Project 2009-03 Emergency Operations (EOP-001-2.1b, -002-3.1, and -003-2)

Consideration of Issues and Directives | November 2014

Project 2009-03 Emergency Operations		
Issue or Directive	**Source**	**Consideration of Issue or Directive**
P 561. (S- Ref 10063 – EOP-001) "As we noted in the NOPR, some control areas define and effectively use more than the "normal," "alert" and "emergency" system states included in the Blackout Report recommendation.**238** We proposed that the ERO determine the optimum number of system states to be employed continent-wide and to consider the addition of the restoration state.**239** Accordingly, we direct the ERO to determine the optimum number of continent-wide system states and their attributes and to modify the Reliability Standard through the Reliability Standards development process to accomplish this objective."	FERC Order No. 693	Cautionary could be normal operations for one entity, while an emergency state for another entity. It is virtually impossible to define Emergency system states, as they are case specific. The intent of the EOP SDT is for the TOPs and BAs to identify, in Requirements R1 and R2, conditions that put them into an emergency state. So the EOP SDT believes that the directive is met with EOP-011-1 through an equally effective method. **R1.** Each Transmission Operator shall develop, maintain, and implement a Reliability Coordinator-reviewed Operating Plan(s) to mitigate operating Emergencies in its Transmission Operator Area. The Operating Plan(s) shall include the following, as applicable: *[Violation Risk Factor: High] [Time Horizon: Real-Time Operations, Operations Planning]* **1.1.** Roles and responsibilities for activating the Operating Plan(s); **1.2.** Processes to prepare for and mitigate Emergencies including: **1.2.1.** Notification to its Reliability Coordinator, to include current and projected conditions, when experiencing an operating Emergency; **1.2.2.** Cancellation or recall of Transmission and generation outages; **1.2.3.** Transmission system reconfiguration; **1.2.4.** Redispatch of generation request;

		1.2.5. Provisions for operator-controlled manual Load shedding that minimizes the overlap with automatic Load shedding and are capable of being implemented in a timeframe adequate for mitigating the Emergency; and **1.2.6.** Reliability impacts of extreme weather conditions. **R2.** Each Balancing Authority shall develop, maintain, and implement a Reliability Coordinator-reviewed Operating Plan(s) to mitigate Capacity Emergencies and Energy Emergencies within its Balancing Authority Area. The Operating Plan(s) shall include the following, as applicable: *[Violation Risk Factor: High] [Time Horizon: Real-Time Operations, Operations Planning]* **2.1.** Roles and responsibilities for activating the Operating Plan(s); **2.2.** Processes to prepare for and mitigate Emergencies including: **2.2.1.** Notification to its Reliability Coordinator, to include current and projected conditions when experiencing a Capacity Emergency or Energy Emergency; **2.2.2.** Requesting an Energy Emergency Alert, per Attachment 1; **2.2.3.** Managing generating resources in its Balancing Authority Area to address: **2.2.3.1.** capability and availability; **2.2.3.2.** fuel supply and inventory concerns; **2.2.3.3.** fuel switching capabilities; and **2.2.3.4.** environmental constraints. **2.2.4.** Public appeals for voluntary Load reductions; **2.2.5.** Requests to government agencies to implement their programs to achieve necessary energy reductions;

		2.2.6. Reduction of internal utility energy use; **2.2.7.** Use of Interruptible Load, curtailable Load and demand response; **2.2.8.** Provisions for operator-controlled manual Load shedding that minimizes the overlap with automatic Load shedding and are capable of being implemented in a timeframe adequate for mitigating the Emergency; and **2.2.9.** Reliability impacts of extreme weather conditions.
P 562. (S- Ref 10064 – EOP-001) "Further, we agree with ISO-NE that the proposed modification should be fieldtested and that policies and procedure be put in place, including operator training, before any processes for continent-wide system states are implemented. Such testing will help assure that all applicable entities and their personnel understand how the terms will be used and will allow operators to train staff to make any necessary changes to their policies and procedures. We direct the ERO to consider such a pilot program as it modifies EOP-001-0 through the Reliability Standards development process."	FERC Order No. 693	The EOP SDT concluded that to run a "fieldtest" would not be a viable option with Emergency states, as one would not intentionally create an Emergency state on the System just to see if it can recover. The EOP SDT concluded that the currently-enforced PER-005-1 standard addresses Emergency operations training for Reliability Coordinators, Balancing Authorities and Transmission Operators: **R3.** At least every 12 months each Reliability Coordinator, Balancing Authority and Transmission Operator shall provide each of its System Operators with at least 32 hours of emergency operations training applicable to its organization that reflects emergency operations topics, which includes system restoration using drills, exercises or other training required to maintain qualified personnel. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]* **R3.1.** Each Reliability Coordinator, Balancing Authority and Transmission Operator that has operational authority or control over Facilities with established IROLs or has established operating guides or protection systems to mitigate IROL violations shall provide each System Operator with emergency operations training using simulation technology such as a simulator, virtual technology, or other technology that replicates the operational behavior of the BES during normal and emergency conditions.

P 571 (S- Ref 10066 – EOP-002) "As we stated in the NOPR, neither EOP-002-2 nor any other Reliability Standard addresses the impact of inadequate transmission during generation emergencies. The Commission agrees with MRO that "insufficient transmission capability" could be due to various causes. The ERO should examine whether to clarify this term in the Reliability Standards development process."	FERC Order No. 693	The EOP SDT has included transmission related items to be included in the Transmission Operator's Emergency Operating Plan(s). These items impact transmission capability and include Requirement R1, Parts 1.2.2-1.2.4: 1.2.2. Cancellation or recall of Transmission and generation outages; 1.2.3. Transmission system reconfiguration; 1.2.4. Redispatch of generation request;
573 (S- Ref 10067 – EOP-003) "The Commission agrees with FirstEnergy that for demand-side resources to qualify as another tool for balancing authorities to use in meeting control performance and disturbance control Reliability Standards, they must meet comparable technical performance requirements as generation resource options. In response to comments from Comverge and APPA, the Commission believes that curtailable loads are adequately addressed in Requirement R6 of the Reliability Standard but that demand response is not covered. Demand response covers considerably more resources than interruptible load. Accordingly, the Commission directs the ERO to modify the Reliability Standard to include all technically	FERC Order No. 693	The EOP SDT removed EOP-001-2.1b, Attachment 1 and incorporated it into this standard under the applicable requirements. The EOP SDT developed individual requirements for the Transmission Operator and the Balancing Authority to develop, maintain and implement Operating Plan(s) to mitigate operating Emergencies. The requirements incorporate the applicable elements of Attachment 1 for each entity. **R3.** Each Transmission Operator shall develop, maintain, and implement a Reliability Coordinator-reviewed Operating Plan(s) to mitigate operating Emergencies in its Transmission Operator Area. The Operating Plan(s) shall include the following, as applicable: *[Violation Risk Factor: High] [Time Horizon: Real-Time Operations, Operations Planning]* **3.1.** Roles and responsibilities for activating the Operating Plan(s); **3.2.** Processes to prepare for and mitigate Emergencies including: **3.2.1.** Notification to its Reliability Coordinator, to include current and projected conditions, when experiencing an operating Emergency; **3.2.2.** Cancellation or recall of Transmission and generation outages; **3.2.3.** Transmission system reconfiguration;

feasible resource options in the management of emergencies. These options should include generation resources, demand response resources and other technologies that meet comparable technical performance requirements.”		**3.2.4.** Redispatch of generation request; **3.2.5.** Provisions for operator-controlled manual Load shedding that minimizes the overlap with automatic Load shedding and are capable of being implemented in a timeframe adequate for mitigating the Emergency; and **3.2.6.** Reliability impacts of extreme weather conditions. **R4.** Each Balancing Authority shall develop, maintain, and implement a Reliability Coordinator-reviewed Operating Plan(s) to mitigate Capacity Emergencies and Energy Emergencies within its Balancing Authority Area. The Operating Plan(s) shall include the following, as applicable: *[Violation Risk Factor: High] [Time Horizon: Real-Time Operations, Operations Planning]* **4.1.** Roles and responsibilities for activating the Operating Plan(s); **4.2.** Processes to prepare for and mitigate Emergencies including: **4.2.1.** Notification to its Reliability Coordinator, to include current and projected conditions when experiencing a Capacity Emergency or Energy Emergency; **4.2.2.** Requesting an Energy Emergency Alert, per Attachment 1; **4.2.3.** Managing generating resources in its Balancing Authority Area to address: **4.2.3.1.** capability and availability; **4.2.3.2.** fuel supply and inventory concerns; **4.2.3.3.** fuel switching capabilities; and **4.2.3.4.** environmental constraints. **4.2.4.** Public appeals for voluntary Load reductions;

		4.2.5. Requests to government agencies to implement their programs to achieve necessary energy reductions; **4.2.6.** Reduction of internal utility energy use; **4.2.7.** Use of Interruptible Load, curtailable Load and demand response; **4.2.8.** Provisions for operator-controlled manual Load shedding that minimizes the overlap with automatic Load shedding and are capable of being implemented in a timeframe adequate for mitigating the Emergency; and **4.2.9.** Reliability impacts of extreme weather conditions.
595 (S- Ref 10072 – EOP-003) "The Commission concludes that the Reliability Standard needs to be modified to ensure that adequate load shedding capabilities are provided so that system operators have an effective operating measure of last resort to contain system emergencies and prevent cascading. The Commission recognizes that the amount of load shedding capability required is dependent on system characteristics and therefore it may not be feasible to have a uniform nationwide load shedding capability. This, however, does not preclude a uniform nationwide criterion on the methodology for establishing load shedding capability that would specify the minimum	FERC Order No. 693	The EOP SDT removed EOP-001-2.1b, Attachment 1 and incorporated it into this standard under the applicable requirements. The EOP SDT developed individual requirements for the Transmission Operator and the Balancing Authority to develop, maintain and implement Operating Plan(s) to mitigate operating Emergencies. The requirements incorporate the applicable elements of Attachment 1 for each entity. **R1.** Each Transmission Operator shall develop, maintain, and implement a Reliability Coordinator-reviewed Operating Plan(s) to mitigate operating Emergencies in its Transmission Operator Area. The Operating Plan(s) shall include the following, as applicable: *[Violation Risk Factor: High] [Time Horizon: Real-Time Operations, Operations Planning]* **1.1.** Roles and responsibilities for activating the Operating Plan(s); **1.2.** Processes to prepare for and mitigate Emergencies including: **1.2.1.** Notification to its Reliability Coordinator, to include current and projected conditions, when experiencing an operating Emergency; **1.2.2.** Cancellation or recall of Transmission and generation outages;

amount of load shedding capability that should be provided based on system characteristics and conditions and the maximum amount of delay before load shedding can be implemented. The Commission directs the ERO to address the minimum load and maximum time concerns of the Commission through the Reliability Standards development process. We suggest that a review of industry best practices would be useful in developing nationwide critera.		**1.2.3.** Transmission system reconfiguration; **1.2.4.** Redispatch of generation request; **1.2.5.** Provisions for operator-controlled manual Load shedding that minimizes the overlap with automatic Load shedding and are capable of being implemented in a timeframe adequate for mitigating the Emergency; and **1.2.6.** Reliability impacts of extreme weather conditions. **R2.** Each Balancing Authority shall develop, maintain, and implement a Reliability Coordinator-reviewed Operating Plan(s) to mitigate Capacity Emergencies and Energy Emergencies within its Balancing Authority Area. The Operating Plan(s) shall include the following, as applicable: *[Violation Risk Factor: High] [Time Horizon: Real-Time Operations, Operations Planning]* **2.1.** Roles and responsibilities for activating the Operating Plan(s); **2.2.** Processes to prepare for and mitigate Emergencies including: **2.2.1.** Notification to its Reliability Coordinator, to include current and projected conditions when experiencing a Capacity Emergency or Energy Emergency; **2.2.2.** Requesting an Energy Emergency Alert, per Attachment 1; **2.2.3.** Managing generating resources in its Balancing Authority Area to address: **2.2.3.1.** capability and availability; **2.2.3.2.** fuel supply and inventory concerns; **2.2.3.3.** fuel switching capabilities; and

		2.2.3.4. environmental constraints. **2.2.4.** Public appeals for voluntary Load reductions; **2.2.5.** Requests to government agencies to implement their programs to achieve necessary energy reductions; **2.2.6.** Reduction of internal utility energy use; **2.2.7.** Use of Interruptible Load, curtailable Load and demand response; **2.2.8.** Provisions for operator-controlled manual Load shedding that minimizes the overlap with automatic Load shedding and are capable of being implemented in a timeframe adequate for mitigating the Emergency; and **2.2.9.** Reliability impacts of extreme weather conditions.
P 597 (S- Ref 10073 – EOP-003) and Paragraph 603 "As suggested by California PUC, periodic drills of simulated load shedding should involve all participants required to ensure successful implementation of load shedding plans. As such, the drills should extend beyond system operators to distribution operators and LSEs. The Reliability Standard should require periodic drills by entities subject to section 215, and require those entities to seek participation by other entities. The drills should test the readiness and functionality of the load shedding plans,	FERC Order No. 693	Directive is addressed by several currently-effective Reliability Standards, including EOP-006-2 – System Restoration Coordination, and PER-005-1 – Operations Personnel Training. Currently-effective Reliability Standard EOP-006-2, Requirement R10 addresses periodic drills and provides: R10. Each Reliability Coordinator shall conduct two System restoration drills, exercises, or simulations per calendar year, which shall include the Transmission Operators and Generator Operators as dictated by the particular scope of the drill, exercise, or simulation that is being conducted. R10.1. Each Reliability Coordinator shall request each Transmission Operator identified in its restoration plan and each Generator Operator identified in the Transmission Operators' restoration plans to participate in a drill, exercise, or simulation at least every two calendar years.

including, at times, the actual deployment of personnel. Therefore the Commission disagrees with FirstEnergy that the requirement for periodic drills of simulated load shedding should be incorporated into the new PER-005-0 Reliability Standard that is currently being drafted to address operator training."		Requirement R3 of currently-effective Reliability Standard PER-005-1 provides: R3. At least every 12 months each Reliability Coordinator, Balancing Authority and Transmission Operator shall provide each of its System Operators with at least 32 hours of emergency operations training applicable to its organization that reflects emergency operations topics, which includes system restoration using drills, exercises or other training required to maintain qualified personnel. R3.1. Each Reliability Coordinator, Balancing Authority and Transmission Operator that has operational authority or control over Facilities with established IROLs or has established operating guides or protection systems to mitigate IROL violations shall provide each System Operator with emergency operations training using simulation technology such as a simulator, virtual technology, or other technology that replicates the operational behavior of the BES during normal and emergency conditions. While not explicitly included, the training required by PER-005-1 (and included in Requirement R4 of future-effective Reliability Standard PER-005-2) could include simulated load shedding.
P 601 (S- Ref 10074 – EOP-003) "APPA Comments are in Paragraph 598: 'In addition, APPA states that NERC should consider requiring balancing authorities and transmission operators to expand coordination and planning of their automatic and manual load shedding plans to include their respective Regional Entities, reliability coordinators and generation owners'."	FERC Order No. 693	The EOP SDT removed EOP-001-2.1b, Attachment 1 and incorporated it into this standard under the applicable requirements. The EOP SDT developed individual requirements for the Transmission Operator and the Balancing Authority to develop, maintain and implement Operating Plan(s) to mitigate operating Emergencies. The requirements incorporate the applicable elements of Attachment 1 for each entity. Coordination and planning of automatic and manual Load shedding has been adequately addressed by requiring Transmission Operators and Balancing Authorities to have a Reliability Coordinator-reviewed Operating Plan(s) to mitigate operating Emergencies. **R1.** Each Transmission Operator shall develop, maintain, and implement a Reliability Coordinator-reviewed Operating Plan(s) to mitigate operating Emergencies in its Transmission Operator Area. The Operating Plan(s)

		shall include the following, as applicable: *[Violation Risk Factor: High] [Time Horizon: Real-Time Operations, Operations Planning]* **1.1.** Roles and responsibilities for activating the Operating Plan(s); **1.2.** Processes to prepare for and mitigate Emergencies including: **1.2.1.** Notification to its Reliability Coordinator, to include current and projected conditions, when experiencing an operating Emergency; **1.2.2.** Cancellation or recall of Transmission and generation outages; **1.2.3.** Transmission system reconfiguration; **1.2.4.** Redispatch of generation request; **1.2.5.** Provisions for operator-controlled manual Load shedding that minimizes the overlap with automatic Load shedding and are capable of being implemented in a timeframe adequate for mitigating the Emergency; and **1.2.6.** Reliability impacts of extreme weather conditions. **R2.** Each Balancing Authority shall develop, maintain, and implement a Reliability Coordinator-reviewed Operating Plan(s) to mitigate Capacity Emergencies and Energy Emergencies. The Operating Plan(s) shall include the following, as applicable: *[Violation Risk Factor: High] [Time Horizon: Real-Time Operations, Operations Planning]* **2.1.** Roles and responsibilities for activating the Operating Plan(s); **2.2.** Processes to prepare for and mitigate Emergencies including: **2.2.1.** Notification to its Reliability Coordinator, to include current and projected conditions when experiencing a Capacity Emergency or Energy Emergency; **2.2.2.** Requesting an Energy Emergency Alert, per Attachment 1;

		2.2.3. Managing generating resources in its Balancing Authority Area to address: **2.2.3.1.** capability and availability; **2.2.3.2.** fuel supply and inventory concerns; **2.2.3.3.** fuel switching capabilities; and **2.2.3.4.** environmental constraints. **2.2.4.** Public appeals for voluntary Load reductions; **2.2.5.** Requests to government agencies to implement their programs to achieve necessary energy reductions; **2.2.6.** Reduction of internal utility energy use; **2.2.7.** Use of Interruptible Load, curtailable Load and demand response; **2.2.8.** Provisions for operator-controlled manual Load shedding that minimizes the overlap with automatic Load shedding and are capable of being implemented in a timeframe adequate for mitigating the Emergency; and **2.2.9.** Reliability impacts of extreme weather conditions.