Do you have a documented procedure that requires you to monitor the status of each Special Protection System in their area, and notify PJM of changes in status.?	Each Transmission Operator and Balancing Authority shall have and provide upon request evidence that could include but is not limited to, documentation, electronic logs, computer printouts, or computer demonstration or other equivalent evidence that will be used to confirm that it monitors the Special Protection Systems in its area. (Requirement 6 Part 1) M3. Each Transmission Operator and Balancing Authority shall have and provide upon request evidence that could include but is not limited to, operator logs, phone records, electronic-notifications or other equivalent evidence that will be used to confirm that it notified affected Transmission Operator and Balancing Authorities of changes in status of one of its Special Protection Systems. (Requirement 6 Part 2)	M-3 Transmission Operations (Rev. 5), Section 5 M-14C Generation and Transmission Facility Construction (Rev. 5) M-14D Generator Operational Requirements (Rev. 16), Section 4.2.1 M-37 Reliability Coordination (Rev. 5), Attachment A; Section 3.1; Section 4.11

ReliabilityFirst (RFC) Standards

Category	Standard Number	Requirement Number	Approved BOT/FERC Standards	Assigned Tasks	Audit Question	Evidence of Compliance (What auditors will be looking for)	Reference Documents
RFC	EOP-001-RFC-01	R1.	In addition to developing, maintaining and implementing an Emergency Operations Plan (EOP) compliant with the requirements of NERC standard EOP-001, each Balancing Authority, Reliability Coordinator, and Transmission Operator shall include the elements of Attachment A to RFC EOP-001.	It is a PJM requirement to develop emergency plans, and the Member TOs are expected to implement plans when and as directed by PJM.	Can you show that each emergency plan has considered each of the requirements of Attachment A	Auditors will check that each emergency plan has addressed the requirements of Attachment A	PJM Operating Agreement (7/17/09) Section 11.3 Transmission Owners Agreement (6/20/09) Sections 4.5, 4.7 M-3 Transmission Operations (Rev. 35), Section 1.2 M-37 Reliability Coordination (Rev. 5), Section 1.1 M-13 Emergency Operations (Rev. 38), Section 2
RFC	EOP-001-RFC-01	Attachment A #04	Selected Rotating Service Interruptions – Document and indicate when an interruption of selected distribution circuits can be utilized during the period(s) of maximum System demand on a rotational basis in accordance with specified load reduction amounts, while minimizing, to the extent practicable, interruption to facilities which are essential services.	As part of the Member TO responsibility to take actions as directed by PJM, the TO shall inform PJM when an interruption of selected distribution circuits can be utilized during the period(s) of maximum System demand on a rotational basis in accordance with specified load reduction amounts, while minimizing, to the extent practicable, interruption to facilities which are essential services.			M-13 Emergency Operations (Rev. 38), Section 1.1; Section 2.3.2 Step 8; Section 5.2, Step 8
RFC	EOP-001-RFC-01	Attachment A #08	Implementation Times – Document the approximate time to implement corrective actions contained in the EOP (which is an important factor in considering emergency actions that must be taken and when they should be ordered.)	As part of the Member TO responsibility to take actions as directed by PJM, the TO shall inform PJM of the approximate time it will take to implement corrective actions contained in the EOP.			M-13 Emergency Operations (Rev. 38), Attachment G
RFC	EOP-001-RFC-01	Attachment A #09	Conservative System Operation for Unusual and Infrequent System Conditions– Provide guidelines during any periods when monitoring capability is lost, for any reason, or when system conditions are subject to man-made threats, such that a more conservative operating state is utilized	As part of the Member TO responsibility to take actions as directed by PJM, the TO shall inform PJM when local monitoring capability is lost or when local the system conditions are such that a more conservative operating state may be advisable.			M-13 Emergency Operations (Rev. 38), Section 3.2 M-1 Control Center Requirements (Rev. 16), Section 2.6.1
RFC	EOP-501-RFC-01	R3.	Each Transmission Operator and Balancing Authority shall participate in its Reliability Coordinator's training program as specified in R2.	Each member TO shall ensure that their shift operators participate in the PJM training program as specified in R2.		Training Program records cross checked with shift staff names.	M-40 Certification and Training Requirements and M-37 Reliability Coordination
RFC	EOP-007-RFC-01	R1.	Each Transmission Operator shall develop and maintain a Blackstart Capability Plan and provide a list of units designated as blackstart capable for inclusion in the RFC Blackstart Database as required in NERC EOP-009-0. The plan and data will be provided to RFC annually by the end of each year or within thirty days of a request.	Each member TO shall develop and maintain a Blackstart Capability Plan for their area, and provide a list of units designated as blackstart to PJM. The data will be provided by PJM to RFC annually by the end of each year or within thirty days of a request.		Black Start plan for the member TO area.	Tariff Schedule 6A M 12 (Rev. 20) , Balancing Operations, Sec. 4, Ancillary Services, Black Start Service, pp 50 - 57 M-14 D (Rev. 16), Generation Operations, Section 7.1.5
RFC	EOP-007-RFC-01	R1.1	The list of blackstart units provided by each Transmission Operator shall include the unit name, location, megawatt capability, type of unit, latest date of test, and starting method.	The black start unit data provided to PJM shall include the unit name, location, megawatt capability, type of unit, latest date of test, and starting method.		Black Start Unit data.	Tariff Schedule 6A M 12 (Rev. 20), Balancing Operations, Sec. 4, Ancillary Services, Black Start Service, pp 50 - 57 M-14 D (Rev. 16), Generation Operations, Section 7.1.5
RFC	EOP-007-RFC-01	R2.	Each Transmission Operator shall verify through either testing or through simulation that the units listed in its Blackstart Capability Plan can perform their intended function.	Each member TO shall verify their restoration procedure as part of the PJM simulation of system restoration at least annually.		On-site Inspection: Provide test results for all Black start Units used in your restoration plan	Tariff Schedule 6A M 12 (Rev. 20), Balancing Operations, Sec. 4, Ancillary Services, Black Start Service, pp 50 - 57 M-14 D (Rev. 16) Generation Operations
RFC	EOP-007-RFC-01	R2.1	If verification is done through testing, documentation of such tests shall include how the test was performed, including operating steps, an indication of the startup of sufficient auxiliary equipment required for startup and operation of the next nonblackstart unit, or	If the member TO verification is done through testing, documentation of such tests shall include how the test was performed, including operating steps, an indication of the startup of sufficient auxiliary equipment required for startup and operation of the next nonblackstart unit.		Documentation that includes how the test was performed, including operating steps, an indication of the startup of sufficient auxiliary equipment required for startup and operation of the next nonblackstart unit.	Tariff Schedule 6A M 12 (Rev. 20), Balancing Operations, Sec. 4, Ancillary Services, Black Start Service, pp 50 - 57 M-14 D (Rev. 16), Generation Operations, Section 7.1.5
RFC	EOP-007-RFC-01	R2.2.	If verification in is done through simulation, the analytical analysis must be the result of dynamic studies that include the capacitive effects of cranking path circuits, unit reactive capabilities, possible steady-state and transient switching voltages, acceptable frequency, and proper modeling of large auxiliary motors required in startup.	If member TO verification in is done through simulation, the analytical analysis must be the result of dynamic studies that include the capacitive effects of cranking path circuits, unit reactive capabilities, possible steady-state and transient switching voltages, acceptable frequency, and proper modeling of large auxiliary motors required in startup.		Documentation that shows that the analytical analysis was done using dynamic studies that include the capacitive effects of cranking path circuits, unit reactive capabilities, possible steady-state and transient switching voltages, acceptable frequency, and proper modeling of large auxiliary motors required in startup.	Tariff Schedule 6A M 12 (Rev. 20) , Balancing Operations, Sec. 4, Ancillary Services, Black Start Service, pp 50 - 57 M-14 D (Rev. 16.) Generation Operations, Section 7.1.5
RFC	EOP-007-RFC-01	R3.	Each Transmission Operator shall review its Blackstart Capability Plan at least once every fives years or more frequently upon changes to the system that warrants such review.			RFC Questionnaire: provide documentation that the black start plan has been reviewed at least once every 5 years	Tariff Schedule 6A M 12, Balancing Operations, Sec. 4, Ancillary Services, Black Start Service, pp 50 - 57 M-14 D Generation Operations, Section 7.1.5

Critical Infrastructure Protection (CIP) Standards

Category	Standard Number	Requirement Number	Approved NERC BOT/FERC Standards	Assigned Tasks	Audit Question	Evidence of Compliance (What auditors will be looking for)	Reference Documents
CIP	CIP-001-1	R1.	Each Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator, and Load Serving Entity shall have procedures for the recognition of and for making their operating personnel aware of sabotage events on its facilities and multi-site sabotage affecting larger portions of the Interconnection.	Each TO member, as LCC, shall have procedures for the recognition of and for making their operating personnel and PJM aware of sabotage events on its facilities and multi-site sabotage affecting larger portions of the Interconnection.		Provide evidence to verify that procedures (either electronic or hard copy) exist for recognition of sabotage events described in Requirement 1. The procedures shall contain information to make operating personnel aware of sabotage events.	M-13 Emergency Operations (Rev. 20), Section 1.2: Governmental Notifications & Public appeals Procedures M-1, Attachment B, Nuclear Plant Communications Protocol
CIP	CIP-001-1	R2.	Each Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator, and Load Serving Entity shall have procedures for the communication of information concerning sabotage events to appropriate parties in the Interconnection.	Each TO member, as LCC, shall have procedures for the communication of information concerning sabotage events to PJM.		The auditors will review your documented procedures for communicating information concerning sabotage events and ask for evidence to verify the list of appropriate parties in the Interconnection shall be notified of sabotage events.	M-13: Emergency Operations (Rev. 38), Section 1.3: Communications
CIP	CIP-001-1	R3.	Each Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator, and Load Serving Entity shall provide its operating personnel with sabotage response guidelines, including personnel to contact, for reporting disturbances due to sabotage events.	Each TO member, as LCC, shall provide its operating personnel with sabotage response guidelines, including personnel to contact which shall include PJM, for reporting disturbances due to sabotage events.		The auditors will review the evidence to verify that documented sabotage response guidelines exist, and that such guidelines include personnel contacts for reporting disturbances due to sabotage events. Be prepared to provide evidence that the documented sabotage response guidelines were provided to operating personnel for reporting disturbances due to sabotage events.	M-13: Emergency Operations (Rev. 38), Section 1: Overview; Section 4
CIP	CIP-001-1	R4.	Each Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator, and Load Serving Entity shall establish communications contacts, as applicable, with local Federal Bureau of Investigation (FBI) or Royal Canadian Mounted Police (RCMP) officials and develop reporting procedures as appropriate to their circumstances.	Each TO member, as LCC, 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, including notifying the PJM Shift Supervisor for any received or observed sabotage event.		Be prepared to provide evidence that can be used to verify that you have established a list identifying, as applicable, communications contacts with local Federal Bureau of Investigation (FBI) or (RCMP) and have develop reporting procedures. NERC Guidance: To ensure uniformity and consistency among the Regional Entities, NERC hereby provides guidance as follows: 1. The referenced Requirement does not require a registered entity to produce evidence of a two-way communication with the FBI or RCMP officials, nor does it require a registered entity to demonstrate that it has a relationship with the FBI or RCMP officials. Rather, the registered entity must produce evidence that it has correct and working contact information with the FBI or RCMP officials, and; 2. The registered entity must produce internal procedures for its personnel to report certain events to the FBI or RCMP. While the measure suggests some types of evidence to support compliance, it does not require agreed upon procedures between the registered entity and the FBI or RCMP and allows for communication records. The referenced Requirement does not specify the nature of the contact. In accordance with the referenced Reliability Standard Requirement the registered entity must provide to the Regional Entities evidence that its procedures contain correct and working contact information for the applicable local FBI or RCMP officials and such record evidence may include written notes, e-mail, etc., indicating who within the organization identified this contact information and describing how the	M-13: Emergency Operations (Rev. 38), Section 4.2: Communications Plan