NERC

NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

Standard Authorization Request Form

Title of Proposed Standard:	Operating Personnel Communications Protocols
Request Date:	March 1, 2007
Revised Date:	June 8, 2007

SAR Requester Information

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Purpose (Describe the purpose of the proposed standard – what the standard will achieve in support of reliability.)

Require that real time system operators use standardized communication protocols during normal and emergency operations to improve situational awareness and shorten response time. The purpose of this standard is to:

1. Provide an adequate level of reliability for the North American bulk power systems – by ensuring that the standards are complete and the requirements are set at an appropriate level to ensure reliability.

2. Ensure the standard or standards are enforceable as mandatory reliability standards with financial penalties - the applicability to bulk power system owners, operators, and users, are clearly defined; the purpose, requirements, and measures are results-focused and unambiguous; the consequences of violating the requirements are clear.

3. Consider other general improvements described in the standards development work plan.

4. Consider stakeholder comments received during the initial development of the standards and other comments received from Electric Reliability Organization (ERO) regulatory authorities, as noted in the attached review sheets.

5. Satisfy the standards procedure requirement for five-year review of the standards.

Industry Need (Provide a detailed statement justifying the need for the proposed standard, along with any supporting documentation.)

The need for improved real-time communications protocols was identified during the investigation of the August 2003 Blackout. Blackout Recommendation #26 is: “Tighten communications protocols, especially for communications during alerts and emergencies. Upgrade communication system hardware where appropriate.” (Note that this SAR does not include the second part of this recommendation regarding the upgrade to communication system hardware.)

Brief Description (Describe the proposed standard in sufficient detail to clearly define the scope in a manner that can be easily understood by others.)

This standard will require the use of specific communication protocols, enabling information to be efficiently conveyed and mutually understood for all operating conditions. The standard will be applicable to transmission operators, transmission owners balancing authorities, reliability coordinators, generator operators and distribution providers.

Requirements will ensure that communications include essential elements such that information is efficiently conveyed and mutually understood for communicating changes to real-time operating conditions and responding to operating directives.

The project may involve moving some requirements that address communications protocols from existing standards into this new standard and will involve adding new requirements that more fully address communications protocols under various operating conditions.

Reliability Functions

The Standard will Apply to the Following Functions ***(Check all applicable boxes.)***		
☒	Reliability Coordinator	Responsible for the real-time operating reliability of its Reliability Coordinator Area in coordination with its neighboring Reliability Coordinator's wide area view.
☒	Balancing Authority	Integrates resource plans ahead of time, and maintains load-interchange-resource balance within a Balancing Authority Area and supports Interconnection frequency in real time.
☐	Interchange Coordinator	Ensures communication of interchange transactions for reliability evaluation purposes and coordinates implementation of valid and balanced interchange schedules between Balancing Authority Areas.
☐	Planning Coordinator	Assesses the longer-term reliability of its Planning Coordinator Area.
☐	Resource Planner	Develops a >one year plan for the resource adequacy of its specific loads within a Planning Coordinator area.
☐	Transmission Planner	Develops a >one year plan for the reliability of the interconnected Bulk Electric System within its portion of the Planning Coordinator area.
☐	Transmission Service Provider	Administers the transmission tariff and provides transmission services under applicable transmission service agreements (e.g., the pro forma tariff).
☒	Transmission Owner	Owns and maintains transmission facilities.
☒	Transmission Operator	Ensures the real-time operating reliability of the transmission assets within a Transmission Operator Area.
☒	Distribution Provider	Delivers electrical energy to the End-use customer.
☐	Generator Owner	Owns and maintains generation facilities.
☒	Generator Operator	Operates generation unit(s) to provide real and reactive power.
☐	Purchasing-Selling Entity	Purchases or sells energy, capacity, and necessary reliability-related services as required.
☐	Market Operator	Interface point for reliability functions with commercial functions.

Reliability and Market Interface Principles

Applicable Reliability Principles ***(Check all boxes that apply.)***	
☒	1. Interconnected bulk power systems shall be planned and operated in a coordinated manner to perform reliably under normal and abnormal conditions as defined in the NERC Standards.
☐	2. The frequency and voltage of interconnected bulk power systems shall be controlled within defined limits through the balancing of real and reactive power supply and demand.
☐	3. Information necessary for the planning and operation of interconnected bulk power systems shall be made available to those entities responsible for planning and operating the systems reliably.
☐	4. Plans for emergency operation and system restoration of interconnected bulk power systems shall be developed, coordinated, maintained, and implemented.
☐	5. Facilities for communication, monitoring, and control shall be provided, used, and maintained for the reliability of interconnected bulk power systems.
☐	6. Personnel responsible for planning and operating interconnected bulk power systems shall be trained, qualified, and have the responsibility and authority to implement actions.
☐	7. The reliability of the interconnected bulk power systems shall be assessed, monitored, and maintained on a wide-area basis.
☐	8. Bulk power systems shall be protected from malicious physical or cyber attacks.

Does the proposed Standard comply with all of the following Market Interface Principles? *(Select 'yes' or 'no' from the drop-down box.)*
Recognizing that reliability is an essential requirement of a robust North American economy:
1. A reliability standard shall not give any market participant an unfair competitive advantage.Yes
2. A reliability standard shall neither mandate nor prohibit any specific market structure. Yes
3. A reliability standard shall not preclude market solutions to achieving compliance with that standard. Yes
4. A reliability standard shall not require the public disclosure of commercially sensitive information. All market participants shall have equal opportunity to access commercially non-sensitive information that is required for compliance with reliability standards. Yes

Detailed Description (Provide enough detail so that an independent entity familiar with the industry could draft a standard based on this description.)

Scope

The scope of the proposed standard is to establish essential elements of communications protocols and communications paths such that operators and users of the North American bulk electric system will efficiently convey information and ensure mutual understanding. The August 2003 Blackout Recommendation Number 26 calls for a tightening of communications protocols. This standard is to ensure that effective communication is practiced and delivered in clear language via pre-established communications paths among pre-identified operating entities. References to communication protocols in other NERC Standards may be moved to this new standard. The standard drafting team shall consider incorporating the use of Alert Level Guidelines and three-part communications in developing this new standard to achieve high level consistency across regions.

Applicability

Medical, law enforcement, air traffic control and other fields routinely use mutually defined and understood terminology or codes. Clear and mutually established communications protocols used during real time operations under normal and emergency conditions ensure universal understanding of terms and reduce errors.

Communications protocols shall precisely define terms, codes, phrases, words, etc. as to their connotation, conditions for use, context of use and expected responses in reply to these terms, codes, phrases, words, etc. Effective communications with proper communications protocols among the operating entities are essential for maintaining reliable system operations.

The standard will include requirements for the following:

1. Real—time system operators will be required to use specific communications protocols under normal, abnormal and emergency conditions to relay critical reliability-related information in a timely and effective manner.

2. Reliability Coordinators, Balancing Authorities, Generation Operators, Transmission Operators, Transmission Owners and Distribution Providers will be required to comply with this standard.

3. The standard will include requirements for entities that experience abnormal conditions to use pre-defined terms such as proposed in the “Alert Level Guideline” (attached) to communicate the operating condition to other entities that are in a position to either assist in resolving the operating condition or to entities that are impacted by the operating condition.

4. The standard may include other requirements that involve communications protocols for real-time system operators.

The standard should address directives 1 and 3 of the FERC Order 693 Mandatory Reliability Standards, paragraph 540 which contains (directive 1 will also be addressed in Project 2006-06; directive 2 will be addressed in Project 2006-06):

"…the Commission identified concerns regarding COM-002-2, the proposed Reliability Standard serves an important purpose by requiring users, owners and operators to implement the necessary communications and coordination among entities. Accordingly, the Commission approves Reliability Standard COM-002-2 as mandatory and enforceable. In addition, pursuant to section 215(d)(5) of the FPA and § 39.5(f) of our regulations, the Commission directs the ERO to develop a modification to COM-002-2 through the Reliability Standards development process that: (1) expands the applicability to include distribution providers as applicable entities; (2) includes a new Requirement for the reliability coordinator to assess and approve actions that have impacts beyond the area view of a transmission operator or balancing authority and (3) requires tightened communications protocols, especially for communications during alerts and emergencies. Alternatively, with respect to this final issue, the ERO may develop a new Reliability Standard that responds to Blackout Report Recommendation No. 26 in the manner described above. Finally, we direct the ERO to include APPA's suggestions to complete the Measures and Levels of Non-Compliance in its modification of COM-002-2 through the Reliability Standards development process."

Related Standards

Standard No.	Explanation – these requirements may need to be modified or moved to the new standard
COM-001-1	R4 is a requirement for the Reliability Coordinator's, Transmission Operator's, and Balancing Authority's real-time operating personnel to use English when communicating between entities.
COM-002-2	R1.1 is a requirement for the Balancing Authority and Transmission Operator to make notifications when there is a threat to reliability. R2 is a requirement for the Reliability Coordinator, Transmission Operator and Balancing Authority relative to issuing and receiving operating directives.
EOP-001-0	R4.1 includes a requirement for the Transmission Operator and Balancing Authority to have communications protocols for use during emergencies (and Attachment 1-EOP-001-0)
EOP-002-2	R6.5 and R7.2 require the Balancing Authority to ask the Reliability Coordinator to declare an Energy Emergency or an Energy Emergency Alert under certain conditions R8 requires the Reliability Coordinator to issue an Energy Emergency Alert under certain conditions R9.1 requires the Load-serving Entity to ask the Reliability Coordinator to declare an Energy Emergency Alert under certain conditions
EOP-006-1	R4 requires the Reliability Coordinator to disseminate information regarding restoration to neighboring Reliability Coordinators and Transmission Operators or Balancing Authorities R5 requires the Reliability Coordinator to approve, communicate, and coordinate the re-synchronizing of major system islands or synchronizing points
CIP-001-1	R1 and R2 require operating entities to have procedures for communicating information relative to sabotage of bulk power system facilities
CIP-008-1	R1.2 requires the responsible entity to have a communication plan for response to a cyber security incident
IRO-001-1	R3 requires the Reliability Coordinator to direct entities to act and R8 requires entities to respond to the Reliability Coordinator's directives
IRO-004-1	R6 requires the Reliability Coordinator to direct entities to act and R7 requires entities to respond to the Reliability Coordinator's directives
IRO-005-2	R4 requires the Reliability Coordinator to issue an Energy Emergency Alert under certain conditions R3, R5, R8, R11, R15, and R17 require the Reliability Coordinator to direct actions to alleviate various types of abnormal or emergency situations
IRO-014-1	R1.1 requires Reliability Coordinators to have procedures processes or plans that address communications and notifications made between Reliability Coordinators under various operating scenarios
PRC-001-1	R6 requires the Transmission Operator and Balancing Authority to make notifications when there is a change in the status of a special protection system
TOP-001-1	R3 requires some responsible entities to comply with the Reliability Coordinator's and Transmission Operator's directives R4 requires some responsible entities to comply with the Transmission Operator's directives R5 requires the Transmission Operator to notify its Reliability Coordinator of certain emergency situations

TOP-002-2	R14, R16 and R17 require responsible entities to notify their Reliability Coordinator of various changes to operating parameters R18 requires the use of uniform line identifiers when referring to transmission facilities of an interconnected network
TOP-007-0	R1 requires the Transmission Operator to notify its Reliability Coordinator when it exceeds an SOL or IROL R4 requires the Reliability Coordinator to direct entities to take actions to restore the system to within SOLs or IROLs
TOP-008-1	R3 requires the Transmission Operator to make notifications if it disconnects an overloaded facility
VAR-001-1	R8 and R12 require the Transmission Operator to direct actions to maintain voltage within limits and to prevent voltage collapse
VAR-002-1	R2.2 and R5.1 require the Generator Operator to comply with directives R3 requires the Generator Operator to notify the Transmission Operator of various status or capability changes

Related SARs

SAR ID	Explanation
Project 2006-06	Reliability Coordination SAR
Project 2007-08	Emergency Operations

Regional Variances

Region	Explanation
ERCOT	
FRCC	
MRO	
NPCC	
RFC	
SERC	
SPP	
WECC	

Guideline for Operating State Alert Levels

Background

System operators need common definitions for normal, alert, and emergency conditions to enable them to act appropriately and predictably as system conditions change. On August 14, 2003, the principal entities involved in the blackout did not have a shared understanding of whether the grid was in an emergency condition, nor did they have a common understanding of the functions, responsibilities, capabilities, and authorities of reliability coordinators and control areas under emergency or near-emergency conditions.

The U.S./Canada Task Force Recommendation 20 recommends the establishment of clear definitions of normal, alert, and emergency operational system conditions, and to clarify the roles, responsibilities, and authorities of reliability coordinators and control areas under each condition.

At its May 2006 meeting, the NERC Reliability Coordinator WG approved a motion to implement a pilot program that defined normal, alert, and emergency operating conditions as they relate to Transmission Loading and Security. The intent is to align the definitions for Transmission Loading and Security with the conditions identified in the Emergency Energy Alert states. In an effort to clarify the application of the definitions being used in the pilot program this guideline has been created. ***In the event of a conflict between the pilot program and applicable NERC Standards the Standards should always be applied first***.

Condition Level >>>>	**Normal**	**Alert Level 1**	**Alert Level 2**	**Alert Level 3**
Threat Level>>>>	**Low**	**Elevated**	**High**	**Severe**
Condition/Threat Color >>>>	**Green**	**Yellow**	**Orange**	**Red**
Generating/capacity	EEA 0 No Energy Deficiencies	EEA 1 all available resources in use	EEA 2 Load management procedures in effect	EEA 3 Firm load interruption imminent or in progress
Transmission	TEA 0 Respecting all IROLs	TEA 1 All available resources committed to respecting IROLs	TEA 2 Load Mgmt procedures in effect to respect IROLs	TEA 3 Firm Load Curtailments in effect to respect IROLs
Security	SEA 0 No cyber threat identified; No known threats on control center or grid assets (lines, substations, generators)	SEA 1 Cyber threat identified or is imminent, OR verified physical threat against control center or grid assets	SEA 2 Cyber event is affecting control center EMS capability, OR physical attack at ***single*** site (control center or grid assets- lines, substations, generators)	SEA 3 Cyber event has shut down control center EMS capability, OR physical attack at ***multiple*** sites (control center or grid assets- lines, substations, generators)

Transmission Emergency Alert (TEA) Levels

Introduction

This Attachment provides the procedures by which a Transmission Operator or Reliability Coordinator can advise of actions taken to manage potential or actual Interconnected Reliability Operating Limit (IROL) violations.

All three operating alert states (EEAs, TEAs and SEAs) are independent of each other and should be declared independently but they may also be declared concurrently.

A. General Requirements

1. Initiation by Reliability Coordinator. A Transmission Emergency Alert (TEA) may be initiated only by a Reliability Coordinator at:

1) the Reliability Coordinator's own request, or
2) upon the request of a Transmission Operator

1.1. Situations for initiating alert. A Transmission Emergency Alert may be initiated for the following reasons:

- When all the available resources have been committed to respect an IROL in the pre-contingency state.
- When load curtailment procedures have been implemented to respect an IROL.

2. Notification. A Reliability Coordinator who declares a Transmission Emergency Alert shall notify all Transmission Operators and Balancing Authorities in its Reliability Area. The Reliability Coordinator shall also notify Reliability Coordinators of the situation via the Reliability Coordinator Information System (RCIS) using the "System Emergency" category. Additionally, conference calls between Reliability Coordinators shall be held as necessary to communicate system conditions. The Reliability Coordinator shall also notify all Transmission Operators and Balancing Authorities in its Reliability Area and Reliability Coordinators when the alert has ended.

B. Transmission Emergency Alert Levels

Introduction

To ensure that all Reliability Coordinators clearly understand potential and actual actions taken to manage IROLs on the Interconnection, NERC has established three levels of Transmission Alerts. The Reliability Coordinators will use these terms when explaining actions taken to manage IROLs to each other. A Transmission Emergency Alert is an emergency procedure, not a daily operating practice, and is not intended as an alternative to compliance with NERC reliability standards.. The Reliability Coordinator may declare whatever alert level is appropriate, and need not proceed through the alerts sequentially.

1. Transmission Emergency Alert 1 (TEA 1) – All available resources committed to respecting IROLs.

Circumstances:

- The Reliability Coordinator or Transmission Operator foresees or is experiencing conditions where all available resources are committed to respect the IROL and is concerned about its ability to respect the IROL.

2. Transmission Emergency Alert 2 (TEA 2) — Load management procedures in effect to respect IROLs.

Circumstances:

- The Reliability Coordinator or Transmission Operator foresees or has implemented procedures up to, but excluding, interruption of firm load commitments. When time permits, these procedures may include, but are not limited to:
  - Public appeals to reduce demand.
  - Voltage reduction.
  - Interruption of non-firm end use loads in accordance with applicable contracts (for emergency purposes, not economic reasons)
  - Demand-side management.
  - Utility load conservation measures
  - TLR 6

Note: TLR 5 would normally be implemented in advance of this alert state. Under some circumstances TLRs may not be available or effective and would not be called prior to this alert state.

During TEA 2, Reliability Coordinators and Transmission Operators have the following responsibilities:

2.1 Declaration period. The declaring Reliability Coordinator shall update the RCIS (under "System Emergency") at a minimum of every hour until the TEA 2 is terminated.

2.4 Evaluating and mitigating transmission limitations. The Reliability Coordinators shall review all System Operating Limits (SOLs) and Interconnection Reliability Operating Limits (IROLs) and transmission loading relief procedures in effect that may be contributing to the alert level. *Where appropriate*, the Reliability Coordinators shall inform the Transmission Operators under their purview of the pending Transmission Emergency Alert and request that they increase their ATC by actions such as restoring transmission elements that are out of service, reconfiguring their transmission system, adjusting phase angle regulator tap positions, implementing emergency operating procedures and redispatching generation.

2.4.1 Notification of ATC adjustments. Resulting increases in ATCs shall be communicated to the market via posting on the appropriate OASIS websites by the Transmission Providers.

2.4.2 Availability of generation redispatch options. Available generation redispatch options shall be immediately communicated to the declaring Reliability Coordinator.

2.4.3 Evaluating impact of current transmission loading relief events. The Reliability Coordinators shall evaluate the impact of any current transmission loading relief events on the ability to supply emergency assistance to the declaring entity. This evaluation shall include analysis of system reliability and involve close communication among Reliability Coordinators.

2.4.4 Initiating inquiries on re-evaluating SOLs and IROLs. The Reliability Coordinators shall consult with the Balancing Authorities and Transmission Providers in their Reliability Areas about the possibility of re-evaluating and revising SOLs or IROLs.

2.5 Coordination of emergency responses. The Reliability Coordinator shall communicate and coordinate the implementation of emergency operating responses.

2.6 Actions Prior to Declaration of TEA 3. Before declaring a TEA 3, all available resources must be committed. This includes but is not limited to:

2.6.1 All available generation units are on-line. All generation capable of being on-line in the time frame of the emergency is on-line including quick-start and peaking units, regardless of cost.

2.6.2 Purchases made regardless of cost. All firm and non-firm purchases have been made, regardless of cost.

2.6.3 Non-firm sales recalled and contractually interruptible loads and demand-side management curtailed. All non-firm sales have been recalled, contractually interruptible retail loads curtailed, and demand-side management activated within provisions of the agreements.

2.6.4 Operating Reserves. Operating reserves are being utilized such that the declaring entity may be carrying reserves below the required minimum or has initiated emergency assistance through its operating reserve sharing program.

3. Transmission Emergency Alert 3 (TEA 3) — Firm load curtailment in effect to respect IROLs.

Circumstances:

The Reliability Coordinator or Transmission Operator foresees or has implemented firm load obligation interruption to respect an IROL.

3.1 Continue actions from TEA 2. The Reliability Coordinators and the declaring entity shall continue to take all actions initiated during TEA 2.

3.2 Declaration Period. The declaring Reliability Coordinator shall update the RCIS under "System Emergency" at a minimum of every hour until the TEA 3 is terminated.

3.3 Use of Transmission short-time limits. The Reliability Coordinators shall request the appropriate Transmission Providers within their Reliability Area to utilize available short-time transmission limits or other emergency operating procedures in order to increase transfer capabilities.

3.4 Re-evaluating and revising SOLs and IROLs. The Reliability Coordinator of the declaring entity shall evaluate the risks of revising SOLs and IROLs on the reliability of the overall transmission system. Re-evaluation of SOLs and IROLs shall be coordinated with other Reliability Coordinators and only with the agreement of the Transmission Operator whose equipment would be affected. The resulting increases in transfer capabilities shall only be made available to the declaring entity who has requested an TEA 3 condition. SOLs and IROLs shall only be revised as long as a TEA 3 condition exists or as allowed by the Transmission Operator whose equipment is at risk. The following are minimum requirements that must be met before SOLs or IROLs are revised:

3.4.2 Mitigation of cascading failures. The Reliability Coordinator shall use its best efforts to ensure that revising SOLs or IROLs would not result in any cascading failures within the Interconnection.

3.5 Returning to pre-emergency SOLs and IROLs. Whenever the transmission systems can be returned to their pre-emergency SOLs or IROLs, the declaring Entity shall notify its respective Reliability Coordinator.

3.5.1 Notification of other parties. Upon notification from the declaring entity that an alert has been downgraded, the Reliability Coordinator shall notify the affected Reliability Coordinators (via the RCIS), Transmission Operators and Balancing Authorities that their systems can be returned to their normal limits.

4. Transmission Emergency Alert 0 (TEA 0) - Termination.

When the declaring Entity is able to respect IROL requirements and is no longer concerned with its ability to respect IROLs, it shall request its Reliability Coordinator to terminate the alert.

4.1. Notification. The Reliability Coordinator shall notify Reliability Coordinators via the RCIS of the termination. The Reliability Coordinator shall also notify the affected Transmission Operators and Balancing Authorities. The TEA 0 shall also be posted on the NERC website if the original alert was so posted.

Security Emergency Alerts (SEA)

Introduction

This Attachment provides the procedures by which a Reliability Coordinator, Transmission Operator or Balancing Authority can communicate the physical and cyber security status of their facilities.

All three operating alert states (EEAs, TEAs and SEAs) are independent of each other and should be declared independently but they may also be declared concurrently.

A. General Requirements

1. Initiation by Reliability Coordinator. A Security Emergency Alert may be initiated only by a Reliability Coordinator at

1) The Reliability Coordinator's own request, or
2) Upon the request of a Transmission Operator, or
3) Upon the request of a Balancing Authority

1.1. Situations for initiating alert. A Security Emergency Alert may be initiated for the following reasons:

- A Cyber threat affecting a control center, grid or generator assets has been identified or is imminent.
- A physical threat affecting a control center, grid or generator assets has been identified or is imminent.

2. Notification.

A Reliability Coordinator who initiates a Security Emergency Alert shall notify all Transmission Operators and Balancing Authorities in its Reliability Area. The Reliability Coordinator shall also notify Reliability Coordinators of the situation via the Reliability Coordinator Information System (RCIS) using the "CIP" category. Additionally, conference calls between Reliability Coordinators shall be held as necessary to communicate system conditions. The Reliability Coordinator shall also notify all Transmission Operators and Balancing Authorities in its Reliability Area and other Reliability Coordinators when the alert has ended

B. Security Emergency Alert (SEA) Levels

To ensure that all Reliability Coordinators clearly understand potential and actual Security Emergency Alerts, NERC has established three levels of Security Emergency Alerts. The Reliability Coordinators will use these terms when explaining security alerts to each other. A Security Emergency Alert is an emergency procedure, not a daily operating practice, and is not intended as an alternative to compliance with NERC reliability standards. The Reliability Coordinator may declare whatever alert level is necessary, and need not proceed through the alerts sequentially.

1. Security Emergency Alert 1 (SEA 1) – Cyber or Physical threat is identified or imminent

Circumstances:

• The Reliability Co-ordinator, Transmission Operator or Balancing Authority has identified an actual or imminent cyber or physical threat to one of its facilities including but not limited to:

- Control Centers
- Generating facilities
- Substations
- Transmission Lines

2. Security Emergency Alert 2 (SEA 2) – Cyber event *impacts* control center EMS or physical attack at a *single site*

Circumstances:

- The Reliability Coordinator, Transmission Operator or Balancing Authority has identified an actual cyber threat event that is affecting control center EMS capability.
- The Reliability Coordinator, Transmission Operator or Balancing Authority has identified a physical attack at a single site.

During Security Emergency Alert 2, Reliability Coordinators, Transmission Operators and Balancing Authorities have the following responsibilities:

2.1 Notifying other Reliability Coordinators, Transmission Operators and Balancing Authorities

The Reliability Coordinator shall post the declaration of the alert level along with the location of the affected facility on the RCIS under "CIP".

2.2 Declaration period.

The declaring Entity shall update its Reliability Coordinator of the situation at a minimum of every hour until the SEA 2 is terminated. The Reliability Coordinator shall update the RCIS as changes occur and pass this information on to the affected Reliability Coordinators, Transmission Operators and Balancing Authorities.

3. Security Emergency Alert 3 (SEA 3) – Cyber event *shuts down* control center EMS or physical attack at *multiple sites*

Circumstances:

- The Reliability Coordinator, Transmission Operator or Balancing Authority has identified an actual cyber threat event that has shutdown a control center EMS capability.
- The Reliability Coordinator, Transmission Operator or Balancing Authority has identified a physical attack at a multiple sites

3.1. Notifying other Reliability Coordinators, Balancing Authorities and Transmission Operators

The Reliability Coordinator shall post the declaration of the alert level along with the locations of the affect facilities on the RCIS under “CIP”.

3.2. Declaration period

The declaring Entity shall update its Reliability Coordinator of the situation at a minimum of every hour until the SEA 3 is terminated. The Reliability Coordinator shall update the RCIS as changes occur and pass this information on to the affected Reliability Coordinators, Transmission Operators and Balancing Authorities**.**

4. Security Emergency Alert 0 (SEA 0) – Termination of alert level

When the declaring entity believes it is no longer under threat, it shall request its Reliability Coordinator to terminate the SEA.

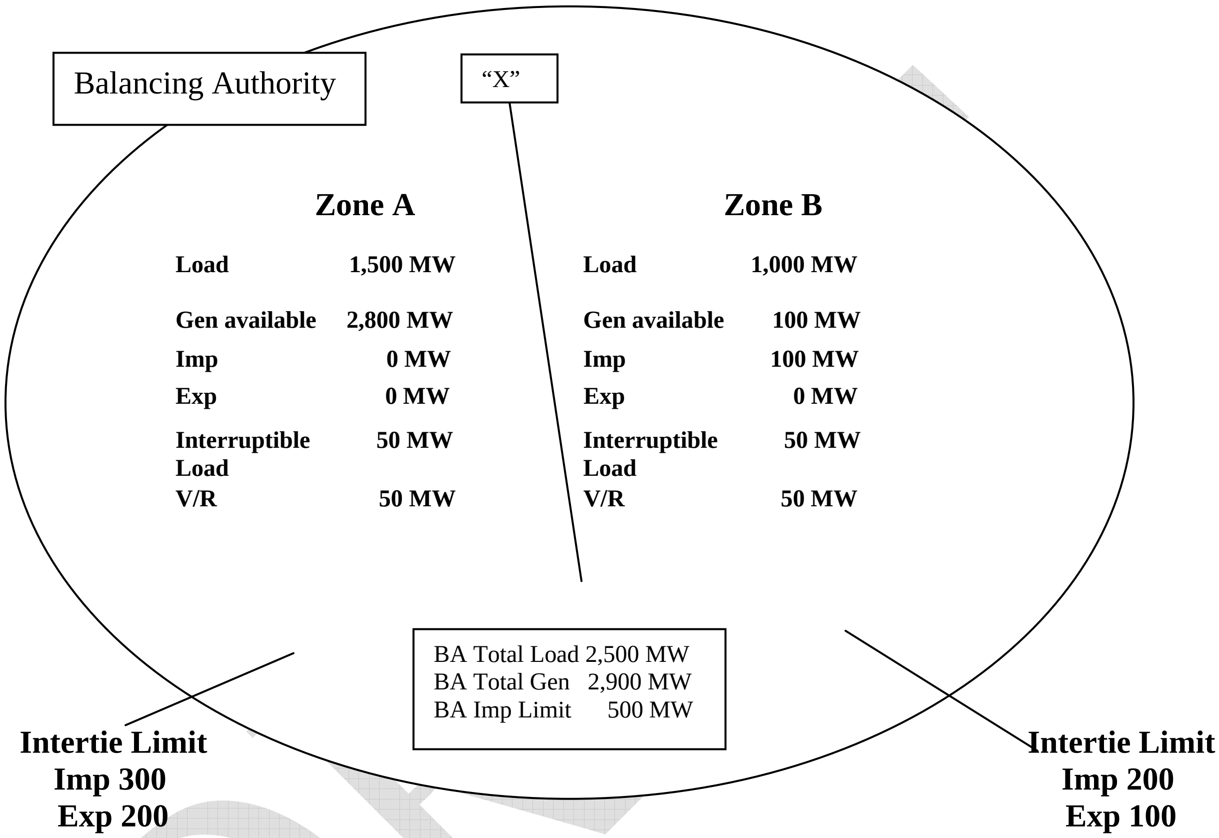
4.1. Notification

The Reliability Coordinator shall notify all other Reliability Coordinators via the RCIS of the termination. The Reliability Coordinator shall also notify the affected Transmission Operators and Balancing Authorities

Example #1

IROL violation on "X"
No Global Adequacy Concerns

IROL "X"
500 MW - A to B
300 MW - B to A



EEA	**1**	**No**
	2	**No**
	3	**No**
TEA	**1**	**Yes**
	2	**Yes**
	3	**Yes**

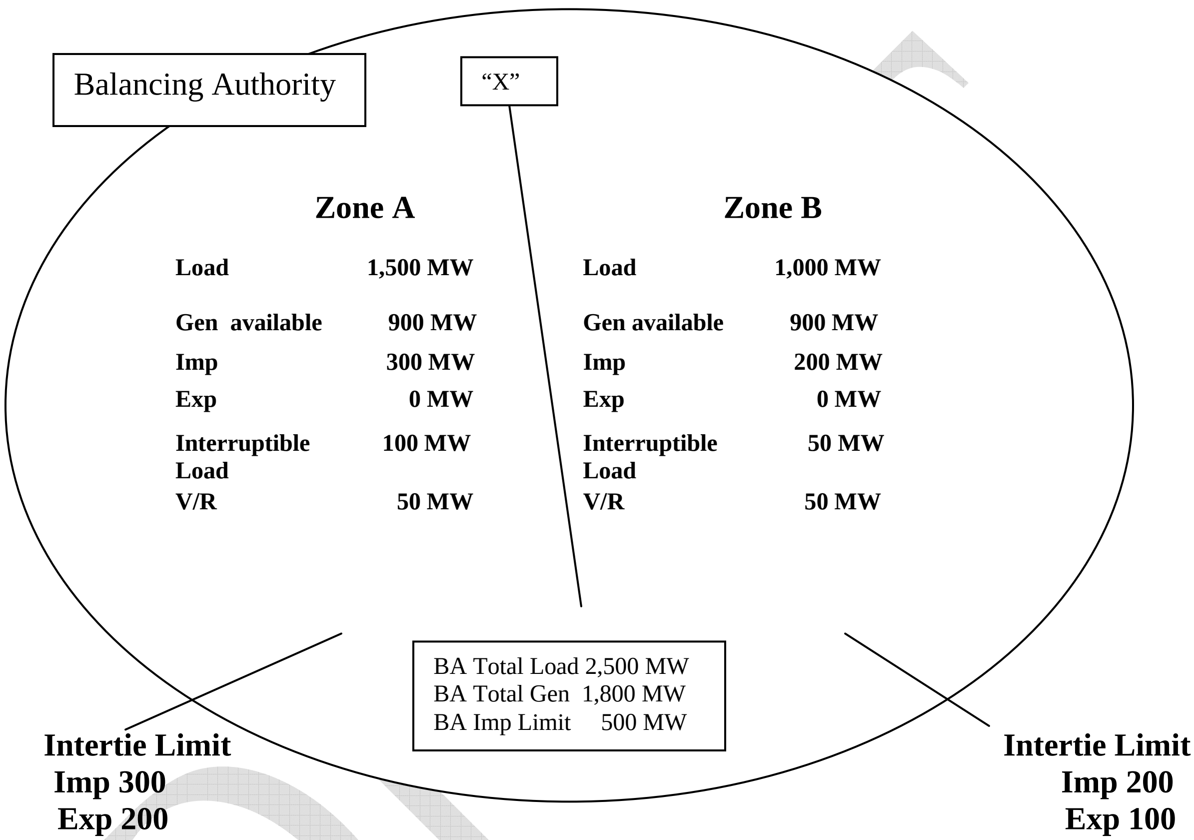
In this example the available generation in A is in excess of its load requirements. The available generation in B is less than its load requirements. Area B will be relying on the full transfer capability of the interface "X" plus an additional import of 100 MW to the maximum limit on the intertie in Area B. With the implementation of the interruptible load and V/R the firm load requirements in B cannot be met without the use of Firm load shedding.

- In this scenario an EEA is not required as the BA is able to meet its global load/generation requirements.
- When this situation is forecast a TEA 1 should be issued to indicate the potential concerns with the ability to respect the IROL limit "X" without the use of load management procedures.
- When load management procedures are implemented in Real Time to respect the IROL "X", a TEA 2 should be issued.
- When Firm load is curtailed to respect the limit a TEA 3 should be issued.

Example #2

Global Adequacy Deficiency
No IROL Violation

IROL “X”
500 MW - A to B
300 MW - B to A



EEA	**1**	**Yes**
	2	**Yes**
	3	**No**
TEA	**1**	**No**
	2	**No**
	3	**No**

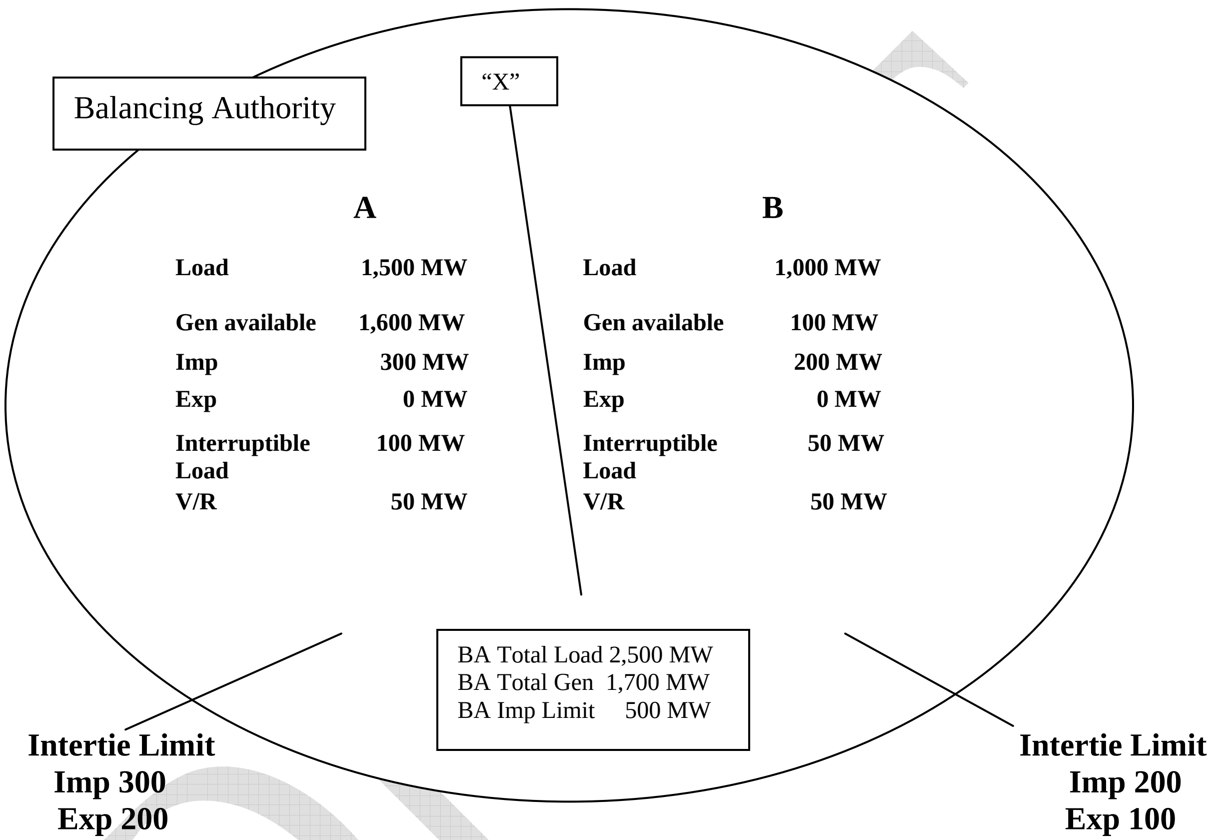
In this example the available generation in A is less than its load requirements. The available generation in B is less than its load requirements. There is a Global Adequacy deficiency after considering full import capability and utilization of interruptible load and V/R.

- EEA procedures should be followed
- There is no need for a TEA to be issued

Example #3

Global Adequacy Deficiency
IROL Violation

IROL "X"
500 MW - A to B
300 MW - B to A



EEA	**1**	**Yes**
	2	**Yes**
	3	**No**
TEA	**1**	**Yes**
	2	**Yes**
	3	**Yes**

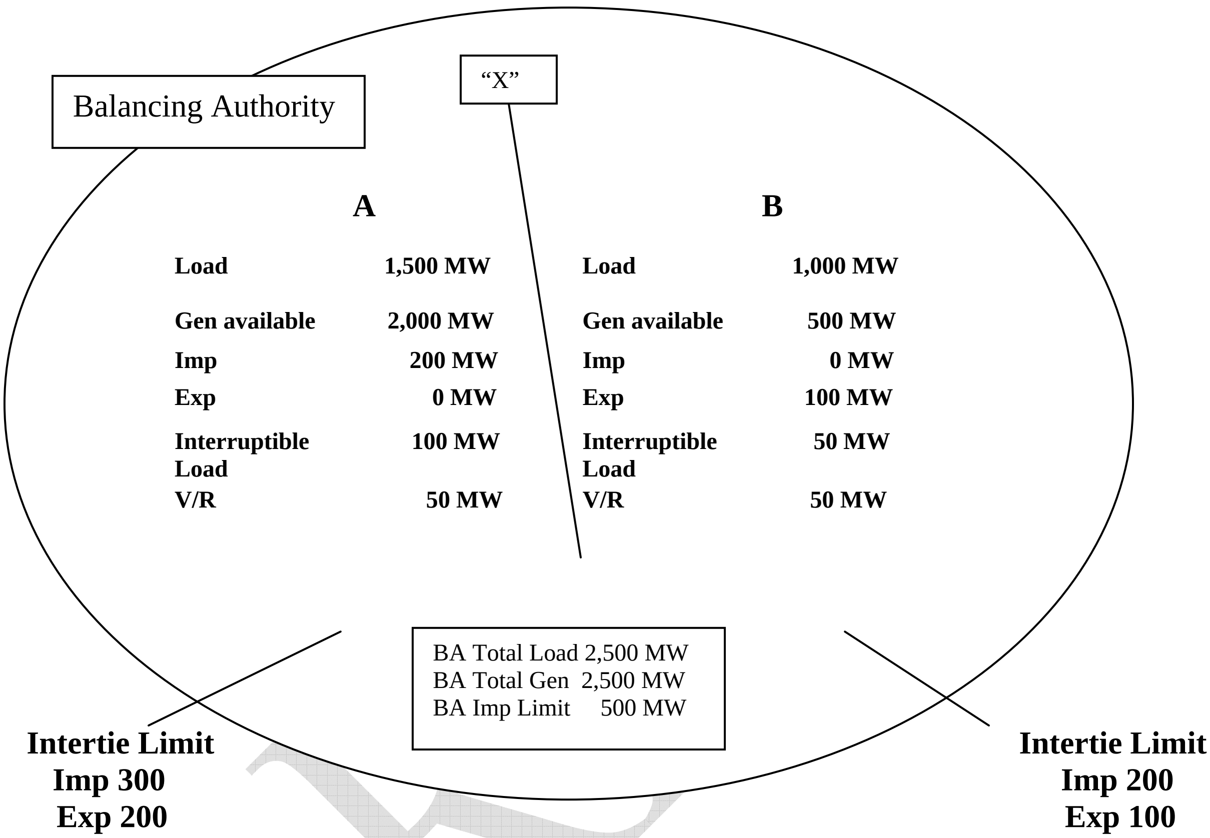
In this example the available generation in A meets its load requirements. The available generation in B is less than its load requirements. There is a Global Adequacy deficiency after considering full import capability. There is also an IROL violation at "X" in the direction of A to B to meet the load requirements in B depending on where load management procedures are implemented.

- An EEA 1 and a TEA 1 should be issued to identify the potential issues
- When load management procedures are implemented to manage the transfer from A to B a TEA 2 should be issued (assumes B will be deficient before the global deficiency occurs).
- An EEA 2 should be issued when load management procedures are being implemented in A to manage global requirements.
- TEA 3 should also be issued when Firm load is shed in B to meet the load requirements in B while respecting the IROL.

Example #4

Transaction Curtailments

IROL "X"
500 MW - A to B
300 MW - B to A



EEA	**1**	**No**
	2	**No**
	3	**No**
TEA	**1**	**No**
	2	**No**
	3	**No**

In this example there are no global adequacy concerns. There is an export transaction in B that is causing a limit concern on "X" in the A to B direction. With the available generation in B plus the transfer capability there is no concern for violating the IROL limit. The transaction is creating a situation where it will be required curtailed at some point to prevent the IROL violation. Assuming the TLR procedure would be effective at relieving this constraint regardless of the TLR level (at either the TLR 3 or 5 level) no TEA would be required as there is no concern that the IROL can't be respected with control actions that don't involve load management procedures.