

**A. Introduction**

- 1. Title:** System Restoration Plans
- 2. Number:** EOP-005-0
- 3. 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
- 4. Applicability**
  - 4.2.** Transmission Operators.
  - 4.3.** Balancing Authorities.
- 5. Effective Date:** April 1, 2005

**B. Requirements**

- R1.** 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-005-0 in developing a restoration plan.
- 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.
- R3.** Each Transmission Operator shall develop restoration plans with a priority of restoring the integrity of the Interconnection.
- R4.** Each Transmission Operator shall coordinate its restoration plans with Balancing Authorities within its area, its Reliability Coordinator, and neighboring Transmission Operators and Balancing Authorities.
- R5.** Each Transmission Operator and Balancing Authority shall periodically test its telecommunication facilities needed to implement the restoration plan.
- 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.
- R7.** Each Transmission Operator and Balancing Authority shall verify the restoration procedure by actual testing or by simulation.
- R8.** Each Transmission Operator shall ensure the availability and location of black start capability within its area to meet the needs of the restoration plan.
- R9.** 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.
  - R9.1.** 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).
  - R9.2.** 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 online, or load shedding.

- R9.3.** The affected Balancing Authorities, working with their Reliability Coordinator(s), shall immediately review the Interchange Schedules between those Balancing Authority Areas or fragments of those Balancing Authority Areas within the separated area and make adjustments as needed to facilitate the restoration. The affected Balancing Authorities shall make all attempts to maintain the adjusted Interchange Schedules, whether generation control is manual or automatic.
- R9.4.** The affected Transmission Operators shall give high priority to restoration of off-site power to nuclear stations.
- R9.5.** The affected Transmission Operators may resynchronize the isolated area(s) with the surrounding area(s) when the following conditions are met:
  - R9.5.1.** Voltage, frequency, and phase angle permit.
  - R9.5.2.** 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.
  - R9.5.3.** Reliability Coordinator(s) and adjacent areas are notified and Reliability Coordinator approval is given.
  - R9.5.4.** Load is shed in neighboring areas, if required, to permit successful interconnected system restoration.

**C. Measures**

Not specified.

**D. Compliance**

**1. Compliance Monitoring Process**

**1.1. Compliance Monitoring Responsibility**

Self-Certification: Each Transmission Operator shall annually self-certify to the Regional Reliability Organization that the following criteria have been met:

- 1.1.1** The necessary operating instructions and procedures for restoring loads, including identification of critical load requirements.
- 1.1.2** A set of procedures for annual review for simulating and, where practical, actual testing and verification of the restoration plan resources and procedures.
- 1.1.3** 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.
- 1.1.4** Any significant changes to the restoration plan must be reported to the Regional Reliability Organization.

**1.2. Compliance Monitoring Period and Reset Timeframe**

One calendar year.

**1.3. Data Retention**

The Transmission Operator must have its plan to reestablish its electric system available for a review by the Regional Reliability Organization at all times.

**1.4. Additional Compliance Information**

## Standard EOP-005-0 — System Restoration Plans

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None.

### 2. Levels of Non-Compliance

- 2.1. **Level 1:** Plan exists but is not reviewed annually.
- 2.2. **Level 2:** Plan exists but does not address one of the elements listed in Attachment 1-EOP-005-0.
- 2.3. **Level 3:** N/A.
- 2.4. **Level 4:** Plan exists but does not address two or more of the requirements in Attachment 1-EOP-005-0, or there is no restoration plan in place.

### E. Regional Differences

None identified.

### Version History

Version	Date	Action	Change Tracking
0	April 1, 2005	Effective Date	New

**Attachment 1-EOP-005-0**

**Elements for Consideration in Development of Restoration Plans**

The Restoration Plan must consider the following requirements, as applicable:

1. Plan and procedures outlining the relationships and responsibilities of the personnel necessary to implement system restoration.
2. 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.
3. The plan must account for the possibility that restoration cannot be completed as expected.
4. The necessary operating instructions and procedures for synchronizing areas of the system that have become separated.
5. The necessary operating instructions and procedures for restoring loads, including identification of critical load requirements.
6. A set of procedures for simulating and, where practical, actually testing and verifying the plan resources and procedures (at least every three years).
7. 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.
8. The functions to be coordinated with and among Reliability Coordinators and neighboring Transmission Operators. (The plan should include references to coordination of actions among neighboring Transmission Operators and Reliability Coordinators when the plans are implemented.)
9. Notification shall be made to other operating entities as the steps of the restoration plan are implemented.