

Standard Authorization Request Form

Title of Proposed Standard Revisions to System Restoration and Blackstart Standards Project 2006-03	
Revised:	January 18, 2007

SAR Requestor Information	SAR Type (<i>Check a box for each one that applies.</i>)
Name Richard J Kafka	<input type="checkbox"/> New Standard
Primary Contact Richard J Kafka	<input checked="" type="checkbox"/> Revision to existing Standards EOP-005, EOP-006, EOP-007, EOP-009
Telephone (301) 469-5274 Fax (301) 469-5235	<input checked="" type="checkbox"/> Withdrawal of existing Standard
E-mail rjkafka@pepcoholdings.com	<input type="checkbox"/> Urgent Action

Standards Authorization Request Form

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

EOP-005-1 — System Restoration Plans

EOP-006-1 — Reliability Coordination - System Restoration

EOP-007-0 — Establish, Maintain, and Document a Regional Blackstart Capability Plan

EOP-009-0 — Documentation of Blackstart Generating Unit Test Results

The purpose of revising the above four standards is to:

1. Provide an adequate level of reliability for the North American bulk power systems - the standards are complete and the requirements are set at an appropriate level to ensure reliability.
2. Ensure they are enforceable as mandatory reliability standards with financial penalties - the applicability to bulk power system owners, operators, and users, and as appropriate particular classes of facilities, are clearly defined; the purpose, requirements, and measures are results-focused and unambiguous; the consequences of violating the requirements are clear.
3. 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 (Attachment A).
4. Consider other general improvements described in the standards development work plan. (See Attachment B)
5. Consider stakeholder comments with suggested revisions to this set of standards that were during the first posting of this SAR (Attachment C).
6. Satisfy the standards procedure requirement for five-year review of the standards.

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

When all else fails, the bulk power system requires a clearly defined and comprehensive set of standards to ensure the ability to successfully restore the integrity of the system. The existing standards lack specificity and measures to guide the industry in a consistent and reliable manner for system restoration.

EOP-005 was a Version 0 standard that was modified to add some requirements that were translated from the Phase III & IV measures thus creating a 'version 1' standard; EOP-006 is a 'version 1' standard as of January 1, 2007; EOP-007, and EOP-009 are Version 0 standards. As the Electric Reliability Organization begins enforcing compliance with reliability standards under Section 215 of the Federal Power Act in the United States and applicable statutes and regulations in Canada, the industry needs a set of clear, measurable, and enforceable reliability standards. The current standards, while a good foundation, were translated from historical operating and planning policies and guides that were appropriate in an era of voluntary compliance. The Version 0 standards, Phase III & IV standards, and recent updates were put in place as a temporary starting point to start up the Electric Reliability Organization and begin enforcement of mandatory standards. However, it is important to update the standards in a timely manner, incorporating improvements to make the standards more suitable for enforcement and to capture prior recommendations that were deferred during the Version 0 and Phase III & IV translations.

In addition, FERC indicated it will not propose to accept or remand EOP-007-0, as it applies only to regional reliability organizations.

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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 project involves reviewing and revising the four referenced standards including:

- Resolving the issue of associating compliance measures with Attachment 1-EOP-005 elements,
- EOP-005 only requires the Transmission Operator and the Balancing Authority to have a system restoration plan. The role of these and other entities, especially the Reliability Coordinator, needs to be defined.
- Both EOP-005 and EOP-006 contain a mix of requirements that address advance planning and real-time operations. The Standards Drafting Team (SDT) should consider the need to clearly delineate the two processes within the standards requirements.
- The elimination of 'fill-in-the-blank' components in EOP-007-0 and EOP-009.
- Other improvements to the standards deemed appropriate by the drafting team, with the consensus of stakeholders, consistent with establishing high quality, enforceable standards and consistent with establishing technically sufficient bulk power system blackstart and restoration standards.

Work is not to be limited to the 'Issues to Address'. Those items shall be considered but are not mandatory revisions.

Throughout the process, the SDT should identify any conflicts that are found with other existing standards and bring them to the attention of the Director of Standards and Standards Committee for resolution.

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Reliability Functions

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

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<input checked="" type="checkbox"/>	Load-Serving Entity	Secures energy and transmission service (and related reliability-related services) to serve the End-use Customer.
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Reliability and Market Interface Principles

Applicable Reliability Principles <i>(Check box for all that apply.)</i>	
<input checked="" type="checkbox"/>	1. Interconnected bulk electric systems shall be planned and operated in a coordinated manner to perform reliably under normal and abnormal conditions as defined in the NERC Standards.
<input type="checkbox"/>	2. The frequency and voltage of interconnected bulk electric systems shall be controlled within defined limits through the balancing of real and reactive power supply and demand.
<input type="checkbox"/>	3. Information necessary for the planning and operation of interconnected bulk electric systems shall be made available to those entities responsible for planning and operating the systems reliably.
<input checked="" type="checkbox"/>	4. Plans for emergency operation and system restoration of interconnected bulk electric systems shall be developed, coordinated, maintained and implemented.
<input type="checkbox"/>	5. Facilities for communication, monitoring and control shall be provided, used and maintained for the reliability of interconnected bulk electric systems.
<input type="checkbox"/>	6. Personnel responsible for planning and operating interconnected bulk electric systems shall be trained, qualified, and have the responsibility and authority to implement actions.
<input type="checkbox"/>	7. The security of the interconnected bulk electric systems shall be assessed, monitored and maintained on a wide area basis.
Does the proposed Standard comply with all of the following Market Interface Principles? <i>(Select 'yes' or 'no' from the drop-down box.)</i>	
1. The planning and operation of bulk electric systems shall recognize that reliability is an essential requirement of a robust North American economy. Yes	
2. An Organization Standard shall not give any market participant an unfair competitive advantage. Yes	
3. An Organization Standard shall neither mandate nor prohibit any specific market structure. Yes	
4. An Organization Standard shall not preclude market solutions to achieving compliance with that Standard. Yes	
5. An Organization 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	

Related Standards

Standard No.	Explanation
PER-002	Applicable personnel must be trained in restoration and blackstart procedures.
EOP-001	R3.4 may be redundant after this project is completed.

Related SARs

SAR ID	Explanation

Regional Differences

Region	Explanation
ERCOT	
FRCC	
MRO	
NPCC	
SERC	
RFC	
SPP	
WECC	

Excerpted from NERC's Reliability Standards Development Plan: 2007 - 2009

Standard Review Form Project 2006-03 System Restoration and Blackstart		
Standard #	EOP-005-0	Comments from NERC Staff Review of Standard Against Standard Review Guidelines
Title	System Restoration Plans	Okay
Purpose		Okay
Applicability		Okay
Requirements	<i>Conditions</i>	Interconnection is capitalized.
	<i>Who?</i>	Okay
	<i>Shall do what?</i>	R2 mentions simulated exercises – where did that come from? R3 – isn't this a function of the extent of the outage? R5 – define periodically R6 – provide training requirements R8 – how do you verify? R115.2 – what does considered mean R11.5.3 – depends on extent
	<i>Result or Outcome</i>	Missing
Measures		2 M for 11 R
Issues to Address	<p>Source and Comments:</p> <p>FERC NOPR</p> <ul style="list-style-type: none"> o Include Measures; and o Identify time frames for training and review of restoration plan requirements to simulate contingencies and prepare operators for anticipated and unforeseen events. <p>FERC staff report</p> <ul style="list-style-type: none"> o Periodicity of training o Lack of Measures <p>Regional Fill-in-the-Blank Team Comments</p> <ul style="list-style-type: none"> o Drafting team should address EOP-005, EOP-006 EOP-007 and EOP-009 concurrently. Primarily, references in EOP-005, EOP-006, and EOP-009 to meet RRO/Regional requirements need to be modified and EOP-007 needs to be more specific. o See notes for EOP-007 <p>VO Industry Comments</p> <ul style="list-style-type: none"> o Priority to integrity of interconnection o BA does not have all required information o Interdependency of planning and implementation missing as well as between functional entities o LSE & GO should have plans o Additional element consideration o Can't really test plan <p>Phase III/IV comments</p> <ul style="list-style-type: none"> o Add LSEs to Applicability o Add a requirement for a blackstart agreement between the transmission operator and the generator owner - include items such as identification of generator owner/operator facilities required to participate in the blackstart plan; when and how quickly a blackstart unit must respond; and what cranking path requires energization o Add a requirement for a cranking path agreement between the 	

Appendix A: Standard Review Forms

	<p>transmission operator and the generator owner/operator</p> <ul style="list-style-type: none">o Condense the requirements and measures - R1 the requirement to develop the restoration plan and all the components required of that plan; and R2 the requirement to prove and document that the plan works. Then, two measurements would follow: one to assess the contents of the plan and one to assess the simulation or testing of the plan.o Need to resolve the issue of the elements on the Attachment – are these mandatory or not – there is a mismatch between R1 and levels of non-complianceo R3 – revise to place emphasis for TOP on restoring local transmission system as preparation for restoring the integrity of the Interconnection.o R4 – Add LSEso R5 – replace ‘periodic’ with a specific periodicity for testingo R6 – add specificity to frequency and scope of required trainingo R11.5 - replace the word, ‘may’ with: The affected Transmission Operators shall not resynchronize the isolated area(s) with the surrounding area(s) until the following conditions are met: the voltage, frequency, and phase angle permit, the affected reliability coordinator(s) and the adjacent areas are notified, and reliability coordinator approval is given.o Delete R11.5.4. It does not seem reasonable or logical for a control area to be required to shed 5,000 MWs of load, for example, in order for their neighbor to reconnect 1,000 MWs of their own load.o R11.5. Should exclude islands within a system that do not affect surrounding areas <p>VRF comments</p> <ul style="list-style-type: none">o R1, 5 & 8 – Does not just apply to local restorationo R2 – Could be broken up into 2 requirementso R11.4 – Ambiguouso R11.5 - This needs to be looked at for 30 days - should be done prior to access being granted.
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Appendix A: Standard Review Forms

Standard Review Form Project 2006-03 System Restoration and Blackstart		
Standard #	EOP-006-0	Comments from NERC Staff Review of Standard Against Standard Review Guidelines
Title	Reliability Coordination – System Restoration	Okay
Purpose		Don't need names. Interconnection is capitalized.
Applicability		Okay
Requirements	<i>Conditions</i>	Okay
	<i>Who?</i>	Okay
	<i>Shall do what?</i>	R5 – burden is capitalized R6 – define actions
	<i>Result or Outcome</i>	Missing
Measures		Addressed by CESDT.
Issues to Address	Source and Comments:	
	FERC NOPR ○ Require that the reliability coordinator be involved in the development and approval of restoration plans; and ○ Include Measures and Levels of Non-Compliance FERC staff report ○ RC should be involved in approving TO & BA plans ○ Expect new standard in November Regional Fill-in-the-Blank Team Comments ○ Drafting team should address EOP-005, EOP-006 EOP-007 and EOP-009 concurrently. Primarily, references in EOP-005, EOP-006, and EOP-009 to meet RRO/Regional requirements need to be modified and EOP-007 needs to be more specific. ○ See notes for EOP-007	
Misc. Items		Compliance not specified but appears in CESDT version

Appendix A: Standard Review Forms

Standard Review Form Project 2006-03 System Restoration and Blackstart		
Standard #	EOP-007-0	Comments from NERC Staff Review of Standard Against Standard Review Guidelines
Title	Establish, Maintain, and Document a Regional Blackstart Capability Plan	Too long
Purpose		Need benefit or value proposition.
Applicability		Need to check applicability for RRO as per SAR.
Requirements	<i>Conditions</i>	Okay
	<i>Who?</i>	Okay
	<i>Shall do what?</i>	R1.1 – quicker if unit status changes
	<i>Result or Outcome</i>	Missing
Measures		M1 – need to spell out measures M2 – define evidence
Issues to Address	Source and Comments:	
	FERC NOPR o Commission will not propose to accept or remand EOP-007-0, as it applies only to regional reliability organizations. FERC staff report o Appropriateness of RRO questioned Regional Fill-in-the-Blank Team Comments o R1 & R2 considerations VO Industry Comments o Clarify testing requirements	
Misc. Items		Question reasonability of simulation as proof of capability.

Appendix A: Standard Review Forms

Standard Review Form Project 2006-03 System Restoration and Blackstart		
Standard #	EOP-009-0	Comments from NERC Staff Review of Standard Against Standard Review Guidelines
Title	Documentation of Blackstart Generating Unit Test Results	'Documentation of' could probably be dropped.
Purpose		Title and purpose do not align. Same purpose as EOP-008.
Applicability		Need to check applicability for GO & GOP as per SAR.
Requirements	<i>Conditions</i>	Okay
	<i>Who?</i>	Okay
	<i>Shall do what?</i>	R1 – do we need MW values? R2 – within how many days?
	<i>Result or Outcome</i>	Missing
Measures		M1 only applies to R2 and needs to define evidence.
Issues to Address	Source and Comments: FERC NOPR o No changes identified. FERC staff report o Lack of periodicity for testing Regional Fill-in-the-Blank Team Comments o Region mentioned in Requirements VO Industry Comments o Distinction between RA & TO vs. RRO for test results	

Applicability

Does this reliability standard clearly identify the functional classes of entities responsible for complying with the reliability standard, with any specific additions or exceptions noted? Where multiple functional classes are identified is there a clear line of responsibility for each requirement identifying the functional class and entity to be held accountable for compliance? Does the requirement allow overlapping responsibilities between Registered Entities possibly creating confusion for who is ultimately accountable for compliance?

Does this reliability standard identify the geographic applicability of the standard, such as the entire North American bulk power system, an interconnection, or within a regional entity area? If no geographic limitations are identified, the default is that the standard applies throughout North America.

Does this reliability standard identify any limitations on the applicability of the standard based on electric facility characteristics, such as generators with a nameplate rating of 20 MW or greater, or transmission facilities energized at 200 kV or greater or some other criteria? If no functional entity limitations are identified, the default is that the standard applies to all identified functional entities.

Purpose

Does this reliability standard have a clear statement of purpose that describes how the standard contributes to the reliability of the bulk power system? Each purpose statement should include a value statement.

Performance Requirements

Does this reliability standard state one or more performance requirements, which if achieved by the applicable entities, will provide for a reliable bulk power system, consistent with good utility practices and the public interest?

Does each requirement identify who shall do what under what conditions and to what outcome?

Measurability

Is each performance requirement stated so as to be objectively measurable by a third party with knowledge or expertise in the area addressed by that requirement?

Does each performance requirement have one or more associated measures used to objectively evaluate compliance with the requirement?

If performance results can be practically measured quantitatively, are metrics provided within the requirement to indicate satisfactory performance?

Technical Basis in Engineering and Operations

Is this reliability standard based upon sound engineering and operating judgment, analysis, or experience, as determined by expert practitioners in that particular field?

Completeness

Is this reliability standard complete and self-contained? Does the standard depend on external information to determine the required level of performance?

Consequences for Noncompliance

In combination with guidelines for penalties and sanctions, as well as other ERO and regional entity compliance documents, are the consequences of violating a standard clearly known to the responsible entities?

Appendix B: Reliability Standard Review Guidelines

Clear Language

Is the reliability standard stated using clear and unambiguous language? Can responsible entities, using reasonable judgment and in keeping with good utility practices, arrive at a consistent interpretation of the required performance?

Practicality

Does this reliability standard establish requirements that can be practically implemented by the assigned responsible entities within the specified effective date and thereafter?

Capability Requirements versus Performance Requirements

In general, requirements for entities to have ‘capabilities’ (this would include facilities for communication, agreements with other entities, etc.), should be located in the standards for certification. The certification requirements should indicate that entities have a responsibility to ‘maintain’ their capabilities.

Consistent Terminology

To the extent possible, does this reliability standard use a set of standard terms and definitions that are approved through the NERC reliability standards development process?

If the standard uses terms that are included in the NERC Glossary of Terms Used in Reliability Standards, then the term must be capitalized when it is used in the standard. New terms should not be added unless they have a ‘unique’ definition when used in a NERC reliability standard. Common terms that could be found in a college dictionary should not be defined and added to the NERC Glossary.

Are the verbs on the ‘verb list’ from the DT Guidelines? If not – do new verbs need to be added to the guidelines or could you use one of the verbs from the verb list?

Violation Risk Factors (Risk Factor)

High Risk Requirement

A requirement that, if violated, could directly cause or contribute to bulk electric system instability, separation, or a cascading sequence of failures, or could place the bulk electric system at an unacceptable risk of instability, separation, or cascading failures;

or a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly cause or contribute to bulk electric system instability, separation, or a cascading sequence of failures, or could place the bulk electric system at an unacceptable risk of instability, separation, or cascading failures, or could hinder restoration to a normal condition.

Medium Risk Requirement

This is a requirement that, if violated, could directly affect the electrical state or the capability of the bulk electric system, or the ability to effectively monitor and control the bulk electric system. However, violation of a medium risk requirement is unlikely to lead to bulk electric system instability, separation, or cascading failures;

or a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly and adversely affect the electrical state or capability of the bulk electric system, or the ability to effectively monitor, control, or restore the bulk electric system. However, violation of a medium risk requirement is unlikely, under emergency, abnormal, or restoration conditions anticipated by the preparations, to lead to bulk electric system instability, separation, or cascading failures, nor to hinder restoration to a normal condition.

Lower Risk Requirement

Appendix B: Reliability Standard Review Guidelines

A requirement that, if violated, would not be expected to adversely affect the electrical state or capability of the bulk electric system, or the ability to effectively monitor and control the bulk electric system. A requirement that is administrative in nature;

Or a requirement in a planning time frame that, if violated, would not, under the emergency, abnormal, or restorative conditions anticipated by the preparations, be expected to adversely affect the electrical state or capability of the bulk electric system, or the ability to effectively monitor, control, or restore the bulk electric system. A planning requirement that is administrative in nature.

Mitigation Time Horizon

The drafting team should also indicate the time horizon available for mitigating a violation to the requirement using the following definitions:

- **Long-term Planning** — a planning horizon of one year or longer.
- **Operations Planning** — operating and resource plans from day-ahead up to and including seasonal.
- **Same-day Operations** — routine actions required within the timeframe of a day, but not real-time.
- **Real-time Operations** — actions required within one hour or less to preserve the reliability of the bulk electric system.
- **Operations Assessment** — follow-up evaluations and reporting of real time operations.

Violation Severity Levels

The drafting team should indicate a set of violation severity levels that can be applied for the requirements within a standard. ('Violation severity levels' replaces the existing 'levels of non-compliance.')

The violation severity levels may be applied for each requirement or combined to cover multiple requirements, as long as it is clear which requirements are included.

The violation severity levels should be based on the following definitions:

- **Lower: mostly compliant with minor exceptions** — the responsible entity is mostly compliant with and meets the intent of the requirement but is deficient with respect to one or more minor details. Equivalent score: 95% to 99% compliant.
- **Moderate: mostly compliant with significant exceptions** — the responsible entity is mostly compliant with and meets the intent of the requirement but is deficient with respect to one or more significant elements. Equivalent score: 85% to 94% compliant.
- **High: marginal performance or results** — the responsible entity has only partially achieved the reliability objective of the requirement and is missing one or more significant elements. Equivalent score: 70% to 84% compliant.
- **Severe: poor performance or results** — the responsible entity has failed to meet the reliability objective of the requirement. Equivalent score: less than 70% compliant.

Compliance Monitor

Replace, 'Regional Reliability Organization' with 'Regional Entity'

Fill-in-the-blank Requirements

Do not include any 'fill-in-the-blank' requirements. These are requirements that assign one entity responsibility for developing some performance measures without requiring that the performance measures be included in the body of a standard – then require another entity to comply with those requirements.

Appendix B: Reliability Standard Review Guidelines

Every reliability objective can be met, at least at a threshold level, by a North American standard. If we need regions to develop regional standards, such as in under-frequency load shedding, we can always write a uniform North American standard for the applicable functional entities as a means of encouraging development of the regional standards.

Requirements for Regional Reliability Organization

Do not write any requirements for the Regional Reliability Organization. Any requirements currently assigned to the RRO should be re-assigned to the applicable functional entity.

Effective Dates

Must be 1st day of 1st quarter after entities are expected to be compliant – must include time to file with regulatory authorities and provide notice to responsible entities of the obligation to comply. If the standard is to be actively monitored, time for the Compliance Monitoring and Enforcement Program to develop reporting instructions and modify the Compliance Data Management System(s) both at NERC and Regional Entities must be provided in the implementation plan.

Associated Documents

If there are standards that are referenced within a standard, list the full name and number of the standard under the section called, ‘Associated Documents’.

Appendix C: Issues Identified by Stakeholders during 1st Posting of SAR for System Restoration and Blackstart

WECC Reliability Coordination Comments Work Group

Clarification of the portion of blackstart and restoration plans that the reliability coordinator approves needs to be restricted to a reasonable expectation. The Reliability Coordinator should review and approve only those portions of individual restoration plans that establish the backbone power system. There is no need for the Reliability Coordinator to be responsible for detailed plans of the BA, TO, GOP, LSE, etc. Specify the portions of the individual plans that need Reliability Coordinator review and approval.

Alberta Electric System Operator

Consider adding definitions to EOP-005-1 for:

- Partial or total shut down;
- Vital telecommunications channels;
- System restoration;
- Blackstart capability plan; and
- System restoration plan.

Consider adding a requirement for Generator Operators to have generating facilities blackstart procedures. Those procedures shall be coordinated with the Transmission Operator's System Restoration plan

Consider revising training in R6. Training requirements should be quoted as stated and required in a different standard, let's say PRC. And with regards to training, it shall be state "what" should be the minimum training required for TO, BA and Generating facilities. And also, clarification as "what" is expected as "simulated exercises". What are those? It is DTS what is required? Or is it a table top adequate?

Consider defining what is as a minimum required criteria for "simulated exercises" in the understanding that it will not be practical to perform "an actual test" to the entire restoration plan. Further more, What is the meaning for simulation? DTS? Power flows? EMTP? Other?

Consider revising EOP-005-1 R9 "switching requirements" and trying not to be prescriptive in telling the "hows" instead of the "what" is required to comply with. The requirement should not be a "cook book". If considering keeping this requirement, then consider defining "switching requirements".

Consider revising EOP-005-1 R10 in order to clarify "simulation testing"

NPC CP9

EOP-05 - Clarify the phrase "critical load requirements". The phrase can be interpreted as:
(i) available and easily accessible loads to be restored for voltage control in network restoration on the bulk power system level. These are loads employed to expedite the restoration of the interconnection.
(ii) loads of importance to health/safety/national security - police, hospitals, govt. offices. These are really distribution loads that are restored once the interconnection is restored and the transmission system is rebuilt.
(iii) restoring off-site power to key transmission facilities.

We suggest that mention of critical loads should be replaced by the restoration of critical transmission and generation facilities necessary to restore load.

With regard to the Phase III/IV comments on EOP-005 Restoration Plans:

- (1) Locking the restoration to single, contractual cranking path.

A robust restoration plan must be flexible. It is impossible to define in advance what equipment will be available for service in the aftermath of a system collapse.

The concept of an explicitly defined cranking path, locked into a restoration plan by contractual requirements, precludes flexibility and is restrictive-further complicating what may be an intricate process. Identifying and communicating and coordinating the intended cranking path is a valid aspect of restoration. This is included in the

Appendix C: Issues Identified by Stakeholders during 1st Posting of SAR for System Restoration and Blackstart

second bullet of the Phase III/IV comments. The fourth bullet of the Phase III/IV comments should be removed from the SAR.

2) R3- Placing emphasis on restoring local transmission.

There is no need for the bullet on R3. The recommendation as noted encourages the restoration of local transmission and load at a higher priority than reestablishing the interconnection. Restoring the interconnection is the highest priority. In the process of achieving that end, some, minimal restoration of local transmission will be involved.

This is in direct conflict with the industry comments on V0 Standards which requires modifications to assign priority to the integrity of the interconnection.

Changing the emphasis of R3 should be removed from the SAR.

3) R11.5- Placing local load restoration above re-establishing the interconnection.

This follows the same argument addressed above. Restoration of the interconnection is a higher priority than the restoration of local load.

R11.5 should be retained in the SAR.

R6 mentions providing training requirements however this training requirement is already in PER-002-R3.1. There is also a training requirement in PER-004 R4 for the RC requirement.

IESO

Comments on EOP-006 & EOP-007 Standards:

EOP 006-1 R3 states "The Reliability Coordinator shall have a Reliability Coordinator Area restoration plan that provides coordination between individual Transmission Operator restoration plans and that ensures reliability is maintained during system restoration events."

EOP 007 R1 states "Each Regional Reliability Organization shall establish and maintain a system BCP, as part of an overall coordinated Regional SRP...."

Is it an acceptable practice for a Reliability Coordinator, in approving its Transmission Operator restoration plans per appropriate assessment criteria and ensuring they enable coordinated restoration with the interconnections, be deemed as an alternative to creating and maintaining regional plans? Otherwise the scope of such regional plans should be specified to limit their scale. Consider the large number of Transmission Operators (and restoration plans) in those Reliability Coordinator Areas with large footprints such as PJM, MISO and California ISO.

The same consideration applies to a Regional Black Start Capability Plan as assessed by the Regional Reliability Organization. Given that black start is integral to system restoration how it is proposed to be handled in instances where the Reliability Coordinator Area differs from the RRO boundary?

Additionally, EOP 006-1 should capture Reliability Coordinator to other Reliability Coordinator 'coordination'. Specifically, "Reliability Coordinators shall coordinate their system restoration plans and efforts together including joint participation in drills and exercises."

Progress Energy Carolinas

EOP-005:

Requirements in EOP-005 should include a definition of "periodically." We would recommend a periodicity of annually to coincide with annual requirement to review and update the restoration plan at least annually.

R3 could be rolled into R1.

EOP-005:

Appendix C: Issues Identified by Stakeholders during 1st Posting of SAR for System Restoration and Blackstart

R6. The actions taken to restore normal operations would depend on the operating emergency. Prescriptive actions should be avoided.

Manitoba Hydro

EOP-005-0 and -1

Applicability - This should apply to Reliability Coordinators as well as TOs and BAs.

R1 (-0 + -1) - As part of integrating the appendix items into the requirements section the last sentence of R1 could be eliminated.

R5 (-0 + -1) - I think the testing period of the telecommunications systems should be defined as well as the type of testing that needs to be done. If auditors start asking questions about tests that are not defined or required it's not fair to the entity being audited if they haven't performed that particular test. It should also be identified if main or backup systems need to be tested or if there should be backup systems.

R6 (-0 + -1) - Reliability Coordinator needs to be included in the training of personnel as part of this standard. Also the type of training needs to be defined (simulations, table top exercises), and the base topics to be trained on (philosophy, building of islands, blackstart) should be defined.

R7 (-0 + -1) - The type of testing or simulations should be defined; should dynamic stability studies, as well as voltage and frequency studies be done on the restoration plans or is running a simulation sufficient, unfortunately a simulation doesn't give you a complete enough evaluation.

R8 (-0) - availability and location aren't enough to ensure the blackstart units can do the job, you also have to ensure the capability of the units and the number of units are sufficient to blackstart. Testing and studies need to be done to ensure the units can accomplish the task.

R8 (-1) - Verification should be done by dynamic, voltage and frequency studies. Verification that the blackstart units are capable should be included with the "number, size, and location". The RRO isn't included in the Applicability section yet it looks like it's their plan that the TO should be meeting instead of meeting the TO plan.

R9 (-1) - Its not clear as to which units this requirement is referring to, is it referring to a remote blackstart unit or other units on the system that need to be started as part of restoring the system?

R9.4 (-0) and R11.4 (-1) - For systems that have nuclear stations it should be made a part of their plans to give restoration of off-site power to the plants a high priority.

R9.5.1 (-0) and R11.5.1 (-1) - When tying two islands together the emphasis should be on minimizing the flow through the tie point once synched and closed rather than when voltage, frequency and phase angle permit. The resultant flow could be greater than expected if the system operator simply relies on the relaying to allow closing. Special attention should be paid to frequency and voltage when tying islands and bringing them as close as possible together prior to closing.

R9.5.4 (-0) and R11.5.4 (-1) - Typically is not the surrounding areas that require shedding of load to reconnect. The surrounding areas usually means the stable or larger of areas meaning frequency in the surrounding areas should be good to start with. It's the area that want to synch that should be adding generation or shedding load to be able to synch with the surrounding areas.

R10 (-1) - The word simulation comes up again, it should be defined what simulation is or whether it's really referring to studies as done by system performance such as dynamic stability studies.

C. Measures (-1) M1. - Should read studies instead of simulations.

D. Compliance, 1.1.1 (-0) and 1.4.1 (-1) - its not clear what is meant by "identification of critical requirements", is it just identifying where critical loads exist so they can be brought on as part of the restoration process or do the voltage and frequency requirements of each critical load have to be identified as part of the restoration plan.

1.4.6 (-1) - the units to be started should be clarified.

1.4.7 (-1) - should refer to the TO restoration plan. If the regional plan is included there needs to be a requirement to share the regional plan with the TOs.

Attachment 1-EOP-005-0 and attachment EOP-005 - 3. - It would be impractical to have a plan for every possibility.

6. - Should this not fall under the dynamic type studies done by engineering studies personnel. To what extent should plans be simulated or tested?

Appendix C: Issues Identified by Stakeholders during 1st Posting of SAR for System Restoration and Blackstart

EOP-006-0 and -1

R1 (-0) and (-1) - The RC should be more than just aware, the Reliability Coordinator's system restoration plan should coordinate with the TO's plan so the RC should thoroughly knowledgeable with the TO plans.

R5 (-0) and (-1) - "major system islands" needs to be defined, at what point the RC gets involved needs to be clear. They don't necessarily need to be involved with the location of the synchronization point (the TOs should be aware of where they can synchronize).

EOP-007-0

R1.2 - Simulation doesn't give the dynamic response the proper studies can give (i.e.; dynamic stability studies, voltage and frequency studies).

R1.3.1 - What if it's the same one third that gets tested each year, the remaining two thirds may not be usable when the time comes to do a real restoration. You can't assume that each year a different one third will be tested. Also in order to provide training to plant personnel testing all blackstart units each year will ensure more plant operators are trained in the procedure.

R1.3.2 - this needs to be more specific as to the type of testing required.

Footer 1 - this should be included in the requirements section.

EOP-009-0

R1 - Besides the RRO the TO has blackstart requirements that need to be met.

Midwest ISO, Inc.

We are concerned about the suggestion to have "blackstart agreements " and "cranking path agreements". Since we don't know how an event will evolve or propogate, restoration plans should be heavy on philosophy, simple to manage once implemented, and not overly prescriptive in detail.

Entergy Services, Inc.

EOP-005

- R1 - is the "loss of vital communications" necessary? This seems redundant to COM-001
- R2 - the comment about correcting deficiencies during simulation exercises seems out of place.
- R3 - how is "coordination" defined?
- R10 & 10.1 - does this include testing of the generators as specified in EOP-009? Is it the same? Need clarification on this.
- VRFs need to be revisited. The proposed VRFs on the current ballot for thie Standards have administrative tasks rated as HIGH.

EOP-007 and EOP-009

EOP-007 contains requirements for a BCP that outlines blackstart unit testing requirements. Blackstart unit testing requirements should not be spread across several EOPs. Consolidate, Consider merging EOP-007 and 009, and the blackstart unit testing portions of EOP-005.