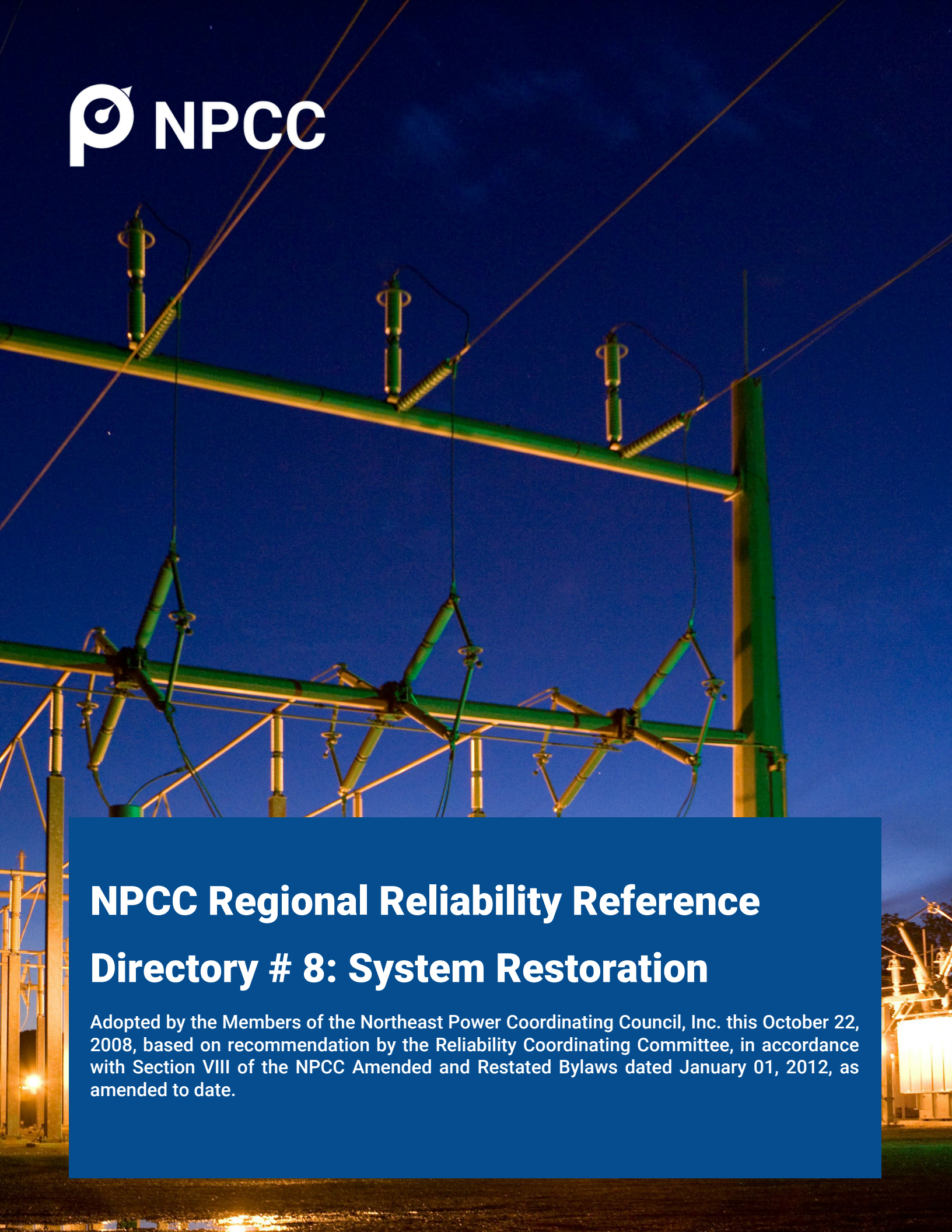

NPCC Regional Reliability Reference Directory # 8: System Restoration

Adopted by the Members of the Northeast Power Coordinating Council, Inc. this October 22, 2008, based on recommendation by the Reliability Coordinating Committee, in accordance with Section VIII of the NPCC Amended and Restated Bylaws dated January 01, 2012, as amended to date.

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1. Introduction

1.1 Title: ***System Restoration***

1.2 Directory Number: 8

1.3 Objective

The objective of this Directory is to present the requirements that each applicable functional entity shall follow in order to perform **Bulk Power System (BPS)** restoration.

Note that the terms **bold and capitalized,** used in this Directory, are defined in the NPCC Glossary of Terms.

Note that, in this Directory, terms denoting the singular include the plural and vice versa.

1.4 Effective Date: October 22, 2008

1.5 Background

This Directory was developed from the draft NPCC A-12 System Restoration Criteria document (January 10, 2008, version). Test procedures for consideration in the implementation of this Directory are provided in the body of this document and summarized in Appendix A.

Individual functional entity system restoration plans may specify more stringent requirements than presented in this Directory. In all cases, the more stringent requirements shall apply.

1.6 Applicability

1.6.1 Functional Entities (Responsible Entities)

- Reliability Coordinators
- Balancing Authorities
- Planning Authorities/Planning Coordinators
- Transmission Operators
- Transmission Owners
- Generator Operators
- Generator Owners

1.6.2 Applicability of NPCC Criteria

The requirements of an NPCC Directory apply to those facilities defined as NPCC **BPS Elements** as identified through the performance-based methodology of NPCC Document A-10, "*Classification of Bulk Power System Elements*," the list of which is maintained by the NPCC Task Force on System Studies (TFSS) and approved by the NPCC Reliability Coordinating Committee (RCC).

The requirements of NPCC Directory #8 *System Restoration* also apply to those additional **Key Facilities** identified by a Reliability Coordinator (RC) as being required to establish a **Basic Minimum Power System (BMPS)** in the Reliability Coordinator Area (RCA).

Requirements to abide by an NPCC Directory may also reside in Federal Energy Regulatory Commission (FERC)-filed tariff requirements, bilateral contracts, and other agreements between facility owners and/or operators and their respective

- Reliability Coordinators
- Balancing Authorities
- Planning Authorities /Planning Coordinators
- Transmission Operators
- Transmission Owners

as applicable and may be enforceable through those FERC-filed tariff requirements, bilateral contracts, and other agreements. NPCC will not enforce compliance to the NPCC Directory requirements in this document on any entity that is not an NPCC Full Member.

2. Defined Terms

Unless specifically noted in this document, terms in bold typeface are defined in the NPCC Glossary of Terms.

3. NERC ERO Reliability Standard Requirements

See Appendix B.

4. NPCC Regional Reliability Standard Requirements

None.

5. NPCC Full Member More Stringent Criteria Requirements

These criteria are in addition to and more stringent than or more specific than NERC continent-wide reliability standards.

System Restoration Plan Requirements

R1 Each Reliability Coordinator, together with its respective Transmission Operators, shall jointly develop, maintain, verify, and implement a system restoration plan for its Reliability Coordinator **Area** that shall:

R1.1 Identify the Reliability Coordinator **Area**'s **BMPS(s).**

R1.2 Address the priority of providing off-site AC power to nuclear power stations.

R1.3 Identify **Interconnection** points with adjacent Reliability Coordinator **Areas**.

R1.4 Identify parameters to **Synchronize** adjacent **BMPSs.**

R1.5 Address coordination of system restoration with neighboring Reliability Coordinator **Areas.**

R1.6 Provide for the re-energization of transmission systems to;

R1.6.1 major generating stations;

R1.6.2 inter-area tie points.

R1.7 Address electrical **Island** stabilization.

R1.8 Identify provisions for fuel resources to support operation of any supplementary generators (e.g., a diesel generator) necessary for operating **Key Facilities** consistent with the expected requirements of the system restoration plan.

BMPS Determination Requirements

R2 Each Reliability Coordinator shall, in determining the **BMPS**, coordinate with all impacted parties and/or functional entities

R3 Each Reliability Coordinator shall ensure that the **BMPS** includes the ability to:

R3.1 Use generator **Blackstart Capability.**

R3.2 Form an electrical **Island**(s).

R3.3 Synchronize electrical **Islands**; and

R3.4 Permit the successful performance of the system restoration plan.

Identification of Key Facilities and Associated Critical Components Requirements

R4 Each Reliability Coordinator shall identify **Key Facilities** and shall inform each functional entity of its identified **Key Facilities**.

R5 Each functional entity identified as the owner of newly identified or proposed **Key Facilities:**

R5.1 Shall identify the associated **Critical Components** for those **Key Facilities** prior to the effective date of the approved system restoration plan.

R5.2 Shall provide, upon request of the Reliability Coordinator, within the timeframe requested, a list of **Critical Components** associated with proposed **Key Facilities.**

R5.3 Shall ensure, prior to the effective date of the approved system restoration plan, or within the timeframe requested by the Reliability Coordinator, that all applicable proposed **Key Facilities** testing outlined in Appendix A has been successfully completed.

R6. Each functional entity identified as the owner of existing **Key Facilities**:

R6.1 Shall provide, upon request of the Reliability Coordinator, within the timeframe requested, any updates, additions, or deletions to the list of **Critical Components** for identified **Key Facilities.**

R6.2 Shall ensure, prior to the effective date of the approved system restoration plan, or within the timeframe requested by the Reliability Coordinator, that the following components associated with identified **Key Facilities** testing outlined in Appendix A have been successfully completed:

R6.2.1 All applicable additional **Critical Components**

R6.2.2 Any modifications to existing **Critical Components** that could potentially impact the functionality of those **Critical Components.**

Power System Restoration Event Analysis Requirements

R7 Following the occurrence of an event that required implementation of a system restoration plan and upon request of the Task Force on Coordination of Operation (TFCO):

R7.1 The Reliability Coordinator shall report, within the timeframe requested by the TFCO, on the performance of its system restoration plan.

R7.2 The Transmission Operator shall report, within the timeframe requested by the TFCO, on the performance of its system restoration plan.

Critical Components Associated with Key Facilities Testing Requirements

Note: The occurrence of an actual event can be considered as a completed test for individual facilities provided it can be demonstrated that the operation of the facilities during the event met the test objectives and performance of the criteria for a successful test as outlined in Appendix A.

Note: In the event that the owner of any **Critical Components** is different than the owner of the associated **Key Facilities**, then the owners of the associated **Key Facilities** and the **Critical Components** shall coordinate to ensure that the requirements of this Directory are met.

Note: All **Critical Components** for which a test is not outlined in Appendix A shall be tested consistent with **Good Utility Practice**[1] as agreed to by the Reliability Coordinator.

R8. Each functional entity which has been identified as owning **Key Facilities** shall:

R8.1 Perform the tests outlined in Appendix A.

R8.2 Maintain evidence of the test results consistent with Section 4.0.

[1] *FERC Order 890-A Preventing Undue Discrimination and Preference in Transmission Service; Issued December 28, 2007; Effective March 17, 2008; see Open Access Transmission Tariff ; Common Service Provisions 1.15 Good Utility Practice; for non-FERC jurisdictional entities, as generally accepted in North America.*

R8.3 Provide evidence, upon request of the Reliability Coordinator and/or Transmission Operator, within the timeframe requested, that the tests specified in sub-Requirement R8.1 have been met.

R8.4 For each functional entity identified as owning **Key Facilities,** which is unable to perform a test outlined in Appendix A, a requested proposed alternate testing methodology may be permitted if each of the following criteria (**R8.4.1-R8.4.6**) are met:

R8.4.1 Evidence must be provided to the Reliability Coordinator that conducting the specified Appendix A test would be detrimental to the operational functionality of the **Key Facility.**

R8.4.2 The alternative testing methodology, with mitigating controls to meet the intent of the Directory Requirement, must be proposed to the Reliability Coordinator to evaluate and to accept or reject the requested proposed alternate testing methodology.

R8.4.3 Post acceptance per **R8.4.2**, the alternative testing methodology must be successfully conducted.

R8.4.4 Operation consistent with **Good Utility Practice** must be demonstrated and maintained throughout the alternative testing protocol.

R8.4.5 The alternative testing methodology results must be submitted to the Reliability Coordinator.

R8.4.6 Approval of the alternative testing methodology results must be received from the Reliability Coordinator.

Note: The alternative testing methodology shall be reviewed on a periodic basis as determined by the Reliability Coordinator. Approval of the alternative testing methodology will either be renewed or revoked by the Reliability Coordinator.

Cable Backup Pressurization System Test at Key Facilities (Reference: Appendix A; Test No. UG-1)

R9. Each functional entity that owns a **Cable** pressurization system at **Key Facilities** shall test for satisfactory operation of both the primary pressurization system and/or the backup pressurization system (if applicable) ability/abilities to maintain required pressure upon loss of power to the **Key Facilities.**

Test basis: Frequency: every six (6) **Calendar Months**
Duration: at least thirty (30) minutes
(Reference: Appendix A; Test No. UG-1)

Note: This capability is required during a blackout to maintain the availability of **Cables** for service and to preclude any damage to the **Cables** as a result of the loss of dielectric strength.

Battery Charger and Backup Power Supply Tests at Transmission, Generation, Telecommunication Facilities and Control Centers identified as Key Facilities (Reference: Appendix A; Test Nos. KF-1 to KF-6)

R10. Each functional entity shall test its **Backup Power Supplies** identified as **Critical Components** as specified in R10.1 through R10.5.

Where there are separate battery chargers and B**ackup Power Supplies** at **Key Facilities** for transmission or generating station equipment and telecommunication equipment, such equipment shall be separately identified on the list of **Critical Components** and shall be inspected and tested individually.

R10.1 Equipment Inspection

Batteries and/or battery chargers identified as **Critical Components** shall be inspected in accordance with maintenance activities and maintenance intervals specified in PRC-005-Protection System, Automatic Reclosing, and Sudden Pressure Relaying Maintenance, giving consideration to exclusions per PRC-005 Table 1-4(f)

(Reference: Appendix A; Test KF-1)

R10.2 Equipment Verification

Batteries and/or battery chargers identified as **Critical Components** shall be verified in accordance with maintenance activities and maintenance intervals specified in PRC-005 Protection System, Automatic Reclosing, and Sudden Pressure Relaying Maintenance, giving consideration to exclusions per PRC-005 Table 1-4(f)

(Reference: Appendix A; Test KF-2)

R10.3 Confirm That All Critical Components Loads Can Be Supplied

Each owner of batteries and/or battery chargers identified as **Critical Components** shall confirm that all **Critical Components Loads** are connected to and can be supplied by the batteries and/or battery chargers. The functional entity owner shall confirm through its design review when modifications are made to **Key Facilities,** or through testing, that all **Critical Components Loads** are connected to and can be sufficiently supplied by the batteries and/or battery chargers.

Test basis: Frequency: when modifications are made to **Key Facilities** or at least once every sixty (60) **Calendar Months**

(Reference: Appendix A; Test KF-3)

R10.4 Startup and Run Test

Each owner of a backup power generator identified on the list of **Critical Components** of **Key Facilities**, shall perform a startup, and run test on that backup power generator.

Test basis: Frequency: monthly
Duration: at least fifteen (15) minutes

(Reference: Appendix A; Test KF-5)

Note: This test also applies to supplemental generation required for **Blackstart Capability** and to a control center and telecommunication center backup power generator.

R10.5 Startup, Transfer and Load Test

Each owner of a backup power generator identified on the list of **Critical Components** of **Key Facilities** shall verify that the backup power generator will pick up the **Critical Components Load** following the loss of station service.

Note: This test also applies to a control center and telecommunication center backup power generator.

For automatically started backup power generators, a startup, transfer, and **Load** test simulating the loss of station service shall be performed.

Test basis: Frequency: every twelve (12) **Calendar Months**
Duration: at least thirty (30) minutes

(Reference: Appendix A; Test KF-6)

For manually started backup power generators, a startup, transfer, and **Load** test performed by starting the generator and verifying **Reliable Operation** while supplying **Critical Components Loads,** shall be performed by the asset owner**.**

Test basis: Frequency: every twelve (12) **Calendar Months**
Duration: at least thirty (30) minutes

(Reference: Appendix A; Test KF-6)

Note: Power sources used to start **Resources** with **Blackstart Capability** will be excluded from test KF-6.

AC Supply and Computer Redundancy at Control Centers or Telecommunication Centers Identified as Key Facilities (Reference: Appendix A-; Test Nos. CC-1 and CC-2)

R11. Each functional entity identified as owning **Key Facilities** shall test its **Critical Components** in the control centers and the telecommunication centers identified as **Key Facilities** to demonstrate that the computer systems will be functional without dependencies on power sources that may be unavailable during a partial or complete system blackout, when required for system restoration.

R11.1 AC Supply Interruption Test

The uninterruptible power supply (UPS) systems in control centers and telecommunication centers shall be tested by interrupting AC supply and verifying that all **Critical Components Loads** are supplied for a time that is sufficient for **Backup Power Supplies** to restore the AC input to the UPS

Test basis: Frequency: every twelve (12) **Calendar Months**.

(Reference: Appendix A; Test CC-1)

R11.2 Computer Redundancy (SCADA/**EMS**) Test

Each functional entity identified as owning **Key Facilities** shall test its computer redundancy (SCADA/**EMS**) features to ensure computer systems (SCADA/**EMS**) continue to function consistent with **Good Utility Practice**.

Test basis: Frequency: every six (6) **Calendar Months**

(Reference: Appendix A; Test CC-2)

Blackstart Capability Generator Testing (Reference: Appendix A; Test No. BS-1)

R12. Each functional entity owning a generating station with **Blackstart Capability** shall verify such concurrent capability as follows:

R12.1 A generating station with **Blackstart Capability** shall be tested for successful equipment startup, sufficient to **Energize** a transmission **Element** or a generating station switchyard **Element,** if that does not involve the disconnection of **Load** that is not dedicated generating station **Load** to conduct the test. Verify **Reliable Operation** while isolated from the **BPS**.

Test basis: Frequency: every twelve (12) **Calendar Months**
Duration: at least ten (10) minutes of **Reliable Operation**

(Reference: Appendix A; Test No. BS-1)

R12.2 Operations voice communications and auxiliary systems such as Supervisory Control and Data Acquisition (SCADA) that are required for **Blackstart Capability** shall be verified to operate consistent with **Good Utility Practice** independent of the interconnected system or other unrelated unit for any source of station service.

Test basis: Frequency: every twelve (12) **Calendar Months**

Duration: Verification of at least ten (10) minutes of **Reliable Operation** concurrent with R12.1

(Reference: Appendix A; Test No. BS-1)

R13. Each Reliability Coordinator shall determine, as required by its respective system restoration plan, the number of units within a generating station that are to be tested for **Blackstart Capability**, and shall notify the applicable functional entity/entities.

R14. Each Reliability Coordinator shall confirm, consistent with the objectives of its respective system restoration plan, that the functional entity owning a generating station with **Blackstart Capability** that is part of the **BMPS** has completed a successful **Blackstart Capability** test.

Reporting the Loss of and Status of Functionality of Critical Components Associated with Key Facilities

The reporting specified in Requirements **R15, R16, R17, R18 and R19** shall identify:

- The name/s of **Critical Components** which have lost functionality or redundancy.
- The affected **Key Facilities** and how they are impacted.
- The impact to the system restoration plan.
- If possible, how the loss of functionality will be compensated for.
- The date and time of the loss of functionality.
- If possible, the date and time of when functionality is restored.

R15. A functional entity that has confirmed the loss of functionality of **Critical Components** shall report to the Transmission Operator responsible for operating the **Critical Components** of the **Critical Components'** loss of functionality as soon as possible but no longer than 15 minutes after confirmation of the loss of functionality.

> **R15.1** The Transmission Operator shall report to its Reliability Coordinator, as soon as possible but no longer than 15 minutes after the functional entity has confirmed the loss of functionality of **Critical Components** to the Transmission Operator.
>
> Examples of such conditions are, but not limited to:
>
> - Loss of control of remote equipment.
> - Complete loss of AC or DC service supply.
> - Loss of **Resources** with **Blackstart Capability**.

R16. A functional entity that has confirmed the loss of redundancy of **Critical Components** shall report to the Transmission Operator responsible for the **Critical Components** of loss of redundancy as soon as possible but no longer than 12 hours after confirmation of the loss of redundancy**.**

Examples of such conditions are:

- Loss of a redundant AC or DC service supply.
- Loss of redundant **Critical Components** associated with **Resources** with **Blackstart Capability**.

R17. A functional entity that has scheduled a maintenance activity (in-service or out-of-service) of **Critical Components** that will result in the loss of functionality of the **Critical Components** shall report that maintenance activity to the Transmission Operator responsible for the **Critical Components** at least 24 hours prior to that scheduled loss of functionality.

> **R17.1** The functional entity shall report to the Transmission Operator responsible for **Critical Components** as soon as possible after the scheduled loss of functionality has begun.
>
> **R17.2** If the scheduled maintenance condition causing the loss of functionality of **Critical Components** affects the functionality of **Key Facilities**, the Transmission Operator responsible for the **Critical Components** shall report this scheduled maintenance condition to its Reliability Coordinator.
>
> - Upon receipt of the scheduled maintenance report
> - Upon receipt of the scheduled maintenance start
> - Upon receipt of the scheduled maintenance end

R18. A functional entity shall report the actions to be taken to restore **Critical Components'** availability or redundancy to the Transmission Operator responsible for the **Critical Components** as soon as known.

> **R18.1** The functional entity shall report to the Transmission Operator responsible for the **Critical Components** the anticipated time that the **Critical Components** functionality will be restored.
>
> **R18.2** The functional entity shall report to the Transmission Operator responsible for maintaining redundancy for **Critical Components** the anticipated time that the **Critical Components'** redundancy will be restored.

R19. A functional entity shall report to the Transmission Operator responsible for the functionality of **Critical Components,** the date and time when the functionality of **Critical Components** is restored.

6. Compliance

6.1 Compliance Monitoring Process

Compliance with the requirements set forth in this Directory will be in accordance with the NPCC Criteria Compliance and Enforcement Program (CCEP).

NPCC will not enforce a duplicate sanction for the violation of any Directory#8 requirement that is also required for compliance with a NERC Reliability Standard.

6.2 Data Retention

Responsible Entities shall keep evidence of compliance for a minimum of five (5) years. A Responsible Entity found non-compliant shall keep information related to the non-compliance until found compliant.

Prepared by: Task Force on Coordination of Operation

Review and Approval: Revision to any portion of this Directory will be posted by the lead Task Force in the NPCC Open Process for a forty-five (45) calendar day review and comment period. Upon satisfactorily addressing all the comments in this forum, the Directory document will be sent to the remaining Task Forces for their recommendation to seek RCC approval.

Upon approval of the RCC, this Directory will be sent to the Full Member Representatives for their final approval if sections pertaining to the Requirements and Criteria portion have been revised. All voting and approvals will be conducted according to the most current "NPCC Bylaws" in effect at the time the ballots are cast.

Revisions pertaining to the Appendices or any other portion of the document such as Links, Glossary Terms, etc., will only require RCC Member approval of the document. Errata may be corrected by the Lead Task Force at any time and provide the appropriate notifications to the NPCC Inc. membership.

This Directory will be updated at least once every three years and as often as necessary to keep it current and consistent with NERC Regional Reliability Standards and other NPCC documents.

References:

- NPCC Glossary of Terms

Appendix A – Standard Test Procedures for Key Facilities and Associated Critical Components Required for System Restoration

Appendix A Standard Test Procedures for Key Facilities and Associated Critical Components Required for System Restoration					
Test No.	**Section**	**Critical Components**	**Test**	**Test Frequency and Duration**	**Criteria for Successful Test**
BS-1	3.1.9 R12.1	Generating station with **Blackstart Capability**	Blackstart Generating Unit Startup Test and energization of a transmission **Element** or generating station switchyard **Element** if that does not require the disconnection of **Load**	Frequency: every twelve (12) **Calendar Months** Duration: at least 10 minutes of **Reliable Operation**	Successful blackstart generating unit startup and 10 minutes of **Reliable Operation**.
	3.1.9 R12.2	Operations voice communications and auxiliary systems	Operate consistent with **Good Utility Practice** independently	Frequency: every twelve (12) **Calendar Months** Duration: Verification of at least 10 minutes of **Reliable Operation** concurrent with R12.1	Independent operation from any source of station service, of all operating aids and auxiliary systems.
UG-1	3.1.6 R9	Pressurization system of underground transmission **Cable**s	**Cable** Backup Pressurization System Test	Frequency: every six (6) **Calendar Months** Duration: at least 30 minutes	Maintains safe dielectric pressure for the minimum test period
UG-1	3.1.7	Where there are separate battery chargers and **Backup Power Supplies** at **Key Facilities** for transmission or generating station equipment and telecommunication equipment, such equipment shall be separately identified on the list of **Critical Components** and shall be inspected and tested individually.			

Appendix A Standard Test Procedures for Key Facilities and Associated Critical Components Required for System Restoration					
Test No.	**Section**	**Critical Components**	**Test**	**Test Frequency and Duration**	**Criteria for Successful Test**
KF-1	**3.1.7 R10.1**	Battery chargers and batteries for **Key Facilities**[2]	Equipment Inspection	Frequency: In accordance with maintenance activities and maintenance intervals specified in PRC-005 *Protection System, Automatic Reclosing, and Sudden Pressure Relaying Maintenance*, giving consideration to exclusions per PRC-005 Table 1-4(f)	In accordance with maintenance activities and maintenance intervals specified in PRC-005 *Protection System, Automatic Reclosing, and Sudden Pressure Relaying Maintenance*, giving consideration to exclusions per PRC-005 Table 1-4(f)
KF-2	**3.1.7 R10.2**	Battery chargers and batteries for **Key Facilities**[2]	Equipment Verification	Frequency: In accordance with maintenance activities and maintenance intervals specified in PRC-005 *Protection System, Automatic Reclosing, and Sudden Pressure Relaying Maintenance*, giving consideration to exclusions per PRC-005 Table 1-4(f)	In accordance with maintenance activities and maintenance intervals specified in PRC-005 *Protection System, Automatic Reclosing, and Sudden Pressure Relaying Maintenance*, giving consideration to exclusions per PRC-005 Table 1-4(f)
KF-3	**3.1.7 R10.3**	Battery chargers and batteries for **Key Facilities**	Confirm that all **Critical Components Loads** can be Supplied	Frequency: at least once every sixty (60) **Calendar Months** or when modifications are made	Confirm that all **Critical Component Loads** are connected to and can be sufficiently supplied from battery chargers and batteries.
KF-4	(Intentionally Left Blank)				

2 *Refer to standard PRC-005 Protection System, Automatic Reclosing, and Sudden Pressure Relaying Maintenance, Table 1-4(f) Exclusions for Protection System Station dc Supply Monitoring Devices and Systems*

Appendix A Standard Test Procedures for Key Facilities and Associated Critical Components Required for System Restoration					
Test No.	**Section**	**Critical Components**	**Test**	**Test Frequency and Duration**	**Criteria for Successful Test**
KF-5	**3.1.7 R10.4**	Backup power generators at **Key Facilities.**	Startup and Run Test	Frequency: monthly Duration: at least 15 minutes	Successful startup followed by 15 minutes of reliable operation.
KF-6	**3.1.7 R10.5**	Backup power generators at **Key Facilities.**[3]	Startup, Transfer and Load Test	Frequency: every twelve (12) **Calendar Months** Duration: at least 30 minutes	- Successful startup (automatically started type) - Transfer scheme operates correctly (automatically started type) 30 minutes of **Reliable Operation** supplying **Critical Components Loads** (both automatically and manually started backup generators)
CC-1	**3.1.8 R11.1**	Uninterruptible power supply (UPS) system at all control centers and telecommunication centers that are designated **Key Facilities**.	AC Supply Interruption Tests	Frequency: every twelve (12) **Calendar Months** Duration: for a time that is sufficient for **Backup Power Supplies** to restore AC supply to the UPS	No impact on computer or telecommunication functions during testing
CC-2	**3.1.8 R11.2**	Computer systems (SCADA/**EMS**) at all control centers and telecommunication centers that are	Computer Redundancy (SCADA/**EMS**) Test	Frequency: every six (6) **Calendar Months**	- No impact on computer functions during testing. - Complete transfer of all elements of SCADA/**EMS**

*3 Power sources used to start **Resources** with **Blackstart Capability** will be excluded from test KF-6.*

Appendix A Standard Test Procedures for Key Facilities and Associated Critical Components Required for System Restoration					
Test No.	**Section**	**Critical Components**	**Test**	**Test Frequency and Duration**	**Criteria for Successful Test**
		designated K**ey Facilities.**			functionality to a redundant computer system without equipment failure. For SCADA/**EMS** systems comprised of multiple standby and/or distributed components, evidence for either automatic transfer or manual updates within Test Frequency Period.

Appendix B – NERC ERO Reliability Standards

The NERC ERO Reliability Standards containing requirements associated with this Directory but not enforceable in all NPCC areas include but may not be limited to:

- EOP-005 System Restoration from Blackstart Resources
- EOP-006 System Restoration Coordination
- PRC-005 Protection System, Automatic Reclosing, and Sudden Pressure Relaying Maintenance

Appendix C – Comparison of Test Procedures for Critical Components of Key Facilities of the System Restoration Plan

Comparison of Test Procedures for Critical Components of Key Facilities of the System Restoration Plan	
New D8 Test No.	**Equivalent Test No. in Previous D8 Versions**
UG-1	UG-1
KF-1	ST-1
KF-2	ST-2, ST-4
KF-3	ST-3, CC-2
KF-4 has been reconstituted into KF-2	
KF-5	ST-5, CC-3
KF-6	ST-6, CC-4
CC-1	CC-1
CC-2	CC-5
BS-1	BS-1

7. Review Record

Task Force on Coordination of Operations Revision Review Record
October 22, 2008
October 22, 2010
October 6, 2017
September 25, 2018
February 2, 2023
October 07, 2026

8. Version History

Version	Date	Action	Change Tracking (New, Errata or Revisions)
0	10/22/2008		New
1	10/22/2010	Revised Sections 5.7.4.4 and 5.7.5.2 Battery Testing	Revision
2	10/06/2017	Phase 2 format	Revision
3	02/16/2018	Revised R8.3 & R12.2	Errata Revision
4	09/25/2018	Revised Section 1.7 Battery Testing	Revision
5	02/02/2023	TFCO Review	Revision
6	10/07/2026	TFCO Review	Revision

NPCC is dedicated to the continued reliability of the Bulk Power System in Northeastern North America.

NPCC

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