A. Introduction

1. **Title:** **Emergency Operations Planning**

2. **Number:** **EOP-001-~~0~~1**

3. **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.

4. **Applicability**

   4.1. Balancing Authorities.

   4.2. Transmission Operators.

5. **~~Proposed~~ Effective Date:** The latter of either the first day of the first quarter, three months after regulatory approvals **or** coincident with the effective date for FAC-014-1.~~First day of first quarter, three months after regulatory approvals April 1, 2005~~

B. Requirements

R1. Balancing Authorities shall have operating agreements with adjacent Balancing Authorities that shall, at a minimum, contain provisions for emergency assistance, including provisions to obtain emergency assistance from remote Balancing Authorities.

~~**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.~~

~~**R3.**~~**R2.** Each Transmission Operator and Balancing Authority shall:

~~**R3.1.**~~**R2.1.** Develop, maintain, and implement a set of plans to mitigate operating emergencies for insufficient generating capacity.

~~**R3.2.**~~**R2.2.** Develop, maintain, and implement a set of plans to mitigate operating emergencies on the transmission system.

~~**R3.3.**~~**R2.3.** Develop, maintain, and implement a set of plans for load shedding.

~~**R3.4.**~~**R2.4.** Develop, maintain, and implement a set of plans for system restoration.

~~**R4.**~~**R3.** Each Transmission Operator and Balancing Authority shall have emergency plans that will enable it to mitigate operating emergencies. At a minimum, Transmission Operator and Balancing Authority emergency plans shall include:

~~**R4.1.**~~**R3.1.** Communications protocols to be used during emergencies.

~~**R4.2.**~~**R3.2.** A list of controlling actions to resolve the emergency. Load reduction, in sufficient quantity to resolve the emergency within NERC-established timelines, shall be one of the controlling actions.

R4.3.R3.3. The tasks to be coordinated with and among adjacent Transmission Operators and Balancing Authorities.

R4.4.R3.4. Staffing levels for the emergency.

R5.R4. Each Transmission Operator and Balancing Authority shall include the applicable elements in Attachment 1-EOP-001-0 when developing an emergency plan.

R6.R5. The Transmission Operator and Balancing Authority shall annually review and update each emergency plan. The Transmission Operator and Balancing Authority shall provide a copy of its updated emergency plans to its Reliability Coordinator and to neighboring Transmission Operators and Balancing Authorities.

R7.R6. The Transmission Operator and Balancing Authority shall coordinate its emergency plans with other Transmission Operators and Balancing Authorities as appropriate. This coordination includes the following steps, as applicable:

R7.1.R6.1. The Transmission Operator and Balancing Authority shall establish and maintain reliable communications between interconnected systems.

R7.2.R6.2. The Transmission Operator and Balancing Authority shall arrange new interchange agreements to provide for emergency capacity or energy transfers if existing agreements cannot be used.

R7.3.R6.3. The Transmission Operator and Balancing Authority shall coordinate transmission and generator maintenance schedules to maximize capacity or conserve the fuel in short supply. (This includes water for hydro generators.)

R7.4.R6.4. The Transmission Operator and Balancing Authority shall arrange deliveries of electrical energy or fuel from remote systems through normal operating channels.

C. Measures

M1. The Transmission Operator and Balancing Authority shall have its emergency plans available for review by the Regional Reliability Organization at all times.

M2. The Transmission Operator and Balancing Authority shall have its two most recent annual self-assessments available for review by the Regional Reliability Organization at all times.

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Monitoring Responsibility

Regional Reliability Organization.

1.2. Compliance Monitoring Period and Reset Time Frame

The Regional Reliability Organization shall review and evaluate emergency plans every three years to ensure that the plans consider the applicable elements of Attachment 1-EOP-001-0.

The Regional Reliability Organization may elect to request self-certification of the Transmission Operator and Balancing Authority in years that the full review is not done.

Reset: one calendar year.

1.3. Data Retention

Current plan available at all times.

1.4. Additional Compliance Information

Not specified.

2. Levels of Non-Compliance

2.1. Level 1: One of the applicable elements of Attachment 1-EOP-001-0 has not been addressed in the emergency plans.

2.2. Level 2: Two of the applicable elements of Attachment 1-EOP-001-0 have not been addressed in the emergency plans.

2.3. Level 3: Three of the applicable elements of Attachment 1-EOP-001-0 have not been addressed in the emergency plans.

2.4. Level 4: Four or more of the applicable elements of Attachment 1-EOP-001-0 have not been addressed in the emergency plans or a plan does not exist.

E. Regional Differences

None identified.

Version History

Version	Date	Action	Change Tracking
0	April 1, 2005	Effective Date	New
0	August 8, 2005	Removed “Proposed” from Effective Date	Errata

Attachment 1-EOP-001-0

Elements for Consideration in Development of Emergency Plans

1. Fuel supply and inventory — An adequate fuel supply and inventory plan that recognizes reasonable delays or problems in the delivery or production of fuel.

2. Fuel switching — Fuel switching plans for units for which fuel supply shortages may occur, e.g., gas and light oil.

3. Environmental constraints — Plans to seek removal of environmental constraints for generating units and plants.

4. System energy use — The reduction of the system's own energy use to a minimum.

5. Public appeals — Appeals to the public through all media for voluntary load reductions and energy conservation including educational messages on how to accomplish such load reduction and conservation.

6. Load management — Implementation of load management and voltage reductions, if appropriate.

7. Optimize fuel supply — The operation of all generating sources to optimize the availability.

8. Appeals to customers to use alternate fuels — In a fuel emergency, appeals to large industrial and commercial customers to reduce non-essential energy use and maximize the use of customer-owned generation that rely on fuels other than the one in short supply.

9. Interruptible and curtailable loads — Use of interruptible and curtailable customer load to reduce capacity requirements or to conserve the fuel in short supply.

10. Maximizing generator output and availability — The operation of all generating sources to maximize output and availability. This should include plans to winterize units and plants during extreme cold weather.

11. Notifying IPPs — Notification of cogeneration and independent power producers to maximize output and availability.

12. Requests of government — Requests to appropriate government agencies to implement programs to achieve necessary energy reductions.

13. Load curtailment — A mandatory load curtailment plan to use as a last resort. This plan should address the needs of critical loads essential to the health, safety, and welfare of the community. Address firm load curtailment.

14. Notification of government agencies — Notification of appropriate government agencies as the various steps of the emergency plan are implemented.

15. Notifications to operating entities — Notifications to other operating entities as steps in emergency plan are implemented.

A. Introduction

1. **Title:** **Reliability Coordination — Facilities**

2. **Number:** IRO 002-~~1~~2

3. **Purpose:** Reliability Coordinators need information, tools and other capabilities to perform their responsibilities.

4. **Applicability**

   4.1. Reliability Coordinators.

5. **Proposed Effective Date:** ~~January 1, 2007~~ The latter of either the first day of the first quarter, three months after regulatory approvals **or** coincident with the effective date for FAC-014-1.~~First day of first quarter, three months after regulatory approvals.~~

B. Requirements

R1. Each Reliability Coordinator shall have adequate communications facilities (voice and data links) to appropriate entities within its Reliability Coordinator Area. These communications facilities shall be staffed and available to act in addressing a real-time emergency condition.

~~**R2.**Each Reliability Coordinator shall determine the data requirements to support its reliability coordination tasks and shall request such data from its Transmission Operators, Balancing Authorities, Transmission Owners, Generation Owners, Generation Operators, and Load-Serving Entities, or adjacent Reliability Coordinators.~~

~~**R3.**~~**R2.** Each Reliability Coordinator — or its Transmission Operators and Balancing Authorities — shall provide, or arrange provisions for, data exchange to other Reliability Coordinators or Transmission Operators and Balancing Authorities via a secure network.

~~**R4.**~~**R3.** Each Reliability Coordinator shall have multi-directional communications capabilities with its Transmission Operators and Balancing Authorities, and with neighboring Reliability Coordinators, for both voice and data exchange as required to meet reliability needs of the Interconnection.

~~**R5.**~~**R4.** Each Reliability Coordinator shall have detailed real-time monitoring capability of its Reliability Coordinator Area and sufficient monitoring capability of its surrounding Reliability Coordinator Areas to ensure that potential or actual System Operating Limit or Interconnection Reliability Operating Limit violations are identified. Each Reliability Coordinator shall have monitoring systems that provide information that can be easily understood and interpreted by the Reliability Coordinator's operating personnel, giving particular emphasis to alarm management and awareness systems, automated data transfers, and synchronized information systems, over a redundant and highly reliable infrastructure.

~~**R6.**Each Reliability Coordinator shall monitor Bulk Electric System elements (generators, transmission lines, buses, transformers, breakers, etc.) that could result in SOL or IROL violations within its Reliability Coordinator Area. Each Reliability Coordinator shall monitor both real and reactive power system flows, and operating reserves, and~~

~~the status of Bulk Electric System elements that are or could be critical to SOLs and IROLs and system restoration requirements within its Reliability Coordinator Area.~~

~~R7.~~R5. Each Reliability Coordinator shall have adequate analysis tools such as state estimation, pre- and post-contingency analysis capabilities (thermal, stability, and voltage), and wide-area overview displays.

~~R8.~~R6. Each Reliability Coordinator shall continuously monitor its Reliability Coordinator Area. Each Reliability Coordinator shall have provisions for backup facilities that shall be exercised if the main monitoring system is unavailable. Each Reliability Coordinator shall ensure SOL and IROL monitoring and derivations continue if the main monitoring system is unavailable.

~~R9.~~R7. Each Reliability Coordinator shall control its Reliability Coordinator analysis tools, including approvals for planned maintenance. Each Reliability Coordinator shall have procedures in place to mitigate the effects of analysis tool outages.

C. Measures

M1. Each Reliability Coordinator shall have and provide upon request evidence that could include, but is not limited to, a document that lists its voice communications facilities with Transmission Operators, Balancing Authorities and Generator Operators within its Reliability Coordinator Area and with neighboring Reliability Coordinators, that will be used to confirm that it has communication facilities in accordance with Requirements 1 and ~~4~~3.

M2. Each Reliability Coordinator shall have and provide upon request evidence that could include, but is not limited to, a data-link facility description document, computer print-out, training-document, or other equivalent evidence that will be used to confirm that it has data links with entities within its Reliability Coordinator Area and with neighboring Reliability Coordinators, as specified in Requirements 1 and ~~4~~3.

~~**M3.** Each Reliability Coordinator shall have and provide upon request evidence that could include, but is not limited to, a letter to Transmission Operators, Balancing Authorities, Transmission Owners, Generator Owners, Generator Operators, and Load-Serving Entities, or adjacent Reliability Coordinators, or other equivalent evidence that will be used to confirm that the Reliability Coordinator has requested the data required to support its reliability coordination tasks. (Requirement 2)~~

~~M4.~~M3. Each Reliability Coordinator shall have and provide upon request evidence that could include, but is not limited to, Energy Management System description documents, computer printouts, SCADA data collection system communications performance or equivalent evidence to demonstrate that it has real-time monitoring capability of its Reliability Coordinator Area and monitoring capability of its surrounding Reliability Coordinator Areas to identify potential or actual System Operating Limit or Interconnection Reliability Operating Limit violations.

~~M5.~~M4. Each Reliability Coordinator shall have and provide upon request evidence that could include, but is not limited to, documentation from suppliers, operating and planning staff training documents, examples of studies, or other

equivalent evidence to show that it has analysis tools in accordance with Requirement 5~~7~~.

~~M6.~~M5. Each Reliability Coordinator shall provide evidence such as equipment specifications, operating procedures, staff records of their involvement in training, or other equivalent evidence to show that it has a backup monitoring facility that can be used to identify and monitor SOLs and IROLs. (Requirement ~~8~~6)

~~M7.~~M6. Each Reliability Coordinator shall have and provide upon request evidence that could include, but is not limited to, a documented procedure or equivalent evidence that will be used to confirm that the Reliability Coordinator has the authority to veto planned outages to analysis tools, including final approvals for planned maintenance as specified in Requirement ~~9~~ 7 Part 1.

~~M8.~~M7. Each Reliability Coordinator shall have and provide upon request its current procedures used to mitigate the effects of analysis tool outages as specified in Requirement ~~9~~ 7 Part 2.

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Monitoring Responsibility

Regional Reliability Organizations shall be responsible for compliance. Monitoring.

1.2. Compliance Monitoring and Reset Time Frame

One or more of the following methods will be used to assess compliance:

- Self-certification (Conducted annually with submission according to schedule.)
- Spot Check Audits (Conducted anytime with up to 30 days notice given to prepare.)
- Periodic Audit (Conducted once every three years according to schedule.)
- Triggered Investigations (Notification of an investigation must be made within 60 days of an event or complaint of noncompliance. The entity will have up to 30 days to prepare for the investigation. An entity may request an extension of the preparation period and the extension will be considered by the Compliance Monitor on a case-by-case basis.)

The Performance-Reset Period shall be 12 months from the last finding of non-compliance.

1.3. Data Retention

Each Reliability Coordinator shall have current in-force documents used to show compliance with Measures 1 through ~~8~~7.

If an entity is found non-compliant the entity shall keep information related to the noncompliance until found compliant or for two years plus the current year, whichever is longer.

Evidence used as part of a triggered investigation shall be retained by the entity being investigated for one year from the date that the investigation is closed, as determined by the Compliance Monitor,

The Compliance Monitor shall keep the last periodic audit report and all requested and submitted subsequent compliance records.

1.4. Additional Compliance Information

None.

2. Levels of Non-Compliance for a Reliability Coordinator

2.1. Level 1: Not applicable.

2.2. Level 2: Did not confirm that the network used for data exchange to other Reliability Coordinators is secure as specified in ~~R3~~R2.

~~2.3.~~**Level 3:** ~~There shall be a separate Level 3 non-compliance, for every one of the following requirements that is in violation:~~

~~2.3.1~~Has not requested the data required to support its reliability coordination tasks. ~~(Requirement 2)~~

~~2.3.2~~2.3. Does not control its Reliability Coordinator analysis tools, including the exercising of final approvals for planned maintenance (~~R7~~R5) or does not have current procedures in place to mitigate the effects of analysis tool outages as specified in ~~R9~~R7.

2.4. Level 4: There shall be a separate Level 4 non-compliance, for every one of the following requirements that is in violation:

2.4.1 Does not have or could not demonstrate the use of voice communication facilities (or show data links) to one or more Transmission Operators, Generator Operators or Balancing Authorities with authority over Bulk Electrical System equipment or with one or more neighboring Reliability Coordinators. (R1 and ~~R4~~R3)

2.4.2 Does not have real-time monitoring capability of its Reliability Coordinator Area and surrounding Reliability Coordinator Areas as specified in ~~R5~~R4.

2.4.3 Does not have a documented procedure for the use of its backup monitoring facilities. (~~R8~~R6)

E. Regional Differences

None identified.

Version History

Version	Date	Action	Change Tracking
0	April 1, 2005	Effective Date	New
0	August 8, 2005	Removed “Proposed” from Effective	Errata

		Date	
1	November 1, 2006	Adopted by Board of Trustees	Revised

Retire entire standard

A. Introduction

1. **Title:** ~~Reliability Coordination — Wide-Area View~~

2. **Number:** ~~IRO-003-2~~

3. **Purpose:** ~~The Reliability Coordinator must have a wide-area view of its own Reliability Coordinator Area and that of neighboring Reliability Coordinators.~~

4. **Applicability**

   ~~4.1.~~Reliability Coordinators.

5. **Effective Date:** ~~January 1, 2007~~When IRO-007-1 becomes effective.

B. Requirements

~~R1.~~Each Reliability Coordinator shall monitor all Bulk Electric System facilities, which may include sub-transmission information, within its Reliability Coordinator Area and adjacent Reliability Coordinator Areas, as necessary to ensure that, at any time, regardless of prior planned or unplanned events, the Reliability Coordinator is able to determine any potential System Operating Limit and Interconnection Reliability Operating Limit violations within its Reliability Coordinator Area.

~~R2.~~Each Reliability Coordinator shall know the current status of all critical facilities whose failure, degradation or disconnection could result in an SOL or IROL violation. Reliability Coordinators shall also know the status of any facilities that may be required to assist area restoration objectives.

C. Measures

~~M1.~~The Reliability Coordinator shall have and provide upon request evidence that could include, but is not limited to, Energy Management System description documents, computer printouts, SCADA data collection, or other equivalent evidence that will be used to confirm that it monitors adjacent Reliability Coordinator Areas as necessary to ensure that, regardless of prior planned or unplanned events, the Reliability Coordinator is able to determine any potential System Operating Limit and Interconnection Reliability Operating Limit violations within its Reliability Coordinator Area.

D. Compliance

1. **Compliance Monitoring Process**

   1.1. **Compliance Monitoring Responsibility**

   ~~Regional Reliability Organizations shall be responsible for compliance monitoring~~.

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

   ~~One or more of the following methods will be used to assess compliance:~~

   ~~- Self-certification (Conducted annually with submission according to schedule.)~~

   ~~- Spot Check Audits (Conducted anytime with up to 30 days notice given to prepare.)~~

- Periodic Audit (Conducted once every three years according to schedule.)

- Triggered Investigations (Notification of an investigation must be made within 60 days of an event or complaint of noncompliance. The entity will have up to 30 days to prepare for the investigation. An entity may request an extension of the preparation period and the extension will be considered by the Compliance Monitor on a case-by-case basis.)

The Performance-Reset Period shall be 12 months from the last finding of non-compliance.

1.3. Data Retention

Each Reliability Coordinator shall have current in-force documents used to show compliance with Measure 1.

If an entity is found non-compliant the entity shall keep information related to the noncompliance until found compliant or for two years plus the current year, whichever is longer.

Evidence used as part of a triggered investigation shall be retained by the entity being investigated for one year from the date that the investigation is closed, as determined by the Compliance Monitor,

The Compliance Monitor shall keep the last periodic audit report and all requested and submitted subsequent compliance records.

1.4. Additional Compliance Information

None.

2. Levels of Non-Compliance for a Reliability Coordinator

2.1. Level 1: Not applicable.

2.2. Level 2: Not applicable.

2.3. Level 3: Not applicable.

2.4. Level 4: Did not produce acceptable evidence to confirm that it monitors adjacent Reliability Coordinator Areas as necessary to ensure that, at any time, regardless of prior planned or unplanned events, the Reliability Coordinator is able to determine any potential System Operating Limit and Interconnection Reliability Operating Limit violations within its Reliability Coordinator Area.

E. Regional Differences

None identified.

Version History

Version	Date	Action	Change Tracking
0	April 1, 2005	Effective Date	New
0	August 8, 2005	Removed “Proposed” from Effective Date	Errata
1	February 7, 2006	Adopted by Board of Trustees	Revised
2	November 1, 2006	Adopted by Board of Trustees	Revised

Standard IRO-004-~~1~~ 2 — Reliability Coordination — Operations Planning

Retire Entire Standard

A. Introduction

1. **Title:** ~~Reliability Coordination — Operations Planning~~

2. **Number:** ~~IRO-004-1~~

3. **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.~~

4. **Applicability**

   ~~**4.1.**Reliability Coordinators.~~

   ~~**4.2.**Balancing Authorities.~~

   ~~**4.3.**Transmission Operators.~~

   ~~**4.4.**Transmission Service Providers.~~

   ~~**4.5.**Transmission Owners.~~

   ~~**4.6.**Generator Owners.~~

   ~~**4.7.**Generator Operators.~~

   ~~**4.8.**Load-Serving Entities.~~

5. **Effective Date:** First day of first quarter, three months after regulatory approvals~~November 1, 2006~~

B. Requirements

~~**R1.**Each Reliability Coordinator shall conduct next-day reliability analyses for its Reliability Coordinator Area to ensure that the Bulk Electric System can be operated reliably in anticipated normal and Contingency event conditions. The Reliability Coordinator shall conduct Contingency analysis studies to identify potential interface and other SOL and IROL violations, including overloaded transmission lines and transformers, voltage and stability limits, etc.~~

~~**R2.**Each Reliability Coordinator shall pay particular attention to parallel flows to ensure one Reliability Coordinator Area does not place an unacceptable or undue Burden on an adjacent Reliability Coordinator Area.~~

~~**R3.**~~**R1.** ~~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~~.

~~**R4.**Each Transmission Operator, Balancing Authority, Transmission Owner, Generator Owner, Generator Operator, and Load-Serving Entity in the Reliability Coordinator Area shall provide information required for system studies, such as critical facility status, Load, generation, operating reserve projections, and known Interchange Transactions. This information shall be available by 1200 Central Standard Time for the Eastern Interconnection and 1200 Pacific Standard Time for the Western Interconnection.~~

R5. Each Reliability Coordinator shall share the results of its system studies, when conditions warrant or upon request, with other Reliability Coordinators and with Transmission Operators, Balancing Authorities, and Transmission Service Providers within its Reliability Coordinator Area. The Reliability Coordinator shall make study results available no later than 1500 Central Standard Time for the Eastern Interconnection and 1500 Pacific Standard Time for the Western Interconnection, unless circumstances warrant otherwise.

R6.R2. If the results of these studies indicate potential SOL or IROL violations, the Reliability Coordinator shall direct its Transmission Operators, Balancing Authorities and Transmission Service Providers to take any necessary action the Reliability Coordinator deems appropriate to address the potential SOL or IROL violation.

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.

C. Measures

M1. Evidence that the Reliability Coordinator conducted next-day contingency analyses for its Reliability Coordinator Area to ensure that the Bulk Electric System could be operated reliably in anticipated normal and Contingency conditions.

D. Compliance

1. Compliance Monitoring Process

Entities will be selected for an on-site audit at least every three years. For a selected 30-day period in the previous three calendar months prior to the on site audit, Reliability Coordinators will be asked to provide documentation showing that next-day reliability analyses were conducted each day to ensure the bulk power system could be operated in anticipated normal and Contingency conditions; and that they identified potential interface and other operating limits including overloaded transmission lines and transformers, voltage and stability limits, etc.

1.1. Compliance Monitoring Responsibility

Self-Certification: Each Reliability Coordinator must annually self-certify compliance to its Regional Reliability Organization with the completion of the studies and action plans in Requirements R1, R2 and R3.

Exception Reporting: Reliability Coordinators will prepare a monthly report to the Regional Reliability Organization for each month that system studies were not conducted, indicating the dates that studies were not done and the reason why.

1.2. Compliance Monitoring Period and Reset Time Frame

One year without a violation from the time of the violation.

1.3. Data Retention

Documentation shall be available for 3 months to provide verification that system studies were performed as required.

1.4. Additional Compliance Information

None identified.

2. Levels of Non-Compliance

2.1. Level 1: ~~System studies were not conducted for one day in a calendar month and/or the action plans were not developed to maintain transmission loading within acceptable limits for potential interface and other IROL violations.~~

~~2.2.~~2.1. **Level 2:** ~~System studies were not conducted for 2–3 days in a calendar month and/or the action plans were not developed to maintain transmission loading within acceptable limits for potential interface and other IROL violations.~~

~~2.3.~~2.2. **Level 3:** ~~System studies were not conducted for 4–5 days in a calendar month and/or the action plans were not developed to maintain transmission loading within acceptable limits for potential interface and other IROL violations.~~

~~2.4.~~2.3. **Level 4:** ~~System studies were not conducted for more than 5 days in a calendar month and/or the action plans were not developed to maintain transmission loading within acceptable limits for potential interface and other IROL violations.~~

E. Regional Differences

~~None identified.~~

Version History

Version	Date	Action	Change Tracking
0	April 1, 2005	Effective Date	New
0	August 8, 2005	Removed “Proposed” from Effective Date	Errata

A. Introduction

1. **Title:** **Reliability Coordination — Current Day Operations**

2. **Number:** IRO-005-~~2~~3

3. **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.

4. **Applicability**

   4.1. Reliability Coordinators.

   4.2. Balancing Authorities.

   4.3. Transmission Operators.

   4.4. Transmission Service Providers.

   4.5. Generator Operators.

   4.6. Load-Serving Entities.

   4.7. Purchasing-Selling Entities.

~~5.~~**Proposed Effective Date:** The latter of either the first day of the first quarter, three months after regulatory approvals **or** coincident with the effective date for FAC-014-1.~~First day of first quarter, three months after regulatory approvals~~~~January 1, 2007~~

B. Requirements

~~**R1.**Each Reliability Coordinator shall monitor its Reliability Coordinator Area parameters, including but not limited to the following:~~

~~**R1.1.**Current status of Bulk Electric System elements (transmission or generation including critical auxiliaries such as Automatic Voltage Regulators and Special Protection Systems) and system loading.~~

~~**R1.2.**Current pre-contingency element conditions (voltage, thermal, or stability), including any applicable mitigation plans to alleviate SOL or IROL violations, including the plan's viability and scope.~~

~~**R1.3.**Current post-contingency element conditions (voltage, thermal, or stability), including any applicable mitigation plans to alleviate SOL or IROL violations, including the plan's viability and scope.~~

~~**R1.4.**System real and reactive reserves (actual versus required).~~

~~**R1.5.**Capacity and energy adequacy conditions.~~

~~**R1.6.**Current ACE for all its Balancing Authorities.~~

~~**R1.7.**Current local or Transmission Loading Relief procedures in effect.~~

~~**R1.8.**Planned generation dispatches.~~

~~R1.9.~~~~Planned transmission or generation outages.~~

~~R1.10.~~~~Contingency events.~~

~~R2.~~~~Each Reliability Coordinator shall be aware of all Interchange Transactions that wheel through, source, or sink in its Reliability Coordinator Area, and make that Interchange Transaction information available to all Reliability Coordinators in the Interconnection.~~

~~R3.~~~~As portions of the transmission system approach or exceed SOLs or IROLs, the Reliability Coordinator shall work with its Transmission Operators and Balancing Authorities to evaluate and assess any additional Interchange Schedules that would violate those limits. If a potential or actual IROL violation cannot be avoided through proactive intervention, the Reliability Coordinator shall initiate control actions or emergency procedures to relieve the violation without delay, and no longer than 30 minutes. The Reliability Coordinator shall ensure all resources, including load shedding, are available to address a potential or actual IROL violation.~~

~~R4.~~R1. Each Reliability Coordinator shall monitor its Balancing Authorities' parameters to ensure that the required amount of operating reserves is provided and available as required to meet the Control Performance Standard and Disturbance Control Standard requirements. If necessary, the Reliability Coordinator shall direct the Balancing Authorities in the Reliability Coordinator Area to arrange for assistance from neighboring Balancing Authorities. The Reliability Coordinator shall issue Energy Emergency Alerts as needed and at the request of its Balancing Authorities and Load-Serving Entities.

~~R5.~~~~Each Reliability Coordinator shall identify the cause of any potential or actual SOL or IROL violations. The Reliability Coordinator shall initiate the control action or emergency procedure to relieve the potential or actual IROL violation without delay, and no longer than 30 minutes. The Reliability Coordinator shall be able to utilize all resources, including load shedding, to address an IROL violation.~~

~~R6.~~R2. Each Reliability Coordinator shall ensure its Transmission Operators and Balancing Authorities are aware of Geo-Magnetic Disturbance (GMD) forecast information and assist as needed in the development of any required response plans.

~~R7.~~R3. The Reliability Coordinator shall disseminate information within its Reliability Coordinator Area, as required.

~~R8.~~R4. Each Reliability Coordinator shall monitor system frequency and its Balancing Authorities' performance and direct any necessary rebalancing to return to CPS and DCS compliance. The Transmission Operators and Balancing Authorities shall utilize all resources, including firm load shedding, as directed by its Reliability Coordinator to relieve the emergent condition.

~~R9.~~R5. The Reliability Coordinator shall coordinate with Transmission Operators, Balancing Authorities, and Generator Operators as needed to develop and implement action plans to mitigate potential or actual SOL, ~~IROL,~~ CPS, or DCS violations. The Reliability Coordinator shall coordinate pending generation and transmission maintenance outages with Transmission Operators, Balancing Authorities, and Generator Operators as needed in both the real time and next-day reliability analysis timeframes.

~~R10.~~R6. As necessary, the Reliability Coordinator shall assist the Balancing Authorities in its Reliability Coordinator Area in arranging for assistance from neighboring Reliability Coordinator Areas or Balancing Authorities.

~~R11.~~R7. The Reliability Coordinator shall identify sources of large Area Control Errors that may be contributing to Frequency Error, Time Error, or Inadvertent Interchange and shall discuss corrective actions with the appropriate Balancing Authority. The Reliability Coordinator shall direct its Balancing Authority to comply with CPS and DCS.

~~R12.~~R8. 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.

~~R10.~~R9. ~~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 non-action 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.

~~R11.~~R10. ~~Each Reliability Coordinator shall make known to Transmission Service Providers within its Reliability Coordinator Area, SOLs or IROLs within its wide-area view.~~ The Transmission Service Providers shall respect ~~these~~ SOLs ~~or~~ and IROLs in accordance with filed tariffs and regional Total Transfer Calculation and Available Transfer Calculation processes.

~~R15.~~R11. Each Reliability Coordinator who foresees a transmission problem (such as an ~~SOL or~~ IROL violation, loss of reactive reserves, etc.) within its Reliability Coordinator Area shall issue an alert to all impacted Transmission Operators and Balancing Authorities in its Reliability Coordinator Area without delay. The receiving Reliability Coordinator shall disseminate this information to its impacted Transmission Operators and Balancing Authorities. The Reliability Coordinator shall notify all impacted Transmission Operators, Balancing Authorities, when the transmission problem has been mitigated.

~~R16.~~ ~~Each Reliability Coordinator shall confirm reliability assessment results and determine the effects within its own and adjacent Reliability Coordinator Areas. The Reliability Coordinator shall discuss options to mitigate potential or actual SOL or IROL violations and take actions as necessary to always act in the best interests of the Interconnection at all times.~~

R17. When an IROL or SOL is exceeded, the Reliability Coordinator shall evaluate the local and wide-area impacts, both real-time and post-contingency, and determine if the actions being taken are appropriate and sufficient to return the system to within IROL in thirty minutes. If the actions being taken are not appropriate or sufficient, the Reliability Coordinator shall direct the Transmission Operator, Balancing Authority, Generator Operator, or Load-Serving Entity to return the system to within IROL or SOL.

C. Measures

M1. The Reliability Coordinator shall have and provide upon request evidence that could include, but is not limited to, Energy Management System description documents, computer printouts, a prepared report specifically detailing compliance to each of the bullets in Requirement 1, EMS availability, SCADA data collection system communications performance or equivalent evidence that will be used to confirm that it monitors the Reliability Coordinator Area parameters specified in Requirements 1.1 through 1.9.

M1. The Reliability Coordinator shall have and provide upon request evidence that could include, but is not limited to, Historical Tag Archive information, Interchange Transaction records, computer printouts, voice recordings or transcripts of voice recordings or equivalent evidence that will be used to confirm that it was aware of and made Interchange Transaction information available to all other Reliability Coordinators, as specified in Requirement 2 1.

M3. If a potential or actual IROL violation occurs, the Reliability Coordinator involved in the event shall have and provide upon request evidence that could include, but is not limited to, operator logs, voice recordings or transcripts of voice recordings, electronic communications, system event logs, operator action notes or equivalent evidence that will be used to determine if it initiated control actions or emergency procedures to relieve that IROL violation within 30 minutes. (Requirement 3 Part 2 and Requirement 5)

M2. If one of its Balancing Authorities has insufficient operating reserves, the Reliability Coordinator shall have and provide upon request evidence that could include, but is not limited to computer printouts, operating logs, voice recordings or transcripts of voice recordings, or equivalent evidence that will be used to determine if the Reliability Coordinator directed and, if needed, assisted the Balancing Authorities in the Reliability Coordinator Area to arrange for assistance from neighboring Balancing Authorities. (Requirement 4 2 Part 2 and Requirement 10 7)

M3. The Reliability Coordinator shall have and provide upon request evidence that could include, but is not limited to, operator logs, voice recordings or transcripts of voice recordings, electronic communications or equivalent evidence that will be used to determine if it informed Transmission Operators and Balancing Authorities of Geo-Magnetic Disturbance (GMD) forecast information and provided assistance as needed in the development of any required response plans. (Requirement 6 3)

M4. The Reliability Coordinator shall have and provide upon request evidence that could include, but is not limited to, operator logs, voice recordings or transcripts of voice

recordings, Hot Line recordings, electronic communications or equivalent evidence that will be used to determine if it disseminated information within its Reliability Coordinator Area in accordance with Requirement ~~7~~4.

M5. The Reliability Coordinator shall have and provide upon request evidence that could include, but is not limited to, computer printouts, operator logs, voice recordings or transcripts of voice recordings, electronic communications or equivalent evidence that will be used to confirm that it monitored system frequency and Balancing Authority performance and directed any necessary rebalancing, as specified in Requirement ~~8~~ 5 Part 1.

M6. The Transmission Operators and Balancing Authorities shall have and provide upon request evidence that could include, but is not limited to, operator logs, voice recordings or transcripts of voice recordings, electronic communications or equivalent evidence that will be used to confirm that it utilized all resources, including firm load shedding, as directed by its Reliability Coordinator, to relieve an emergent condition. (Requirement ~~8~~ 5 Part 2)

M7. The Reliability Coordinator shall have and provide upon request evidence that could include, but is not limited to, voice recordings or transcripts of voice recordings, electronic communications, operator logs or equivalent evidence that will be used to determine if it coordinated with Transmission Operators, Balancing Authorities, and Generator Operators as needed to develop and implement action plans to mitigate potential or actual SOL, ~~IROL,~~ CPS, or DCS violations including the coordination of pending generation and transmission maintenance outages with Transmission Operators, Balancing Authorities and Generator Operators. (Requirement ~~9~~ 6 Part 1)

M8. If a large Area Control Error has occurred, the Reliability Coordinator shall have and provide upon request evidence that could include, but is not limited to, operator logs, voice recordings or transcripts of voice recordings, Hot Line recordings, electronic communications or equivalent evidence that will be used to determine if it identified sources of the Area Control Errors, and initiated corrective actions with the appropriate Balancing Authority if the problem was within the Reliability Coordinator's Area (Requirement ~~11~~ 8 Part 1)

M9. If a Special Protection System is armed and that system could have had an inter-area impact, the Reliability Coordinator shall have and provide upon request evidence that could include, but is not limited to, agreements with their Transmission Operators, procedural documents, operator logs, computer analysis, training modules, training records or equivalent evidence that will be used to confirm that it was aware of the impact of that Special Protection System on inter-area flows. (Requirement ~~12~~9)

M10. If there is an instance where there is a disagreement on a derived limit, the ~~Reliability Coordinator,~~ Transmission Operator, Balancing Authority, Generator Operator, Load-serving Entity, Purchasing-selling Entity and Transmission Service Provider involved in the disagreement shall have and provide upon request evidence that could include, but is not limited to, operator logs, voice recordings, electronic communications or equivalent evidence that will be used to determine if it operated to the most limiting parameter. (~~Part 2 of~~ Requirement ~~13~~10)

~~M13.~~M11. The Reliability Coordinator shall have and provide upon request evidence that could include, but is not limited to, procedural documents, operator logs, voice recordings or transcripts of voice recordings, electronic communications or equivalent evidence that will be used to confirm that it provided SOL and IROL information to Transmission Service Providers within its Reliability Coordinator Area. (Requirement ~~14~~11, Part 1)

~~M14.~~M12. The Transmission Service Providers shall have and provide upon request evidence that could include, but is not limited to, procedural documents, operator logs, voice recordings or transcripts of voice recordings, electronic communications or equivalent evidence that will be used to confirm that it respected the SOLs or IROLs in accordance with filed tariffs and regional Total Transfer Calculation and Available Transfer Calculation processes.(Requirement ~~14~~ 11 Part 2)

~~M15.~~M13. The Reliability Coordinator shall have and provide upon request evidence that could include, but is not limited to, operator logs, voice recordings or transcripts of voice recordings, electronic communications or equivalent evidence that will be used to confirm that it issued alerts when it foresaw a transmission problem (such as an SOL or IROL violation, loss of reactive reserves, etc.) within its Reliability Coordinator Area, to all impacted Transmission Operators and Balancing Authorities in its Reliability Coordinator Area as specified in Requirement ~~15~~ 12 Part 1.

~~M16.~~M14. The Reliability Coordinator shall have and provide upon request evidence that could include, but is not limited to, operator logs, voice recordings or transcripts of voice recordings, electronic communications or equivalent evidence that will be used to confirm that upon receiving information such as an SOL or IROL violation, loss of reactive reserves, etc. it disseminated the information to its impacted Transmission Operators and Balancing Authorities as specified in Requirement ~~15~~ 12 Part 2.

~~M17.~~M15. The Reliability Coordinator shall have and provide upon request evidence that could include, but is not limited to, operator logs, voice recordings or transcripts of voice recordings, electronic communications or equivalent evidence that will be used to confirm that it notified all impacted Transmission Operators, Balancing Authorities and Reliability Coordinators when a transmission problem has been mitigated. (Requirement ~~15~~ 12 Part 3)

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Monitoring Responsibility

Regional Reliability Organizations shall be responsible for compliance monitoring.

1.2. Compliance Monitoring and Reset Time Frame

One or more of the following methods will be used to assess compliance:

- Self-certification (Conducted annually with submission according to schedule.)

- Spot Check Audits (Conducted anytime with up to 30 days notice given to prepare.)
- Periodic Audit (Conducted once every three years according to schedule.)
- Triggered Investigations (Notification of an investigation must be made within 60 days of an event or complaint of noncompliance. The entity will have up to 30 days to prepare for the investigation. An entity may request an extension of the preparation period and the extension will be considered by the Compliance Monitor on a case-by-case basis.)

The Performance-Reset Period shall be 12 months from the last finding of non-compliance.

1.3. Data Retention

For Measure~~s 1~~ 9~~and 11~~, each Reliability Coordinator shall have its current in-force documents as evidence.

For Measures ~~2~~1~~–10~~ 8 ~~and~~, ~~Measure 13~~11, and Measures ~~15~~ 13 through ~~16~~15, the Reliability Coordinator shall keep 90 days of historical data (evidence).

For Measure 6~~8~~, the Transmission Operator and Balancing Authority shall keep 90 days of historical data (evidence).

For Measure ~~12~~10, the ~~Reliability Coordinator,~~ Transmission Operator, Balancing Authority, and Transmission Service Provider shall keep 90 days of historical data (evidence).

For Measure ~~14~~12, the Transmission Service Provider shall keep 90 days of historical data (evidence).

If an entity is found non-compliant the entity shall keep information related to the noncompliance until found compliant or for two years plus the current year, whichever is longer.

Evidence used as part of a triggered investigation shall be retained by the entity being investigated for one year from the date that the investigation is closed, as determined by the Compliance Monitor,

The Compliance Monitor shall keep the last periodic audit report and all requested and submitted subsequent compliance records.

1.4. Additional Compliance Information

None.

2. Levels of Non-Compliance for a Transmission Operator, Balancing Authority, Generator Operator, Load-serving Entity, Purchasing-selling Entity and Transmission Service Provider

2.1. Level 1: Not applicable.

2.2. Level 2: Not applicable.

2.3. Level 3: Not applicable.

2.4. Level 4: There shall be a separate Level 4 non-compliance, for every one of the following requirements that is in violation:

2.4.1 Did not follow the Reliability Coordinator's directives in accordance with ~~R8~~ R5 Part 2).

2.4.2 Did not operate to the most limiting parameter when a difference in derived limits existed. (~~R13~~ R10~~Part 2~~)

3. Levels of Non-Compliance for a Reliability Coordinator:

3.1. Level 1: Not applicable.

3.2. Level 2: ~~Did not make Interchange Transaction information available to all other Reliability Coordinators in the Interconnection. (Requirement 2)~~Not applicable.

3.3. Level 3: There shall be a separate Level 3 non-compliance, for every one of the following requirements that is in violation:

3.3.1 Did not communicate to each of its Balancing Authorities and Transmission Operators to make them aware of GMD forecast information or did not assist in the development of any required response plans to a predicted GMD. (Requirement ~~6~~3)

3.3.2 Did not disseminate information within its Reliability Coordinator Area. (Requirement ~~7~~4)

3.4. Level 4: There shall be a separate Level 4 non-compliance, for every one of the following requirements that is in violation:

~~**3.4.1**Does not meet one or more of the requirements as specified in requirement 1 (Requirements 1.1 through R1.9)~~

~~**3.4.2**Did not make Interchange Transaction information available to all other Reliability Coordinators. (Requirement 2)~~

~~**3.4.3**Did not initiate control actions or emergency procedures to relieve an IROL violation without delay, and no longer than 30 minutes. (Requirement 3 Part 2 and Requirement 5)~~

~~**3.4.4**~~**3.4.1** Did not direct the Balancing Authorities in the Reliability Coordinator Area to arrange for assistance from neighboring Balancing Authorities. (Requirement ~~4~~ 2 Part 2)

~~**3.4.5**~~**3.4.2** Did not monitor the system frequency or each of its Balancing Authorities performance or did not direct rebalancing to return to DCS and CPS compliance. (Requirement ~~8~~ 5 Part 1)

~~**3.4.6**~~**3.4.3** Did not coordinate with Transmission Operators, Balancing Authorities, and Generator Operators as needed to develop and implement action plans to mitigate potential or actual SOL, ~~IROL,~~ CPS, or DCS violations. (Requirement ~~9~~6)

~~**3.4.7**~~**3.4.4** When it identified a source of large Area Control Errors, it did not initiate corrective actions with the appropriate Balancing Authority if the

problem was inside its Reliability Coordinator Area. (Requirement ~~11~~ 8 part 1)

~~3.4.8~~3.4.5 Did not provide evidence that it was aware of the impact of the operation of a Special Protection System on inter-area flows. (Requirement ~~12~~9)

~~3.4.9 Did not operate to the most limiting parameter when a difference in derived limits existed. (Requirement 13 Part 2)~~

~~3.4.10 Did not provide Transmission Service Providers with SOLs or IROLs (within the Reliability Coordinator's wide-area view) (Requirement 14 Part 1)~~

~~3.4.11~~3.4.6 Did not issue alerts when it foresaw a transmission problem (such as an SOL or IROL violation, loss of reactive reserves, etc.) within its Reliability Coordinator Area. (Requirement ~~15~~12)

4. Levels of Non-Compliance for a Transmission Service Provider

4.1. Level 1: Not applicable.

4.2. Level 2: Not applicable.

4.3. Level 3: Not applicable.

4.4. Level 4: There shall be a separate Level 4 non-compliance, for every one of the following requirements that is in violation:

4.4.1 Did not operate to the most limiting parameter when a difference in derived limits existed. (~~R13~~ R10~~Part 2~~)

4.4.2 Did not respect the SOLs or IROLs in accordance with filed tariffs and regional Total Transfer Calculation and Available Transfer Calculation processes.(Requirement 14 ~~Part~~ 12)

E. Regional Differences

None identified.

Version History

Version	Date	Action	Change Tracking
0	April 1, 2005	Effective Date	New
0	August 8, 2005	Removed "Proposed" from Effective Date	Errata

Standard Development Roadmap

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Future Development Plan:

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4. 30-day posting before board adoption.	To be determined
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Definitions of Terms Used in Standard

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Real-Time Data: Real-Time measured values, state estimator values derived from the measured values, or other calculated values derived from the measured values — may include directly monitored data, Inter-utility data exchange (e.g., Interconnection Control Area Communication Protocol or SCADA Data), and manually collected data.

Real-Time Monitoring: The act of scanning data and drawing conclusions about what the data indicates.

Self-Certification: A process by which an entity does a self-evaluation to determine if it is compliant with the specific requirements for a reliability standard.

A. Introduction

1. **Title:** **Monitoring the Reliability Coordinator Wide Area**

2. **Number:** IRO-007-1

3. **Purpose:** To prevent instability, uncontrolled separation, or cascading outages that adversely impact the reliability of the interconnection by ensuring that the Bulk Electric System is continuously monitored.

4. **Applicability**

   4.1. Reliability Coordinator

~~B.~~5. **Proposed Effective Date:** The latter of either the first day of the first quarter, three months after regulatory approvals **or** coincident with the effective date for FAC-014-1.

B. Requirements.

R1. The Reliability Coordinator shall perform Real-Time Monitoring of system operating parameters within its Wide Area to determine if operating parameters are within their associated Interconnection Reliability Operating Limits (IROLs). *(Violation Risk Factor: Medium) (~~Mitigation~~ Time Horizon: Real-time Operations)*

R2. If unanimity cannot be reached on the value for an IROL or its T_v, all Reliability Coordinators who monitor that Facility (or group of Facilities) shall, without delay, use the most conservative of the values under consideration. *(Violation Risk Factor: High) (~~Mitigation~~ Time Horizon: Real-time Operations)*

C. Measures

M1. The Reliability Coordinator shall have Real-Time Data for system operating parameters within its Wide Area available in a form that its System Operators can compare to its IROLs as evidence of real-time monitoring.

M2. For an IROL or its T_v without agreement between Reliability Coordinators, the Reliability Coordinator shall have, and provide upon request, evidence that could include, but is not limited to, operating logs, voice recordings, transcripts of voice recordings, or other equivalent evidence to confirm that it used the most conservative of the values under consideration.

D. Compliance

1. **Compliance Monitoring Process**

   1.1. Compliance Monitoring Responsibility

   ~~Electric Reliability Organization~~ Regional Entity

   1.2. Compliance Monitoring Period and Reset Time Frame

   The Performance-Reset Period shall be 12 months from the last violation.

   1.3. Data Retention

   The Reliability Coordinator shall have evidence of compliance with M1 upon request.

The Reliability Coordinator shall keep evidence to show compliance with M2 for three calendar years

The Compliance Monitor shall keep audited data for three calendar years.

1.4. Additional Compliance Information

The Reliability Coordinator shall demonstrate compliance through Self-Certification submitted to its Compliance Monitor annually. The Compliance Monitor may also use scheduled on-site reviews every three years, investigations initiated in response to a complaint, or other methods as provided for in the Compliance Monitoring Enforcement Program, to assess performance.

The Reliability Coordinator shall demonstrate the following to its Compliance Monitor to inspect during a scheduled, on-site review or as part of an investigation upon complaint:

1.4.1 Its System Operators actively monitoring and comparing Real-Time system operating parameters associated with IROLs.

2. Violation Severity Levels

2.1. Lower: Not applicable.

2.2. Moderate: Not applicable.

2.3. High: Not applicable.

2.4. Severe: A severe violation occurs if either of the following conditions are present:

2.4.1 System operating parameters not monitored in Real-Time and compared against IROLs.

2.4.2 There was a disagreement on the IROL or its T_v and the most conservative limit under consideration was not used.

E. Regional Differences

None

F. Associated Documents

None

Version History

Version	Date	Action	Change Tracking

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Operational Planning Analysis: An analysis of the expected system conditions for the next day's operation and up to 12 months ahead. Expected system conditions include things such as load forecast(s), generation output levels, and known system constraints (transmission facility outages, generator outages, equipment limitations, etc.).

Real-Time Assessment: An examination of existing and expected system conditions, conducted by collecting and reviewing immediately available data.

A. Introduction

1. **Title:** **Reliability Coordinator Operational Analyses and Real-time Assessments**

2. **Number:** IRO-008-1

3. **Purpose:** To prevent instability, uncontrolled separation, or cascading outages that adversely impact the reliability of the interconnection by ensuring that the Bulk Electric System is assessed during the operations horizon.

4. **Applicability**

   4.1. Reliability Coordinator.

5. **Proposed Effective Date:** The latter of either the first day of the first quarter, three months after regulatory approvals **or** coincident with the effective date for FAC-014-1.

B. Requirements

R1. The Reliability Coordinator shall perform Operational Planning Analysis to assess whether the planned operations for the next day within its Wide Area, will exceed any of its Interconnection Reliability Operating Limits (IROLs) during anticipated normal and Contingency event conditions. *(Violation Risk Factor: Medium) (~~Mitigation~~ Time Horizon: Operations Planning)*

R2. The Reliability Coordinator shall perform Real-Time Assessments at least every 30 minutes to determine if its Wide Area is exceeding any IROLs or is expected to exceed any IROLs. *(Violation Risk Factor: High) (~~Mitigation~~ Time Horizon: Real-time Operations)*

R3. When the results of the Reliability Coordinator's Operational Planning Analyses or Real-Time Assessments indicate the need for specific operational actions to prevent or mitigate instances of exceeding IROLs, the Reliability Coordinator shall share its results with those entities that are expected to take those actions. *(Violation Risk Factor: Medium) (~~Mitigation~~ Time Horizon: Real-time Operations or ~~Same Day Operations~~)*

C. Measures

M1. The Reliability Coordinator shall have, and provide upon request, the results of its latest Operational Planning Analysis.

M2. The Reliability Coordinator shall have, and provide upon request, evidence that could include, but is not limited to computer output, operator logs, checklists, or other evidence to show it conducted a Real-Time Assessment at least once every 30 minutes.

M3. The Reliability Coordinator shall have and provide upon request, evidence that could include, but is not limited to operating logs, voice recordings, transcripts of voice records, facsimiles, or other equivalent evidence that will be used to confirm that it shared the results of its Operational Planning Analyses and Real-Time Assessments with those entities expected to take actions based on that information.

D. Compliance

1. **Compliance Monitoring Process**

1.1. Compliance Monitoring Responsibility

Electric Reliability Organization

1.2. Compliance Monitoring Period and Reset Time Frame

The Performance-Reset Period shall be 12 months from the last violation.

1.3. Data Retention

The Compliance Monitor shall keep audited data for three calendar years.

The Reliability Coordinator shall keep its latest day-ahead Operational Planning Analysis.

The Reliability Coordinator shall keep evidence for M2 for the most recent two days.

The Reliability Coordinator shall keep evidence for M3 for one month.

1.4. Additional Compliance Information

The Reliability Coordinator shall demonstrate compliance through Self-Certification submitted to its Compliance Monitor annually. The Compliance Monitor may also use scheduled on-site reviews once every three years, investigations initiated in response to a complaint, or other methods as provided for in the Compliance Monitoring Enforcement Program, to assess performance.

2. Violation Severity Levels

2.1. Lower: Not applicable.

2.2. Moderate: Shared the results with some but not all of the entities that were required to take action (R3).

2.3. High: Real-Time Assessments were conducted but not as frequently as required (R2).

2.4. Severe: A severe violation exists if any of the following conditions are present:

2.4.1 Did not perform an Operational Planning Analysis for the next day in accordance with R1.

2.4.2 Did not perform any Real-time Assessments for any continuous eight-hour period (R2).

2.4.3 Did not share the results of its analyses or assessments with any of the entities that were required to take action (R3).

E. Regional Differences

None

F. Associated Documents

None

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~~**Interconnection Reliability Operating Limit Event:** Any instance of exceeding an Interconnection Reliability Operating Limit for a minimum of 30 continuous seconds.~~

~~**Interconnection Reliability Operating Limit Event Duration:** The length of time an Interconnection Reliability Operating Limit is exceeded. The duration is measured from the point in time where the limit is first exceeded for at least 30 continuous seconds and ends at the beginning of the continuous 30 seconds in which the value returns to within the Interconnection Reliability Operating Limit.~~

Occurrence Period: The time period in which performance is measured and evaluated.

A. Introduction

1. **Title:** **Reliability Coor**dinator Actions to Operate Within IROLs

2. Number: **IRO-009-1**

3. **Purpose:** To prevent instability, uncontrolled separation, or cascading outages that adversely impact the reliability of the interconnection by ensuring prompt action to prevent or mitigate instances of exceeding Interconnection Reliability Operating Limits (IROLs).

4. **Applicability**

   4.1. Reliability Coordinator

5. **Proposed Effective Date:** The latter of either the first day of the first quarter, three months after regulatory approvals **or** coincident with the effective date for FAC-014-1.

B. Requirements

R1. For each IROL that is identified in advance of Real-time, the Reliability Coordinator shall have one or more Operating Processes, Procedures, or Plans that identify actions it shall take or actions it shall direct others to take to prevent exceeding those IROLs. *(Violation Risk Factor: Medium) (~~Mitigation~~ Time Horizon: Operations Planning or Same Day Operations)*

R2. For each IROL that is identified in advance of Real-time, the Reliability Coordinator shall have one or more Operating Processes, Procedures, or Plans that identify actions it shall take or actions it shall direct others to take (up to and including load shed) to mitigate the magnitude and duration of exceeding that IROL such that the IROL is relieved within the IROL's T_v. *(Violation Risk Factor: Medium) (~~Mitigation~~ Time Horizon: Operations Planning or Same Day Operations)*

R3. When an assessment of actual or expected system conditions predicts that an IROL will be exceeded, the Reliability Coordinator shall implement one or more Operating Processes, Procedures or Plans to prevent exceeding that IROL. *(Violation Risk Factor: High) (~~Mitigation~~ Time Horizon: Real-time Operations)*

R4. When actual system conditions show that there is an instance of exceeding an IROL, the Reliability Coordinator shall, without delay, act or direct others to act to mitigate the magnitude and duration of the instance of exceeding that IROL within the IROL's T_v. *(Violation Risk Factor: High) (~~Mitigation~~ Time Horizon: Real-time Operations)*

C. Measures

M1. The Reliability Coordinator shall have, and provide upon request, one or more documented Operating Processes, Procedures, or Plans that that will be used to confirm that it has Operating Processes, Procedures or Plans to address both preventing and mitigating instances of exceeding IROLs in accordance with Requirement 1 and Requirement 2.

M2. The Reliability Coordinator shall have, and provide upon request, evidence that could include, but is not limited to, operating logs, voice recordings, transcripts of voice

recordings, or other equivalent evidence that will be used to confirm that it acted or directed others to act in accordance with Requirement 3 and Requirement 4.

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Monitoring Responsibility

Electric Reliability Organization

1.2. Compliance Monitoring Period and Reset Time Frame

The Performance-Reset Period shall be 12 months from the last violation.

1.3. Data Retention

The Reliability Coordinator shall keep IROL Violation Reports, operations logs, or other documentation for three calendar years. The Compliance Monitor shall keep audited data for three calendar years.

1.4. Additional Compliance Information

The Reliability Coordinator shall demonstrate compliance through self-certification submitted to its Compliance Monitor annually and reporting by exception. If an IROL is exceeded for time greater than T_v, the Reliability Coordinator shall complete and submit to its Compliance Monitor within five days, an IROL Violation Report.

The Compliance Monitor may also use scheduled on-site reviews every three years, and investigations upon complaint, to assess performance.

The Reliability Coordinator shall have the following available for its Compliance Monitor to inspect during a scheduled, on-site review or within 5 days of a request as part of an investigation upon complaint:

1.4.1 Operations logs or other documentation indicating the magnitude and duration of each instance of exceeding an IROL and the actions or directives issued for each of these instances.

1.4.2 IROL Violation Reports.

2. Violation Severity Levels

2.1. Low: ~~Between 95% to 99% of the IROLs identified in advance of real-time have Operating Processes, Procedures, or Plans that identify actions to prevent or mitigate instances of exceeding those IROLs. (R1 and R2)~~Not applicable.

2.2. Moderate ~~Between 85% to 94% of the IROLs identified in advance of real-time have Operating Processes, Procedures, or Plans that identify actions to prevent or mitigate instances of exceeding those IROLs. (R1 and R2)~~Not applicable.

~~2.3.~~**High:** ~~**There shall be a high violation severity level if any of the following conditions exist:**~~

~~2.4.Between 70% to 84% of the IROLs identified in advance of real-time have Operating Processes, Procedures, or Plans that identify actions to prevent or mitigate instances of exceeding those IROLs. (R1 and R2)~~

~~2.3.2~~2.3. ~~Actual system conditions showed that there was an instance of exceeding an IROL, and there was a delay before acting or directing others to act to mitigate the magnitude and duration of the instance of exceeding that IROL (R4)~~Not applicable.

2.4. Severe: There shall be a severe violation severity level if any of the following conditions exist:

2.4.1 ~~Less than 70% of the~~One or more -IROLs identified in advance of real-time do not have Operating Processes, Procedures, or Plans that identify actions to prevent or mitigate instances of exceeding those IROLs. (R1 and R2)

2.4.2 An assessment of actual or expected system conditions predicted that an IROL would be exceeded, but no Operating Processes, Procedures or Plans were implemented to prevent exceeding that IROL. (R3)

2.4.3 Actual system conditions showed that there was an instance of exceeding an IROL, and there was a delay of five[1] minutes or more before taking a control action or directing others to act to mitigate the magnitude and duration of the instance of exceeding that IROL (R4)

~~2.4.3~~2.4.4 Actual system conditions showed that there was an instance of exceeding an IROL, and no actions or directions were given to mitigate the magnitude and duration of the instance of exceeding that IROL (R4)

E. Regional Differences

None

F. Associated Documents

IROL Violation Report

Version History

Version	Date	Action	Change Tracking

[1] The five minutes is not a 'grace period' before taking any action – the five minutes recognizes that the first actions taken may not result in an action that can be independently confirmed.

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. SAC approves SAR for posting (March 10, 2002).
2. Drafting team posts draft SAR for comment (April 2–May 3, 2002) (August 20–September 29, 2002).
3. SAC approves development of standard (November 20, 2003).
4. JIC assigns development of standard to NERC (January 10, 2003).
5. Drafting team posts drafts for comment (February 18–April 2, 2003) (July 1–August 29, 2003).
6. Balloted December 18, 2003–January 6, 2004.
7. Drafting team posts drafts for comment (March 1–April 14, 2004).
8. Informational posting to allow the Determine Facility Ratings, System Operating Limits and Transfer Capabilities standards a chance to be finalize (November 2004 through October 2006).
9. Drafting team posts drafts and implementation plan for comment (January 2–February 15, 2007).

Description of Current Draft:

This draft reflects conforming changes made to the standards based on comments submitted during the January 2–February 15, 2007 comment period. The drafting team has asked the Standards Committee for authorization to post the standards and implementation plan for a 30-day, pre-ballot review.

Future Development Plan:

Anticipated Actions	Anticipated Date
1. Post for 30-day pre-ballot period.	March 15–April 13, 2007
2. First ballot of standards.	April 16–25, 2007
3. Recirculation ballot of standards.	May 1–10, 2007
4. 30-day posting before board adoption.	To be determined
5. Board adopts standards.	To be determined

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 introduced in this standard.

A. Introduction

1. **Title:** **Reliability Coordinator Data Specification and Collection**

2. **Number:** **IRO-010-1**

3. **Purpose:** To prevent instability, uncontrolled separation, or cascading outages that adversely impact the reliability of the interconnection by ensuring the Reliability Coordinator has the data it needs to monitor and assess the operation of its Reliability Coordinator Area.

4. **Applicability**

   4.1. Reliability Coordinator.

   4.2. Balancing Authority.

   4.3. Generator Owner.

   4.4. Generator Operator.

   4.5. Interchange Authority.

   4.6. Load-Serving Entity.

   4.7. Transmission Operator.

   4.8. Transmission Owner.

5. **Proposed Effective Date:** The latter of either the first day of the first quarter, three months after regulatory approvals **or** coincident with the effective date for FAC-014-1.~~First day of first quarter, three months after regulatory approvals.~~

B. Requirements

R1. The Reliability Coordinator shall have a documented data specification for data and information to build and maintain models to support Real-Time Monitoring, Operational Planning Analyses, and Real-time Assessments. The specification shall include the following: *(Violation Risk Factor: ~~Medium~~Low) (~~Mitigation~~ Time Horizon: Operations Planning)*

R1.1. List of required data and information

R1.2. Mutually agreeable format

R1.3. Timeframe and periodicity for providing data and information (based on its hardware and software requirements, and the time needed to do its Operational Planning Analyses)

R1.4. Process for data provision when automated Real-Time system operating data is unavailable.

R2. The Reliability Coordinator shall distribute its data specification to entities that have Facilities monitored by the Reliability Coordinator and to entities that provide Facility status to the Reliability Coordinator. *(Violation Risk Factor: ~~Medium~~Low) (~~Mitigation~~ Time Horizon: Operations Planning)*

R3. Each Balancing Authority, Generator Owner, Generator Operator, Interchange Authority, Load-serving Entity, Reliability Coordinator, Transmission Operator, and Transmission Owner shall provide data and information, as specified, to the Reliability Coordinator(s) with which it has a reliability relationship. The data and information is limited to data needed by the Reliability Coordinator to support Real-Time Monitoring, Operational Planning Analyses, and Real-Time Assessments. *(Violation Risk Factor: Medium) (~~Mitigation~~ Time Horizon: Operations Planning; Same-day Operations; Real-time Operations)*

C. Measures

M1. The Reliability Coordinator shall have, and provide upon request, a documented data specification that contains all elements identified in Requirement 1.

M2. The Reliability Coordinator shall have, and provide upon request, evidence that it distributed its data specification to entities that have Facilities monitored by the Reliability Coordinator and to entities that provide Facility status to the Reliability Coordinator.

M3. The Balancing Authority, Generator Owner, Generator Operator, Load-Serving Entity, Reliability Coordinator, Transmission Operator and Transmission Owner shall each have, and provide upon request, evidence that could include but is not limited to, operator logs, voice recordings, computer printouts, SCADA data, or other equivalent evidence that will be used to confirm that it provided data and information, as specified in Requirement 3.

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Monitoring Responsibility

Electric Reliability Organization

1.2. Compliance Monitoring Period and Reset Time Frame

The Performance-Reset Period shall be 12 months from the last violation.

1.3. Data Retention

The Reliability Coordinator shall keep its most current data specification.

The Reliability Coordinator shall keep evidence to show compliance with Measure 2

For data that is requested in advance of real-time, the Balancing Authority, Generator Owner, Generator Operator, Load-Serving Entity, Reliability Coordinator, Transmission Operator and Transmission Owner shall keep evidence used to show compliance with Measure 3 for 3 months.

The Compliance Monitor shall keep audited data for three calendar years.

1.4. Additional Compliance Information

The Reliability Coordinator shall demonstrate compliance through Self-Certification submitted to its Compliance Monitor annually. The Compliance Monitor may also use scheduled on-site reviews every three years, and investigations initiated in response to a complaint, or other methods as provided for in the Compliance Monitoring Enforcement Program, to assess performance.

The Reliability Coordinator shall have the following available for its Compliance Monitor to inspect during a scheduled, on-site review or within 5 days of a request as part of an investigation upon complaint:

1.4.1 Data specification(s).

1.4.2 Proof of distribution of the data specification(s).

2. Violation Severity Levels for the Reliability Coordinator

2.1. Lower: There shall be a lower violation severity level if any of the following conditions exist:

2.1.1 Distributed its data specification to greater than or equal to 95% but less than ~~99~~ 100% of the entities that have Facilities monitored by the Reliability Coordinator and the entities that provide the Reliability Coordinator with Facility status. (R2)

2.1.2 Provided greater than or equal to 95%- but less then 100% ~~95- 99%~~ of the data and information to other Reliability Coordinators as specified. (R3)

2.2. Moderate:There shall be a moderate violation severity level of any of the following conditions exist:

2.2.1 Distributed its data specification to greater than or equal to 85% but less than ~~94~~95% of the entities that have Facilities monitored by the Reliability Coordinator and the entities that provide the Reliability Coordinator with Facility status. (R2)

2.2.2 Provided greater than or equal to 85%, but less than 95% ~~85- 94%~~ of the data and information to other Reliability Coordinators as specified. (R3)

2.3. High: There shall be a high violation severity level of any of the following conditions exist:

2.3.1 Data specification incomplete (missing one of the following: list of required data, a mutually agreeable format, a timeframe for providing data, a data provision process to use when automated Real-Time system operating data is unavailable). (R1)

2.3.2 Distributed its data specification to greater than or equal to 70%- but less then 85% ~~70- 84%~~ of the entities that have Facilities monitored by the Reliability Coordinator and the entities that provide the Reliability Coordinator with Facility status. (R2)

2.3.3 Provided greater than or equal to 70%- but less then 85% ~~70- 84%~~ of the data and information to other Reliability Coordinators as specified. (R3)

2.4. Severe: There shall be a severe violation severity level of any of the following conditions exist:

2.4.1 No data specification (R1)

2.4.2 Data specification distributed to less than 70% of the entities that have Facilities monitored by the Reliability Coordinator and the entities that provide the Reliability Coordinator with Facility status. (R2)

2.4.3 Provided less than 70% of the data and information to other Reliability Coordinators as specified. (R3)

3. Violation Severity Levels for the Balancing Authority, Generator Owner, Generator Operator, Load-Serving Entity, Reliability Coordinator, Transmission Operator and Transmission Owner

3.1. Lower: Provided greater than or equal to 95%- but less then 100% ~~95-99%~~ of the data and information to the Reliability Coordinator as specified. (R3)

3.2. Moderate: Provided greater than or equal to 85%, but less than 95% ~~85-94%~~ of the data and information to the Reliability Coordinator as specified. (R3)

3.3. High: Provided greater than or equal to 70%, but less than 85% ~~70-84%~~ of the data and information to the Reliability Coordinator as specified. (R3)

3.4. Severe: Provided less than 70% of the data and information to the Reliability Coordinator as specified. (R3)

E. Regional Differences

None

F. Associated Documents

None

Version History

Version	Date	Action	Change Tracking

A. Introduction

1. **Title:** **Planned Outage Coordination**

2. **Number:** TOP-003-~~0~~1

3. **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.

4. **Applicability**

   4.1. Generator Operators.

   4.2. Transmission Operators.

   4.3. Balancing Authorities.

   4.4. Reliability Coordinators.

~~5.~~**Proposed Effective Date:** ~~April 1, 2005~~ The latter of either the first day of the first quarter, three months after regulatory approvals **or** coincident with the effective date for FAC-014-1.~~First day of first quarter, three months after regulatory approvals.~~

B. Requirements

R1. Generator Operators and Transmission Operators shall provide planned outage information.

R1.1. Each Generator Operator shall provide outage information daily to its Transmission Operator for scheduled generator outages planned for the next day (any foreseen outage of a generator greater than 50 MW). The Transmission Operator shall establish the outage reporting requirements.

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.~~

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.

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.

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.

R4. Each Reliability Coordinator shall resolve any scheduling of potential reliability conflicts.

C. Measures

M1. Evidence that the Generator Operator, Transmission Operator, and Balancing Authority~~, and Reliability Coordinator~~ reported and coordinated scheduled outage information as indicated in the requirements above.

D. Compliance

1. Compliance Monitoring Process

Each Regional Reliability Organization shall conduct a review every three years to ensure that each responsible entity has a process in place to provide planned generator and/or bulk transmission outage information to their Reliability Coordinator, and with neighboring Transmission Operators and Balancing Authorities.

Investigation: At the discretion of the Regional Reliability Organization or NERC, an investigation may be initiated to review the planned outage process of a monitored entity due to a complaint of non-compliance by another entity. Notification of an investigation must be made by the Regional Reliability Organization to the entity being investigated as soon as possible, but no later than 60 days after the event. The form and manner of the investigation will be set by NERC and/or the Regional Reliability Organization.

1.1. Compliance Monitoring Responsibility

A Reliability Coordinator makes a request for an outage to "not be taken" because of a reliability impact on the grid and the outage is still taken. The Reliability Coordinator must provide all its documentation within three business days to the Regional Reliability Organization. Each Regional Reliability Organization shall report compliance and violations to NERC via the NERC Compliance Reporting process.

1.2. Compliance Monitoring Period and Reset Timeframe

One calendar year without a violation from the time of the violation.

1.3. Data Retention

One calendar year.

1.4. Additional Compliance Information

Not specified.

2. Levels of Non-Compliance

2.1. Level 1: Each entity responsible for reporting information under Requirements R1 and R3 has a process in place to provide information to their Reliability Coordinator but does not have a process in place (where permitted by legal agreements) to provide this information to the neighboring Balancing Authority or Transmission Operator.

2.2. Level 2: N/A.

2.3. Level 3: N/A.

2.4. Level 4: There is no process in place to exchange outage information, or the entity responsible for reporting information under Requirements R1 to R3 does not follow the directives of the Reliability Coordinator to cancel or reschedule an outage.

E. Regional Differences

None identified.

Version History

Version	Date	Action	Change Tracking
0	April 1, 2005	Effective Date	New
0	August 8, 2005	Removed “Proposed” from Effective Date	Errata

A. Introduction

1. **Title:** **Operational Reliability Information**

2. **Number:** TOP-005-~~1~~2

3. **Purpose:** To ensure reliability entities have the operating data needed to monitor system conditions within their areas.

4. **Applicability**

   4.1. Transmission Operators.

   4.2. Balancing Authorities.

   ~~**4.3.**Reliability Coordinators.~~

   ~~**4.4.**~~**4.3.** Purchasing Selling Entities.

5. **Proposed Effective Date:** The latter of either the first day of the first quarter, three months after regulatory approvals **or** coincident with the effective date for FAC-014-1.~~November 1, 2006First day of first quarter, three months after regulatory approvals.~~

B. Requirements

~~**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.~~

~~**R1.1.**Each Reliability Coordinator shall identify the data requirements from the list in Attachment 1-TOP-005-0 "Electric System Reliability Data" and any additional operating information requirements relating to operation of the bulk power system within the Reliability Coordinator Area.~~

~~**R2.**~~**R1.** As a condition of receiving data from the Interregional Security Network (ISN), each ISN data recipient shall sign the NERC Confidentiality Agreement for "Electric System Reliability Data."

~~**R3.**~~**R2.** Upon request, each Balancing Authority and Transmission Operator shall provide to other Balancing Authorities and Transmission Operators with immediate responsibility for operational reliability, the operating data that are necessary to allow these Balancing Authorities and Transmission Operators to perform operational reliability assessments and to coordinate reliable operations. Balancing Authorities and Transmission Operators shall provide the types of data as listed in Attachment 1-TOP-005-0 "Electric System Reliability Data," unless otherwise agreed to by the Balancing Authorities and Transmission Operators with immediate responsibility for operational reliability.

~~**R4.**~~**R3.** Each Purchasing-Selling Entity shall provide information as requested by its Host Balancing Authorities and Transmission Operators to enable them to conduct operational reliability assessments and coordinate reliable operations.

C. Measures

M1. Evidence that the ~~Reliability Coordinator,~~ Balancing Authority, Transmission Operator, and Purchasing-Selling Entity is providing the information required, within the time intervals specified, and in a format agreed upon by the requesting entities.

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Monitoring Responsibility

Self-Certification: Entities shall annually self-certify compliance to the measures as required by its Regional Reliability Organization.

Exception Reporting: Each Region shall report compliance and violations to NERC via the NERC compliance reporting process.

1.2. Compliance Monitoring Period and Reset Time Frame

Periodic Review: Entities will be selected for operational reviews at least every three years. One calendar year without a violation from the time of the violation.

1.3. Data Retention

Not specified.

1.4. Additional Compliance Information

Not specified.

2. Levels of Non-Compliance

2.1. Level 1: Each entity responsible for reporting information under Requirements R1 to ~~R5~~ R3 is providing the requesting entities with the data required, in specified time intervals and format, but there are problems with consistency of delivery identified in the measuring process that need remedy (e.g., the data is not supplied consistently due to equipment malfunctions, or scaling is incorrect).

2.2. Level 2: N/A.

2.3. Level 3: N/A.

2.4. Level 4: Each entity responsible for reporting information under Requirements R1 to ~~R5~~ R3 is not providing the requesting entities with data with the specified content, timeliness, or format. The information missing is included in the requesting entity's list of data.

E. Regional Differences

None identified.

Version History

Version	Date	Action	Change Tracking
0	April 1, 2005	Effective Date	New
0	August 8, 2005	Removed "Proposed" from Effective	Errata

		Date	

Attachment 1-TOP-005-0

Electric System Reliability Data

This Attachment lists the types of data that Reliability Coordinators, Balancing Authorities, and Transmission Operators are expected to provide, and are expected to share with each other.

1. The following information shall be updated at least every ten minutes:

1.1. Transmission data. Transmission data for all Interconnections plus all other facilities considered key, from a reliability standpoint:

1.1.1 Status.

1.1.2 MW or ampere loadings.

1.1.3 MVA capability.

1.1.4 Transformer tap and phase angle settings.

1.1.5 Key voltages.

1.2. Generator data.

1.2.1 Status.

1.2.2 MW and MVAR capability.

1.2.3 MW and MVAR net output.

1.2.4 Status of automatic voltage control facilities.

1.3. Operating reserve.

1.3.1 MW reserve available within ten minutes.

1.4. Balancing Authority demand.

1.4.1 Instantaneous.

1.5. Interchange.

1.5.1 Instantaneous actual interchange with each Balancing Authority.

1.5.2 Current Interchange Schedules with each Balancing Authority by individual Interchange Transaction, including Interchange identifiers, and reserve responsibilities.

1.5.3 Interchange Schedules for the next 24 hours.

1.6. Area Control Error and frequency.

1.6.1 Instantaneous area control error.

1.6.2 Clock hour area control error.

1.6.3 System frequency at one or more locations in the Balancing Authority.

2. Other operating information updated as soon as available.

2.1. Interconnection Reliability Operating Limits and System Operating Limits in effect.

2.2. Forecast of operating reserve at peak, and time of peak for current day and next day.

2.3. Forecast peak demand for current day and next day.

2.4. Forecast changes in equipment status.

2.5. New facilities in place.

2.6. New or degraded special protection systems.

2.7. Emergency operating procedures in effect.

2.8. Severe weather, fire, or earthquake.

2.9. Multi-site sabotage.

A. Introduction

1. **Title:** **Monitoring System Conditions**

2. **Number:** TOP-006-~~1~~2

3. **Purpose:**

   To ensure critical reliability parameters are monitored in real-time.

4. **Applicability**

   4.1. Transmission Operators.

   4.2. Balancing Authorities.

   4.3. Generator Operators.

   4.4. Reliability Coordinators.

5. **Proposed Effective Date:** The latter of either the first day of the first quarter, three months after regulatory approvals **or** coincident with the effective date for FAC-014-1.~~January 1, 2007First day of first quarter, three months after regulatory approvals.~~

B. Requirements

R1. Each Transmission Operator and Balancing Authority shall know the status of all generation and transmission resources available for use.

R1.1. Each Generator Operator shall inform its Host Balancing Authority and the Transmission Operator of all generation resources available for use.

R1.2. Each Transmission Operator and Balancing Authority shall inform the Reliability Coordinator and other affected Balancing Authorities and Transmission Operators of all generation and transmission resources available for use.

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.

R3. Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall provide appropriate technical information concerning protective relays to their operating personnel.

R4. Each ~~Reliability Coordinator,~~ Transmission Operator, and Balancing Authority shall have information, including weather forecasts and past load patterns, available to predict the system's near-term load pattern.

R5. Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall use monitoring equipment to bring to the attention of operating personnel important deviations in operating conditions and to indicate, if appropriate, the need for corrective action.

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.

R7. Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall monitor system frequency.

C. Measures

M1. The Generator Operator shall have and provide upon request evidence that could include but is not limited to, operator logs, voice recordings, electronic communications, or other equivalent evidence that will be used to confirm that it informed its Host Balancing Authority and Transmission Operator of all generation resources available for use. (Requirement 1.1)

M2. Each Transmission Operator and Balancing Authority shall have and provide upon request evidence that could include but is not limited to, operator logs, voice recordings, electronic communications, or other equivalent evidence that will be used to confirm that it informed its Reliability Coordinator and other affected Balancing Authorities and Transmission Operators of all generation and transmission resources available for use. (Requirement 1.2)

M3. Each ~~Reliability Coordinator,~~ Transmission Operator and Balancing Authority shall have and provide upon request evidence that could include but is not limited to, computer printouts or other equivalent evidence that will be used to confirm that it monitored each of the applicable items listed in Requirement 2.

M4. Each ~~Reliability Coordinator,~~ Transmission Operator and Balancing Authority shall have and provide upon request evidence that could include but is not limited to, printouts, training documents, description documents or other equivalent evidence that will be used to confirm that it has weather forecasts and past load patterns, available to predict the system's near-term load pattern. (Requirement 4)

M5. Each Reliability Coordinator, Transmission Operator and Balancing Authority shall have and provide upon request evidence that could include but is not limited to, a description of its EMS alarm capability, training documents, or other equivalent evidence that will be used to confirm that important deviations in operating conditions and the need for corrective actions will be brought to the attention of its operators. (Requirement 5)

M6. Each Reliability Coordinator, Transmission Operator and Balancing Authority shall have and provide upon request evidence that could include but is not limited to, a list of the frequency monitoring points available to the shift-operators or other equivalent evidence that will be used to confirm that it monitors system frequency. (Requirement 7)

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Monitoring Responsibility

Regional Reliability Organizations shall be responsible for compliance monitoring.

1.2. Compliance Monitoring and Reset Time Frame

One or more of the following methods will be used to assess compliance:

- Self-certification (Conducted annually with submission according to schedule.)
- Spot Check Audits (Conducted anytime with up to 30 days notice given to prepare.)
- Periodic Audit (Conducted once every three years according to schedule.)
- Triggered Investigations (Notification of an investigation must be made within 60 days of an event or complaint of noncompliance. The entity will have up to 30 days to prepare for the investigation. An entity may request an extension of the preparation period and the extension will be considered by the Compliance Monitor on a case-by-case basis.)

The Performance-Reset Period shall be 12 months from the last finding of non-compliance.

1.3. Data Retention

Each Generator Operator shall keep 90 days of historical data (evidence) for Measure 1.

Each Transmission Operator and Balancing Authority shall keep 90 days of historical data (evidence) for Measure 2.

Each ~~Reliability Coordinator,~~ Transmission Operator and Balancing Authority shall have current documents as evidence for Measure 3, 5 and 6.~~.~~

Each Reliability Coordinator, shall have current documents as evidence for Measure 5 and 6.

Each ~~Reliability Coordinator,~~ Transmission Operator and Balancing Authority shall have current documents as evidence of compliance to Measure 4.

If an entity is found non-compliant the entity shall keep information related to the noncompliance until found compliant or for two years plus the current year, whichever is longer.

Evidence used as part of a triggered investigation shall be retained by the entity being investigated for one year from the date that the investigation is closed, as determined by the Compliance Monitor,

The Compliance Monitor shall keep the last periodic audit report and all supporting compliance data

1.4. Additional Compliance Information

None.

2. Levels of Non-Compliance for Reliability Coordinators:

2.1. Level 1: Not applicable.

2.2. Level 2: Not applicable.

2.3. Level 3: Not applicable.

2.4. Level 4: There shall be a separate Level 4 non-compliance, for every one of the following requirements that is in violation:

2.4.1 ~~Does not monitor all of the applicable items listed in Requirement 2.~~ Not applicable.

2.4.2 ~~Did not have the information specified in R4.~~ Not applicable.

2.4.3 Did not bring to the attention of its operators, important deviations in operating conditions and the need for corrective actions. (Requirement 5)

2.4.4 No evidence it monitors system frequency. (Requirement 7)

3. Levels of Non-Compliance for Generator Operators:

3.1. Level 1: Not applicable.

3.2. Level 2: Not applicable.

3.3. Level 3: Not applicable.

3.4. Level 4: Did not inform its Host Balancing Authority and/or the Transmission Operator of all generation resources available for use. (R1.1)

4. Levels of Non-Compliance for Transmission Operators and Balancing Authorities:

4.1. Level 1: Not applicable.

4.2. Level 2: Not applicable.

4.3. Level 3: Not applicable.

4.4. Level 4: There shall be a separate Level 4 non-compliance, for every one of the following requirements that is in violation:

4.4.1 Did not inform the Reliability Coordinator and/or other affected Balancing Authorities and Transmission Operators of all generation and transmission resources available for use in accordance with R1.2.

4.4.2 Does not monitor all the applicable items listed in R2.

4.4.3 Did not have the information specified in R4.

4.4.4 Does not have monitoring to bring to the attention of operating personnel important deviations in operating conditions and the need for corrective actions as specified in R5.

4.4.5 No evidence it monitors system frequency. (R7).

E. Regional Differences

None identified.

Version History

Version	Date	Action	Change Tracking
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