NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

Mapping Document

Project 2015-08 Emergency Operations

Standard: EOP-005-3		
Requirement in Approved Standard	**Translation to New Standard or Other Action**	**Description and Change Justification**
EOP-005-2, Requirement R1 **R1.** Each Transmission Operator shall have a restoration plan approved by its Reliability Coordinator. The restoration plan shall allow for restoring the Transmission Operator's System following a Disturbance in which one or more areas of the Bulk Electric System (BES) shuts down and the use of Blackstart Resources is required to restore the shut down area to service, to a state whereby the choice of the next Load to be restored is not driven by the need to control frequency or voltage regardless of whether the Blackstart Resource is located within the Transmission Operator's System. The restoration plan shall include: [Violation Risk Factor = High] [Time Horizon = Operations Planning]	EOP-005-3, Requirement R1 **R1.** Each Transmission Operator shall develop and implement a restoration plan approved by its Reliability Coordinator. The restoration plan shall allow for restoring the Transmission Operator's System following a Disturbance in which one or more areas of the Bulk Electric System (BES) shuts down and the use of Blackstart Resources is required to restore the shutdown area to service. The restoration plan shall include: *[Violation Risk Factor = High] [Time Horizon = Operations Planning, Real-time Operations]*	EOP-005-3, Requirement R1 In this industry it is widely understood that "*have a restoration plan*," is not simply to be in possession of a restoration plan. The intent of the EOP SDT is for the TOP to develop its restoration plan and for the restoration plan to be utilized. The EOP SDT removed the language: "*…to a state whereby the choice of the next Load to be restored is not driven by the need to control frequency or voltage regardless of whether the Blackstart Resource is located within the Transmission Operator's System*" in Requirement R1, as it is covered in Requirement R1, Part 1.8. Due to the addition of the word "implement," the phrase, "Real-time Operations" was added to the Time Horizon.

Standard: EOP-005-3		
Requirement in Approved Standard	**Translation to New Standard or Other Action**	**Description and Change Justification**
EOP-005-2, Requirement R2 **R2.** Each Transmission Operator shall provide the entities identified in its approved restoration plan with a description of any changes to their roles and specific tasks prior to the implementation date of the plan. *[Violation Risk Factor = Medium] [Time Horizon = Operations Planning]*	EOP-005-3, Requirement R2 **R2.** Each Transmission Operator shall provide the entities identified in its approved restoration plan with a description of any changes to their roles and specific tasks prior to the effective date of the plan. *[Violation Risk Factor = Medium] [Time Horizon = Operations Planning]*	"Implementation date" was revised to "effective date" to clarify that the approved restoration plan is provided to entities prior to its effective date, rather than prior to any given implementation date of the restoration plan.
EOP-005-2, Requirement R3 **R3.** Each Transmission Operator shall review its restoration plan and submit it to its Reliability Coordinator annually on a mutually-agreed, predetermined schedule. *[Violation Risk Factor = Medium] [Time Horizon = Operations Planning]* EOP-005-2, Requirement R3, Part 3.1 **3.1** If there are no changes to the previously submitted restoration plan, the Transmission Operator shall confirm annually on a predetermined schedule to its	EOP-005-3, Requirement R3 R3. Each Transmission Operator shall review its restoration plan and submit it to its Reliability Coordinator at least once each 15 calendar months on a mutually-agreed, predetermined schedule. *[Violation Risk Factor = Medium] [Time Horizon = Operations Planning]*	The language, "…at least once each 15 calendar months…" was added to provide clarity. Retirement of EOP-005-2, Requirement R3, and Part 3.1 was approved by FERC with an effective date of January 21, 2014.

Standard: EOP-005-3		
Requirement in Approved Standard	**Translation to New Standard or Other Action**	**Description and Change Justification**
Reliability Coordinator that it has reviewed its restoration plan and no changes were necessary.		
EOP-005-2, Requirement R4 **R4.** Each Transmission Operator shall update its restoration plan within 90 calendar days after identifying any unplanned permanent System modifications, or prior to implementing a planned BES modification, that would change the implementation of its restoration plan. *[Violation Risk Factor = Medium] [Time Horizon = Operations Planning]*	EOP-005-3, Requirement R4 **R4.** Each Transmission Operator shall update and submit to its Reliability Coordinator for approval of its restoration plan to reflect System modifications that would change the ability to implement its restoration plan, as follows: *[Violation Risk Factor = Medium] [Time Horizon = Operations Planning]*	As previously written, Requirement R4 addressed (in one sentence) two restoration plan updates that a Transmission Operator must perform: (1) the restoration plan must be updated within 90 calendar days after identifying any unplanned permanent System modifications and (2) the restoration plan must be updated prior to implementing a planned BES modification. This language creates two ambiguities. First, the phrase: "… that would change the implementation of its restoration plan" appeared to apply to both types of changes; however, no time frame is specified for updating the restoration plan for a planned BES modification. One could infer that "90 calendar days" is intended to be the same time frame for both unplanned and planned modifications.

Standard: EOP-005-3		
Requirement in Approved Standard	**Translation to New Standard or Other Action**	**Description and Change Justification**
		Second, the distinction between "System modifications" for unplanned changes and "BES modifications" for planned changes is confusing. Some "system modifications" can include "BES modifications". Examples of unplanned System modifications could include natural disasters that affect BES Facilities, major equipment failures, etc., that are integral to the restoration plan. For clarity, the EOP SDT revise the language in this Requirement to require a TOP to update its restoration plan to only reflect System modifications that affect its ability to implement its restoration plan as describe in Requirement R1 Parts. The intent is not to capture minor modifications that would have no impact on the implementation of a restoration, such as element number changes or device changes that have no significance to the implementation of the plan.
EOP-005-2, Requirement R4, Part 4.1 **R4.1** Each Transmission Operator shall submit its revised restoration plan	EOP-005-3, Requirement R4, Parts 4.1 and 4.2	The EOP SDT revisions harmonize the use of "System modification" and clarify the timing

Standard: EOP-005-3		
Requirement in Approved Standard	**Translation to New Standard or Other Action**	**Description and Change Justification**
to its Reliability Coordinator for approval within the same 90 calendar day period.	**4.1.** No more than 90 calendar days after the Transmission Operator identifies any unplanned System modifications. **4.2.** No less than 30 calendar days prior to the Transmission Operator's implementation of planned System modifications.	for unplanned and planned System modifications.
EOP-005-2, Requirement R5 **R5.** Each Transmission Operator shall have a copy of its latest Reliability Coordinator approved restoration plan within its primary and backup control rooms so that it is available to all of its System Operators prior to its implementation date. *[Violation Risk Factor = Lower] [Time Horizon = Operations Planning]*	EOP-005-3, Requirement R5 **R5.** Each Transmission Operator shall have a copy of its latest Reliability Coordinator approved restoration plan within its primary and backup control rooms so that it is available to all of its System Operators prior to its effective date. *[Violation Risk Factor = Lower] [Time Horizon = Operations Planning]*	"Implementation date" was revised to "effective date" to clarify that System Operators will be in possession of the most current version of a restoration plan prior to that plan becoming effective, rather than prior to any given implementation date of a restoration plan.
EOP-005-2, Requirement R6 **R6.** Each Transmission Operator shall verify through analysis of actual events, steady state and dynamic simulations, or testing that its restoration plan accomplishes its intended	EOP-005-3, Requirement R6 **R6.** Each Transmission Operator shall verify through analysis of actual events, steady state and dynamic simulations, or testing that its restoration plan accomplishes its	The sentence, "This shall be completed every five years at a minimum" was revised to: "This shall be completed at least once every five years" to eliminate any ambiguity in the prior language.

Standard: EOP-005-3		
Requirement in Approved Standard	**Translation to New Standard or Other Action**	**Description and Change Justification**
function. This shall be completed every five years at a minimum. Such analysis, simulations or testing shall verify: *[Violation Risk Factor = Medium] [Time Horizon = Long-term Planning]*	intended function. This shall be completed at least once every five years. Such analysis, simulations or testing shall verify: *[Violation Risk Factor = Medium] [Time Horizon = Long-term Planning]*	
EOP-005-2, Requirement R7 **R7.** Following a Disturbance in which one or more areas of the BES shuts down and the use of Blackstart Resources is required to restore the shut down area to service, each affected Transmission Operator shall implement its restoration plan. If the restoration plan cannot be executed as expected the Transmission Operator shall utilize its restoration strategies to facilitate restoration. *[Violation Risk Factor = High] [Time Horizon = Real-time Operations]*		The EOP SDT agrees with the Independent Experts Review Panel (IERP) recommendation to retire EOP-005-2, Requirement R7 as redundant. By adding the language: "develop and implement" to EOP-005-3, Requirement R1, EOP-005-2, Requirement R7, is redundant to EOP-005-3, Requirement R1.
EOP-005-2, Requirement R8 **R8.** Following a Disturbance in which one or more areas of the BES shuts down and the use of Blackstart Resources is required to restore the shut down area to service, the Transmission Operator shall resynchronize		The EOP SDT agrees with the IERP to retire EOP-005-2, Requirement R8 as "duplicative with EOP-005-2, Requirement R1, Part 1.3 (have a plan) and RC authority in IRO-001-1.1b, Requirement R3." The EOP SDT recommends retirement of EOP-005-2,

Standard: EOP-005-3		
Requirement in Approved Standard	**Translation to New Standard or Other Action**	**Description and Change Justification**
area(s) with neighboring Transmission Operator area(s) only with the authorization of the Reliability Coordinator or in accordance with the established procedures of the Reliability Coordinator. *[Violation Risk Factor = High] [Time Horizon = Real-time Operations]*		Requirement R8 under Criterion B7 as Redundant.
EOP-005-2, Requirement R10, and Requirement R10, Parts 10.1, 10.2, 10.3, and 10.4 **R10.** Each Transmission Operator shall include within its operations training program, annual System restoration training for its System Operators to assure the proper execution of its restoration plan. This training program shall include training on the following: *[Violation Risk Factor = Medium] [Time Horizon = Operations Planning]* **10.1.** System restoration plan including coordination with the Reliability Coordinator and Generator Operators included in the restoration plan. **10.2.** Restoration priorities.	EOP-005-3, Requirement R8, and Requirement R, Parts 8.1, 8.2, 8.3, 8.4, and 8.5 **R8.** Each Transmission Operator shall include within its operations training program, System restoration training at least once each 15 calendar months for its System Operators. This training program shall include training on the following: *[Violation Risk Factor = Medium] [Time Horizon = Operations Planning]* **8.1** System restoration plan including coordination with the Reliability Coordinator and Generator Operators included in the restoration plan. **8.2** Restoration priorities.	The language, "…at least once each 15 calendar months…" was added to provide clarity and to align training with the timing for updates to the restoration plan. The language, "…to assure the proper execution of its restoration plan" was removed from this requirement, as it added no additional value. Requirement R8, Part 8.5 was added to Requirement R8 to address findings from the *Report on the FERC-NERC-Regional Entity Joint Review of Restoration and Recovery Plans*.

Standard: EOP-005-3		
Requirement in Approved Standard	**Translation to New Standard or Other Action**	**Description and Change Justification**
10.3. Building of cranking paths. **10.4.** Synchronizing (re-energized sections of the System).	**8.3** Building of cranking paths. **8.4** Synchronizing (re-energized sections of the System). **8.5** Transition to Balancing Authority for Area Control Error and Automatic Generation Control.	
EOP-005-2, Requirement R11 **R11.** Each Transmission Operator, each applicable Transmission Owner, and each applicable Distribution Provider shall provide a minimum of two hours of System restoration training every two calendar years to their field switching personnel identified as performing unique tasks associated with the Transmission Operator's restoration plan that are outside of their normal tasks. *[Violation Risk Factor = Medium] [Time Horizon = Operations Planning]*	EOP-005-2, Requirement R9 **R9.** Each Transmission Operator, each applicable Transmission Owner, and each applicable Distribution Provider shall provide a minimum of two hours of System restoration training every two calendar years to their field switching personnel identified as performing unique tasks associated with the Transmission Operator's restoration plan that are outside of their normal tasks. *[Violation Risk Factor = Medium] [Time Horizon = Operations Planning]*	Federal Energy Regulatory Commission (Commission) Order no. 749: *"[N]ERC, in its comments about the term [unique tasks], states that it 'could promote the development of a guideline to aid registered entities in complying with Requirement R11.' The Commission notes that this Reliability Standard will not become effective for at least 24 months, during which time ambiguities in language or differences of opinion among affected entities may be resolved in practical ways. Once the Standard is effective, if industry determines that ambiguity with the term arises, it would be appropriate for NERC to consider its proposal to develop*

Standard: EOP-005-3		
Requirement in Approved Standard	**Translation to New Standard or Other Action**	**Description and Change Justification**
		a guideline to aid entities in their compliance obligations." The Project 2015-02 Emergency Operations Periodic Review Team, as well as the Project 2015-08 Emergency Operations Standards Drafting Team determined (through conducted outreach and comment questions/responses during postings of periodic review templates and the SAR) that industry does not find ambiguity with the term "unique tasks." The industry understands "unique tasks" to be those tasks that are defined by the TOP, TO, and the DP.

Standard: EOP-006-3		
Requirement in Approved Standard	**Translation to New Standard or Other Action**	**Description and Change Justification**
EOP-006-2, Requirement R1, and Requirement R1, Parts 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8 , and 1.9 **R1.** Each Reliability Coordinator shall have a Reliability Coordinator Area restoration plan. The scope of the Reliability Coordinator's restoration plan starts when Blackstart Resources are utilized to re-energize a shut down area of the Bulk Electric System (BES), or separation has occurred between neighboring Reliability Coordinators, or an energized island has been formed on the BES within the Reliability Coordinator Area. The scope of the Reliability Coordinator's restoration plan ends when all of its Transmission Operators are interconnected and ~~it~~ its Reliability Coordinator Area is connected to all of its neighboring Reliability Coordinator Areas. The restoration plan shall include: *[Violation Risk Factor = High] [Time Horizon = Operations Planning]* **1.1** A description of the high level strategy to be employed during	EOP-006-3, Requirement R1, and Requirement R1, Parts 1.1, 1.2, 1.3, 1.4, 1.5, and 1.6 **R1.** Each Reliability Coordinator shall develop, maintain, and implement a Reliability Coordinator Area restoration plan. The scope of the Reliability Coordinator's restoration plan starts when Blackstart Resources are utilized to re-energize a shutdown area of the Bulk Electric System (BES), or separation has occurred between neighboring Reliability Coordinators, or an energized island has been formed on the BES within the Reliability Coordinator Area. The scope of the Reliability Coordinator's restoration plan ends when all of its Transmission Operators are interconnected and its Reliability Coordinator Area is connected to all of its neighboring Reliability Coordinator Areas. The restoration plan shall include: *[Violation Risk Factor = High] [Time Horizon*	Due to the addition of the language "implement," Real-time Operations was added to the Time Horizon. The language "adjacent" was added to distinguish between direct connection v. multiple neighbors (beyond direct connection). Requirement R1, Parts 1.2, 1.3, and 1.4 should be retired under Paragraph 81, Criterion B7, as redundant with Requirement R1, Part 1.5.

Standard: EOP-006-3		
Requirement in Approved Standard	**Translation to New Standard or Other Action**	**Description and Change Justification**
restoration events for restoring the Interconnection including minimum criteria for meeting the objectives of the Reliability Coordinator's restoration plan. **1.2** Operating Processes for restoring the Interconnection. **1.3** Descriptions of the elements of coordination between individual Transmission Operator restoration plans. **1.4** Descriptions of the elements of coordination of restoration plans with neighboring Reliability Coordinators. **1.5** Criteria and conditions for reestablishing interconnections with other Transmission Operators within its Reliability Coordinator Area, with Transmission Operators in other Reliability Coordinator Areas, and with other Reliability Coordinators.	*= Operations Planning, Real-time Operations]* **1.1** A description of the high-level strategy to be employed during restoration events for restoring the Interconnection, including minimum criteria for meeting the objectives of the Reliability Coordinator's restoration plan. **1.2** Criteria and conditions for re-establishing interconnections with other Transmission Operators within its Reliability Coordinator Area, with adjacent Transmission Operators in other Reliability Coordinator Areas, and with adjacent Reliability Coordinators. **1.3** Reporting requirements for the entities within the Reliability Coordinator Area during a restoration event. **1.4** Criteria for sharing information regarding restoration with neighboring Reliability	

Standard: EOP-006-3		
Requirement in Approved Standard	**Translation to New Standard or Other Action**	**Description and Change Justification**
1.6 Reporting requirements for the entities within the Reliability Coordinator Area during a restoration event. **1.7** Criteria for sharing information regarding restoration with neighboring Reliability Coordinators and with Transmission Operators and Balancing Authorities within its Reliability Coordinator Area. **1.8** Identification of the Reliability Coordinator as the primary contact for disseminating information regarding restoration to neighboring Reliability Coordinators, and to Transmission Operators, and Balancing Authorities within its Reliability Coordinator Area. **1.9** Criteria for transferring operations and authority back to the Balancing Authority.	Coordinators and with Transmission Operators and Balancing Authorities within its Reliability Coordinator Area. **1.5** Identification of the Reliability Coordinator as the primary contact for disseminating information regarding restoration to neighboring Reliability Coordinators, and to Transmission Operators, and Balancing Authorities within its Reliability Coordinator Area. **1.6** Criteria for transferring operations and authority back to the Balancing Authority.	

Standard: EOP-006-3		
Requirement in Approved Standard	**Translation to New Standard or Other Action**	**Description and Change Justification**
EOP-006-2, Requirement R4, and Requirement R4, Part 4.1 **R4.** Each Reliability Coordinator shall review their neighboring Reliability Coordinator's restoration plans. *[Violation Risk Factor = Medium] [Time Horizon = Operations Planning]* **4.1** If the Reliability Coordinator finds conflicts between its restoration plans and any of its neighbors, the conflicts shall be resolved in 30 calendar days.	EOP-006-3, Requirement R4, and Requirement R4, Part 4.1 **R4.** Each Reliability Coordinator shall review its neighboring Reliability Coordinator's restoration plans and provide written notification of any conflicts discovered during that review within 60 calendar days of receipt. *[Violation Risk Factor = Medium] [Time Horizon = Operations Planning]* **4.1** If a Reliability Coordinator finds conflicts between its restoration plans and any of its neighbors, the conflicts shall be resolved within 30 calendar days of written notification.	Language for timeframe and written notification was added for clarity.
EOP-006-2, Requirement R6 **R6.** Each Reliability Coordinator shall have a copy of its latest restoration plan and copies of the latest approved restoration plan of each Transmission Operator in its Reliability Coordinator Area within its primary and backup control rooms so that it is available to all of its System Operators prior to the	EOP-006-3, Requirement R6 **R7.** Each Reliability Coordinator shall have a copy of its latest restoration plan and copies of the latest approved restoration plan of each Transmission Operator in its Reliability Coordinator Area within its primary and backup control rooms so that it is available to all of its System Operators prior to the	"Implementation date" was revised to "effective date" for clarity.

Standard: EOP-006-3		
Requirement in Approved Standard	**Translation to New Standard or Other Action**	**Description and Change Justification**
implementation date. *[Violation Risk Factor = Lower] [Time Horizon = Operations Planning]*	effective date. *[Violation Risk Factor = Lower] [Time Horizon = Operations Planning]*	
EOP-006-2, Requirement R7 **R7.** Each Reliability Coordinator shall work with its affected Generator Operators~~,~~ and Transmission Operators as well as neighboring Reliability Coordinators to monitor restoration progress, coordinate restoration, and take actions to restore the BES frequency within acceptable operating limits. If the restoration plan cannot be completed as expected the Reliability Coordinator shall utilize its restoration plan strategies to facilitate System restoration. *[Violation Risk Factor = High] [Time Horizon = Real-time Operations]*		The EOP SDT agrees with the IERP to retire EOP-006-2, Requirement R7 as "a logical action that does not require a standard." The EOP SDT recommends retirement of EOP-006-2, Requirement R7 under Criterion A (Overreaching Criterion). In addition, by adding the language: "develop, maintain, and implement" to EOP-006-3, Requirement R1, EOP-006-2, Requirement R7, is redundant to EOP-006-3, Requirement R1.
EOP-006-2, Requirement R8 **R8.** The Reliability Coordinator shall coordinate or authorize resynchronizing islanded areas that bridge boundaries		The EOP SDT agrees with the IERP to retire EOP-006-2, Requirement R8 as "a logical action that does not require a standard." The EOP SDT recommends retirement of

Standard: EOP-006-3		
Requirement in Approved Standard	**Translation to New Standard or Other Action**	**Description and Change Justification**
between Transmission Operators or Reliability Coordinators. If the resynchronization cannot be completed as expected the Reliability Coordinator shall utilize its restoration plan strategies to facilitate resynchronization. *[Violation Risk Factor = High] [Time Horizon = Real-time Operations]*		EOP-006-2, Requirement R8 under Criterion A (Overreaching Criterion). In addition, by adding the language: "develop, maintain, and implement" to EOP-006-3, Requirement R1, EOP-006-2, Requirement R8, is redundant to EOP-006-3, Requirement R1.
EOP-006-2, Requirement R9 **R9.** Each Reliability Coordinator shall include within its operations training program, annual System restoration training for its System Operators to assure the proper execution of its restoration plan. This training program shall address the following: *[Violation Risk Factor = Medium] [Time Horizon = Operations Planning]*	EOP-006-3, Requirement R7 **R7.** Each Reliability Coordinator shall include within its operations training program, at least once each 15 calendar months, System restoration training for its System Operators. This training program shall address the following: *[Violation Risk Factor = Medium] [Time Horizon = Operations Planning]*	Language for timeframe was added for clarity. "To assure the proper execution of its restoration plan" was removed because it added no additional value; the entire standard is based upon using your restoration plan when needed.

Standard:EOP-008-2		
Requirement in Approved Standard	**Translation to New Standard or Other Action**	**Description and Change Justification**
EOP-008-1, Requirement R1, Part 1.1 **1.1.** The location and method of implementation for providing backup functionality for the time it takes to restore the primary control center functionality.	EOP-008-2, Requirement R1, Part 1.1 **1.1** The location and method of implementation for providing backup functionality.	To provide clarification: Requirement R1, Part 1.1, it would be difficult to establish a timing requirement to restore primary control center functionality, given the range of events that could render the primary control center inoperable. The revision to Requirement R1, Part 1.1. prevents a tertiary (i.e., already included in EOP-008-2, Requirements R3 and R4).
EOP-008-1, Requirement R1, Part 1.2.3 **1.2.3** Voice communications.	EOP-008-2, Requirement R1, Part 1.2.3 **1.2.3** Interpersonal Communications	The COM-001-2 standard, along with the defined term "Interpersonal Communications" became effective 10/1/2015, therefore the EOP SDT agreed that this defined term should be used.
EOP-008-1, Requirement R5 **R5.** Each Reliability Coordinator, Balancing Authority, and Transmission Operator, shall annually review and approve its Operating Plan for backup functionality. *[Violation Risk Factor = Medium] [Time Horizon = Operations Planning]*	EOP-008-2, Requirement R5 **R5.** Each Reliability Coordinator, Balancing Authority, and Transmission Operator, shall review and approve its Operating Plan for backup functionality at least once every 15 calendar months. *[Violation Risk Factor =*	The language, "…at least once each 15 calendar months…" was added to provide clarity.

Standard:EOP-008-2		
Requirement in Approved Standard	**Translation to New Standard or Other Action**	**Description and Change Justification**
	Medium] [Time Horizon = Operations Planning]	
EOP-008-1, Requirement R7 **R7.** Each Reliability Coordinator, Balancing Authority, and Transmission Operator shall conduct and document results of an annual test of its Operating Plan that demonstrates: *[Violation Risk Factor = Medium] [Time Horizon = Operations Planning]*	EOP-008-1, Requirement R7 **R7.** Each Reliability Coordinator, Balancing Authority, and Transmission Operator shall conduct a test of its Operating Plan at least once every 15 calendar months and shall document the results from such a test. This test shall demonstrate: *[Violation Risk Factor = Medium] [Time Horizon = Operations Planning]*	The language, "…at least once each 15 calendar months…" was added to provide clarity.