

## Standard Development Roadmap

*This section is maintained by the drafting team during the development of the standard and will be removed when the standard becomes effective.*

### Development Steps Completed:

1. SAR version 1 posted on November 6, 2006.
2. SAR version 1 comment period closed on December 5, 2006.
3. SAR version 2 and comment responses for SAR version 1 posted on February 8, 2007.
4. SAR version 2 comment period closed on March 9, 2007.
5. SAR version 3 and comment responses for SAR version 2 accepted by SC and SDT appointed on April 9, 2007.
6. First posting of revised standards on August 15, 2007 with comment period closed on September 28, 2007.
7. Second posting of revised standards on January 7, 2008 with comment period closed on February 5, 2008.

### Proposed Action Plan and Description of Current Draft:

The SDT began meeting in mid-April 2007 immediately following the approval of the SAR by the SC with the goal of completing work in approximately one year's time. The current draft is the third posting of the proposed standards. Requirements in EOP-007 and EOP-009 have been incorporated into the revised EOP-005 and EOP-006. Therefore, EOP-007 and EOP-009 will be retired when this project is approved and EOP-005-2 and EOP-006-2 go into effect.

### Future Development Plan:

Anticipated Actions	Anticipated Date
1. Third posting of draft standards.	April 2008
2. Fourth posting of draft standards.	September 2008
3. Standards posted for first ballot.	January 2009
4. Standards posted for second ballot.	March 2009
5. Standards sent to BOT for approval.	March 2009

### Definitions of Terms Used in Standard

*This section includes all newly defined or revised terms used in the proposed standard. Terms already defined in the Reliability Standards Glossary of Terms are not repeated here. New or revised definitions listed below become approved when the proposed standard is approved. When the standard becomes effective, these defined terms will be removed from the individual standard and added to the Glossary.*

**None.**

## A. Introduction

1. **Title:** System Restoration ~~from Blackstart Resources~~ — Coordination
2. **Number:** EOP-006-2
3. **Purpose:** Ensure plans, ~~and Facilities~~ are established and personnel are ~~in place~~ prepared to enable effective coordination of the System restoration ~~from Blackstart Resources~~ process to ensure reliability is maintained during restoration and priority is placed on restoring the Interconnection.
4. **Applicability:**
  - 4.1. Reliability Coordinators.
5. **Proposed Effective Date:** TBD

## B. Requirements

- 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 BES, or separation has occurred between neighboring Reliability Coordinators, or an energized island has been formed on the Bulk Electric System (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 is connected to all of its neighboring Reliability Coordinators. The restoration plan shall be written such that it allows for the restoration of its area 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 for an event that requires the utilization of Blackstart Resources regardless of whether the Blackstart Resource is located within the Reliability Coordinator's Area.~~ The restoration plan shall include: [Violation Risk Factor = High] [Time Horizon = Operations Planning]
  - R1.1. Procedures for restoring the integrity of the Interconnection.
  - R1.2. Descriptions of the elements of coordination between individual Transmission Operator restoration plans.
  - R1.3. Descriptions of the elements of coordination of restoration plans with neighboring Reliability Coordinators.
  - R1.4. Criteria and conditions for reestablishing interconnections between neighboring Transmission Operators and Reliability Coordinator Areas.
  - R1.5. Identification of acceptable voltage and frequency limits during restoration.
  - ~~R1.6. A statement accounting for the possibility that restoration can not be completed as expected indicating that in situations where the actual conditions do not match the studied conditions, the System Operator shall use professional judgment to deviate from the System restoration plan.~~
  - R1.6. Reporting requirements for the entities within the Reliability Coordinator Area during a restoration event.

- R1.7.** Criteria for sharing information regarding restoration with neighboring Reliability Coordinators and with Transmission Operators and Balancing Authorities within its Reliability Coordinator area.
- R1.8.** 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.
- R2.** The Reliability Coordinator, ~~to ensure the reliability of the Interconnection,~~ shall distribute its Reliability Coordinator Area restoration plan to its Transmission Operators, Balancing Authorities, and neighboring Reliability Coordinators. [Violation Risk Factor = Lower] [Time Horizon = Operations Planning]
- R3.** Each Reliability Coordinator shall review its restoration plan ~~on an annual (rolling 365 days) basis~~ every twelve months. [Violation Risk Factor = Medium] [Time Horizon = Operations Planning]
- R4.** Each Reliability Coordinator shall update its restoration plan within ninety calendar days after identifying changes to one of its Transmission Operator's restoration plans or upon reviewing a neighboring Reliability Coordinator's restoration plan that would necessitate a change in their coordination tasks or responsibilities. [Violation Risk Factor = Medium] [Time Horizon = Operations Planning]
- R5.** Each Reliability Coordinator shall review the Transmission Operator restoration plans as defined in EOP-005 within its Reliability Coordinator Area. [Violation Risk Factor = Medium] [Time Horizon = Operations Planning]
- R5.1.** The Reliability Coordinator shall determine whether the Transmission Operator's restoration plan is coordinated with the Reliability Coordinator's restoration plan as well as being compatible with other Transmission Operator restoration plans within its Reliability Coordinator Area.
- R5.2.** The Reliability Coordinator shall approve or disapprove the Transmission Operator's submitted restoration plan within thirty calendar days following the receipt of the restoration plan from the Transmission Operator.
- R5.3.** The Reliability Coordinator shall provide written notification to the Transmission Operator of its decision and provide reasons if disapproving a Transmission Operator's restoration plan.
- R6.** Each Reliability Coordinator shall have a copy of its latest restoration plan and the latest approved restoration plan of each Transmission Operator in its Reliability Coordinator Area within each of its control centers and available to all of its control room personnel. [Violation Risk Factor = Lower] [Time Horizon = Operations Planning]
- 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, e~~ Each Reliability Coordinator shall work ~~in conjunction~~ with its affected Balancing Authorities, 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. Such actions may include but not be limited to adjusting generation, placing additional generators on line, or shedding Load. [Violation Risk Factor = High] [Time Horizon = Real-time Operations]

**R7.1.** If the restoration plan cannot be completed as expected because actual conditions do not match the studied conditions, the Reliability Coordinator shall utilize its restoration plan philosophies to implement alternative measures for achieving System restoration.

**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, t~~The Reliability Coordinator shall authorize and coordinate resynchronizing ~~isolated~~dislanded areas that bridge boundaries between Transmission Operators or Reliability Coordinators. [Violation Risk Factor = High] [Time Horizon = Real-time Operations]

**R8.1.** If the restoration plan cannot be completed as expected because actual conditions do not match the studied conditions, the Reliability Coordinator shall utilize its restoration plan philosophies to implement alternative measures for achieving System restoration.

~~**R9.**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, t~~The Reliability Coordinator shall serve 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. [Violation Risk Factor = Lower] [Time Horizon = Real-time Operations]

**R10.R9.** Each Reliability Coordinator shall include within its operations training program, annual System restoration training for ~~the control room personnel identified in its restoration plan~~its System Operators to ensure the proper execution of its restoration plan. This training program shall include the following: [Violation Risk Factor = Medium] [Time Horizon = Operations Planning]

**R10.1.R9.1.** System restoration philosophy including the coordination role of the Reliability Coordinator.

**R10.2.R9.2.** Reestablishing the Interconnection.

**R11.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. [Violation Risk Factor = Medium] [Time Horizon = Operations Planning]

**R11.1.R10.1.** Each Reliability Coordinator shall request each Transmission Operator and Generator Operator identified in its restoration plan to participate in a drill, exercise, or simulation at least every two calendar years.

## C. Measures

**M1.** Each Reliability Coordinator shall have available a dated copy of its restoration plan in accordance with Requirement R1.

- M2. Each Reliability Coordinator shall provide evidence such as e-mails with receipts or registered mail receipts, that its approved restoration plan has been distributed in accordance with Requirement R2.
- M3. Each Reliability Coordinator shall provide evidence such as a review signature sheet, or revision histories, that it has annually reviewed its restoration plan in accordance with Requirement R3.
- M4. Each Reliability Coordinator shall provide evidence such as adated review signature sheets, or revision histories, that it has updated its restoration plan in accordance with Requirement R4.
- M5. Each Reliability Coordinator shall provide evidence such as a review signature sheet, that it has reviewed its Transmission Operator's submitted restoration plan(s) in accordance with Requirement R5.
- M6. Each Reliability Coordinator shall have documentation such as e-mail receipts that it has made the latest approved copy of its restoration plan available in each of its control rooms and to each of its control room personnel in accordance with Requirement R6.
- M7. ~~If there has been a Disturbance in which Blackstart Resources have been utilized,~~ Each Reliability Coordinator involved shall have evidence such as voice recordings, e-mail, dated computer printouts, or operator logs, that it monitored and coordinated restoration progress in accordance with Requirement R7.
- M8. If there has been a resynchronizing of an isolated/islanded area, each Reliability Coordinator involved shall have evidence such as voice recordings, e-mail, or operator logs, that it authorized and coordinated resynchronizing in accordance with Requirement R8.
- ~~M9. If there has been a Disturbance in which Blackstart Resources have been utilized, e~~Each Reliability Coordinator involved shall have evidence such as voice recordings, e-mail, or operator logs, that it served as the primary contact to disseminate information to neighboring Reliability Coordinators and Transmission Operators and Balancing Authorities within its Reliability Coordinator Area in accordance with Requirement R9.
- M9. Each Reliability Coordinator shall have an electronic or hard copy of its training records available showing that it has provided training in accordance with Requirement R10.
- M10. Each Reliability Coordinator shall have evidence ~~such as training records~~ that it conducted two System restoration drills, exercises, or simulations per year and that ~~included~~ Transmission Operators and Generator Operators ~~with Blackstart Resources~~ included in the Reliability Coordinator's restoration plan were invited in accordance with Requirement R10.

## D. Compliance

1. Compliance Monitoring Process
  - 1.1. Compliance Enforcement Authority  
Regional Entity.

**1.2. Compliance Monitoring Period and Reset Time Frame**

Not applicable.

**1.3. Compliance Monitoring and Enforcement Processes:**

Compliance Audits

Self-Certifications

Spot Checking

Compliance Violation Investigations

Self-Reporting

Complaints

**1.4. Data Retention**

The Reliability Coordinator shall keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation:

- Approved restoration plan and any restoration plans in force since the last compliance audit for Requirement R1, Measure M1.
- Distribution of its approved restoration plan and any restoration plans in force for the current year and three prior calendar years for Requirement R2, Measure M2.
- Its annually reviewed restoration plan for the current year and last three prior calendar years for Requirement R3, Measure M3.
- Updated restoration plans for all versions from the current year and the three prior calendar years for Requirement R4, Measure M4.
- The reviewed restoration plans for the current year and the last three prior calendar years for Requirement R5, Measure M5.
- The current, approved restoration plan and any restoration plans in force for the last three calendar years was made available in its control rooms for Requirement R6, Measure M6.
- Implementation of its restoration plan on any occasion over a rolling twelve month period for Requirement R7, Measure M7.
- Implementation of its restoration plan on any occasion over a rolling twelve month period for Requirement R8, Measure M8.
- Actual training program materials or descriptions for three calendar years for Requirements R9, Measure M9.
- Records of all Reliability Coordinator restoration drills, exercises, or simulations since its last compliance audit as well as one previous compliance audit period for Requirement R10, Measure M10.

If a Reliability Coordinator is found non-compliant, it shall keep information related to the non-compliance until found compliant.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.5. **Additional Compliance Information**

None.



2. Violation Severity Levels

<u>R#</u>	<u>Lower VSL</u>	<u>Moderate VSL</u>	<u>High VSL</u>	<u>Severe VSL</u>
<u>R1.</u>	<u>The Reliability Coordinator failed to comply with less than 25% of the number of sub-components within this requirement.</u>	<u>The Reliability Coordinator failed to comply with 25% or more and less than 50% of the number of sub-components within this requirement.</u>	<u>The Reliability Coordinator has failed to comply with 50% or more and less than 75% of the number of sub-components within this requirement.</u>	<u>The Reliability Coordinator has failed to comply with 75% or more of the number of sub-components within this requirement.</u>
<u>R2.</u>	<u>The Reliability Coordinator did not distribute the required information to one entity identified in the requirement within the required timeframe. Or, the Reliability Coordinator distributed the required information to all entities but was thirty days late.</u>	<u>The Reliability Coordinator did not distribute the required information to two entities identified in the requirement within the prescribed timeframe. Or, the Reliability Coordinator distributed the required information to all entities but was sixty days late.</u>	<u>The Reliability Coordinator did not distribute the required information to three entities identified in the requirement within the prescribed timeframe. Or, the Reliability Coordinator distributed the required information to all entities but was ninety days late.</u>	<u>The Reliability Coordinator did not distribute the required information to four or more entities identified in the requirement within the prescribed timeframe. Or, the Reliability Coordinator distributed the required information to all entities but was 120 days late.</u>
<u>R3.</u>	<u>The Reliability Coordinator did not review its restoration plan within twelve months.</u>	<u>The Reliability Coordinator did not review its restoration plan within thirteen months.</u>	<u>The Reliability Coordinator did not review its restoration plan within fourteen months.</u>	<u>The Reliability Coordinator did not review its restoration plan within fifteen months.</u>
<u>R4.</u>	<u>The Reliability Coordinator failed to comply within ninety calendar days of the change.</u>	<u>The Reliability Coordinator failed to comply within 120 calendar days of the change.</u>	<u>The Reliability Coordinator has failed to comply within 150 calendar days of the change. .</u>	<u>The Reliability Coordinator has failed to comply within 180 calendar days of the change.</u>
<u>R5.</u>	<u>The Reliability Coordinator did not review and approve/disapprove the restoration plans within the pre-determined schedule. Or, the Reliability Coordinator failed to notify the Transmission Operator in writing of its reasons for disapproval.</u>	<u>The Reliability Coordinator did not review and approve/disapprove the restoration plans within forty-five calendar days of the pre-determined schedule.</u>	<u>The Reliability Coordinator did not review and approve/disapprove the restoration plans within sixty calendar days of the pre-determined schedule.</u>	<u>The Reliability Coordinator did not review and approve/disapprove the restoration plans within ninety calendar days of the pre-determined schedule.</u>

<u>R#</u>	<u>Lower VSL</u>	<u>Moderate VSL</u>	<u>High VSL</u>	<u>Severe VSL</u>
<b>R6.</b>	<u>The Reliability Coordinator did not make the latest approved restoration plan available in its control rooms within fifteen calendar days of its approval.</u>	<u>The Reliability Coordinator did not make the latest approved restoration plan available in its control rooms within twenty calendar days of its approval.</u>	<u>The Reliability Coordinator did not make the latest approved restoration plan available in its control rooms within twenty-five calendar days of its approval.</u>	<u>The Reliability Coordinator did not make the latest approved restoration plan available in its control rooms within thirty calendar days of its approval.</u>
<b>R7.</b>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>The Reliability Coordinator did not work with its affected Balancing Authorities, 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.</u>
<b>R8.</b>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>The Reliability Coordinator did not authorize and coordinate resynchronizing islanded areas that bridge boundaries between Transmission Operators or Reliability Coordinators.</u>
<b>R9.</b>	<u>The Reliability Coordinator supplied the necessary training but not within the required timeframe.</u>	<u>The Reliability Coordinator supplied training but did not address both sub-requirements.</u>	<u>N/A</u>	<u>The Reliability Coordinator has not included System restoration training in its operations training program..</u>
<b>R10.</b>	The Reliability Coordinator only held one restoration drill, exercise, or simulation during the calendar year.	The Reliability Coordinator held the correct number of restoration drills, exercises, or simulations but did not invite each Transmission Operator	N/A	The Reliability Coordinator did not hold a restoration drill, exercise, or simulation during the calendar year.

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<u>R#</u>	<u>Lower VSL</u>	<u>Moderate VSL</u>	<u>High VSL</u>	<u>Severe VSL</u>
		and Generator Operator identified in its restoration plan to participate in a drill, exercise, or simulation at least every two calendar years.		

**E. Regional Variances**

None.

**Version History**

<u>Version</u>	<u>Date</u>	<u>Action</u>	<u>Change Tracking</u>
0	April 1, 2005	Effective Date	New
0	August 8, 2005	Removed “Proposed” from Effective Date	Errata
1	November 1, 2006	Adopted by Board of Trustees	Revised
2	TBD	Revisions pursuant to Project 2006-03	Updated Measures and Compliance to match new Requirements