**Consideration of Comments on 1st Draft of System Restoration and Blackstart Standard (Project 2006-03)**

The System Restoration and Blackstart Standard Drafting Team thanks all commenters who submitted comments on the first draft of the standards. These standards were posted for a 45-day public comment period from August 15 through September 28, 2007. The requesters asked stakeholders to provide feedback on the standard through a special Comment Form. There were 46 sets of comments, including comments from more than 140 different people from more than 60 companies representing 9 of the 10 Industry Segments as shown in the table on the following pages.

Based on the volume of comments received and the subsequent changes made to the standards, the drafting team is recommending that the standards be put out for a second round of comments.

Industry comments in some areas disputed the position of the SDT for the draft requirements. In some instances, the SDT has accepted these comments and made changes to the draft requirements to reflect these changes. (See the red-lined EOP-005-2: Definitions, Title, Purpose, Requirements: R1, R2, R3, R4, R9, R10, R13, R14, R15, R16, and R17 plus the required changes in the Measures to accommodate the requirements changes. See the red-lined EOP-006-2: Definitions, Title, and Purpose, Requirements: R1, R2, R3, R4, R6, R7, R8, R9, and R10 plus the required changes in the Measures to accommodate the requirements changes.) However, in other areas, the SDT has not made changes requested by the industry and has provided explanations as to why the requested changes were not made. These items included:

- Applicability of the BA
  - The SDT considered these comments but believes that the BA does not have an "applicability" role in the TOP restoration plan or its implementation. Beginning with the system collapse, the TOP restores the Transmission System, restores Interconnections, and supplies off-site power to nuclear generating stations. This is accomplished on a command and control basis by the Transmission Operator in conjunction with the GOP. Once Interconnections have been reestablished and the Transmission System restored, the restoration of firm Load can begin. The TOP is restoring the System through command and control until a sufficient System has been built where frequency is under control.
- Moving training to the PER standards
  - FERC Order 693 mandates that restoration training be included in the blackstart standards. "The Commission believes that inclusion of periodic system restoration drills and training and review of restoration plans in a system restoration Reliability Standard is the most effective way of achieving the desired goal of ensuring that all participants are trained in system restoration and that the restoration plans are up to date to deal with system changes."
- Approval process by the RC
  - RC review and approval of the plan is not an issue of compliance but of coordination and workability with the RC's restoration plan. The SDT believes that this gives input to the RC in the development of plans such that the various TOP plans are coordinated with the RC's plan. In FERC Order 693, "the Commission directs the ERO to develop a modification to EOP-006-1 through the Reliability Standards development process that ensures that the reliability coordinator, which is the highest level of authority responsible for reliability of the Bulk-Power System, is involved in the development and approval of system

restoration plans." The SDT believes that the process described in EOP-005-2 and EOP-006-2 meets the Commission directive.

- Removal of restoration from partial shutdown from these standards
  - The SDT believes that partial shutdowns are already covered by other standards including TOP-001, TOP-004, and EOP-001.
- Training of field switching personnel and Generator Operators
  - In FERC Order 693, FERC determined that "System restoration requires the participation of not only control room personnel but also those outside of the control room. These include blackstart unit operators and field switching operators in situations where SCADA capability is unavailable."
  - If the TOP's restoration plan has field switching tasks unique to system restoration that are not included in normal operations, then training shall be required.

In this "Consideration of Comments" document stakeholder comments have been organized so that it is easier to see the responses associated with each question. All comments received on the standards can be viewed in their original format at:

http://www.nerc.com/~filez/standards/System_Restoration_Blackstart.html

If you feel that your comment has been overlooked, please let us know immediately. Our goal is to give every comment serious consideration in this process! If you feel there has been an error or omission, you can contact the Vice President and Director of Standards, Gerry Adamski, at 609-452-8060 or at gerry.adamski@nerc.net. In addition, there is a NERC Reliability Standards Appeals Process.[1]

[1] The appeals process is in the Reliability Standards Development Procedures: http://www.nerc.com/standards/newstandardsprocess.html.

The Industry Segments are:

1 — Transmission Owners
2 — RTOs, ISOs
3 — Load-serving Entities
4 — Transmission-dependent Utilities
5 — Electric Generators
6 — Electricity Brokers, Aggregators, and Marketers
7 — Large Electricity End Users
8 — Small Electricity End Users
9 — Federal, State, Provincial Regulatory or other Government Entities
10 – Regional Reliability Organizations, Regional Entities

| Commenter | | Organization | Industry Segment | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1. | Dan Boezio (G16) | AEP | ✓ | | | | | | | | | |
| 2. | Anita Lee (G8) | AESO | | ✓ | | | | | | | | |
| 3. | Bruce Fauvelle (G13) | AESO | | ✓ | | | | | | | | |
| 4. | Ken Goldsmith (G10) | ALTW | | | | | | | | | | |
| 5. | Jeffrey V. Hackman | Ameren | ✓ | | ✓ | | ✓ | ✓ | | | | |
| 6. | Eugene Warnecke (G15) | Ameren | ✓ | | | | | | | | | |
| 7. | Thad K. Ness | American Electric Power (AEP) | ✓ | | | | ✓ | ✓ | | | | |
| 8. | Jason Shaver | American Transmission Co. (ATC) | ✓ | | | | | | | | | |
| 9. | Warren Maxvill (G13) | AVA | | | | | | | | | | |
| 10. | Rod Byrnell (G13) | BCTC | | ✓ | | | | | | | | |
| 11. | Dave Rudolph (G10) | BEPC | | | | | | | | | | ✓ |
| 12. | Chris Bradley (G15) | Big Rivers Electric Corp. | ✓ | | | | | | | | | |
| 13. | Brian Tuck (G13) | BPA | ✓ | | | | | | | | | |
| 14. | Thomas Fung | British Columbia TC (BCTC) | | ✓ | | | | | | | | |
| 15. | Brent Kingsford (G8) | CAISO | | ✓ | | | | | | | | |
| 16. | Eric Hudson (G13) | CAISO | | ✓ | | | | | | | | |
| 17. | John Jonte | CenterPoint Energy | ✓ | | | | | | | | | |
| 18. | Alan Gale (G7) | City of Tallahassee | | | | | ✓ | | | | | |
| 19. | Paul Bleuss (G3) | CMRC | | | | | | | | | | |
| 20. | Greg Tillitson (G3) | CMRC | | | | | | | | | | |
| 21. | Edwin Thompson (G11) | Con Edison | ✓ | | | | | | | | | |

| Commenter | | Organization | Industry Segment | | | | | | | | | |
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| 22. | Charles L. Bunnell | Consumers Energy | | | ✓ | ✓ | ✓ | | | | | |
| 23. | Vic Davis (G4) | Delmarva | ✓ | | | | | | | | | |
| 24. | Phillip Vavala (G4) | Delmarva | ✓ | | | | | | | | | |
| 25. | Jack Kerr | Dominion Virginia Power | | | | | | | | | | |
| 26. | Hank LaBean (G13) | DOPD | | | | | | | | | | |
| 27. | Greg Rowland | Duke Energy | ✓ | | ✓ | | ✓ | | | | | |
| 28. | Gregory Mason (G15) | Dynegy | | | | | ✓ | | | | | |
| 29. | Brian Berkstresser (G16) | EDE | ✓ | | | | | | | | | |
| 30. | John Bonner (G11) | Entergy Nuclear | | | ✓ | | | | | | | |
| 31. | Edward J. Davis | Entergy Services, Inc. | ✓ | | | | | | | | | |
| 32. | Will Franklin | Entergy Services, Inc. (Gen. & Mkt.) | | | | | | ✓ | | | | |
| 33. | Steve Myers (G8) | ERCOT | | ✓ | | | | | | | | ✓ |
| 34. | Doug Hohlbaugh (G5) | FirstEnergy Corp. | ✓ | | ✓ | | ✓ | ✓ | | | | |
| 35. | Sam Ciccone (G5) | FirstEnergy Corp. | ✓ | | | | | | | | | |
| 36. | Dave Folk (G5) | FirstEnergy Corp. | ✓ | | | | | | | | | |
| 37. | John Reed (G5) | FirstEnergy Corp. | ✓ | | | | | | | | | |
| 38. | John Martinez (G5) | FirstEnergy Corp. | ✓ | | | | | | | | | |
| 39. | Jerry Sanicky (G5) | FirstEnergy Corp. | ✓ | | | | | | | | | |
| 40. | Ken Dresner (G5) | FirstEnergy Corp. – Fossil | | | | | ✓ | | | | | |
| 41. | Jeff Gooding (G6) | Florida Power & Light Co. | ✓ | | | | | | | | | |
| 42. | Marty Mennes (G6) | Florida Power & Light Co. | ✓ | | | | | | | | | |
| 43. | Pedro Modia (G6) | Florida Power & Light Co. | ✓ | | | | | | | | | |
| 44. | Frank Prieto (G6) | Florida Power & Light Co. | ✓ | | | | | | | | | |
| 45. | Eric Senkowicz (G7) | FRCC | | | | | | | | | | ✓ |
| 46. | Mark Bennett (G7) | Gainesville Regional Utilities | | | | | ✓ | | | | | |
| 47. | Paul Turner (G15) | Georgia System Operations Corp. | | | ✓ | | | | | | | |
| 48. | Joe Knight (G9) (G10) | Great River Energy | | | | | | | | | | ✓ |
| 49. | David Kiguel (G11) | Hydro One Networks | ✓ | | | | | | | | | |
| 50. | Roger Champagne (I) (G11) | Hydro-Québec/TransÉnergie (HQT) | ✓ | | | | | | | | | |

| Commenter | | Organization | Industry Segment | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 51. | Ron Falsetti (I) (G8) (G11) | IESO | | ✓ | | | | | | | | |
| 52. | Matt Goldberg (G8) | ISO New England | | ✓ | | | | | | | | |
| 53. | Kathleen Goodman (G11) | ISO New England | | ✓ | | | | | | | | |
| 54. | Jim Cyrulewski (G9) | JDRJC Associates | | | | | | | | ✓ | | |
| 55. | Michael Gammon (I) (G17) | Kansas City Power & Light | ✓ | | | | | | | | | |
| 56. | Eric Ruskamp (G10) | LES | | | | | | | | | | ✓ |
| 57. | Don Nelson (G11) | MA Department of Public Utilities | | | | | | | | | ✓ | |
| 58. | Joseph DePoorter (I) (G9) | Madison Gas and Electric | | | | ✓ | | | | | | |
| 59. | Doug Rempel | Manitoba Hydro | ✓ | | ✓ | | ✓ | ✓ | | | | |
| 60. | Robert Coish (G10) | Manitoba Hydro | ✓ | | ✓ | | ✓ | ✓ | | | | |
| 61. | Tom Mielnik (G10) | MEC | | | | | | | | | | |
| 62. | Jason L. Marshall (G9) | Midwest ISO Stakeholders | | ✓ | | | | | | | | |
| 63. | Michael Brytowski (G10) | Midwest Reliability Organization | | | | | | | | | | ✓ |
| 64. | Bill Phillips (G8) | MISO | | ✓ | | | | | | | | |
| 65. | Terry Bilke (G10) | MISO | | | | | | | | | | ✓ |
| 66. | Carol Gerou (G10) | MP | | | | | | | | | | ✓ |
| 67. | Michael Schiavone | National Grid | ✓ | | | | | | | | | |
| 68. | Mike Rinnali (G11) | National Grid | ✓ | | | | | | | | | |
| 69. | Alden Briggs | New Brunswick System Operator | | ✓ | | | | | | | | |
| 70. | Randy MacDonald (G11) | New Brunswick System Operator | | ✓ | | | | | | | | |
| 71. | James Castle | New York ISO | | ✓ | | | | | | | | |
| 72. | Greg Campoli (G8) | New York ISO | | ✓ | | | | | | | | |
| 73. | Ralph Rufrano (G11) | New York Power Authority | ✓ | | | | | | | | | |
| 74. | Joe O'Brien | NIPSCO | ✓ | | ✓ | | | ✓ | | | | |
| 75. | Murale Gopinathan (G11) | Northeast Utilities | ✓ | | | | | | | | | |
| 76. | Reza Rizvi (G11) | NPCC | | | | | | | | | | ✓ |
| 77. | Guy V. Zito (G11) | NPCC | | | | | | | | | | ✓ |
| 78. | Al Adamson (G11) | NY State Reliability Council | | | | | | | | | | ✓ |
| 79. | George Brady | Ohio Valley Electric | ✓ | | | | | | | | | |

| Commenter | | Organization | Industry Segment | | | | | | | | | |
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| | (G12) | Corp. | | | | | | | | | | |
| 80. | Scott Cummingham (G12) | Ohio Valley Electric Corp. | ✓ | | | | | | | | | |
| 81. | Robert Mattey (G12) | Ohio Valley Electric Corp. | ✓ | | | | | | | | | |
| 82. | Pete Kubeck (G16) | OKE&G | ✓ | | | | | | | | | |
| 83. | Brian Gooder (I) (G11) | Ontario Power Generation Inc. | | | | | ✓ | | | | | |
| 84. | Aaron Smith | Omaha Public Power District | ✓ | | ✓ | | ✓ | ✓ | | | | |
| 85. | Richard Kinas (G7) | Orlando Utilities Commission | ✓ | | | | | | | | | |
| 86. | Ron Verraneault (G13) | PAC | | | | | | | | | | |
| 87. | David Thorne (G4) | Pepco Holdings, Inc. – Affiliates | ✓ | | | | | | | | | |
| 88. | Kris Buchholz | PG&E (1) | ✓ | | | | | | | | | |
| 89. | Lauri Jones | PG&E (2) | | | | | | | | | | |
| 90. | Alicia Daugherty (G8) | PJM | | ✓ | | | | | | | | |
| 91. | Richard Krajewski (G13) | PNM | | | | | | | | | | |
| 92. | Dick Schwarz (G13) | PNSC | | | | | | | | | | |
| 93. | Rick Brock (G13) | PSC | | | | | | | | | ✓ | |
| 94. | Gary Campbell | ReliabilityFirst Corp. (1) | | | | | | | | | | ✓ |
| 95. | Glenn Kaht | ReliabilityFirst Corp. (2) | | | | | | | | | | |
| 96. | Thomas J. Bradish (G1) | Reliant Energy | | | | | ✓ | | | | | |
| 97. | Mike Gentry | Salt River Project | ✓ | | ✓ | | ✓ | ✓ | | | | |
| 98. | Mike Pfeister | Salt River Project | ✓ | | ✓ | | ✓ | ✓ | | | | |
| 99. | Mike Gentry (G3) | Salt River Project | | | | | | | | | | |
| 100. | Scott Peterson | San Diego Gas & Electric Co. | ✓ | | ✓ | | | | | | | |
| 101. | Terry Blackwell (G1) | Santee Cooper | ✓ | | | | | | | | | |
| 102. | Tom Abrams (G1) | Santee Cooper | ✓ | | | | | | | | | |
| 103. | Glenn Stephens (G1) | Santee Cooper | ✓ | | | | | | | | | |
| 104. | Rene' Free (G1) | Santee Cooper | ✓ | | | | | | | | | |
| 105. | Kristi Boland (G1) | Santee Cooper | ✓ | | | | | | | | | |
| 106. | Jim Peterson (G1) | Santee Cooper | ✓ | | | | | | | | | |
| 107. | Wayne Ahl (G1) | Santee Cooper | ✓ | | | | | | | | | |
| 108. | William Gaither | SC Public Service | ✓ | | | | | | | | | |

| Commenter | | Organization | Industry Segment | | | | | | | | | |
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| | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| | (G15) | Authority | | | | | | | | | | |
| 109. | George Noller (G13) | SCE | ✓ | | | | | | | | | |
| 110. | Pat Huntley (G15) | SERC | | | | | | | | | | ✓ |
| 111. | John Troha (G15) | SERC | | | | | | | | | | ✓ |
| 112. | Jon Crook (G13) | SMUD | ✓ | | | | | | | | | |
| 113. | Al McMeekin (G15) | South Carolina Electric & Gas Co. | ✓ | | ✓ | | ✓ | | | | | |
| 114. | Marc Butts (G16) | Southern Company Services | ✓ | | | | | | | | | |
| 115. | Roman Carter (G16) | Southern Company Services | ✓ | | | | | | | | | |
| 116. | Jim Busbin (G16) | Southern Company Services | ✓ | | | | | | | | | |
| 117. | J. T. Wood (G16) | Southern Company Services | ✓ | | | | | | | | | |
| 118. | Tom Higgins (G16) | Southern Company Services | | | | | ✓ | | | | | |
| 119. | Mike Oats (G16) | Southern Company Services | | | | | ✓ | | | | | |
| 120. | John Ciza (G16) | Southern Company Services | | | | | | ✓ | | | | |
| 121. | Roger Green (G16) | Southern Company Services | | | | | ✓ | | | | | |
| 122. | Doug McLaughlin (G15) | Southern Company Services, Inc. | ✓ | | | | | | | | | |
| 123. | Charles Yeung (G8) | Southwest Power Pool | | | | | | | | | | ✓ |
| 124. | Katy Onnen (G16) | Southwest Power Pool | | | | | | | | | | ✓ |
| 125. | Robert Rhodes (G16) | Southwest Power Pool | | | | | | | | | | ✓ |
| 126. | Bill Grant (G16) | SPS | ✓ | | | | | | | | | |
| 127. | Kyle McMenamin (G16) | SPS | ✓ | | | | | | | | | |
| 128. | Stephen Joseph (G7) | Tampa Electric Company | ✓ | | | | | | | | | |
| 129. | Walter E. Joly (G2) | Tennessee Valley Authority | ✓ | | | | ✓ | | | | | |
| 130. | Chuck Owens (G2) | Tennessee Valley Authority | ✓ | | | | | | | | | |
| 131. | Stuart Goza (G2) | Tennessee Valley Authority | ✓ | | | | | | | | | |
| 132. | David Thompson (G2) | Tennessee Valley Authority | | | | | ✓ | | | | | |
| 133. | Mark Marcum (G2) | Tennessee Valley Authority | | | | | ✓ | | | | | |

| Commenter | | Organization | Industry Segment | | | | | | | | | |
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| | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 134. | Mike Clements (G15) | Tennessee Valley Authority | ✓ | | ✓ | | ✓ | | | | ✓ | |
| 135. | Robert Eubank (G13) | TSGT | ✓ | | | | | | | | | |
| 136. | Karl Bryan | U.S. Army Corps of Engineers | | | | | ✓ | | | | | |
| 137. | Jim Haigh (G10) | WAPA | | | | | | | | | | ✓ |
| 138. | Nancy Bellows (G3) | WAPA (WACM) | | | | | | | | | | |
| 139. | Ken Driggs (G13) | WECC | | | | | | | | | | ✓ |
| 140. | Eric Langhorst (G13) | WECC | | | | | | | | | | ✓ |
| 141. | Neal Balu (G10) | WPSR | | | | | | | | | | |
| 142. | Allen Klassen (G16) | WR | ✓ | | | | | | | | | |
| 143. | Pam Oreschick (G10) | XCEL | | | | | | | | | | ✓ |
| 144. | Howard Rulf | We Energies | | | ✓ | ✓ | ✓ | | | | | |

I – Indicates that individual comments were submitted in addition to comments submitted as part of a group
G1 – Santee Cooper
G2 – Tennessee Valley Authority (TVA)
G3 – WECC Reliability Coordination Comments Work Group (WECC RCCWG)
G4 – Pepco Holdings, Inc. – Affiliates
G5 – FirstEnergy Corp.
G6 – Florida Power & Light Co. (FPL)
G7 – Florida Reliability Coordinating Council (FRCC)
G8 – ISO/RTO Council
G9 – Midwest ISO Stakeholders
G10 – MRO Standards Review Committee (MRO SRC)
G11 – NPCC Reliability Standards Committee (NPCC RSC)
G12 – Ohio Valley Electric Corp. (OVEC)
G13 – WECC Operations Training Subcommittee (WECC OTS)
G14 – WECC Reliability Coordination Comments Work Group (WECC RCCWG)
G15 – SERC Operations Planning Subcommittee (SERC OPS)
G16 – Southern Company Services, Inc. (Southern Transmission)
G17 – SPP Operating Reliability Working Group (SPP ORWG)

## Index to Questions, Comments, and Responses

1. Attachment 1 of EOP-005-1 has been eliminated and the elements for consideration moved directly into Requirement R1 and the sub-requirements of R1 in EOP-005-2. Do you agree or have other suggestions as to how to incorporate the elements into the standards?

**Summary Consideration:** While most stakeholders agreed with the elimination of Attachment 1 of EOP-005-1, there were many comments suggesting improvements to the standard. Due to comments received, changes have been made to Title, Purpose, R1 and its sub-requirements, establishment of the new R2, R12, and R17 as shown below.

**EOP-005-2:**

**Title: System Restoration from Blackstart Resources — Operations**

**Purpose:** Ensure plans, and Facilities are established, and personnel are ~~available~~ in place to ~~restore the Bulk Electric~~ enable System ~~(BES) to its normal state following an event that requires the utilization of~~ restoration from Blackstart Resources~~.~~ to ensure reliability is maintained during restoration and priority is placed on restoring the Interconnection.

**R1.** Each Transmission Operator shall have a restoration plan approved by its Reliability Coordinator ~~to restore its System to its normal state following an event that requires the utilization of Blackstart Resources.~~ The restoration plan shall ~~have~~ allow for restoring the Transmission Operator's System following a ~~priority of~~ Disturbance in which one or more areas of the Bulk Electric System (BES) shuts down and the use of Blackstart Resources is required to restore the shut down area to service, to a state whereby the choice of the next Load to be restored is not driven by the need to control frequency or voltage regardless of whether the Blackstart Resource is located within the Transmission Operator's System. The restoration plan shall include:

**R1.1.** A description of the manner in which all obligations for off-site power requirements of nuclear power plants will be fulfilled.

**R1.2.** Procedures for restoring the integrity of the Interconnection under the direction of the Reliability Coordinator.

~~**R1.1.**Identification of the authority and tasks of the Transmission Operator's control room and field switching personnel assigned to participate in restoration activities including the responsibility of the Transmission Operator to work with its Reliability Coordinator and with other Transmission Operators and the responsibility of the Transmission Operator to coordinate its restoration activities with the entities operating within its area.~~

~~**R1.2.**Documented coordination with applicable Blackstart Resource Facility Plans (BRFP) to ensure the ability of the Blackstart Resource to control and maintain voltage and frequency within acceptable limits.~~

**R1.3.** Identification of each Blackstart Resource and its characteristics including the following: the name of the Blackstart Resource, location, megawatt and megavar capacity, and type of unit~~, latest date of test, test results and starting method~~.

**R1.4.** Identification of Cranking Paths ~~diagrams, including~~ and initial switching requirements~~,~~ between each Blackstart Resource and the unit(s) to be started.

**R1.5.** Identification of acceptable operating voltage and frequency limits during restoration.

**R1.6.** A statement accounting for the possibility that restoration can not be completed as expected indicating that in situations where the actual conditions do not match the studied conditions, the System Operator shall use professional judgment to ~~modify~~ deviate from the System restoration plan.

**R1.7.** Operating Procedures to re-establish connections within the Transmission Operator's System for areas that have become separated.

**R1.8.** Operating Procedures to restore Loads, ~~, including identification of any critical Load requirements that require high priority including off-site power for nuclear Facilities, and Facilities required to restore the BES.~~ such as station service for substations, units to be restarted or stabilized, the Load needed to stabilize generation and frequency, and provide voltage control for restoring the System.

~~**R1.8.**Procedures to coordinate its restoration plan with the applicable Generator Owners, Generator Operators, Load-Serving Entities, Distribution Providers, and Balancing Authorities within its area, its Reliability Coordinator, and neighboring Transmission Operators and Balancing Authorities.Operating~~

**R2.** Each Transmission Operator, in order to ensure the reliability of the Interconnection, shall distribute its approved restoration plan to the entities identified in its restoration plan, and to it's Reliability Coordinator.

**R12.** Each Transmission Operator shall provide a minimum of two hours of System restoration training per year for ~~each of its authorized transmission~~ field switching personnel ~~for the tasks~~ identified ~~in~~ as performing unique tasks associated with its restoration plan~~.~~ and outside of their normal tasks.

**R17.** Each Generator Operator ~~shall provide documentation~~ of ~~its~~ a Blackstart Resource ~~test results to its Reliability Coordinator~~ shall perform Blackstart Resource tests, and maintain records of such testing, in accordance with the testing requirements set by the Transmission Operator~~.~~ to verify that the Blackstart Resource can perform as specified in the restoration plan.

**R17.1.** Testing records shall include at a minimum: name of the Blackstart Resource, unit tested, date of the test, duration of the test, time required to start the unit, an indication of any testing requirements not met under Requirement R6~~, the voltage profile during the test including time correlation to Loads applied (if any), and the unit frequency profile during the test including time correlation to Loads applied (if any). .~~

**R17.2.** Each Generator Operator shall provide the blackstart test results within thirty calendar days following a request from its Reliability Coordinator or Transmission Operator.

Based on stakeholder comments, changes were also made to the Title, Purpose and R1 of EOP-006 as shown below.

**Title: System Restoration ~~and~~ from Blackstart Resources – Coordination**

**Purpose:** Ensure plans, ~~facilities,~~and Facilities are established and personnel are available forin place to enable effective coordination of the System restoration from Blackstart Resources process to ensure reliability is maintained during restoration and priority is placed on restoring the Interconnection.

**R1.** ~~The~~ Each Reliability Coordinator shall have a Reliability Coordinator Area restoration plan ~~that has been made available to its Transmission Operators, Balancing Authorities, and neighboring Reliability Coordinators to restore its area to its normal state following an event that requires the utilization of Blackstart Resources. The restoration plan shall have a priority of .~~ The restoration plan shall be written such that it allows for the restoration of its area following a Disturbance in which one or more areas of the Bulk Electric System (BES) shuts down and the use of Blackstart Resources is required to restore the shut down area to service, to a state whereby the choice of the next Load to be restored is not driven by the need to control frequency or voltage for an event that requires the utilization of Blackstart Resources regardless of whether the Blackstart Resource is located within the Reliability Coordinator's Area. The restoration plan shall include:

Several commenters suggested that the Balancing Authority (BA) should be added to the revised standards. The SDT disagrees that the BA has an "applicability" role in the TOP restoration plan or its implementation. Beginning with the system collapse, the TOP restores the Transmission System, restores interconnections, and supplies off-site power to nuclear generating stations. This is accomplished on a command and control basis by the Transmission Operator (TOP) in conjunction with the Generator Operator (GOP). Once interconnections have been reestablished and the transmission System restored, the restoration of firm Load can begin. The TOP is restoring the System through command and control until a sufficient System has been built where frequency is under control. EOP-001 and TOP-001 include requirements for actions during partial restorations.

Several commenters suggested that the Reliability Coordinator should not 'approve' the TOP's restoration plans. As to the RC approval process: In FERC Order 693, "the Commission directs the ERO to develop a modification to EOP-006-1 through the Reliability Standards development process that ensures that the reliability coordinator, which is the highest level of authority responsible for reliability of the Bulk-Power System, is involved in the development and approval of system restoration plans." The SDT believes that the process described in EOP-005-2 and EOP-006-2 meets the Commission directive.

Several commenters questioned the inclusion of training requirements. The SDT supports FERC's recommendation that inclusion of periodic system restoration drills and training requirements in the EOP standards as the most effective way of achieving the desired level of system restoration training.

| **Question #1** | | | |
|---|---|---|---|
| **Commenter** | **Yes** | **No** | **Comment** |
| RFC (2) | | ☑ | R1.2.1 requires the TOP to include the latest date of test and test results of each blackstart resource. In R1 the RC is required to approve the Restoration Plan. Would the |

| Question #1 | | | |
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| **Commenter** | **Yes** | **No** | **Comment** |
| | | | RC have to approve the plan due to changes in test results? I suggest the test results not be included in the plan, but that the TOP has record of them outside of the "plan." R1.8 requires the TOP to coordinate with many "applicable" entities. Which of the entities are applicable? Do the applicable entities include all classes of LSEs? If the answer is yes, this would require coordinating with many LSEs that own no physical assets, such as Alternate Retail Electric Suppliers. The drafting team should consider specifying exactly what entities are applicable to the coordination requirement. Otherwise, it is very open to interpretation. |
| **Response:** The SDT agrees that test results should not be a component of R1.2.1. The GOP now has the requirement to maintain these records (new R17).<br>R1.8 has been changed to R2 and the use of the term 'applicable' has been removed. | | | |
| Duke Energy | | ☑ | In moving the Attachment 1 to EOP-005, the SDT made it a requirement that all elements of the attachment be part of a restoration plan. The previous version did not require this and stated where applicable. The SDT should reword their statement in R1 to say "The restoration plan shall include the following where applicable:" Audit teams could review this requirement as it is currently written and find a company in non-compliance because they do not have a Requirement in their plan and the company could not have a need for that requirement. The SDT also changed the wording in R1 and placed priority of a restoration plan on the restoring of the integrity of the Interconnection. Why does this need to be stated when that is the purpose of all restoration plans? And by including this statement, is a conflict introduced with requirement R1.7 and the restoring of off-site power to a Nuclear Station. Some people could interpret that as saying that you need to establish the transmission network integrity before you restore power to a nuclear facility. While it may be understood by some that in restoring power to a nuclear facility is establishing the integrity of the transmission network, it may not be understood by all. |
| **Response:** The SDT did not move all items from Attachment 1 to the requirements. The SDT believes that all the sub-requirements stated in R1 must be included in the TOP's restoration plan.<br><br>The SDT has made changes to R1 in an attempt to clarify the nuclear power plant issue. See R1.1 in the revised EOP-005-2 which requires that the restoration plan include a "A description of the manner in which all obligations for off-site power requirements of nuclear power plants will be fulfilled." | | | |
| Santee Cooper | | ☑ | As an entity that has implemented its restoration plan following hurricanes, Santee Cooper does not believe a restoration plan should be a step by step plan based on an assumed set of conditions for a particular event. Rather, Santee Cooper believes a restoration plan needs to be developed in such a manner that it provides guidance and allows for flexibility to address many different sets of conditions and events. In addition, |

| Question #1 | | | |
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| **Commenter** | **Yes** | **No** | **Comment** |
| | | | Santee Cooper believes restoration plans should be tailored for each particular system, and its particular circumstances, and therefore should not require approval by a Reliability Coordinator as long as all of the requirements associated with the related NERC standards are satisfied (i.e., the RC should not perform a compliance monitoring function if this is what is intended by the approval). Finally, Santee Cooper believes that a restoration plan developed to address a broad range of circumstances would not require the statement in R1.5. |
| **Response:** The SDT has changed R1.5 to accommodate the indicated concern. The revised sub-requirement (now R1.6) requires that the restoration plan include "a statement accounting for the possibility that restoration can not be completed as expected indicating that in situations where the actual conditions do not match the studied conditions, the System Operator shall use professional judgment to deviate from the System restoration plan."<br><br>In FERC Order 693, *"the Commission directs the ERO to develop a modification to EOP-006-1 through the Reliability Standards development process that ensures that the reliability coordinator, which is the highest level of authority responsible for reliability of the Bulk-Power System, is involved in the development and approval of system restoration plans."* The SDT believes that the process described in EOP-005-2 and EOP-006-2 meets the Commission directive. | | | |
| AEP | | ☑ | EOP-005, R1& EOP-006, R1– The first sentence of EOP-005, R1 needs revised to reflect its intent. It presently says the Transmission Operator shall have a restoration plan approved by its Reliability Coordinator "following" an event that requires the utilization of Black-start recourses. As written, the requirement could be misinterpreted to mean you need to have an approved plan only after using the plan to restore your system. The verbiage should be clear that you need an approved plan. The same is true with the wording of EOP-006, R1.<br><br>EOP-005, R1.1 & EOP-006, R1.1 – The proposed training standard PER-005 requires system operator position/control center tasks for reliability and emergency be identified, by each operating entity for their system operator positions, from the PER-005 Attachment A Generic Task List. This PER-005 requirement has a 36 month time frame of implementation. If these tasks are identified under the PER-005 standard, we do not see the benefit or necessity of documentation in the EOP. The black-start plan is implemented via system operators. Identification of plan parameters will by default fall to the assigned reliability tasks of the system operator personnel as identified in PER-005. Also, the time implementation would be an issue with the EOP, as the tasks identified in the EOP must match the tasks identified for the PER-005 standard.<br><br>EOP-005, R1.1 – We do not agree with naming the tasks of field switching personnel. The transmission sub-station field switching personnel are already trained for operation and switching of the sub-station equipment and know their associated tasks. They do it |

| Question #1 | | | |
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| **Commenter** | **Yes** | **No** | **Comment** |
| | | | on a daily bases. Tasks performed on any equipment with operating, control power, or other problems are dealt with during maintenance and repair by the field personnel on a routine bases, much of which are under emergency situations which often include reliability situations. Any tasks they perform for restoration are under the authority and direction of system operators in the control center. Since field switch-person tasks are performed under the authority of the System Operator, they are directed as functions of the System Operator Emergency Operations Tasks to implement emergency procedures and direct restoration.<br><br>EOP-005, R1.2 - The Blackstart Resource Facility Plans (BRFP) first appears in R1.2. but it is not defined until R12. Suggest adding the definition in R1.21.since the wording is similar to the wording appearing in R12. Adding the definition sooner would lead to a more understandable requirement. |
| **Response:** The SDT agrees and has rewritten R1 for EOP-005 and EOP-006. (See the summary consideration above.)<br><br>The SDT supports FERC's recommendation that inclusion of periodic system restoration drills and training requirements in the EOP standards as the most effective way of achieving the desired level of system restoration training.<br><br>If the TOP's restoration plan has field switching tasks unique to system restoration that are not included in normal operations, then training shall be required. Changes have been made to R12 to clarify this position.<br><br>BRFP has been removed from the standard in the new revision for the second posting. | | | |
| OVEC | | ☑ | For completely new standards I would agree with the method of incorporating the elements of the Attachment as requirements or sub-requirements. But for this existing standard the elements appear to have been substantially rewritten and include requirements not in the original Attachment. Moving or revising the elements of the Attachment creates burdensome and unproductive work for an entity to re-identify where in its restoration plan the revised elements or new sub-requirements are considered. |
| **Response:** The purpose of the Reliability Standards Development Work Plan 2007-2009 is to revise the standards to make them more specific and measurable and to minimize duplication across standards. The sub-requirements of R1 are required elements of the system restoration plan. Some are based on Attachment 1. Not all elements of Attachment 1 have been moved to sub-requirements of R1. | | | |
| MRO SRC | | ☑ | The MRO does not agree with adding violation risk factors to every requirement. Additionally, when new requirements are proposed they should be value added, not just for documentation that needs to be reviewed and updated The MRO does not agree with removing the BA from standard EOP-005-2, as they have a critical function in blackstart system restoration. The MRO would suggest including any limitations of the Blackstart |

| Question #1 | | | |
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| **Commenter** | **Yes** | **No** | **Comment** |
| | | | resource and the fuel type of the Blackstart resource in requirement 1.2.1. |
| **Response:** The Reliability Standards Development Procedure requires that each requirement have a VRF.<br>The SDT disagrees that the BA has an "applicability" role in the TOP restoration plan or its implementation. Beginning with the system collapse, the TOP restores the Transmission System, restores interconnections, and supplies off-site power to nuclear generating stations. This is accomplished on a command and control basis by the Transmission Operator in conjunction with the GOP. Once interconnections have been reestablished and the Transmission System restored, the restoration of firm Load can begin. The TOP is restoring the System through command and control until a sufficient System has been built where frequency is under control.<br>The SDT believes that the requirements cited in R1 are sufficient. | | | |
| FPL | | ☑ | I do not believe that a restoration plan should be a step by step plan based on an assumed set of conditions for a particular event. A restoration plan needs to be developed in such a manner that it provides guidance and allows flexibility to address many different sets of conditions and events. In addition the restoration plan should be tailored for each particular system and therefore should not require approval of the Reliability Coordinator as long as all the requirements associated with the NERC Standards are satisfied. The Reliability Coordinator should not perform a compliance monitoring function if this is what is intended by the approval.<br>There is no need for A Black Start Reliability Plan independent of a System restoration Plan. The System Restoration plan requirements include location of blackstart units, MW and Mvar capability, start time, and fuel requirements. |
| **Response:** The SDT has changed R1.5 to accommodate the indicated concern. The revised sub-requirement (now R1.6) requires that the restoration plan include "a statement accounting for the possibility that restoration can not be completed as expected indicating that in situations where the actual conditions do not match the studied conditions, the System Operator shall use professional judgment to deviate from the System restoration plan."<br><br>RC review and approval of the plan is not an issue of compliance but of coordination and workability with the RC's restoration plan. In FERC Order 693, *"the Commission directs the ERO to develop a modification to EOP-006-1 through the Reliability Standards development process that ensures that the reliability coordinator, which is the highest level of authority responsible for reliability of the Bulk-Power System, is involved in the development and approval of system restoration plans."*<br>The SDT believes that the process described in EOP-005-2 and EOP-006-2 meets the Commission directive.<br>BRFP has been removed from the standard in the new revision for the second posting.<br><br>The requirement to have a Blackstart Resource Facility Plan has been removed from the revised standard. | | | |
| Consumers | | ☑ | |
| CenterPoint | ☑ | ☑ | It is appropriate to incorporate the elements from Attachment 1 into R1. CenterPoint Energy agrees with FERC that more than just control room personnel would be involved |

| Question #1 | | | |
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| **Commenter** | **Yes** | **No** | **Comment** |
| | | | in system restoration. However, CenterPoint Energy disagrees that field switching personnel should be specifically identified. Field switching personnel follow switching orders in any restoration situation, regardless of its cause, and therefore specific task identification specifically related to blackstart restoration is not warranted. In other words, field switching personnel would not perform any tasks during a blackstart system restoration that they would not perform as part of their normal, day to day duties. Specific training in blackstart restoration is therefore not required. |
| **Response:** If the TOP's restoration plan has field switching tasks unique to system restoration that are not included in normal operations, then training shall be required. Changes have been made to R12 to clarify this position. (See the summary consideration above.) | | | |
| New York ISO | ☑ | ☑ | If the definition of a Blackstart Resource is "A generation Facility..", then the term Blackstart Resource Facility Plan is redundant and confusing.<br>There is no need for requirements for a Black Start Reliability Plan independent of a system restoration plan. From the viewpoint of requirements for a system restoration plan, the location, MW and MVAR capacity and the start time are required aspects of the restoration plan.<br>Latest type of unit, latest date of test, test results. |
| **Response:** BRFP has been removed from the standard in the new revision for the second posting. | | | |
| Southern Transmission | ☑ | ☑ | We agree with the elimination of Attachment 1 as found in Version 1 of this Standard and the placement of its elements into, and under, Requirement 1 of Version 2. We disagree, however, with the change in the applicability of the proposed Standard (to include the provisions of the former Attachment 1) in its transition from Version 1 to Version 2. Balancing Authorities will continue to play a vital role in System Restoration; this Standard should be written to reflect that role. We have further comment on the applicability of this Standard in our response to Question #9. |
| **Response:** The SDT disagrees that the BA has an "applicability" role in the TOP restoration plan or its implementation. Beginning with the system collapse, the TOP restores the Transmission System, restores interconnections, and supplies off-site power to nuclear generating stations. This is accomplished on a command and control basis by the Transmission Operator in conjunction with the GOP. Once interconnections have been reestablished and the Transmission System restored, the restoration of firm Load can begin. The TOP is restoring the System through command and control until a sufficient System has been built where "balancing" is not an issue. | | | |
| FRCC | ☑ | ☑ | The DT has re-defined the intent of attachment 1. The "Elements for Consideration in Development of Restoration Plan" are now requirements that "shall be included" but the conversion retains subjective language of the original attachment. After the conversions and as written some of the requirements are still editorial, subjective and open to interpretation.<br>Comments on R1 language: What is a "normal state"? "Following an event that requires |

| Question #1 | | | |
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| **Commenter** | **Yes** | **No** | **Comment** |
| | | | utilization of Blackstart Resources". This implies that this standard does not apply to restoration plans for systems that are re-connecting to an energized section of the Interconnection (recovery from "partial shutdown" as described below). If this is the DT intent, the title of the standard should be revised to "System Blackstart - Operations". |
| **Response:** The SDT did not move all items from Attachment 1 to the requirements. The SDT believes that all the sub-requirements stated in R1 must be included in the TOP's restoration plan. Changes have been made to the sub-requirements to address the concerns. (See the summary consideration above.)<br>The purpose of a restoration plan is not to restore every MW of Load and Transmission System element to service but to reach a stage whereby the choice of the next Load to be restored is not driven by the need to control frequency or voltage. Normal state has been eliminated in the text to reflect this purpose.<br>The SDT agrees with the comment on the title and has made changes to address this concern. The revised title is, "System Restoration and Blackstart Resources — Operations | | | |
| ISO/RTO | ☑ | ☑ | We can agree with moving the items from the attachment into the requirements. However, R1's sub-requirements are in need of revisions.<br>R1.1 should be broken up into at least two sentences to be clear. Suggested wording: R1.1 Identification of the authority and tasks of the Transmission Operator's control room and field switching personnel assigned to participate in restoration activities. Identification of the responsibility of the Transmission Operator to work with its Reliability Coordinator and with other Transmission Operators. Identification of the responsibility of the Transmission Operator to coordinate its restoration activities with the BAs, GOPs, LSEs, RC, DPs and GOPs (or the specific entities that the drafting team actually meant to require coordination of the restoration activities with) operating within its area.<br>R1.8 requires that the plan include procedures to coordinate the plan with various entities. We do not believe that this should be required to be in the plan. Coordination of the plan should be the requirement. |
| **Response:** Changes have been made to the sub-requirements of R1 to address the concerns. (See the summary consideration above.) The proposed R1.1 was not adopted because the authority of the TOP is already addressed in TOP-001. The SDT agrees with the point made concerning R1.8 and has moved it to its own requirement (R2). | | | |
| HQT<br>NBSO<br>NPCC RSC | ☑ | | Delete 1.2.1 and revise 1.2 to read: "Document each Blackstart resource and its characteristics, including the following: the name of the Blackstart Resource, location, megawatt and megavars capacity and type of unit."<br>In R1.8: "Identify within the plan the coordination among Generator Owners, Generator Operators, Load-Serving Entities, Distribution Providers, and Balancing Authorities within its area, its Reliability Coordinator, and neighboring Transmission Operators and Balancing Authorities. |
| **Response:** The SDT agrees that test results should not be a component of R1.2.1. The GOP now has the requirement to maintain these records (R17). | | | |

| Question #1 | | | |
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| **Commenter** | **Yes** | **No** | **Comment** |
| The SDT agrees with the point made concerning R1.8 and has moved it to its own requirement (R2). | | | |
| WECC RCCWG | ☑ | | While the WECC RCCWG has no problem with attachment 1 be moved into the standard we have concerns with R1 which states:<br>"Each Transmission Operator shall have a restoration plan approved by its Reliability Coordinator to restore its System to its normal state following an event that requires the utilization of Blackstart Resources. The restoration plan shall have a priority of restoring the integrity of the Interconnection under the direction of the Reliability Coordinator."<br>The group questions what the criteria for "approval" by the RC are. If situations are encountered during a restoration event that are not covered in the restoration plan, are the RC and TOP in violation of the standard?<br>The WECC RCCWG request clarification of the phrase "normal state". Does this refer to interconnected operation? If a TOP has a single tie and that tie experiences damage that will require a year to repair are the RC and TOP in violation of the standard?<br>The WECC RCCWG agrees that RC and TOP need restoration plans, but believes the plans cannot be drafted to cover every possible scenario.<br>The WECC RCCWG believes that the phrase "under the direction of the Reliability Coordinator should be removed. The Reliability Coordinator coordinates with the TOP, but does not direct the TOP what specific steps need to be taken. The Reliability Coordinator needs to allow the Transmission Operator to direct his own portion of a restoration. When there are islands to be synchronized, or reconnected to the interconnection, the Reliability Coordinator is in a position to "direct" (approve) action. Otherwise, the Reliability Coordinator should be coordinating with Transmission Operators. |
| **Response:** RC review and approval of the plan is not an issue of compliance but of coordination and workability with the RC's restoration plan. The SDT believes that this gives input to the RC in the development of plans such that the various TOP plans are coordinated with the RC's plan. In FERC Order 693, *"the Commission directs the ERO to develop a modification to EOP-006-1 through the Reliability Standards development process that ensures that the reliability coordinator, which is the highest level of authority responsible for reliability of the Bulk-Power System, is involved in the development and approval of system restoration plans."* The SDT believes that the process described in EOP-005-2 and EOP-006-2 meets the Commission directive.<br>The purpose of a restoration plan is not to restore every MW of Load and Transmission System element to service but to reach a stage whereby the choice of the next Load to be restored is not driven by the need to control frequency or voltage. Normal state has been eliminated in the text to reflect this purpose.<br>The SDT has changed the new R1.6 to accommodate the indicated concern. The revised sub-requirement (now R1.6) requires that the restoration plan include "a statement accounting for the possibility that restoration can not be completed as expected indicating that in situations where the actual conditions do not match the studied conditions, the System Operator shall use professional judgment to deviate from the System restoration plan." | | | |

| Question #1 | | | |
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| **Commenter** | **Yes** | **No** | **Comment** |
| The SDT believes that the phrase "…under the direction of the RC…" is appropriate as worded. | | | |
| Madison G&E | ☑ | | a) Agree with placing the requirements directly into the standard.<br>b) In R1, second sentence the word "normal" needs to be removed and replaced with "pre-Disturbance". Normal has not been defined and leaves the reader to determine its definition.<br>c) In R1.1, It is unclear what "identification of the authority and task of the Transmission Operator's control room and field personnel assigned to participate in restoration activities" means? The Transmission Operator may be leading switching crews from other companies within their transmission area, thus not knowing who is available. This Requirement needs to be reworded so it is clear. This may leads to some training requirements, which would need to be contained NERC Standard category "Personnel Performance, Training, and Qualifications".<br>d) In R1.2, The term "Blackstart Resource Facility Plan" is used for the first time, but no definition is provided, a definition needs to be provided.<br>e) In R1.2.1, Is "characteristics" the name plate rating? And what is contained in "test results"? Perhaps the SDT should consider placing together a list (check list) of testable items. Then the GO/GOP would know what NERC requirements need to be tested in order to be compliant. This would also stream line the reporting process, since a uniform list (possibly an attachment to the Standard) that would be reconized throughout the electrical industry.<br>f) In R1.5, "System Operator" in the second sentence needs to be changed to "Transmission Operator". |
| **Response:** R1 - The purpose of a restoration plan is not to restore every MW of Load and Transmission System element to service but to reach a stage whereby the choice of the next Load to be restored is not driven by the need to control frequency or voltage. Normal state has been eliminated in the text to reflect this purpose.<br>R1.1 - The SDT agrees, this requirement is handled in TOP-001. Therefore, the SDT has deleted this sub-requirement.<br>R1.2 - BRFP has been removed from the standard in the new revision for the second posting.<br>R1.2.1 - The SDT agrees that test results should not be a component of R1. The GOP now has the requirement to maintain these records (R17).<br>R1.5 - System Operator is a defined term in the NERC Glossary and is used correctly in this context. | | | |
| Ameren | ☑ | | Agree with the idea. However, we believe that phrases such as "identification of the authority" do not speak to a uniform requirement. The standard would be well served to tighten this language to exactly define the requirement and to include as an appendix an "example of excellence" as a guide, or some other similar means, to demonstrate explicitly what is desired. |
| **Response:** The SDT agrees, this requirement is handled in TOP-001. Therefore, the SDT has deleted this sub-requirement. | | | |
| BCTC | ☑ | | Suggest replace "normal" state in R1 with "stable" state. The end configuration might be normal state if the disturbance originated outside the Balancing Authority's Area. |

| Question #1 | | | |
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| **Commenter** | **Yes** | **No** | **Comment** |
| | | | Requirement R1.1 is the first time in this Standard that identifies field switching personnel. The Standard requires field switching personnel to have their authority identified. Field switching personnel would only be expected to have authority to complete operations where the Transmission Operator or System Operator did not have SCADA control of equipment as FERC 693 suggests. And this authority should only have to be identified clearly for restoration and only if communications were lost. The lack of SCADA control (as suggested by FERC in order 693) for restoration should be identified in the requirement as the trigger for identifying authority of field switching personnel.<br><br>Suggest adding "if applicable" to end of R1.3.<br><br>The statement in R1.5 that allows System Operators to use professional judgment to modify plans under the conditions listed is a good idea. |
| **Response: R1 -** The purpose of a restoration plan is not to restore every MW of Load and Transmission System element to service but to reach a stage whereby the choice of the next Load to be restored is not driven by the need to control frequency or voltage. Normal state has been eliminated in the text to reflect this purpose.<br><br>R1.1 - The SDT has deleted this sub-requirement to identify authorities – several commenters identified that there are other requirements in existing standards to address authority.<br><br>R1.3 - The SDT does not believe that 'if applicable' is appropriate for this requirement. Cranking Paths are always present in some form. However, the SDT has deleted diagram from the requirement. | | | |
| ATC | ☑ | | We agree with the Standard Drafting Team's decision to incorporated the "elements of consideration" into the standards. |
| FirstEnergy | ☑ | | FE Agrees - The information in the attachment of every standard should always be immediately included into the body of the requirements section. |
| KCPL | ☑ | | Agree, no other suggestions. |
| OPG | ☑ | | |
| OPPD | ☑ | | |
| National Grid | ☑ | | |
| Entergy (G&M) | ☑ | | |
| IESO | ☑ | | |
| Manitoba Hydro | ☑ | | |

| **Question #1** | | | |
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| **Commenter** | **Yes** | **No** | **Comment** |
| MISO Stakeholders | ☑ | | |
| NIPSCO | ☑ | | |
| RFC (1) | ☑ | | |
| Entergy | ☑ | | |
| Dominion | ☑ | | |
| Salt River Project | ☑ | | |
| SERC OPS | ☑ | | |
| SPP ORWG | ☑ | | |
| We Energies | ☑ | | |
| TVA | ☑ | | |
| US Army Corps Eng. | ☑ | | |
| **Response:** Thank you. | | | |

2. The SRB SDT has removed the language for partial shutdown as part of restoration as we consider recovery from partial shutdown as normal operations. We believe that this requirement is covered in other standards and this standard only applies to those situations where you need to apply Blackstart Resources. Do you agree or have other suggestions as to how to handle partial shutdowns?

**Summary Consideration:** Most commenters agreed with removal of language for partial shutdown. Some commenters suggested that the title and purpose of EOP-005 and EOP-006 should be modified, the drafting team made the following changes:

EOP-005-2:

**Title: System Restoration from Blackstart Resources — Operations**

**Purpose:** Ensure plans, and Facilities are established, and personnel are ~~available~~ in place to ~~restore the Bulk Electric~~ enable System ~~(BES) to its normal state following an event that requires the utilization of~~ restoration from Blackstart Resources~~.~~ to ensure reliability is maintained during restoration and priority is placed on restoring the Interconnection.

EOP-006-2:

**Title: System Restoration ~~and~~ from Blackstart Resources – Coordination**

**Purpose:** Ensure plans, ~~facilities,~~ and Facilities are established and personnel are available forin place to enable effective coordination of the System restoration from Blackstart Resources process to ensure reliability is maintained during restoration and priority is placed on restoring the Interconnection.

Because there were several comments indicating that additional clarification is needed to distinguish an emergency state from a system restoration, the SDT further refined R1 in EOP-005 and EOP-006. The SDT believes that, while an emergency state, restoring the System without the use of Blackstart Resources does not require the frequency and voltage balancing capabilities required by EOP-005 and EOP-006. Partial shutdowns are already covered by other standards including TOP-001, TOP-004, and EOP-001.
Due to industry comments, Requirement R1 has been changed as shown below.

EOP-005:

**R1.** Each Transmission Operator shall have a restoration plan approved by its Reliability Coordinator ~~to restore its System to its normal state following an event that requires the utilization of Blackstart Resources.~~ The restoration plan shall ~~have~~ allow for restoring the Transmission Operator's System following a ~~priority of~~ Disturbance in which one or more areas of the Bulk Electric System (BES) shuts down and the use of Blackstart Resources is required to restore the shut down area to service, to a

state whereby the choice of the next Load to be restored is not driven by the need to control frequency or voltage regardless of whether the Blackstart Resource is located within the Transmission Operator's System. The restoration plan shall include:

**R1.1.** A description of the manner in which all obligations for off-site power requirements of nuclear power plants will be fulfilled.

**R1.2.** Procedures for restoring the integrity of the Interconnection under the direction of the Reliability Coordinator.

~~**R1.1.** Identification of the authority and tasks of the Transmission Operator's control room and field switching personnel assigned to participate in restoration activities including the responsibility of the Transmission Operator to work with its Reliability Coordinator and with other Transmission Operators and the responsibility of the Transmission Operator to coordinate its restoration activities with the entities operating within its area.~~

~~**R1.2.** Documented coordination with applicable Blackstart Resource Facility Plans (BRFP) to ensure the ability of the Blackstart Resource to control and maintain voltage and frequency within acceptable limits.~~

**R1.3.** Identification of each Blackstart Resource and its characteristics including the following: the name of the Blackstart Resource, location, megawatt and megavar capacity, and type of unit~~, latest date of test, test results and starting method~~.

**R1.4.** Identification of Cranking Paths ~~diagrams, including~~ and initial switching requirements~~,~~ between each Blackstart Resource and the unit(s) to be started.

**R1.5.** Identification of acceptable operating voltage and frequency limits during restoration.

**R1.6.** A statement accounting for the possibility that restoration can not be completed as expected indicating that in situations where the actual conditions do not match the studied conditions, the System Operator shall use professional judgment to ~~modify~~ deviate from the System restoration plan.

**R1.7.** Operating Procedures to re-establish connections within the Transmission Operator's System for areas that have become separated.

**R1.8.** Operating Procedures to restore Loads~~, , including identification of any critical Load requirements that require high priority including off-site power for nuclear Facilities, and Facilities required to restore the BES.~~ such as station service for substations, units to be restarted or stabilized, the Load needed to stabilize generation and frequency, and provide voltage control for restoring the System.

~~**R1.8.** Procedures to coordinate its restoration plan with the applicable Generator Owners, Generator Operators, Load-Serving Entities, Distribution Providers, and Balancing Authorities within its area, its Reliability Coordinator, and neighboring Transmission Operators and Balancing Authorities.Operating~~

EOP-006-2 Requirement R1 was changed as follows:

**R1.** ~~The~~ Each Reliability Coordinator shall have a Reliability Coordinator Area restoration plan ~~that has been made available to its Transmission Operators, Balancing Authorities, and neighboring Reliability Coordinators to restore its area to its normal state following an event that requires the utilization of Blackstart Resources. The restoration plan shall have a priority of .~~ The restoration plan shall be written such that it allows for the restoration of its area following a Disturbance in which one or more areas of the Bulk Electric System (BES) shuts down and the use of Blackstart Resources is required to restore the shut down area to service, to a state whereby the choice of the next Load to be restored is not driven by the need to control frequency or voltage for an event that requires the utilization of Blackstart Resources regardless of whether the Blackstart Resource is located within the Reliability Coordinator's Area. The restoration plan shall include:

| Question #2 | | | |
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| **Commenter** | **Yes** | **No** | **Comment** |
| MISO Stakeholders | | ☑ | What other standards is this requirement covered in? A partial shut-down may still require utilization of cranking paths and black-start units to speed restoration. We are not aware that this is covered in any other standard. |
| Entergy (G&M) | | ☑ | Please identify the "other standards" in which the drafting team believes is covering partial shutdown recovery. |
| HQT<br>NPCC RSC | | ☑ | We do not support this, please identify the standard that this requirement is covered in. |
| KCPL | | ☑ | There are entities that have designed their systems to break into islands so believe the partial shutdown language should remain in the standard. In addition, not aware of any other place in the standards where restoration of partial shutdown of areas is addressed. |
| **Response:** Partial shutdowns are already covered by other standards including TOP-001, TOP-004, and EOP-001. | | | |
| FRCC | | ☑ | Recovery from "partial shutdown" is a critical EOP and is much more likely to be encountered by areas of the Interconnections. Requirement R1.6 still addresses restoration of separated systems so the intent of this question as well as wording within R1 of both standards is not clear to us. Coordinated restoration of "partial shutdowns" has to be coordinated with neighboring TOPs and the RC to ensure that a system disturbance causing a local area shutdown does not propagate further, during restoration. Restoration from an energized section of the Interconnection, if available, will always be the preferred, most stable and quickest method for restoring the integrity of the affected BES transmission system. The stability of an energized system makes restoration much more efficient, but the energized system must be protected from an un-coordinated connection to the de-energized system. A Blackstart restoration will inherently transition to a restoration from "partial shutdown" state or configuration. |
| NBSO | | ☑ | A lot of partial shutdowns require restoration as per an Areas restoration plan so I would not eliminate the term. What is meant by a partial shutdown anyway? How big of an area does it cover? For example, the 2003 blackout could be considered a partial shutdown of the Eastern Interconnection and these Standards surely are meant to cover similar situations. Possibly one could use partial shutdowns, if applicable, …. |

| Question #2 | | | |
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| **Commenter** | **Yes** | **No** | **Comment** |
| We Energies | | ☑ | The major impetus for restructuring the entire industry, especially from the regulatory perspective, is the partial shutdown that occurred on August 14, 2003. Anyone participating in that restoration effort would likely not describe the efforts as normal operations. Suggest that the term restoration apply any time resynchronizing is required to restore the interconnected system to whole. |
| BCTC | ☑ | | We agree with removing language for partial shutdown as part of this restoration standard, but we disagree that restoring from a partial shutdown is normal operations. The concepts taught to System Operating personnel for restoration from a partial shutdown or a complete shutdown are the same. |
| OVEC | ☑ | | Partial shutdown should not be considered normal operations. Partial shutdown should be considered as emergency operations whether Blackstart Resources are applied or not. |
| SPP ORWG | ☑ | | We would like to know in which standard(s) a partial shutdown is covered. |
| RFC (2) | | ☑ | If a partial shutdown included 90% of a system, it would be difficult to view the restoration as normal operations. In fact, the TOP would implement their System Restoration Plan. |
| **Response:** The SDT believes that, while an emergency state, restoring the System without the use of Blackstart Resources does not require the frequency and voltage balancing capabilities required by EOP-005 and EOP-006. Partial shutdowns are already covered by other standards including TOP-001, TOP-004, and EOP-001. | | | |
| SERC OPS | | ☑ | We agree with removing partial shutdown from the language; however, we believe the plan should include requirements for the synchronization of islands resulting from partial shutdown of an individual system |
| **Response:** The SDT agrees. The requirement for maintaining plans for resynchronization are included in R1. (See R1.7 in the revised standard.) | | | |
| OPG | | ☑ | |
| ISO/RTO<br>IESO | ☑ | ☑ | We can support this standard to deal with restoration from blackstart only and cover restoration from partial shutdown by other standards. However, the title and purpose of EOP-005 and EOP-006 should be revised to more accurately reflect this scope. An appropriate standard(s) to cover the partial recovery requirements needs to be determined but we do not think that these requirements necessarily fall into "normal operations" as recovery from partial shutdown could well be regarded as emergency operations.<br><br>On the other hand, restoration may span from recovering from partial shut down, re-synchronizing islands to blackstart. It is much more desirable to group all restoration requirements in one set of standards regardless of whether or not blackstart resources are required for restoration. |

| Question #2 | | | |
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| **Commenter** | **Yes** | **No** | **Comment** |
| | | | We urge the SDT to consider this option as opposed to limiting this standard to restoring from blackstart only. |
| **Response:** The SDT has changed the Title and Purpose of both EOP-005 and EOP-006. (See the summary consideration above.)<br>The SDT believes that, while an emergency state, restoring the System without the use of Blackstart Resources does not require the frequency and voltage balancing capabilities required by EOP-005 and EOP-006. Partial shutdowns are already covered by other standards including TOP-001, TOP-004, and EOP-001. | | | |
| Manitoba Hydro | ☑ | | I believe that a clearer definition of what a restoration plan is meant to cover is needed. |
| **Response:** The SDT has re-written the Purpose statement and R1 to accommodate these concerns. (See the summary consideration above.) | | | |
| ATC | ☑ | | ATC agrees that this standard should apply in those situations that require Blackstart Resource. |
| Madison G&E | ☑ | | A partial shutdown could be a normal occurrence, even if a Blackstart Resource is used to bring that portion of the system back to its pre-Disturbance state. |
| RFC (1) | ☑ | | I believe this standard is covering the event in which blackstart resources are needed or complete shutdown has happened. By covering these types of events here and training on these events the industry is ensuring that there is an understanding by personnel and equipment available to restore after these events. Partial shutdown training, understanding of operational processes and procedures and other standards is provided by existing training and documentation. |
| Southern Transmission | ☑ | | We agree with the removal of the "partial shutdown" language from this Standard for the reasons stated. |
| FirstEnergy | ☑ | | FE Agrees |
| New York ISO | ☑ | | |
| Santee Cooper | ☑ | | |
| TVA | ☑ | | |
| US Army Corps Eng. | ☑ | | |
| Ameren | ☑ | | |
| Reliant | ☑ | | |
| Entergy | ☑ | | |
| Dominion | ☑ | | |
| AEP | ☑ | | |

| Question #2 | | | |
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| **Commenter** | **Yes** | **No** | **Comment** |
| CenterPoint | ☑ | | |
| Consumers | ☑ | | |
| Duke Energy | ☑ | | |
| FPL | ☑ | | |
| MRO SRC | ☑ | | |
| National Grid | ☑ | | |
| NIPSCO | ☑ | | |
| Salt River Project | ☑ | | |
| **Response:** Thank you. | | | |

3. The SRB SDT has included training for generator operators and field switching personnel associated with restoration in EOP-005 in accordance with FERC Order 693. Do you agree or have other suggestions for how to supply such training?

**Summary Consideration:** Most commenters disagreed with the inclusion of training for generator operators and field switching personnel associated with restoration.

The SDT notes that in FERC Order 693, the FERC determined that *"System restoration requires the participation of not only control room personnel but also those outside of the control room. These include blackstart unit operators and field switching operators in situations where SCADA capability is unavailable."*

The drafting team modified R10 (now R12 in the revised standard) to clarify that ff the TOP's restoration plan has field switching tasks **unique** to system restoration that are not included in normal operations, then training is required.

In FERC Order 693, the ERO is directed to identify time frames for training and review of restoration plan requirements. Requirements have been changed accordingly. Several commenters questioned the proposed time frames and the drafting team modified the requirement to clarify that the training must be a minimum of two hours rather than four hours, and the training requirement is only applied to Generator Operators of Blackstart Resources.

The drafting team's modifications to EOP-005 Requirements R12 (formerly R10) & R18 as shown below.

**R12.** Each Transmission Operator shall provide a minimum of two hours of System restoration training per year for ~~each of its authorized transmission~~ field switching personnel ~~for the tasks~~ identified ~~in~~ as performing unique tasks associated with its restoration plan~~.~~ and outside of their normal tasks.

**R18.** Each Generator Operator of a Blackstart Resource shall provide a minimum of ~~four~~ two hours of training per year to each of its operating personnel responsible for the startup and synchronization of its Blackstart Resource generation units ~~identified in the BRFP~~. The training program shall include the following:

| **Question #3** | | | |
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| **Commenter** | **Yes** | **No** | **Comment** |
| SDG&E | | ☑ | I do not agree with the training required of field switching personnel. It is overly prescriptive given the less complex nature of their involvement in restoration. Have a requirement to include system restoration training within the TOPs authorization training for its switching personnel (typically every 3 years). That way to stay authorized, you have to have that restoration training. |
| WECC RCCWG | | | Training should be addressed in the PER standards. In addition to that comment, the WECC RCCWG feels that a standard that is applicable to Reliability Coordinators only is not the place for Training for Generator Operators and field switching personnel. |

| Question #3 | | | |
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| **Commenter** | **Yes** | **No** | **Comment** |
| | | | Training for all switchmen is confusing as the term switchmen is not defined and varies by locality. |
| **Response:** If the TOP's restoration plan has field switching tasks unique to system restoration that are not included in normal operations, then training shall be required. Changes have been made to R12 to clarify this position. | | | |
| PG&E (1) | | | We don't agree that specific hours of training should be stated for generator operators, but only specify the training that is needed. We also recommend a two year requirement be considered, similar to the drills in EOP-006. We do not agree that the training should go to the field switching personnel since they take orders from the control room. In addition, their switching assignments will be based on their specific locations, wherever that is at the time of the event. |
| **Response:** It is appropriate to include both the minimum hours of training and the training content in this standard, similar to the training requirements documented in PER-002-2 which states '"each Transmission Operator and Balancing Authority shall provide its operating personnel at least five days per year of training and drills using realistic simulations of system emergencies, in addition to other training required to maintain qualified operating personnel." Additionally, in the new version of the standard, PER-005, requirement R3 states "'shall provide each System Operator with at least 32 hours annually of emergency operations and system restoration training" PER-005 R3.1. states "training shall include the principles and procedures needed for recognizing and responding to emergencies, using drills, exercises or simulations of system conditions in subject areas from the Emergency Operations Topics (provided in Attachment B)."<br>If the TOP's restoration plan has field switching tasks unique to system restoration that are not included in normal operations, then training shall be required. Changes have been made to R12 to clarify this position. | | | |
| Salt River Project | | ☑ | Training of field switching personnel should not be included in NERC Standards and should be left up to the individual entities. Field switching personnel are not typically NERC certified. This issue could be addressed in NERC Readiness Audits.<br>Field switching personnel should always be working under the direction of a certified Transmission Operator. Are the tasks performed by switching personnel that much different than their normal switching tasks? While the conditions triggering the performance of the tasks may be abnormal, the tasks are likely the same and a special training requirement for field personnel isn't warranted. |
| **Response:** System restoration requires the participation of control room personnel, generator operators and field switching personnel regardless of NERC certification. As such, all should receive system restoration training. EOP-005-2 establishes the minimum training requirements to ensure all participants are trained in system restoration. Other NERC standards require training of non-certified personnel such as CIP-004-1.<br>If the TOP's restoration plan has field switching tasks unique to system restoration that are not included in normal operations, then training shall be required. Changes have been made to R12 to clarify this position. | | | |
| SERC OPS | | ☑ | (1) We do not agree that training requirements should be included in EOP-005, and (2) We don't agree with the "broad brush" approach taken to apply to all field personnel.<br>(1) We feel strongly that training for restoration should be addresed by the PER Standards rather than in the Emergency Operations Standards. |

| Question #3 | | | |
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| **Commenter** | **Yes** | **No** | **Comment** |
| | | | (2) In addition to the training requirements being too broadly applied to field personnel, they lack detail in what should be covered as compared to the requirements of R9. The specified training in Requirements R10 and R15 should only apply to those Transmission Operator and Generation Operator personnel that direct system restoration actions carried out by personnel in the field and generating plants. Requirement R15 of the Standard needs to be revised to delete the requirement for "a minimum of four hours of training per year." Requirement R15 already includes a minimum content for the training program for Generator Operators. As long as the training given meets the training content requirement in R15, there is no need, and it is inappropriate, to specify a required duration for the training. Also, since the training content is specified in R15, this requirement is measureable and there is no need for training duration to be added just so the requirement can be measured in this manner. |
| New York ISO | | ☑ | Generator operators and field switching personnel have no decision making role in the process of system restoration. Switching personnel follow switching orders, as is their normal function. Generator operators keep their units running, keep the dispatching entity (TO or ISO) appraised of the unit capabilities, and follow the MW/MVAR instructions of the dispatching entity, as is their normal function.<br>All training requirements should be included in PER-005. |
| Entergy | | ☑ | There should not be a requirement for training of "field switching personnel" in system restorations as those personnel do not take unilateral action. Field personnel are trained as needed to fulfill all the requirements of their positions and duties, including restoration. In addition, we believe all the compliance monitoring and book-keeping needed to show compliance for training 2 hours per year does not justify the placement of this type of requirement in a NERC standard. Please delete EOP-005-2 R10. |
| Dominion | | ☑ | Dominion's position is that system restoration training should be provided to each of our approved transmission field switching personnel as part of their re-qualification training that is currently performed on a three year cycle. In fact we intend to integrate this training into the qualification program whether or not the proposed requirement for such training is approved or not. This training will cover all of the switching tasks identified in our system restoration plan. We do not agree that such training is necessary on an annual cycle, and an annual requirement would needlessly disrupt our established and proven training cycle. A three year cycle is the current requirement for blackstart resource testing, and we believe that a three year cycle is adequate for qualifying field switching personnel as long as the qualification training covers all components of switching tasks identified in the system restoration plan as it may change and become more complex over time.<br>Therefore, Dominion believes that requirement R10 of EOP-005 should read as follows:<br>R10. Each Transmission Operator shall provide System restoration training at least |

| Question #3 | | | |
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| **Commenter** | **Yes** | **No** | **Comment** |
| | | | every three years for each of its authorized transmission field switching personnel for the tasks identified in its restoration plan.<br>Dominion's position is that the blackstart generator operator needs to know how to coordinate with the Transmission Operator, how to perform a black start-up, how to perform switching, and how to control the generator voltage and frequency as load is added during a system restart. The operator is familiar with most of these activities through experience gained while normally operating the generator and through the normally scheduled blackstart testing. Therefore, we do not agree that a minimum of four hours of training per year is necessary based on the day to day activities that the generator operators perform. If there is to be a training requirement, it should be based on the topics that should be covered rather than be time based. |
| AEP | | ☑ | EOP-005, R10 – We do not agree with mandating 2 hours of annual training for field switching personnel. Their initial training gives them the required training to qualify and certify them to perform switching. Their daily job is switching, operating, and maintaining the sub-station and line equipment. All field-switching by field switching personnel is done under the authority and direction of the NERC certified system operators in the operating/dispatch centers. The System Operators give detailed step by step switching instructions to field-switching personnel, whether emergency or routine maintenance switching, related to the isolation and restoration of equipment. Instructions are not given to unqualified personnel. Instructions are given to qualified personnel only. Our Company policy requires a switchperson to take a refresher course if a switchperson has not switched within a twelve month period. Consequently we find little value in mandating an annual two hour training session for every switchperson on the AEP system. Field switching personnel will follow the switching instructions given by the System Operators/Dispatchers during black-start the same as they do in other situations of maintenance, emergencies following storms, and emergencies of other unplanned outages. In most cases, these are step-by-step instructions. However, we could support a requirement mandating 2 hrs of annual training for field switching personnel that have not performed switching in the past 12 months. |
| ATC | | ☑ | ATC does not agree with the requirement to train field switching personnel and request that it be deleted. ATC believes that emergency field switching done during a blackout is no different than field switching performed during planned events or other emergencies. In addition, the field switching personnel work under the direction of a NERC certified system operator.<br>If the SDT determines its necessary to address this issue, then we recommend that the SDT request NERC to have a personnel specific committee explore the idea. |
| Consumers | | ☑ | R15 - Consumers agrees that it is appropriate for the Standard to require the generator operator to provide training to its operating personnel, however, the generator operator |

| Question #3 | | | |
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| **Commenter** | **Yes** | **No** | **Comment** |
| | | | should be allowed flexibility in determining what training is necessary to ensure it meets its obligations set forth in the transmission operators BRFP. |
| HQT | | ☑ | Field switching personnel and Generator Operators are sufficiently trained and no specific training is required; these entities do not have decision making authority with respect to system restoration. The interpretation of the term "operator" is not clear in the FERC order.<br>Further, as a generic comment, all training requirements should be contained in the single training Standard PER-005; this comment is applicable to both proposed Standards EOP-005 and EOP-006. |
| FirstEnergy | | ☑ | FE Disagrees. We do not support the proposed R10 requirement of EOP-005-2. FE's field switching personnel do not independently perform transmission switching without taking direction from our transmission operations staff. It is FE's view that our field personnel do not need to be trained in the "big picture view" of system restoration and that the tasks required of them would not be significantly different than switching steps performed during normal operations.<br>With regard to proposed requirement R15 of EOP-005-2, we agree with the proposed training for the Generator Operator related to the system restoration plans. However, the SDT should further clarify the Generator Operator definition for this requirement; i.e. plant generator operator or control center generator operator with oversight of multiple units, or both.<br>Furthermore, we do not agree with including training requirements in the EOP standards. We recommend that all training requirements be included in the PER set of training standards. Also, there is a current NERC project (2006-01) that is creating new requirements for system personnel training. The new standard is PER-005 and it discusses training with regard to system restoration in requirement R3. The SDTs for this project and the 2006-01 project should coordinate the training requirements and keep them in the PER set of standards. |
| CenterPoint | | ☑ | Any training requirement should be contained within the appropriate PER standard. However, field switching personnel should not be included. The role of field switching personnel in a black start restoration situation would not differ significantly from storm restoration or other service restoration situations. Therefore, specific training requirements are not warranted. (See response to Q.1. above.) |
| IESO | | ☑ | All training matters should be grouped under the training standards. To have a training requirement in each standard that deals with a specific subject creates a difficulty in assessing a complete training need. |
| KCPL | | ☑ | It is unnecessary to include training for field switching personnel. These personnel do not act independently and are under the direction of Transmission Operators and Generation Operators who are required to be trained in this proposed standard. |

| Question #3 | | | |
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| **Commenter** | **Yes** | **No** | **Comment** |
| FPL | | ☑ | Generator Operators and field switching personnel have no decision making role in the process of system restoration.<br>R-16 If the term Generation Operators must remain then it should be clear that these are the Generation Operators only responsible for Operation of the Black Start resources.<br>All training requirements should be covered under Per-005. Training requirements sprinkled throughout the Standards become confusing.<br>Clarification needs to be given on what type of training is required for authorized transmission field switching personnel. |
| NPCC RSC | | ☑ | Field switching personnel and Generator Operators are sufficiently trained and no specific restoration training is required; these entities do not have decision making authority with respect to system restoration. The interpretation of the term "operator" is not clear in the FERC order.<br>Further, as a generic comment to training, all training requirements should be contained in the single training Standard PER-005; this comment is applicable to both proposed Standards EOP-005 and EOP-006. |
| Southern Transmission | | ☑ | All training requirements should be centralized in the PER category of Reliability Standards. The EOP-005-2 proposed Standard sets a minimum amount of time to be spent, on an annual basis, in training for both TOP and GO without offering much specificity or guidance, particularly for the TOP (and BA if included), as to what the training will impart. Requirement R.15 is a good beginning. More of the training detail should be developed and then specified in the Standard, perhaps with "training will include as a minimum" language. Once more detail is identified, time estimates of performing that training could then be developed and listed for the GO and TOP (and BA) if the drafting team feels minimum time periods for training should be included in the Standard. We recommend dropping the four and two hour minimum time requirements and focus more on the minimum content to be included in the training.<br>If the Standard will continue to utilize a "Blackstart Resource agreement", training requirements should be reflected in that agreement. |
| PG&E (2) | ☑ | ☑ | Including training for generator operators and field switching personnel associated with restoration complies with the intent of FERC Order 693, with states "System restoration requires the participation of not only control room personnel but also those outside of the control room. These include blackstart unit operators and field switching operators in situations where SCADA capability is unavailable. As such, the Commission believes that inclusion of periodic system restoration drills and training and review of restoration plans in a system restoration Reliability Standard is the most effective way of achieving the desired goal of ensuring that all participants are trained in system restoration and that the restoration plans are up to date to deal with system changes." |

| Question #3 | | | |
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| **Commenter** | **Yes** | **No** | **Comment** |
| | | | However, the training required in EOP-005-2 R10 and R15 are missing the words "where SCADA capability is unavailable".<br>R10 and R15 are also not clear who exactly is required to be involved in this required training. Recommend adding the words "where SCADA capability is unavailable" and clearly defines 'those outside of the control room' that would require training so it is not mis-interpreted and can be properly measured. |
| SPP ORWG | | ☑ | FERC Order 693 assumes that switchmen and generator operators are acting independently, which is incorrect. They are always under the direction and operating authority of an entity's control room. We do not believe this additional training requirement for switchmen and generator operators is necessary as they are already trained on how to switch equipment under adverse conditions (storm restoration, loss of DC, etc.) or on how to start and synchronize a unit. |
| OVEC | | ☑ | Training requirements should all be in one standard. The training standard should not dictate training contents. Field switching personnel should not be included in any training requirements because these personnel are under the direction and control of a NERC certified system operator. |
| OPG | | ☑ | As written the standard implies that Generator Operators do not currently possess the necessary skills to start and synchronize a unit. In addition Ontario already has a comprehensive System Restoration and Blackstart Program that includes training and integrated exercises for operators. This requirement would add an additional training burden. OPG questions the necessity for this additional trainig burden and requires to know the justification and rationale for its requirement. |
| MRO SRC | | ☑ | The MRO would like the SDT to clarify who exactly needs training regarding field switching personnel and the duties they perform. Does an entity need to train all field personnel for all duties, due to the rotating nature of duties performed by field personnel? |
| National Grid | | ☑ | Neither directs restoration therefore this requirement is unnecessary. They only need to follow the direction they are given. |
| NBSO | | ☑ | Special restoration training for the field personnel is not required. They should be trained sufficiently through their normal training process. |
| Duke Energy | ☑ | ☑ | At generator facilities, operators may be required to perform non-routine duties associated with blackstart, such as switchyard activities. It is appropriate to provide blackstart training for these individuals. However transmission field switching personnel would be performing familiar tasks under the direction of the Transmission Operator, and do not need specialized training. We have hundreds of field switching personnel, and providing two additional hours of training purely on blackstart restoration is unwarranted. |
| FRCC | ☑ | ☑ | Training requirements for EOPs should be centrally located in the PER standards and not |

| Question #3 | | | |
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| **Commenter** | **Yes** | **No** | **Comment** |
| | | | embedded within EOP-005 and EOP-006.<br>For companies with local Generation Control Centers, we agree that training is needed. For companies with Generation, Interchange, and Transmission in the same control center, this training is already required (EOP-005-0, R6 and R7). Field switching personnel are already trained on how to operate switches and devices. In a restoration situation field operating personnel need only to follow the instructions given to them by the System Operator, therefore specific training for field personnel in restoration is not needed. |
| We Energies | ☑ | | We disagree with the training requirements for field switching personnel and Generator Operators.<br>For the field switching, there is no value added by requiring the training. Field personnel routinely switch under adverse conditions related to storm recovery and equipment damage.<br>The GO is the entity testing units for Black Start capability for compliance to NERC and Regional Entity Standards. The training required in the proposed standards is redundant. The GO does not determine restoration philosophy. Restoration priorities are not the purview of the GO. |
| NIPSCO | ☑ | | It may be desirable to have all training requirements in a single standard such as PER-005. It is not clear who the generator operator is in this context. Is that a person at the generating station or at the central operations center? |
| Manitoba Hydro | ☑ | | I am in agreement with MISO in that if the training content is covered then you don't need to define how many hours of training is required by generator operators and field switching personnel. |
| MISO Stakeholders | ☑ | ☑ | While generator operators and field switching personnel should participate in drills associated with restoration, we are not sure it is appropriate to extend obligations beyond registered entities (field switching personnel and power plant workers may have no affiliation with the respective BA or TOP). Most utilities have scores of individuals that do field switching and in all cases they are working under the direction of a transmission operator. The specified training in Requirements R10 and R15 should only apply to those Transmission Operator and Generation Operator personnel that direct system restoration actions carried out by personnel in the field and generating plants Assuming Generator Operators does not encompass personnel in the plant, requirement R15 of the Standard needs to be revised to delete the requirement for "a minimum of four hours of training per year." Requirement R15 already includes a minimum content for the training program for Generator Operators. As long as the training given meets the training content requirement in R15, there is no need, and it is inappropriate, to specify a required duration for the training. Also, since the training content is specified in R15, this requirement is measurable and there is no need for training duration to be |

| Question #3 | | | |
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| **Commenter** | **Yes** | **No** | **Comment** |
| | | | added just so the requirement can be measured in this manner. |
| WECC OTS | ☑ | ☑ | WECC OTS agrees that including training for generator operators and field switching personnel associated with restoration complies with the intent of FERC Order 693, with states "System restoration requires the participation of not only control room personnel but also those outside of the control room. These include blackstart unit operators and field switching operators in situations where SCADA capability is unavailable. As such, the Commission believes that inclusion of periodic system restoration drills and training and review of restoration plans in a system restoration Reliability Standard is the most effective way of achieving the desired goal of ensuring that all participants are trained in system restoration and that the restoration plans are up to date to deal with system changes."<br>However, the training required in EOP-005-2 R10 and R15 are missing the words "where SCADA capability is unavailable". The wording in R10 and R15 are also not clear who exactly is required to be involved in this required training. The OTS recommends adding the words "where SCADA capability is unavailable" and clearly defines 'those outside of the control room' that would require training so it is not mis-interpreted and can be properly measured. |
| Ameren | | ☑ | While a case could be made that the only generator operators that would participate in a Blackstart plan are able to be defined and thus easy to target for training, it is not the case with field switching personnel. For blackouts resulting from sabotage or natural disaster, it is highly likely that many field switching personnel will be called into duty to aid in restoration that can not be pre-determined or would not be logical choices for yearly training. For example, many utilities rely on contractors, other utilities, and even staff employees during storm or disaster events. These people may be trained to various work, e.g operation of a switch or operation of switches in a control room that may be necessary depending on the extent of the blackout, the duration, and the extent of other damage. Even those people who routinely perform switching may be called to a more important purpose during a restoration event if a replacement employee from one of the "emergency responder" categories could be used. The switching training will be nothing but a feel good which does not contribute to reliability. It would be far better for the requirement to be that following an event a TOP showed it utilized appropriate levels to support the restoration. |
| ISO/RTO | | ☑ | All training matters should be grouped under the training standards. To have a training requirement in each standard that deals with a specific subject creates a difficulty in assessing a complete training need.<br>We also do not see the need for R10. For example, if a field switchman is trained to switch and follow directions of the transmission dispatcher, we do not see the need for a blanket requirement that all switchmen must have specific annual blackstart training. |

| Question #3 | | | |
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| **Commenter** | **Yes** | **No** | **Comment** |
| | | | There is also concern that the term switchmen could cause confusion. Does this requirement require training of the person pulling switches in the field or is this a resurrection of the local control center topic?<br>In R9., the term "existing emergency operations topics training program" should be simplified to "operations training program". |
| BCTC | ☑ | ☑ | This training should be covered in the PER Standards that are being re-worked at the same time.<br>FERC Order 693 said in part "System restoration requires the participation of not only control room personnel but also those outside of the control room. These include blackstart unit operators and field switching operators in situations where SCADA capability is unavailable. As such, the Commission believes that inclusion of periodic system restoration drills and training and review of restoration plans in a system restoration Reliability Standard is the most effective way of achieving the desired goal of ensuring that all participants are trained in system restoration and that the restoration plans are up to date to deal with system changes." The training required in EOP-005-2 R10 and R15 are missing the words "where SCADA capability is unavailable". The wording in R10 and R15 are also not clear who exactly is required to be involved in this required training. Suggest adding the words "where SCADA capability is unavailable".<br>R15 says Generator Operators not Generator Operators of Blackstart Resources. Is this requirement meant to cover more than Generator Operators of Blackstart Resources? If yes, they should be clearly defined which Generator Operators must be trained.<br>Generator Operators of Blackstart Resources are required to test the plant once every three years to ensure the plant is capable of meeting the requirements of being a Blackstart Resource. A certain amount of training goes into meeting this test. Would 4 hours of training to test the Blackstart Resource meet this requirement or is the training that is being suggested as required annually be different? If it is different the Standard should say that as we believe the training program for Generator Operators in R15 is part of the blackstart testing we do every 3 years. Who would be required to maintain these training records for an audit, the Generator Operator or the Transmission Operator? |
| **Response:** The SDT notes that in FERC Order 693, the FERC determined that *"System restoration requires the participation of not only control room personnel but also those outside of the control room. These include blackstart unit operators and field switching operators in situations where SCADA capability is unavailable."*<br>If the TOP's restoration plan has field switching tasks unique to system restoration that are not included in normal operations, then training shall be required. Changes have been made to R12 to clarify this position.<br>In FERC Order 693, the ERO is directed to identify time frames for training and review of restoration plan requirements. | | | |
| Santee Cooper | | ☑ | FERC Order 693 states the "Commission believes that inclusion of periodic |

| Question #3 | | | |
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| **Commenter** | **Yes** | **No** | **Comment** |
| | | | system restoration drills and training and review of restoration plans . . .". We recommend that "periodic" training be conducted every 3 years, which is our current policy on refresher training (8 hours) for generator operators and field switching personnel. Providing training for two and four hours annually is not cost effective or productive for personnel involved in shift operations. The eight hours provided by Santee Cooper every three years provides an in-depth review of switching operations than could be provided in two and four hours of training. A requirement of more hours of training every three years will allow for more in depth training with appropriate assessments. |
| **Response:** EOP-005-2 establishes the minimum training requirements to ensure all participants are trained in system restoration. Annual training is more effective and required by other standards such as PER-002. Many methods are available for training shift workers besides typical classroom style instruction. | | | |
| Reliant | | ☑ | The training requirement for generator operators is not needed because:<br>1. Generator operator is too broad of a term in defining who must be trained. It could mean the control room operator or the person that works the basement. I believe that the standard team means the person that actually starts the unit. In any case the 4 hours of training is over kill. These units, in the majority of the cases are simple cycle CT's that do double duty as black start and as peakers. As a peaker these units are started during high demand periods. The generator operator knows how to start these units so additional training is not needed.<br>2. The generator operators do what they are told. They do not take any unilateral action in the event of a blackout. The transmission operator must have a very though understanding of the sequence of events. The generator operator only needs to understand the process at a high level. It does not take 4 hours of training for this position to get a more detailed understanding. The generator is in possession of the black start recovery procedure. If the SDT feels that training is required then that training requirement should be on the operators' supervisor, not the operator.<br>3. The black start generator must do an annual test proving the units ability to start without assistance from the grid and sync to a dead bus. This should suffice as adequate training for the generator operator. |
| **Response:** The SDT has made changes to the old R17 to accommodate these concerns. | | | |

| Question #3 | | | |
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| **Commenter** | **Yes** | **No** | **Comment** |
| Madison G&E | | ☑ | a) All required training that a NERC Standard directs any entity to do should be placed in its own NERC (training) Standard. The NERC Standard category "Personnel Performance, Training, and Qualifications" is established for this purpose. As stated in FERC Order 693, para. 1335, training requirements would not be in one "all inclusive standard". A better fit is to have many individual standards (that specify training requirements listed in Personnel Performance, Training, and Qualifications section of the NERC Standards) under the heading of "Personnel Performance, Training, and Qualifications". If a training requirement is imbedded in a non-"Personnel Performance, Training, and Qualifications" standard, it will lead to possible shortfalls from an entity.<br>b) Concerning "Generator Operator" training: Concur with FERC's decision (FERC Order 693, para 1332 and 1359) that the Generator Operator as an entity (see NERC definition of Generator Operator) is required to be NERC Trained, not the plant operators located at the generator plant site, based on the following:<br>As stated in FERC Order 693, para. 1360, "... a generator operator typically receives instructions from a balancing authority. Some generator operators are structured in such a way that they have a centrally-located dispatch center [note: possibly in a System Operations Center where the person performing NERC Standards in accordance with Balancing Authority are also the Generator Operator] that receives direction and then develops specific dispatch instructions for plant operators under their control". "In this type of structure, it is the personnel of the centrally-located dispatch center that must receive formal training in accordance with the Reliability Standard. Plant operators located at the generator plant site also need to be trained but the responsibility for this training is outside the scope of the Reliability Standard".<br>c) We should not CONFUSE Generator Operator (a registered NERC entity) with plant personnel.<br>d) Per NERC Definition: "Generator Operator is: The ENTITY that operates generating unit(s) and performs the FUNCTION of supplying energy and Interconnected Operations Services".<br>FERC states that plant operator training is outside the scope of a Reliability Standard within FERC Order 693, para, 1361, again.<br>FERC Order 693, para. 1365, states " regarding the need for a size limitation on generator operators...We believe that limiting the applicability of Reliability Standards to NERC's definition of bulk electric system will alleviate much of... the expanded requirements on end users who have on-site generation". The SDT need to state this in the proposed Standard.<br>e) Concerning "Field Switching Personnel" and "blackstart unit operators" training: Per FERC Order 693, para. 627, states "...PER-005-1 only includes Requirements on the control room personnel and not those outside of the control room. System restoration requires the participation of not only control room personnel but also those outside of |

| Question #3 | | | |
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| **Commenter** | **Yes** | **No** | **Comment** |
| | | | the control room. These include blackstart unit operators and field switching operators in situations where SCADA capability is unavailable". According to the above paragraph, any type of training should be in PER-005-1 and not within EOP-005-2 (described in first sentence of para. 627).<br>f) There should not be an hour (training) requirement (or mention) for non-NERC certified personnel within any NERC Standard ("Field Switching Personnel" and "blackstart unit operators"). Key people need to be in the training loop for restoration processes, but the NERC Standard training requirement can only apply to personnel who hold a NERC Certification. SRB SDT should remove training hour requirements for non NERC Certified personnel from the NERC Standard. The NERC Standard is not a receptacle of NERC Requirements (?) for NON NERC Certified personnel.<br>g) There may be a few items that require specialized training in the restoration of the BES. One may be the synching of two islands or ensuring backup systems are working within limits for pipe type cable. Perhaps these requirements could be held at the Transmission operator or Regional Entity level. |
| **Response:**<br>*A.* The SDT notes that in FERC Order 693, the FERC determined that *"System restoration requires the participation of not only control room personnel but also those outside of the control room. These include blackstart unit operators and field switching operators in situations where SCADA capability is unavailable."*<br>**B.** Thank you.<br>**C.** The SDT has made changes to R17 to accommodate this concern.<br>**D.** The SDT has made changes to R17 to accommodate this concern.<br>**E.** If the TOP's restoration plan has field switching tasks unique to system restoration that are not included in normal operations, then training shall be required. Changes have been made to the new R12 to clarify this position.<br>F. (and G.) It is appropriate to include both the minimum hours of training and the training content in this standard, similar to the training requirements documented in PER-002-2 which states '"each Transmission Operator and Balancing Authority shall provide its operating personnel at least five days per year of training and drills using realistic simulations of system emergencies, in addition to other training required to maintain qualified operating personnel." Additionally, in the new version of the standard, PER-005, requirement R3 states "'shall provide each System Operator with at least 32 hours annually of emergency operations and system restoration training" PER-005 R3.1. states "training shall include the principles and procedures needed for recognizing and responding to emergencies, using drills, exercises or simulations of system conditions in subject areas from the Emergency Operations Topics (provided in Attachment B)." | | | |
| RFC (1) | ☑ | | However I think you need to be clear on your definition of GOP. As I understand it , GOP's are those which communicate with the BA and relay directions to generating plant personnel. Both of these types of personnel should have some type of training in my opinion. These people need to be aware of these types of situations. The plant |

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| **Commenter** | **Yes** | **No** | **Comment** |
| | | | operator is concerned with his or her unit and it's operation however there are things which he should be aware of such as frequency swings during restoration, loading of units, etc. Field Switching personnel may not make transmission operational decisions but they are involved and need a familiarity with equipment during these types of events.<br>The training time required should probably be reduced to 2/4 hours every 2 years. |
| **Response:** EOP-005 has been modified to make it clear that representative staff members of a TOP or GOP must participate in drills not the TOP or GOP function.<br>It is appropriate to include both the minimum hours of training and the training content in this standard, similar to the training requirements documented in PER-002-2 which states '"each Transmission Operator and Balancing Authority shall provide its operating personnel at least five days per year of training and drills using realistic simulations of system emergencies, in addition to other training required to maintain qualified operating personnel." Additionally, in the new version of the standard, PER-005, requirement R3 states "'shall provide each System Operator with at least 32 hours annually of emergency operations and system restoration training" PER-005 R3.1. states "training shall include the principles and procedures needed for recognizing and responding to emergencies, using drills, exercises or simulations of system conditions in subject areas from the Emergency Operations Topics (provided in Attachment B)." In FERC Order 693, the ERO is directed to identify time frames for training and review of restoration plan requirements. | | | |
| TVA | ☑ | | It would be helpful to have more insight from the drafting team about the scope of training to be required. Perhaps an attachment to the standard should be added to clarify the training objectives. On initial impression, the 2/4 hr annual training requirement for Operators seems excessive. It would appear that this training should be able to be incorporated into existing operator training programs already in place. |
| **Response:** It is appropriate to include both the minimum hours of training and the training content in this standard, similar to the training requirements documented in PER-002-2 which states '"each Transmission Operator and Balancing Authority shall provide its operating personnel at least five days per year of training and drills using realistic simulations of system emergencies, in addition to other training required to maintain qualified operating personnel." Additionally, in the new version of the standard, PER-005, requirement R3 states "'shall provide each System Operator with at least 32 hours annually of emergency operations and system restoration training" PER-005 R3.1. states "training shall include the principles and procedures needed for recognizing and responding to emergencies, using drills, exercises or simulations of system conditions in subject areas from the Emergency Operations Topics (provided in Attachment B)." The training mentioned is part of the existing training requirement not in addition to. In FERC Order 693, the ERO is directed to identify time frames for training and review of restoration plan requirements. | | | |
| US Army Corps Eng. | ☑ | | I am glad that finally there is a requirement for generator operators to be trained on black start restoration in addition to the requirement for testing of black starting of a generator. For all of the generators in my Division that are listed as black start resources, I require each operator to perform black start operations annually. I do this so that when a need arises to perform black starting, the operator on shift is fully trained in black starting a generator. The required 4 hours of training will give the |

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| **Commenter** | **Yes** | **No** | **Comment** |
| | | | operators a better idea of what the power system needs are surrounding black starting. |
| OPPD | ☑ | | |
| Entergy (G&M) | ☑ | | |
| **Response:** Thank you for your comment. | | | |

4. The SRB SDT defined a new term, Blackstart Resource, which allows for greater flexibility in providing resources for blackstart operations. Do you agree with this definition?

**Summary Consideration:** Several commenters suggested that the definition was not clear and the SDT modified the definition based on comments received as shown below.

**Blackstart Resource:** A generation Facility and associated set of equipment ~~under~~ which has ~~the control of the Generator Operator with the basic~~ ability to ~~start itself~~ be started without support from the System or to ~~automatically~~ remain energized without connection to the remainder of the System, with the ability to energize a dead (de-energized) bus, ~~and~~ meeting the Transmission Operator's restoration plan needs for real and reactive power capability, frequency and voltage control, and that has been included in the Transmission Operator's restoration plan.

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| **Commenter** | **Comment** |
| Ameren | Again, the nuance that is supposed to be derived from this wording is not clear. Again, please state what you mean and if necessary use an example to define. |
| **Response:** The creation of this term helps define the true application of this standard since it only applies to a subset of all generators. Also, it helps define the fact that this standard only applies to designated units and not to other units that may be blackstart capable. The definition will eventually be moved into the NERC Glossary and may be used by other standards beyond these. | |
| IESO | No, we do not agree with the definition of this term. The definition of the term must be revised in order to narrow down the scope of the definition to "true" blackstart units only. This way we can ensure that generators which trip on detecting the absence of an energized grid and end up serving station load (islanding scheme) are not considered as a blackstart resource because such units also have the capability to re-energize the grid if they are required to do so and as soon as the synchronization parameters are achieved, but this does NOT make these blackstart units.<br>Hence, we propose a revised definition which is stated as follows: "Blackstart Resource: A generation Facility and set of equipment under the control of the Generator Operator with the basic ability to start itself without support from the System, with the ability to energize a dead bus, and meeting the Transmission Operator's restoration plan needs for real and reactive power capability." |
| New York ISO | In M.M. Adibi's presentation to the EPRI System Restoration Workshop 3/16/2007 presented successful performance for generator islanding schemes at 50-60%. If we are counting on that sort of success rate, the transmission operators will have to be contracting for large amounts of blackstart and/or testing those islanding schemes on a very rigorous schedule. Testing the islanding schemes sounds like a major headache to me. It would be more straightforward deal with the traditions definition of blackstart. |
| NBSO | No<br>The following definition is proposed: Blackstart Resource - A generation Facility and set of equipment under the control of the Generator Operator with the basic ability to start itself without support from the System, with the ability to energize a dead bus, and meeting the Transmission Operator's |

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| **Commenter** | **Comment** |
| | restoration plan needs for real and reactive power capability. |
| FirstEnergy | FE Agrees with the need for a revised "Blackstart" term. However, the definition seems longer than required with much of the verbiage repetitive and unnecessary.<br>Therefore we propose the following revised definition: "Blackstart Resource - A generation Facility under the control of the Generator Operator with the ability to start itself without support from the System and that meets the restoration plan of the Transmission Operator." |
| ATC | We do not agree with the proposed definition for "Blackstart Resources". The proposed language would allow an entity to claim it has a "Blackstart Resource" even if the unit's availability is directly dependent on its pre-disturbance activity. In other words if the unit was on prior to the blackout then it may be available following the event, but if the unit was offline prior to the blackout then it will not be available post disturbance.<br>A "Blackstart Resource" should be limited to a generator that has the ability to start without system support.<br>An adequate level of reliability is dependent on the ability to restore the BPS following a blackout. That concept should not be dependent on the pre-disturbance status of the Blackstart Resource. |
| Southern Transmission | No. As we interpret the definition provided with Version 2 of the Standard, we find the definition clouds what a Blackstart Resource actually is. We read the part of the definition "... or to automatically remain energized without connection to the remainder of the System, ..." to be mis-leading. A generating unit that has not tripped off-line and is part of an islanded system but does not have "self start" capability will now be classified as a Blackstart Resource - and it isn't. This unit cannot start without support from the power grid and should not be considered a Blackstart Resource. The "... or to automatically remain energized without connection to the remainder of the System, ..." language in the definition should be stricken.<br>Also, the Background section (end of the second paragraph) of this comment form states there is a newly defined term - Blackstart Resource Facility Plan - in the proposed Standard. We did not find a definition for Blackstart Resource Facility Plan.<br>Additionally, the portion of the definition which reads, "..with the basic ability to start itself without support ..." would read better if phrased "... with the basic ability to be started without support ... ." |
| **Response:** Resources that can isolate themselves and remain in service are as important to the restoration effort as resources that can start without outside sources of power and are being considered Blackstart Resources. This type of resource being considered a Blackstart Resource is currently used in several regions.<br>Blackstart Resource Facility Plan has been deleted from the standard. | |
| NPCC RSC HQT | No<br>The following definition is proposed: Blackstart Resource: A generation Facility and set of equipment under the control of the Generator Operator with the basic ability to start itself without support from the System, with the ability to energize a dead bus, and meeting the Transmission Operator's restoration plan needs for real and reactive power capability.<br>Reliability concerns point to the high failure rate of islanding schemes as an alternative to a dedicated |

| Question #4 | |
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| | Blackstart generator.<br>It is also an issue that the system dispatch would require that these islanding units always operate 24 x 7 throughout the year. |
| **Response:** Resources that can isolate themselves and remain in service are as important to the restoration effort as resources that can start without outside sources of power and are being considered Blackstart Resources because of request from several industry representatives. This type of resource being considered a Blackstart Resource is currently used in several regions. These types of units are usually base load generation that is assumed to be running 24/7 except for maintenance. | |
| ISO/RTO | NO, we do not agree with the definition of this term. It is conceivable that a generating unit with blackstart capability can be located outside of the identified restoration, or "cranking" path. On the other hand, there can be facilities on the restoration path that do not provide or are not equipped with blackstart capability.<br>We suggest the SDT to consider requiring the responsible entity (TOP) to:<br>(a) Identify a cranking path for restoration from blackstart, and<br>(b) designate specific generating sources on the cranking path that have or to provide blackstart capability. |
| **Response:** It's the TOP's responsibility to define which units are to be used in its restoration plan. Other units that are blackstart capable but not included in the restoration plan are not Blackstart Resources under these standards. | |
| MISO Stakeholders | The definition appears to deal only with the starting point of the cranking path (typically a combustion turbine or hydro unit) and leaves out the first generator downstream along the cranking path. This is where the real challenge takes place. This plant must be able to start up with a limited supply. |
| **Response:** True. Only the first unit to start is considered to be a Blackstart Resource under the NERC definition. Starting the next generator is part of the restoration plan. | |
| MRO SRC | The MRO feels the definition of Blackstart Resource is unclear and would suggest using a more concrete term such as Blackstart Plant or Blackstart Facility. |
| **Response:** Your comment should have included the definition of the suggested terms. Without the definitions we cannot act on this suggestion. | |
| NIPSCO | Yes/No The new definition looks fine however Blackstart Resource Facility Plans (BRFP) should also be defined and be the term replacing Blackstart Capability Plan. |
| **Response:** The "Blackstart Resource Facility Plan" has been deleted from the revised standard. | |
| OVEC | No, I do not agree with the definition. It is not clear what the word "automatically" means in this context. Does it allow for some operator intervention or no operator intervention at all? The new term which might allow for greater flexibility mis-identifies resources which were never intended to be a Blackstart Resource. Suggest limiting the definition to the following, "A generation Facility under the control of the Generator Operator with the basic ability to start itself without support from the System." |
| **Response:** This type of isolation scheme is required to act in time frames that are much faster than operator intervention time frames. Resources that can isolate themselves and remain in service are as important to the restoration effort as | |

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| **Commenter** | **Comment** |
| resources that can start without outside sources of power and are being considered Blackstart Resources because of request from several industry representatives. This type of resource being considered a Blackstart Resource is not new to this draft to several regions. | |
| WECC RCCWG | We suggest you remove the words "under the control of the Generator Operator" from the definition, leaving the definition "A generation Facility and set of equipment with the basic ability to start itself without support from the System or to automatically remain energized without connection to the remainder of the System, with the ability to energize a dead bus, and meeting the Transmission Operator's restoration plan needs for real and reactive power capability." |
| **Response:** The SDT chooses to retain the existing wording to address the possibility of additional Facilities under the control of the GOP beyond the definition of generation Facility. | |
| Santee Cooper | We suggest replacing the words "to start itself" in the definition with "to be started". |
| FPL | No. The terms "basic ability to start it self" and "under the control of the generation operator" need to be clearer. |
| Entergy (G&M) | Yes, we agree with the definition. Consider adding a frequency component to the definition (as mentioned in the testing criteria). |
| PG&E (1) | We are concerned that the phrase "start itself" may be misunderstood as meaning automatically restarting itself. |
| FRCC | Yes, although the wording "basic ability to start itself" is a bit awkward. |
| SERC OPS | Yes, with the following change to the definition: replace "start itself" with "be started". |
| **Response:** The definition has been modified to reflect your suggestion. (See the summary consideration above.) | |
| Madison G&E | No. The following corrections need to be made to the definition of "Blackstart Resource".<br>a) After "Facility" in the first sentence , delete "and set of equipment", NERC definition of Facility is "A set of electrical equipment…", "and set of equipment" makes the sentence redundant.<br>b) Delete the word "basic" in the second sentence. A Blackstart Resource must be able to (Black)start on there own or not. There is no room for "basic ability".<br>c) Change the word "or" to "and" in the second sentence after "without support from the System". Just about every unit would be able to stay online if not connected to the remainder of the System, if it had the proper amount of load. You could have a blackstart unit online and only be providing station services to itself.<br>d) Concur with the last sentence in the definition of Blackstart resource stating "… and meeting the Transmission Operator's restoration plan needs for real and reactive power capability". But this is the only place that the Transmission Operator can make any minimum real and reactive power requirements to Generator Facilities on Blackstart Resources. This should be stated in a requirement (that the Transmission Operator will set minimum real and reactive limits for Blackstart resources). |
| **Response:**<br>a) and b) - The definition has been modified to reflect your suggestions. (See the summary consideration above.)<br>c) Units that can separate from the system but remain on-line are a special type of blackstart resource that needs to be clearly identified. | |

| Question #4 | |
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| **Commenter** | **Comment** |
| d) The SDT believes that this is addressed in R13. | |
| US Army Corps Eng. | I fully agree with this term. All of my hydropower generating facilities are capable of black starting the powerhouse. This is done as part of the dam safety and flood response requirements. This does not mean all hydro generators can black start a transmission line, it means that they can operate as a system generation resource during a black start event. Reconstruction of the transmission system starts with black starting lines, but having additional generation that can synch to the line will aide in how quickly large blocks of load can be picked up. So you may also want to define generation that is capable of starting or staying operational during a major system disturbance but is not capable of picking up the heavy reactive loads necessary to black start a transmission line. |
| TVA | Yes |
| Reliant | The definition looks good. |
| Entergy | Yes |
| AEP | Yes |
| BCTC | Yes |
| Duke Energy | Yes |
| KCPL | Yes |
| OPPD | Yes, we are in agreement with the definition. |
| RFC (1) | Yes, I agree. |
| Salt River Project | Yes |
| SPP ORWG | We agree with the definition. |
| **Response:** Thank you for your comment. | |

5. The SRB SDT has merged the RRO requirements in EOP-007 into EOP-006 and assigned them to the Reliability Coordinator. Do you agree with this change?

**Summary Consideration**: While most commenters agreed with the merging and reassignment of the RRO requirements from EOP-007 into EOP-006 there were some suggestions for modifying the requirements for training and drills And for making modifications to recognize that the actual restoration may deviate from the restoration plan. Based on these comments, the drafting team made the following changes to R1.6, R10 (now R12) and R18.

**R1.6.** A statement accounting for the possibility that restoration can not be completed as expected indicating that in situations where the actual conditions do not match the studied conditions, the System Operator shall use professional judgment to ~~modify~~ deviate from the System restoration plan.

**R12.** Each Transmission Operator shall provide a minimum of two hours of System restoration training per year for ~~each of its authorized transmission~~ field switching personnel ~~for the tasks~~ identified ~~in~~ as performing unique tasks associated with its restoration plan~~.~~ and outside of their normal tasks.

**R18.** Each Generator Operator of a Blackstart Resource shall provide a minimum of ~~four~~ two hours of training per year to each of its operating personnel responsible for the startup and synchronization of its Blackstart Resource generation units ~~identified in the BRFP.~~ The training program shall include the following:

Several commenters suggested that the Reliability Coordinator should not 'approve' the TOP's restoration plans. As to the RC approval process: In FERC Order 693, "*the Commission directs the ERO to develop a modification to EOP-006-1 through the Reliability Standards development process that ensures that the reliability coordinator, which is the highest level of authority responsible for reliability of the Bulk-Power System, is involved in the development and approval of system restoration plans.*" The SDT believes that the process described in EOP-005-2 and EOP-006-2 meets the Commission directive.

| **Question #5** | | | |
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| **Commenter** | **Yes** | **No** | **Comment** |
| TVA | | ☑ | RC should not "approve" the TOP plan. RC should review and provide technical comments to the TOP. TOP should be required to respond to RC written technical comments similar to the process in FAC-008-1 R2 for ratings. RC should not be a position of being liable for having "approved" the TOP plan EOP-005-2 R1 and EOP-006-2 R1 should be reworded to remove "approval". |
| NIPSCO | ☑ | ☑ | It is not certain that the RC or RRO has the resources and information to approve individual TOP restoration plans. The TOPs test the plans using their own expertise. |
| FRCC | ☑ | ☑ | We caution the DT that Reliability Coordinators should not be put in a position as Compliance Monitors. This is not the intention or the design of the NERC Standards program or the Compliance programs. The Reliability Coordinators should review and be aware of restoration plans but the "approval" step is shifting the responsibility for |

| Question #5 | | | |
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| **Commenter** | **Yes** | **No** | **Comment** |
| | | | determining the effectiveness or "acceptability" of a plan back on the RC and effectively puts responsibility on the RC without organizational authority over the various entities within their footprint. This could add significant administrative burden on the RCs while diluting the restoration reliability responsibilities of individual entities. |
| RFC (1) | ☑ | | However, If this standard is to set requirements for the RC then the RC should mentioned in the applicability section. The RC should not be involved in any compliance function either as it is not a compliance monitor. |
| MISO Stakeholders | | ☑ | In general, we agree that many of the requirements from EOP-007 logically should be applied to the RC. However, we question the requirement for the RC to approve the TOP plan. What approval means is not defined in the standard. Doe it mean that the RC guarantees the TOP plan will work, that the plan follows a consistent format or is it something else. Also, what is proposed if a plan fails to be approved? Which entity is non-compliant? It would be more appropriate for the RC to review, rather than approve, subordinate plans. |
| **Response:** RC review and approval of the plan is not an issue of compliance but of coordination and workability with the RC's restoration plan.<br>The SDT believes that this gives input to the RC in the development of plans such that the various TOP plans are coordinated with the RC's plan. In FERC Order 693, *"the Commission directs the ERO to develop a modification to EOP-006-1 through the Reliability Standards development process that ensures that the reliability coordinator, which is the highest level of authority responsible for reliability of the Bulk-Power System, is involved in the development and approval of system restoration plans."* The SDT believes that the process described in EOP-005-2 and EOP-006-2 meets the Commission directive.<br>The applicability section of EOP-006-2 has the RC as the applicable entity.<br>If a plan is not approved, EOP-006-2: R2, describes the process and defines who is responsible in a specific timeframe. | | | |
| Santee Cooper | | ☑ | Santee Cooper believes that a restoration plan developed to address a broad range of circumstances would not require the statement in R1.6 of EOP-006.<br>R8 requires two system restoration drills, exercises, or simulations per year. This is a new requirement and not one that was merged from EOP007.<br>The approval of system restoration plans by the Reliability Coordinator is a new requirement. Does this requirement hold the RC accountable if a TOP's plan turns out to be insufficient when implemented? Does this place the RC in a compliance monitoring role? If the RC does not approve a TOP's plan, is that TOP considered to be non-compliant? Prior wording used was "shall be aware of the restoration plan of each TOP". |
| **Response:** The SDT has modified old R1.6 to accommodate this concern. (See the summary consideration above.)<br>Yes, this is a new requirement that the SDT believes is necessary.<br>RC review and approval of the plan is not an issue of compliance but of coordination and workability with the RC's restoration plan. The SDT believes that this gives input to the RC in the development of plans such that the various TOP plans are coordinated with the RC's plan. In Order 693, *"the Commission directs the ERO to develop a modification to EOP-006-1* | | | |

| Question #5 | | | |
|---|---|---|---|
| **Commenter** | **Yes** | **No** | **Comment** |
| *through the Reliability Standards development process that ensures that the reliability coordinator, which is the highest level of authority responsible for reliability of the Bulk-Power System, is involved in the development and approval of system restoration plans."* The SDT believes that the process described in EOP-005-2 and EOP-006-2 meets the Commission directive. | | | |
| FPL | | ☑ | R8 requires two restoration drills, exercises, or simulations per year. This is a new requirement and not one merged from EOP-007<br><br>The approval of system restoration plans by the Reliability Coordinator is also a new requirement. Prior wording used in the Standards was "shall be aware of the restoration plan of each TOP", I believe this was sufficient. Does this requirement hold the Reliability Coordinator accountable if the TOP's plan turns out to be insufficient when implemented? Does this place the RC in a compliance monitoring role? |
| **Response:** Yes, this is a new requirement that the SDT believes is necessary.<br>RC review and approval of the plan is not an issue of compliance but of coordination and workability with the RC's restoration plan. The SDT believes that this gives input to the RC in the development of plans such that the various TOP plans are coordinated with the RC's plan. In Order 693, *"the Commission directs the ERO to develop a modification to EOP-006-1 through the Reliability Standards development process that ensures that the reliability coordinator, which is the highest level of authority responsible for reliability of the Bulk-Power System, is involved in the development and approval of system restoration plans."* The SDT believes that the process described in EOP-005-2 and EOP-006-2 meets the Commission directive. | | | |
| FirstEnergy | ☑ | | FE Agrees - But we would we recommend considering further consolidation of EOP-006 into the proposed EOP-005-2. Since the standards coordinate with each other, it would alleviate having to constantly look at both standards from both a compliance and standards development standpoint. These standards go "hand-in-hand" since the Transmission Operator and Generator Operator would need to have an understanding of what the Reliability Coordinator would be asking of them, and vice versa.<br>If the standards are kept separate, we need to point out that requirement R8 of EOP-006-2 ["Each Reliability Coordinator shall conduct two System restoration drills, exercises, or simulations per year which include the Transmission Operators and Generator Operators with Blackstart Resources in their area of responsibility as dictated by the particular scope of the drill, exercise, or simulation that is being conducted. Each Transmission Operator and Generator Operator with Blackstart Resources shall be included in a drill, exercise, or simulation at least every two years."] does not coordinate with its counterpart requirement, R11, in EOP-005-2 ["Each Transmission Operator shall participate in its Reliability Coordinator's restoration drills, exercises, or simulations as requested by its Reliability Coordinator."]. There should be an agreement between the RC and TOP/GOP functions as to when it would be feasible to conduct these drills with consideration for those times of the year when all TOP/GOP personnel resources are |

| Question #5 | | | |
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| **Commenter** | **Yes** | **No** | **Comment** |
| | | | occupied with a busy work load. We suggest adding statements within these requirements with regard to such an agreement. |
| **Response:** The SDT believes that the operations and coordination functions need to remain separated. The existing standards required periodic drills. The SDT defined a minimum number of times the RC is required to hold a restoration drill based on current operations in many entities. Entities are required to be involved in one of the drills. | | | |
| WECC OTS | ☑ | | However, the OTS is unclear on the time frame for the Reliability Coordinator training and does not think it is well defined. Would this training be an annual requirement for the RC's or would the training fall on the RRO on how often they train each RC? |
| PG&E (2) | ☑ | | It is unclear on the time frame for the Reliability Coordinator training and it is well defined. Would this training be an annual requirement for the RC's or would the training fall on the RRO on how often they train each RC? |
| BCTC | ☑ | | The time frame for training for RC's is not defined. Is this an annual requirement or is this left up to each RC how often they train each RC? |
| **Response:** Since the training cited is within the existing operations training program as defined in the PER-004 standard, the timeframe is included by default**.** | | | |
| MRO SRC | ☑ | | Should the SDT assign the RC to this standard, then there needs to be a transition period for the RC when assigning them new requirements. The MRO wants to recognize the continued need for Regional Planning. |
| **Response:** As mentioned in the Standard Development Roadmap document, the SDT understands that a transition plan is required. See the proposed phase-in of requirements in the implementation plan posted with the revised standard. Nothing in the revised standards prevents an RE from performing their own planning. | | | |
| US Army Corps Eng. | ☑ | | Documentation of coordination is one of the things that have been missing in previous system restoration plans. |
| Southern Transmission | ☑ | | EOP-007 was totally applicable to the RRO. Responsibility for the Standards ultimately rolls back to the RRO. We agree with the change. |
| NBSO | ☑ | | The RC is the proper entity. |
| New York ISO | ☑ | | |
| Ameren | ☑ | | |
| Reliant | ☑ | | |
| Entergy | ☑ | | |
| Dominion | ☑ | | |
| Madison G&E | ☑ | | |
| AEP | ☑ | | |
| ATC | ☑ | | |

| Question #5 | | | |
|---|---|---|---|
| **Commenter** | **Yes** | **No** | **Comment** |
| CenterPoint | ☑ | | |
| Duke Energy | ☑ | | |
| Entergy (G&M) | ☑ | | |
| HQT | ☑ | | |
| IESO | ☑ | | |
| ISO/RTO | ☑ | | |
| KCPL | ☑ | | |
| Manitoba Hydro | ☑ | | |
| NPCC RSC | ☑ | | |
| OPG | ☑ | | |
| OPPD | ☑ | | |
| OVEC | ☑ | | |
| Salt River Project | ☑ | | |
| SERC OPS | ☑ | | |
| SPP ORWG | ☑ | | |
| We Energies | ☑ | | |
| **Response:** Thank you. | | | |

6. The SRB SDT has replaced the existing Blackstart Capability Plan (and retired the definition) with the Reliability Coordinator's requirement for a coordination element in their restoration plan. Do you agree with this approach or do you have other suggestions for how to handle this?

**Summary Consideration:** Most commenters agreed with replacing the Blackstart Capability Plan with the Reliability Coordinator's (RC's) requirement for a coordination element in its restoration plan.

Some commenters questioned the requirement for the RC to approve the Transmission Operator's (TOP's) restoration plan, thinking that this approval is compliance-related. RC review and approval of the plan is not an issue of compliance but of coordination and workability with the RC's restoration plan. The SDT believes that this gives input to the RC in the development of plans such that the various TOP plans are coordinated with the RC's plan. In FERC Order 693, "the Commission directs the ERO to develop a modification to EOP-006-1 through the Reliability Standards development process that ensures that the reliability coordinator, which is the highest level of authority responsible for reliability of the Bulk-Power System, is involved in the development and approval of system restoration plans." The SDT believes that the process described in EOP-005-2 and EOP-006-2 meets the Commission directive.

Requirement R1 has been changed to accommodate industry concerns.

**EOP-005-2:**

EOP-005:

**R1.** Each Transmission Operator shall have a restoration plan approved by its Reliability Coordinator ~~to restore its System to its normal state following an event that requires the utilization of Blackstart Resources.~~ The restoration plan shall ~~have~~ allow for restoring the Transmission Operator's System following a ~~priority of~~ Disturbance in which one or more areas of the Bulk Electric System (BES) shuts down and the use of Blackstart Resources is required to restore the shut down area to service, to a state whereby the choice of the next Load to be restored is not driven by the need to control frequency or voltage regardless of whether the Blackstart Resource is located within the Transmission Operator's System. The restoration plan shall include:

**EOP-006-2:**

**R1.** ~~The~~ Each Reliability Coordinator shall have a Reliability Coordinator Area restoration plan ~~that has been made available to its Transmission Operators, Balancing Authorities, and neighboring Reliability Coordinators to restore its area to its normal state following an event that requires the utilization of Blackstart Resources. The restoration plan shall have a priority of .~~ The restoration plan shall be written such that it allows for the restoration of its area following a Disturbance in which one or more areas of the Bulk Electric System (BES) shuts down and the use of Blackstart Resources is required to restore the shut down area to service, to a state whereby the choice of the next Load to be restored is not driven by the need to control frequency or voltage for an event that requires the utilization of Blackstart Resources regardless of whether the Blackstart Resource is located within the Reliability Coordinator's Area. The restoration plan shall include:

| Question #6 | | | |
|---|---|---|---|
| **Commenter** | **Yes** | **No** | **Comment** |
| ISO/RTO | ☑ | ☑ | We agree with the replacement, but feel that the requirement to "coordinate" fall short of requiring the RC to direct system restoration especially from a total shutdown. Please see our detailed comments under Q9. |
| IESO | ☑ | ☑ | We agree with the replacement, but feel that the requirement to "coordinate" fall short of requiring the RC to direct system restoration especially from a total shutdown. Please see our detailed comments under Q9. |
| Duke Energy | ☑ | ☑ | We agree with this approach, with certain clarifications. The existing EOP-006-1 requires the Reliability Coordinator to be aware of the restoration plans of Transmission Operators within its RC Area (R1), and to have a current copy of each plan that it relies upon to confirm that it meets R1 (M1). The revised EOP-006-2 requires the Reliability Coordinator to review and approve the Transmission Operators' plans (R2). We do not see a need for the RC to approve each Transmission Operator's restoration plan, or to have a copy of the plans, since the RC is unlikely to have the level of detailed knowledge that the balancing authorities and transmission operators have for setting-up the stable islands required under restoration plans. Requiring the RC to approve those plans implies that the RC must have the requisite expertise to approve them, and within 30 days (R2.3). The revised EOP-006-2 also requires the RC to have a RC Area restoration plan with documented coordination between Transmission Operator plans and neighboring RC Area plans (R1). R1 is sufficient to address FERC's concern that the RC be involved in the development and approval of system restoration plans, and R2 is not needed. |
| NIPSCO | ☑ | | The RC should coordinate the restoration plans however this should not include approving the plans. |
| Entergy | | ☑ | We do not agree the RC should be responsible for the development, review, approval, or implementation of any Blackstart Capability Plan. A BCP is a local requirement incumbent on the Transmission Owner/Operator to develop and implement. |
| **Response:** RC review and approval of the plan is not an issue of compliance but of coordination and workability with the RC's restoration plan. The SDT believes that this gives input to the RC in the development of plans such that the various TOP plans are coordinated with the RC's plan. In FERC Order 693, *"the Commission directs the ERO to develop a modification to EOP-006-1 through the Reliability Standards development process that ensures that the reliability coordinator, which is the highest level of authority responsible for reliability of the Bulk-Power System, is involved in the development and approval of system restoration plans."* The SDT believes that the process described in EOP-005-2 and EOP-006-2 meets the Commission directive. | | | |
| Reliant | ☑ | | I suggest that you take a look at how PJM handles the coordination element. |
| **Response:** PJM is represented on the SDT. | | | |
| BCTC | ☑ | | Agree with the concept but suggest the following revision to the 2nd sentence in R1. "The restoration plan shall have a priority of restoring the integrity of the Interconnection |

| Question #6 | | | |
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| **Commenter** | **Yes** | **No** | **Comment** |
| | | | under the direction of the Reliability Coordinator as required." Alternately, suggest deleting the clause "under the direction of the Reliability Coordinator". During the time when the Transmission Operator is restoring its own System, doing this under the direction of the Reliability Coordinator would not make best use of the Reliability Coordinator's time and knowledge. |
| **Response:** The SDT has modified R1 to address these concerns. The revised standard states that the following must be included in the restoration plan, "Procedures for restoring the integrity of the Interconnection under the direction of the Reliability Coordinator." (R1.2 in the revised standard) | | | |
| MISO Stakeholders | ☑ | | We agree with this approach in general. However, we do not believe 30 days is enough time to review TOP plans. |
| **Response:** The SDT believes that 30 days is appropriate. | | | |
| OVEC | ☑ | | From a practical standpoint it is probably better having the Reliability Coordinator coordinate rather than a Regional Reliability Organization. |
| Ameren | ☑ | | This is a very worthwhile change. |
| FirstEnergy | ☑ | | FE agrees |
| New York ISO | ☑ | | |
| Santee Cooper | ☑ | | |
| TVA | ☑ | | |
| US Army Corps Eng. | ☑ | | |
| Dominion | ☑ | | |
| Madison G&E | ☑ | | |
| AEP | ☑ | | |
| ATC | ☑ | | |
| CenterPoint | ☑ | | |
| Consumers | ☑ | | |
| Entergy (G&M) | ☑ | | |
| FPL | ☑ | | |
| FRCC | ☑ | | |
| HQT | ☑ | | |
| KCPL | ☑ | | |

| Question #6 | | | |
|---|---|---|---|
| **Commenter** | **Yes** | **No** | **Comment** |
| Manitoba Hydro | ☑ | | |
| MRO SRC | ☑ | | |
| NBSO | ☑ | | |
| NPCC RSC | ☑ | | |
| OPG | ☑ | | |
| RFC (1) | ☑ | | |
| Salt River Project | ☑ | | |
| SERC OPS | ☑ | | |
| Southern Transmission | ☑ | | |
| SPP ORWG | ☑ | | |
| We Energies | ☑ | | |
| **Response:** Thank you. | | | |

7. If you are aware of any regional variances that would be required as a result of these standards, please identify them here.

**Summary Consideration:** Stakeholders did not identify any regional variances that are needed for these standards. No changes were made to the standard based on comments to this question.

| **Question #7** | |
|---|---|
| **Commenter** | **Comment** |
| RFC (1) | Yes, TOP's need to be required to have a restoration plan for their entire footprint. R1 needs to be changed to state that TOP's shall have a restoration plan for their entire footprint which is approved…… Reliance on other entities under the TOP's direction during a system restoration is fine however the TOP should have an RC approved restoration plan of its entire footprint available for its operators and training on these other entity restoration plans since the TOP is the entity responsible for implementation of the restoration plan.<br><br>If the TOP relies on any of the entities under its purview to provide a part of the plan or perform any functions in implementation of its plan those entities should be subject to the requirements in this standard as they apply to those areas of the restoration plan. This region has TO personnel implementing their restoration plan for the TOP, these personnel should be addressed by this standard concerning what is applicable, training required and possible certification of the operators. |
| **Response:** The SDT agrees that the TOP needs to have a plan that covers its entire footprint and believes that using the term 'System' accommodates this concern. | |
| ATC | ATC believes that this standard may require Regulatory support in terms of locating a "Blackstart Resources" and testing. The standard requires testing of these resources which may use up some unit's emission constraints.<br><br>At a minimum NERC should ask the question about emission constraints surrounding "Blackstart Resources". |
| **Response:** Thank you for your input. | |
| NIPSCO | EOP-007-RFC-01 will need to be reviewed and updated |
| **Response:** The intent of the ERO and EPAct 2005 is to develop international standards that cover the North American Interconnections. Regional standards are either to be more stringent or address a physical difference. It is expected that many regional standards will either be obsolete or need to be revised. | |
| New York ISO | No |
| TVA | None |
| WECC RCCWG | No |
| Entergy | No |
| BCTC | None |
| Consumers | N/A |
| Duke Energy | None |
| HQT | At this time, no NPCC variance is anticipated. |

| Question #7 | |
|---|---|
| **Commenter** | **Comment** |
| IESO | No |
| ISO/RTO | No |
| KCPL | Not aware of any regional variances. |
| MRO SRC | The MRO is not aware of any issues. |
| NBSO | No NPCC variance is expected. |
| NPCC RSC | At this time, no NPCC variance is anticipated. |
| SERC OPS | No |
| Southern Transmission | We are not aware of any regional variances that would be required as a result of these standards. |
| SPP ORWG | None |
| **Response:** Thank you. | |

8. If you are aware of any conflicts between the proposed standards and any regulatory function, rule order, tariff, rate schedule, legislative requirement or agreement, please identify them here.

**Summary Consideration:** Stakeholders did not identify any conflicts between the proposed standards and any regulatory function, rule order, tariff, rate schedule, legislative requirement or agreement No changes were made to the standard based on comments to this question.

The inclusion of restoration training in these standards was questioned. FERC Order 693 mandates that restoration training be included in the blackstart standards. *"The Commission believes that inclusion of periodic system restoration drills and training and review of restoration plans in a system restoration Reliability Standard is the most effective way of achieving the desired goal of ensuring that all participants are trained in system restoration and that the restoration plans are up to date to deal with system changes."*

| **Question #8** | |
|---|---|
| **Commenter** | **Comment** |
| US Army Corps Eng. | Federal Entities with power or transmission assets are not allowed to take direction from non-Federal entities. This problem applies to many of the Rel Stndrds and needs to be cleared up at a legislative level in order for the Rel Stndrds to be fully complied with. |
| **Response:** This issue is beyond the authority of the SDT. | |
| Madison G&E | YES, All required training that a NERC Standard directs any entity to do should be placed in its own NERC (training) Standard. The NERC Standard category "Personnel Performance, Training, and Qualifications" is established for this purpose. As stated in FERC Order 693, para. 1335, training requirements would not be in one "all inclusive standard". A better fit is to have many individual standards (that specify training requirements listed in Personnel Performance, Training, and Qualifications section of the NERC Standards) under the heading of "Personnel Performance, Training, and Qualifications". If a training requirement is imbedded in a non-"Personnel Performance, Training, and Qualifications" standard, it will lead to possible shortfalls from an entity. |
| **Response:** FERC Order 693 mandates that restoration training be included in the blackstart standards. *"The Commission believes that inclusion of periodic system restoration drills and training and review of restoration plans in a system restoration Reliability Standard is the most effective way of achieving the desired goal of ensuring that all participants are trained in system restoration and that the restoration plans are up to date to deal with system changes."* | |
| ATC | – The TOP is currently responsible for transporting energy supplied from the Black Start generator interconnection point to restore the transmission grid as a whole under the restoration services portion of the Transmission Tariff. The costs of planning for, and implementing this responsibility are currently reimbursed under the network transmission tariff. If by "securing blackstart services" it is intended that the TOP must contract with generators or otherwise arrange with "Black Start Generators" to provide this capability, ATC cannot support this approach unless a mechanism is also provided that will allow the TOP to include any costs that might be incurred in transmission rates.<br>– ATC, is willing to be responsible as the TOP to enter into agreements for Black Start Services with |

| Question #8 | |
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| **Commenter** | **Comment** |
| | generators that are interconnected to ATC's transmission facilities, and anticipate making the necessary tariff filings or otherwise arrange for reimbursement for any costs incurred through the regional transmission organization.<br>– If the Standard is eventually written that the TOP is responsible for "procuring" or "arranging" for the service, an adequate timeframe prior to implementation of the requirement must be allowed to pursue the necessary rate and other tariff approval together with the required agreements prior to this standard becoming enforceable. |
| **Response:** Reimbursement for services has no impact on the reliable operation of the BES and should not be included in a reliability standard. | |
| RFC (2) | R1.4 of EOP-005-2 has the TOP identify acceptable voltage and frequency limits during restoration. R1.5 of EOP-005-2 has the RC identify the same. There seems to be a conflict in having 2 different functional entities identifying the same parameter. The drafting team should consider resolving this apparent conflict. |
| **Response:** The SDT sees no conflict from the early stages of restoration where the TOP is controlling voltage and frequency and the latter stages where the RC takes control. The RC should be aware of the voltage limits set by the TOP. The RC can include in its restoration plan the limits that must be maintained by the TOPs in its area. | |
| New York ISO | No |
| TVA | None |
| WECC RCCWG | There are no conflicts that we are aware of. |
| Entergy | No |
| BCTC | None |
| Consumers | N/A |
| Duke Energy | None |
| HQT | No such conflict is seen at this time. |
| KCPL | Not aware of any conflicts. |
| MRO SRC | The MRO is not aware of any issues. |
| NBSO | None |
| NPCC RSC | No such conflict is seen at this time. |
| RFC (1) | No |
| SERC OPS | No |
| Southern Transmission | We are not aware of any conflicts between the proposed standards and any regulatory function, rule order, tariff, rate schedule, legislative requirement or agreement. |
| SPP ORWG | None |
| **Response:** Thank you. | |

9. If you have any other comments on the proposed standards that you haven't already provided in response to the questions above, please provide them here.

**Summary Consideration:** Extensive Changes were made to EOP-005 and to EOP-006 due to the comments received from the industry. Please consult the posted red-line and clean versions of the 2nd draft of both standards.

Comments are grouped by standard and requirement.

## EOP-005 and EOP-006 — Miscellaneous comments:

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| SERC OPS | We commend the drafting team members for their hard work in combining and clarifying the requirements of EOP-005, 006, 007 and 009. |
| Southern Transmission | Finally, we commend the System Restoration and Blackstart Drafting Team for its excellent work on the System Restoration and Blackstart Standards -- Project 2006-03. We appreciate the opportunity provided by the drafting team to submit comments on a matter of such importance to the industry. |
| US Army Corps Eng. | I am especially pleased that generator operators now have to be coordinated with prior to listing their generators as a black start resource. In the past, it was after the fact that the generator owner was informed that their. |
| IESO<br>ISO/RTO | 17. General: We realize that the violation severity levels, mitigation time horizons and compliance elements have not been drafted. This and in view of the possible changes to some of the requirements, we have chosen not to comment on the measures at this time. We will offer our comments on these elements at the next posting. |
| FirstEnergy | 1. A good set of EOP requirements will achieve the goal of eliminating need for any existing regional standards, so we need to work towards a good set of blackstart standards. |
| **Response:** Thank you | |
| MRO SRC | The MRO would suggest completing Section D (Compliance) for both standards EOP-005-2 and EOP-006-2 before commenting begins. Also, in R2.1 of EOP-006-2, shouldn't the RC's restoration plan be compatible with the individual BA and TOP restoration plans. The MRO would assume that the RC's restoration plan be comprised of the individual restoration plans within their area. |
| **Response:** The SDT has deferred Section D to a future draft so that we can concentrate on requirements. | |
| We Energies | The standards appear to be drafted from the perspective of a vertically integrated utility, not in terms of the NERC functional model entities. The conspicuous absence of the NERC functional entity "Balancing Authority" in both EOP-005-2 and EOP-006-2 produces doubt as to the value of the standards. The BA should be intimately involved in all aspects of the system restoration plan and the execution thereof.<br>The argument that the BA role is prescribed for all operating conditions in the Balancing Authority standards is fallacious. Below are extracts from BAL–001 thorough BAL–006 with comments regarding the applicability during the restoration process.<br>A. Introduction<br>1. Title: Real Power Balancing Control Performance<br>2. Number: BAL-001-0 |

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| | 3. Purpose: To maintain Interconnection steady-state frequency within defined limits by balancing real power demand and supply in real-time.<br>4. Applicability:<br>4.1. Balancing Authorities<br>5. Effective Date: April 1, 2005<br>The purview of BAL-001 is limited to interconnection steady state frequency, and does not pertain to island frequency during system restoration efforts. During island scenarios ACE is irrelevant as are the control performance criteria – the frequencies of the various islands will not be equal and there will be no scheduled interchange.<br>EOP-005 R1.4 requires identification of acceptable operating frequency limits during restoration efforts. R3.3 further requires that frequency be controlled within dynamic limits documented in R1.4. Since BAL-001 does not apply to restoration scenarios, and the Balancing Authority is responsible for maintaining frequency, the NERC functional entity "Balancing Authority" should be included in the EOP-005-2 standard.<br>A. Introduction<br>1. Title: Disturbance Control Performance<br>2. Number: BAL-002-0<br>3. Purpose:<br>The purpose of the Disturbance Control Standard (DCS) is to ensure the Balancing Authority is able to utilize its Contingency Reserve to balance resources and demand and return Interconnection frequency within defined limits following a Reportable Disturbance. Because generator failures are far more common than significant losses of load and because Contingency Reserve activation does not typically apply to the loss of load, the application of DCS is limited to the loss of supply and does not apply to the loss of load.<br>4. Applicability:<br>4.1. Balancing Authorities<br>4.2. Reserve Sharing Groups (Balancing Authorities may meet the requirements of Standard 002 through participation in a Reserve Sharing Group.)<br>4.3. Regional Reliability Organizations<br>5. Effective Date: April 1, 2005<br>Again, interconnection frequency has no meaning in an island scenario.<br>A. Introduction<br>1. Title: Frequency Response and Bias<br>2. Number: BAL-003-0<br>3. Purpose:<br>This standard provides a consistent method for calculating the Frequency Bias component of ACE.<br>4. Applicability:<br>4.1. Balancing Authorities<br>5. Effective Date: April 1, 2005<br>During island scenarios, ACE is irrelevant. |

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| | A. Introduction<br>1. Title: Time Error Correction<br>2. Number: BAL-004-0<br>3. Purpose:<br>The purpose of this standard is to ensure that Time Error Corrections are conducted in a manner that does not adversely affect the reliability of the Interconnection.<br>4. Applicability:<br>4.1. Reliability Coordinators<br>4.2. Balancing Authorities<br>5. Effective Date: April 1, 2005<br>No RC will initiate a Time Error Correction during island scenarios.<br>A. Introduction<br>1. Title: Automatic Generation Control<br>2. Number: BAL-005-0<br>3. Purpose:<br>This standard establishes requirements for Balancing Authority Automatic Generation Control (AGC) necessary to calculate Area Control Error (ACE) and to routinely deploy the Regulating Reserve. The standard also ensures that all facilities and load electrically synchronized to the Interconnection are included within the metered boundary of a Balancing Area so that balancing of resources and demand can be achieved.<br>4. Applicability:<br>4.1. Balancing Authorities<br>4.2. Generator Operators<br>4.3. Transmission Operators<br>4.4. Load Serving Entities<br>5. Effective Date: April 1, 2005<br>AGC will be useless until system conditions are near to normal interconnection status.<br>A. Introduction<br>1. Title: Inadvertent Interchange<br>2. Number: BAL-006-1<br>3. Purpose:<br>This standard defines a process for monitoring Balancing Authorities to ensure that, over the long term, Balancing Authority Areas do not excessively depend on other Balancing Authority Areas in the Interconnection for meeting their demand or Interchange obligations.<br>4. Applicability:<br>4.1. Balancing Authorities.<br>5. Effective Date: May 1, 2006<br>There will be no inadvertent flows out from or into an island.<br>In summary, the existing NERC Balancing Authority Standards BAL–001 through BAL–006 do not apply during system restoration efforts. Further, the proposed standards EOP–005–2 and EOP–006–2 do not address the operations of the Balancing Authority during system restoration events. |

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| **Response:** The SDT disagrees that the BA has an "applicability" role in the TOP restoration plan or its implementation. Beginning with the system collapse, the TOP restores the Transmission System, restores interconnections, and supplies off-site power to nuclear generating stations. This is accomplished on a command and control basis by the Transmission Operator in conjunction with the GOP. Once interconnections have been reestablished and the Transmission System restored, the restoration of firm Load can begin. The TOP is restoring the System through command and control until a sufficient System has been built where frequency is under control. | |
| Salt River Project | I would like to see the training requirements in R9, R10, R11, R15, and R16 moved to a PER standard. Intermingling training requirements with operational requirements makes it a bit harder to ensure training program compliance. Monitoring every proposed standard for training requirements is essentially what we are faced with today. It makes more sense to use the PER series of standards for all training requirements. This would make for a smaller EOP-005-2, minus 5 requirements, while also being more consistent with the purpose stated in EOP-05-2. |
| PG&E (2) | Specific training requirements should be found in one standard, not amongst eighty or more. This allows the training staff responsible for the training compliance measures to coordinate and provide training for all future and current training needs. |
| **Response:** FERC Order 693 mandates that restoration training be included in the blackstart standards. *"The Commission believes that inclusion of periodic system restoration drills and training and review of restoration plans in a system restoration Reliability Standard is the most effective way of achieving the desired goal of ensuring that all participants are trained in system restoration and that the restoration plans are up to date to deal with system changes."* | |
| BCTC | The new training for personnel outside the Control Room has been identified as an annual requirement but the existing words in EOP-005 for TO Control Room personnel and EOP-007 for RC Control Room personnel does not detail the training requirement as an annual requirement. Was all the training requirements listed in the Standards meant to be an annual requirement?<br>EOP-005-1 had a requirement to periodically test telecommunication facilities that are required to implement a blackstart plan. Is this covered in another Standard or is this no longer required? |
| **Response:** Since the training cited is within the existing operations training program as defined in the PER-004 standard, the timeframe is included by default**.**<br>The SDT believes that COM-001-1 – Telecommunications already requires the redundancy and reliability required for emergency communications systems during system restoration. | |
| SPP ORWG | Ample time should be given to implement the changes following BOT approval of the standards; we suggest 18 months to allow for revisions, coordination, and approval. |
| **Response:** The SDT will post its proposed implementation plan with the revised standard. | |
| NBSO | Are there any liabilities associated with the RC approving the TOP restoration plan? Although the NBSO agrees with the RC having a copy of the plans and approving them in principle, the RC should not be held responsible for typos and etc.<br>NBSO believes that the Balancing Authority is missing from the applicable entity list in section 4. The BA is responsible for load/generation balance and frequency control and therefore plays an important role in the restoration process. |
| **Response:** RC review and approval of the plan is not an issue of compliance but of coordination and workability with the RC's restoration plan. The SDT believes that this gives input to the RC in the development of plans such that the various TOP | |

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| plans are coordinated with the RC's plan. In FERC Order 693, "*the Commission directs the ERO to develop a modification to EOP-006-1 through the Reliability Standards development process that ensures that the reliability coordinator, which is the highest level of authority responsible for reliability of the Bulk-Power System, is involved in the development and approval of system restoration plans.*" The SDT believes that the process described in EOP-005-2 and EOP-006-2 meets the Commission directive.<br>The SDT disagrees that the BA has an "applicability" role in the TOP restoration plan or its implementation. Beginning with the system collapse, the TOP restores the Transmission System, restores interconnections, and supplies off-site power to nuclear generating stations. This is accomplished on a command and control basis by the Transmission Operator in conjunction with the GOP. Once interconnections have been reestablished and the Transmission System restored, the restoration of firm Load can begin. The TOP is restoring the System through command and control until a sufficient System has been built where frequency is under control. | |
| New York ISO | I would like the drafting team to respond to these specific questions:<br>1) What are the limits of "units to be started" in R1.2?<br>2) What is the incremental value of R1.5 over the requirements of PER-001?<br>3) Why does the standard define as acceptable an unworkable restoration plan for to exist for up to one quarter of a year?<br>4) How is it physically possible for generators to perform the black start tests required in R14 without having possession of the test requirements R6?<br>Requirement 1.2 has no meaning and it unenforceable. "Units to be started" is every generator on the system. Using that rule, one could assume that something like 50% of a system's transmission would have to be designated "cranking paths". |
| **Response:**<br>1) Each Blackstart Resource should have a cranking path to at least one other non-blackstart resource. These do not need to be independent from the non-blackstart resource goals of other Blackstart Resources.<br>2) The SDT has changed R1.5 to accommodate the indicated concern.<br>3) No restoration plan can be updated immediately, and a prior restoration plan should contain useful information (with recognized deficiencies) for restoring the system.<br>4) The requirement to distribute testing requirements is in the old R8 (now R10 in the revised standard) | |
| ATC | The standards appear to be drafted from the perspective of a vertically integrated utility, not in terms of the NERC functional model entities. The conspicuous absence of the NERC functional entity "Balancing Authority" in both EOP-005-2 and EOP-006-2 produces doubt as to the value of the standards. The BA should be intimately involved in all aspects of the system restoration plan and the execution thereof.<br>The existing NERC Balancing Authority Standards BAL–001 through BAL–006 do not apply during system restoration efforts. Further, the proposed standards EOP–005–2 and EOP–006–2 do not address the operations of the Balancing Authority during system restoration events.<br>ATC believes that Standard EOP-005-2 would be more readable if the Standard Drafting Team (SDT) split the standard into two standards. It's our suggestion that Requirements six and nine be moved to a new standard to address blackstart generator testing.<br>In addition to moving these requirements into a separate standard ATC believes that the SDT should write an industry standard for blackstart resources. |

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| | - Frequency of testing<br>- Demonstrate ability to start the unit when isolated<br>- Demonstrate ability to energize a dead bus<br>- Demonstrate ability to remain stable an control voltage<br>- Demonstrate ability to maintain acceptable frequency<br>- Determine a minimum testing duration<br>Lastly those results should be shared with the Transmission Operator.<br>Failure to write specific industry standards will create fill-in-the-blank standards for the Transmission Operator.<br>No training is specified for the BA system operators. The system restoration scenario is very unique and challenging in terms of balancing resources to load. Load behavior will be very dynamic – cold load pick up and loss of diversity will be significant factors during the restoration process. Since the BA is ultimately responsible for balancing under all conditions, it is imperative for the BA to be involved in the training for restoration and the implementation during an event. |
| **Response:** The SDT disagrees that the BA has an "applicability" role in the TOP restoration plan or its implementation. Beginning with the system collapse, the TOP restores the Transmission System, restores interconnections, and supplies off-site power to nuclear generating stations. This is accomplished on a command and control basis by the Transmission Operator in conjunction with the GOP. Once interconnections have been reestablished and the Transmission System restored, the restoration of firm Load can begin. The TOP is restoring the System through command and control until a sufficient System has been built where frequency is under control.<br>Industry comments indicated that the majority of the industry wanted the blackstart testing requirements in the blackstart standard.<br>The SDT believes that there are too many physical differences within the industry; adopting a continent-wide standard would cause us to come up with a Least Common Denominator list of requirements that would end up being a detriment to reliability. The suggested topics are mentioned in the revised text.<br>Test results are available to the TOP on request as shown in the new R17.2 | |
| TVA | Regarding Drills perhaps the SDT could clarify requirements for drills and what constitutes a drill. There appears to be potential inconsistency in requirements for Blackstart Resource participation in Restoration Drills once every two years while requiring Blackstart tests once every three years. In addition, requiring two Restoration Drills per year seems excessive.<br>1. BA's must be included in: Plan development, Training and drills, communication and coordination during restoration and connection with neighboring areas.<br>2. Field personnel and generation operators training requirements in this Standard appear duplicative. Field personnel switch elements under similar conditions such as storm restoration. Generator operators that test black start facilities have the operational training related to their role in restoration. |
| **Response:** The SDT is allowing the RC to set the scope and content of the drills, exercises, or simulations required by the standards.<br>The SDT disagrees that the BA has an "applicability" role in the TOP restoration plan or its implementation. Beginning with the system collapse, the TOP restores the Transmission System, restores interconnections, and supplies off-site power to nuclear generating stations. This is accomplished on a command and control basis by the Transmission Operator in | |

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| conjunction with the GOP. Once interconnections have been reestablished and the Transmission System restored, the restoration of firm Load can begin. The TOP is restoring the System through command and control until a sufficient System has been built where frequency is under control.<br><br>It is appropriate to include both the minimum hours of training and the training content in this standard, similar to the training requirements documented in PER-002-2 which states '"each Transmission Operator and Balancing Authority shall provide its operating personnel at least five days per year of training and drills using realistic simulations of system emergencies, in addition to other training required to maintain qualified operating personnel." Additionally, in the new version of the standard, PER-005, requirement R3 states "'shall provide each System Operator with at least 32 hours annually of emergency operations and system restoration training" PER-005 R3.1. states "training shall include the principles and procedures needed for recognizing and responding to emergencies, using drills, exercises or simulations of system conditions in subject areas from the Emergency Operations Topics (provided in Attachment B)."<br><br>The SDT notes that in FERC Order 693, the FERC determined that *"System restoration requires the participation of not only control room personnel but also those outside of the control room. These include blackstart unit operators and field switching operators in situations where SCADA capability is unavailable."* If the TOP's restoration plan has field switching tasks unique to system restoration that are not included in normal operations, then training shall be required. Changes have been made to R11 to clarify this position. | |
| FRCC | A requirement for a Blackstart plan or procedure should include a sub-requirement that specifies that the procedure or plan include a step that the TOP and /or GO shall isolate itself electrically from all other systems prior to iniating restoration activities. |
| **Response:** R1.3 (R1.4 in the revised draft) includes "initial switching requirements" – the SDT believes that anything more than that in a standard would be too prescriptive. | |
| PG&E (2) | EOP-005-1 had a requirement to periodically test telecommunication facilities that are required to implement a blackstart plan. Is this covered in another Standard or has it been eliminated and is not required?<br>New training for personnel outside the Control Room has been identified as an annual requirement but the existing words in EOP-005 for Transmission Operator Control Room personnel and EOP-007 for Reliability Coordinators Control Room personnel does not detail the training requirement as an annual requirement. Were all the training requirements listed in the Standards meant to be an annual requirement? |
| WECC OTS | The WECC OTS is the principle group in the Western Interconnection to support the WECC training program and providing support to the trainers in the West. It is the OTS belief that quality training can and should result in quality System Operators and improved system reliability and therefore, we are supportive of the effort by the drafting team for their efforts to ensure the system operator responsible for the BES meets a minimum competency and knowledge levels. Quality training requires analysis and process and the OTS supports a requirement for development, delivery, and evaluation of system operator training. The OTS has several questions concerning the lack of clarity for the training requirements.<br>EOP-005-1 had a requirement to periodically test telecommunication facilities that are required to implement a blackstart plan. Is this covered in another Standard or has it been eliminated and is not |

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| | required?<br>New training for personnel outside the Control Room has been identified as an annual requirement but the existing words in EOP-005 for Transmission Operator Control Room personnel and EOP-007 for Reliability Coordinators Control Room personnel does not detail the training requirement as an annual requirement. Were all the training requirements listed in the Standards meant to be an annual requirement?<br>The WECC OTS finds the new System Restoration and Blackstart-Coordination Standards to be duplicating in their training requirements and not well defined in the time frames for this training. The OTS has also identified several training specific needs in other NERC Standards and would like to recommend that all training requirements in the current NERC Standards and future Standards only be identified in the NERC System Personnel Training Standard. While it is necessary to mention in the various standards, training needs per that standard, specific training requirements should be found in one standard, not amongst eighty or more. This allows the training staff responsible for the training compliance measures to coordinate and provide training for all future and current training needs. |
| **Response:** The SDT believes that COM-001-1 – Telecommunications already requires the redundancy and reliability required for emergency communications systems during system restoration.<br><br>Since the training cited is within the existing operations training program as defined in the PER standards, the timeframe is included by default**.**<br><br>FERC Order 693 mandates that restoration training be included in the blackstart standards. "*The Commission believes that inclusion of periodic system restoration drills and training and review of restoration plans in a system restoration Reliability Standard is the most effective way of achieving the desired goal of ensuring that all participants are trained in system restoration and that the restoration plans are up to date to deal with system changes.*" | |
| FRCC | General comments:<br>In a few requirements / sub-requirements there are mutiple requirements embedded within a single requirement. For clarity, we would encourage the drafting team to further breakout individual requirements and sub-requirements where appropriate. ie. R1 both standards includes multiple requirements - EOP-005, R1.7 and R12 includes multiple requirements)<br>A few of the requirements would not be enforceable as drafted.<br>EOP-006<br>R4 includes words such as "work in conjunction", "monitor restoration progress". Measurement for this type of requirements is subjective at best and would be difficult to measure in a consistent manner. EOP-005, R1.1, "identification of the authority and tasks" is also a subjectively measured requirement and would be difficult to enforce consistently. Requirements that cannot be measured consistently should be re-drafted or deleted. - ex. EOP-005, R1, R1.1<br>Purpose should be revised to clearly state the intent of this draft, ie, System Blackstart Operations as stated in R1 of both standards.<br>We appreciate the Drafting Team's efforts on these important standards and hope our comments provide value to the process. |
| **Response:** Changes have been made to several requirements such as R1 and R12 to address these types of concerns. | |

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| The SDT believes that measures can and have been written to cover these issues.<br>The Purpose statement has been re-written for the second posting. | |
| KCPL | EOP-006 6. There is no review requirement for the RC to update their restoration plan and there should be a requirement. |
| **Response:** The SDT agrees and has added a new requirement to address this oversight. (See R3 and R4 in the revised EOP-006.) | |

## EOP-005 and EOP-006 — Comments on Definitions and Terminology:

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| Santee Cooper | Blackstart Resource Facility Plans (BRFP) needs to be a definition included in the "Definitions of Terms Used in Standard". |
| RFC | Is the Blackstart Facility Resource Plan a defined term? The standard says what it must include, but doesn't appear to define it. |
| **Response:** BRFP has been removed from the standard in the new revision for the second posting. | |
| NPCC RSC | 10) The term critical load is subject to interpretation. From a system restoration viewpoint, we view this as load that is critical to provide the needed balance to that portion of the BES to maintain stability and acceptable voltages. |
| HQT | 10) The term critical load is subject to interpretation. From a system viewpoint, we view this as load that is critical to provide the needed balance to that portion of the BES to maintain stability and acceptable voltages. |
| **Response:** Critical Load in BES system restoration includes station service for substations, units to be restarted or stabilized, the Load needed to stabilize generation and frequency and provide voltage control for restoring the System. This statement has been added to the standard, and the term, 'critical load' has been deleted. | |
| NBSO | The terminology Cranking Paths seems to be very dated and should be replaced by Station Service Supply Path or something similar. |
| **Response:** Cranking Path is a defined term in the NERC Glossary. | |
| ATC | The Term System Shut Down needs to be better defined. (EOP-005-2 Requirement 1) |
| **Response:** The SDT has revised the Purpose and R1 to address this concern. (See the summary consideration at the end of Question 1 to see the changes to the purpose and R1.) | |
| Southern Transmission | 5. In Requirement 1.5 of EOP-005-2 and Requirement 1.6 of EOP-006-2 we note the use of the un-defined term "professional judgment." The drafting team might consider replacing this ambiguous term with language similar to that found in Requirement 1 of Reliability Standard TOP-001-1. While we also note Requirements 1.5 (EOP-005-2) and 1.6 (EOP-006-2) are intended for inclusion in the restoration plan, we recommend the drafting team re-consider the need for this element in the restoration plan as it is covered in the TOP-001-1 Standard. |
| **Response:** The SDT has changed the old R1.5 of EOP-005 and R1.6 of EOP-006 to accommodate the indicated concern. R1.5 (now R1.6 in both EOP-005 and EOP-006) requires the restoration plan to include, "A statement accounting for the possibility that restoration can not be completed as expected indicating that in situations where the actual conditions do not match the studied conditions, the System Operator shall use professional judgment to ~~modify~~ deviate from the System | |

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| restoration plan." | |
| SPP ORWG | We would like clarification of the word annual: Does it mean every twelve months or once per calendar year?<br>Ample time should be given to implement the changes following BOT approval of the standards; we suggest 18 months to allow for revisions, coordination, and approval. |
| **Response:** The SDT assumed that annually means once a calendar year.<br>The SDT will add a transition plan in a future draft. | |
| FRCC | We would encourage the DT to more clearly define the following terms: "normal state", "priority of restoring the integrity of the Interconnection", "acceptable TOP restoration plan" and "documented coordination". These terms are ambiguous and make demonstrating compliance very subjective. We would also suggest removing all wording using "but not be limited to". This is unnecessary and does not add value to the requirements (ie EOP-005 R6, EOP-006 R4). Standard requirements should focus on requirements and limit the amount of editorial language. |
| **Response:** Normal state has been removed. R1 has been re-written to clarify the integrity of the Interconnection.<br>Acceptable has been removed. Documented has been removed.<br>"But not be limited to" has been removed. | |

## EOP-005 and EOP-006 — Comments on Applicability:

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| NIPSCO | The BA should be included in the restoration standard in the role presently designated in standards earmarked for replacement. The BA would play an important part during restoration especially if the BA and TOP functions have been separated into different companies. Reinforcing this idea is the latest PER-005 which suggests that Bas provide emergency and system restoration training. |
| NBSO | NBSO believes that the Balancing Authority is missing from the applicable entity list in section 4. The BA is responsible for load/generation balance and frequency control and therefore plays an important role in the restoration process. |
| Southern Transmission | 1. The current EOP-005-1 has applicability to the Balancing Authorities (e.g. R5, R6, R11.3, etc.). There is no applicability, however, to the Balancing Authority in the proposed version 2 of EOP-005 standard. In EOP-005-1 R11.3, for example, the Balancing Authorities are specifically assigned the responsibility of reviewing Interchange Schedules between BA's or fragments of BA Areas within the separated area and make adjustments to facilitate the restoration using manual or automatic generation control. Many Transmission Operators do not normally have the training or experience to manage issues that are normally the responsibility of Balancing Authority – frequency control, generation-load balancing, operating reserves and, most particularly, interchange. In many cases, the Transmission Operator also does have not the tools/mechanisms such as AGC and Scheduling software to perform these functions. System collapse/blackout/islanding will not necessarily take place along Transmission Operator boundaries and therefore the participation of affected Balancing Area is critical for a successful restoration process. In R5, the Transmission Operator is expected to resynchronize islanded Areas with neighboring areas with approval from the RC but no mention is made of the BA's participation and responsibilities in the resulting interconnection – or perhaps a new "cross-BA" island - of Balancing Areas. If the Drafting Team continues to believe that the BA should |

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| | not be included at all in this version of the standard, at a minimum, the Drafting Team should consider adding a requirement to the TOP restoration plan to require that the restoration plan includes criteria for deciding when the TOP will transfer frequency control and generation/load balancing back to the Balancing Authority (i.e. when does a restoration process end and normal operation start taking back over). Even if, the BA is made an applicable entity, the Drafting team might still consider this transition to "normal" as a necessary part of the TOP restoration plan |
| BCTC | This Standard is not applicable to Balancing Authorities. Why are these operators not covered? |
| Duke Energy | The existing EOP-005-1 includes Balancing Authorities, and requires them to work with the TOs and RC(s) to determine the extent and condition of the isolated area(s), coordinate with TOs and generators to adjust generation, place additional generators on line, or load shedding (R11.1 and R11.2). The BAs are also required to review Interchange Schedules and make adjustments as needed to facilitate restoration (R11.3). The revised EOP-005-2 and EOP-006-2 no longer have applicability to the BA, and we believe they should have applicability to the BA with these same requirements. |
| ATC | ATC believes that the Applicability section be expanded to included the BA, LSE and DP. Requirement 1.8 should have a counter requirement that requires the BA, LSE and DP to follow the TOPs orders during the restoration effort. |
| We Energies | No training is specified for the BA system operators. The system restoration scenario is very unique and challenging in terms of balancing resources to load. Load behavior will be very dynamic – cold load pick up and loss of diversity will be significant factors during the restoration process. Since the BA is ultimately responsible for balancing under all conditions, it is imperative for the BA to be involved in the training for restoration and the implementation during an event.<br>The LSE has no involvement here. I see some value including the LSE in terms of load used as a tool. What load profiles are expected? What impact does that have on the generation and island frequency? |
| **Response:** The SDT disagrees that the BA has an "applicability" role in the TOP restoration plan or its implementation. Beginning with the system collapse, the TOP restores the Transmission System, restores interconnections, and supplies off-site power to nuclear generating stations. This is accomplished on a command and control basis by the Transmission Operator in conjunction with the GOP. Once interconnections have been reestablished and the Transmission System restored, the restoration of firm Load can begin. The TOP is restoring the System through command and control until a sufficient System has been built where frequency is under control.<br>R2 in the revised standard requires distribution of the restoration plan to the entities identified in the plan. | |
| New York ISO | There is no need for "Generator Operators with Blackstart Resources" to be listed as one of the applicable entities. The system restoration plan is the Transmission Operators plan. Blackstart resources are an essential part of the Transmission Operators plan. It is the Transmission Operators responsibility to insure that the black start resources are adequately contracted and tested. The Blackstart resources have no responsibilities in the restoration plan outside its obligations to the Transmission Operator. |
| **Response:** The SDT notes that in Order 693, the FERC determined that *"System restoration requires the participation of not only control room personnel but also those outside of the control room. These include blackstart unit operators and field* | |

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| *switching operators in situations where SCADA capability is unavailable."* |

## EOP-005 — Comments on Requirement 1:

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| Pepco | R1.3 Several Blackstart units provide cranking power to steam units all located with the Generation Operator's site. The Transmission Operator has no visibility or authority over these internal plant switching paths. This needs to be part of the BRFP and not a requirement for the Transmission Operator. |
| **Response:** BRFP has been removed from the standard in the new revision for the second posting. | |
| We Energies | R1.4 – Specifies voltage and frequency limits. Without the BA involvement, how do you control frequency? Who determines the frequency limits? The BAL Standards apply for normal operations with bias control, but system restoration scenarios are totally different. |
| **Response:** The SDT disagrees that the BA has an "applicability" role in the TOP restoration plan or its implementation. Beginning with the system collapse, the TOP restores the Transmission System, restores interconnections, and supplies off-site power to nuclear generating stations. This is accomplished on a command and control basis by the Transmission Operator in conjunction with the GOP. Once interconnections have been reestablished and the Transmission System restored, the restoration of firm Load can begin. The TOP is restoring the System through command and control until a sufficient System has been built where frequency is under control. | |
| SPP ORWG | R1 - We believe the second sentence should read "The restoration plan shall have a priority of restoring the integrity of the Interconnection in conjunction with the Reliability Coordinator" instead of "under the direction of the Reliability Coordinator" to coincide with wording in EOP-006-2 R4.<br>R1.2.1 - The requirement to include Blackstart Resource test dates and results in the restoration plans would require Transmission Operators to update their restoration plan as often as a Blackstart Unit is tested. We believe this creates an unnecessary amount of work to both the TO and the Reliability Coordinator, as they will have to approve or deny each revision of the plan.<br>R1.5 - We suggest removing this requirement because it has no substance. |
| **Response:** In FERC Order 693, *"the Commission directs the ERO to develop a modification to EOP-006-1 through the Reliability Standards development process that ensures that the reliability coordinator, which is the highest level of authority responsible for reliability of the Bulk-Power System, is involved in the development and approval of system restoration plans."* The SDT believes that the process described in EOP-005-2 and EOP-006-2 meets the Commission directive.<br>The SDT agrees that test results should not be a component of R1.2.1. The GOP now has the requirement to maintain these records (R17).<br>The SDT has changed R1.5 (Now R1.6)as follows, "A statement accounting for the possibility that restoration can not be completed as expected indicating that in situations where the actual conditions do not match the studied conditions, the System Operator shall use professional judgment to ~~modify~~ deviate from the System restoration plan. | |
| Southern Transmission | 2. The use of the term "operating procedures" used in R1.6 needs to be defined. Although the same term was used in Attachment 1 of EPO-005-1, continuing to use an ambiguous term moving forward should not be overlooked by the Drafting Team. Typically an Operating Procedure involves a specific set of actions (e.g. switching, generation dispatch, etc.). To create such detailed procedures, there needs to be some valid assumptions/criteria that the actions in the procedures are established |

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| | against. Requirement R1.6, for example, requires such operating procedures for re-establishing connections for areas in the TOP's area that have become separated. Since such areas can not all be predetermined for all restoration situations that might occur, the requirement as written leaves the TOP open for always being in non-compliance since operating procedures for all perturbations of area boundaries is not feasible. Perhaps "operating procedures" needs to be more clearly defined to be less prescriptive (e.g. switching sequences) and more generic (i.e., issues to be considered such as synching locations, resulting reserves to be maintained, resulting frequency control, etc.) than is normally used for the term. In addition, the scope/wording of the 1.6 requirement needs to be clarified to reflect more generic plans than might currently be interpreted from the proposed wording. |
| **Response:** "Operating Procedures" is the preferred term since it is defined in the NERC Glossary. | |
| SDE&G | R1.1: The TOP is responsible for coordinating its restoration activities with the other entities operating within its area, but there is no requirement for the other entities to cooperate in that coordination effort or identify themselves to the TOP. What is the list of entities? Is it all the LSEs and PSE one might have in it's transmission area. The standard does not put a requirement on them. Even generators without blackstart capabilities need to cooperate in the restoration efforts to bring the system back up.<br>R1.2.1: The logistics of keeping the restoration plan up to date with the latest test date, test results, and starting method of black start units seem overly complicated. That means every time any one unit is tested, the plan needs to be updated. Can we simply reference the documentation required of the generator in R14.1 to satisfy this requirement that this be documented.<br>R1.8 Again, requires that the TOP coordinate with the other entities, but doesn't require most of them to cooperate with that coordination. |
| **Response:** R1.1 & R1.8: TOP-001 covers the coordination issues.<br>The SDT agrees that test results should not be a component of R1.2.1. The GOP now has the requirement to maintain these records (R17). | |
| PG&E (2) | EOP-005-2 R1.7 and R4.2 only lists nuclear stations for high priority of off-site power. |
| WECC OTS | EOP-005-2 R1.7 and R4.2 only lists nuclear stations for high priority of off-site power. Suggest also listing thermal stations where an area may not have nuclear resources and the Thermal stations require off site power to maintain their ability to come back on line quickly. |
| **Response:** The SDT has made changes to R1 in an attempt to clarify the nuclear power plant issue. In the revised standard, R1.1 requires that the restoration plan include, "A description of the manner in which all obligations for off-site power requirements of nuclear power plants will be fulfilled." | |
| Entergy | EOP-005-2 R1 requires the TOP to have a restoration plan "approved" by its RC. We disagree with this aspect of this requirement. Blackstart is a local procedure so the TOP develops his restoration plan, without approval by the RC, and provides that plan to the RC for his awareness. The RC then coordinates the interconnection of the restarted systems with the rest of the interconnection. Please delete the phrase "approved by its Reliability Coordinator".<br><br>EOP-005-2 R1.1 includes identification of authority and tasks of the TOP "field switching personnel" and R10 requires a minimum of 2 hours training per year for tasks identified in the restoration plan. |

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| | Blackstart plans are a roadmap for restarting a system, must be flexible and not prescriptive to the field personnel level. Field personnel are trained as needed to fulfill all the requirements of their positions and duties, including restoration. We agree with the Order 693 statement<br>- System restoration requires the participation of not only control room personnel but also those outside of the control room. These include blackstart unit operators and field switching operators in situations where SCADA capability is unavailable. As such, the Commission believes that inclusion of periodic system restoration drills and training and review of restoration plans in a system restoration Reliability Standard is the most effective way of achieving the desired goal of ensuring that all participants are trained in system restoration and that the restoration plans are up to date to deal with system changes.<br>However, that training should be part of the - periodic system restoration drills - rather than a specific training period per year. Please delete "field switching personnel" from R1.1 and delete all of R10.<br><br>We believe the TOP should be able to perform its own task assignments, NERC standards should not make those assignments and we suggest the deletion of "field switching personnel" from all of these NERC standards. |
| **Response:** In FERC Order 693, "*the Commission directs the ERO to develop a modification to EOP-006-1 through the Reliability Standards development process that ensures that the reliability coordinator, which is the highest level of authority responsible for reliability of the Bulk-Power System, is involved in the development and approval of system restoration plans.*" The SDT believes that the process described in EOP-005-2 and EOP-006-2 meets the Commission directive.<br><br>The SDT notes that in FERC Order 693, the FERC determined that "*System restoration requires the participation of not only control room personnel but also those outside of the control room. These include blackstart unit operators and field switching operators in situations where SCADA capability is unavailable.*"<br><br>R1.1 was deleted from the revised standard because several stakeholders indicated that authority is addressed in other standards. If the TOP's restoration plan has field switching tasks unique to system restoration that are not included in normal operations, then training shall be required. Changes have been made to R12 to clarify this position. | |
| Entergy (G&M) | R1.5 : This authority is not appropriate in a NERC standard. Each entity's own procedure may choose to include such language however it should not be a requirement to allow an operator to deviate from a procedure. |
| **Response:** The SDT has changed R1.5 to accommodate the indicated concern. | |
| Madison G&E | a) R1.2.1, R1.4, R3.1, R6.2.3, R12, and R14.1 all refer to voltage and in particular megavar capacity. During an actual blackout, the Blackstart Resource may be able to handle the leading MVar's that an un-energized transmission line produces. Blackstart Resource owners are not able to accurately test the unit's megavars capacity to absorb Vars since we tend to keep the transmission system energized. The SDT will need to change the wording so Blackstart Resource owners can be compliant with the standard. |
| **Response:** The SDT has revised the requirements to address these concerns. | |

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| Duke Energy | R1.1 of EOP-005-2 requires that the Transmission Operator's restoration plan identify the authority and tasks of the Transmission Operator's control room and field switching personnel assigned to participate in restoration activities. We do not agree that restoration plans should identify authority and tasks of field switching personnel since these personnel are not NERC-certified and only act under the direction of the Transmission Operator's NERC-certified control room operators. |
| **Response:** The SDT notes that in FERC Order 693, the FERC determined that *"System restoration requires the participation of not only control room personnel but also those outside of the control room. These include blackstart unit operators and field switching operators in situations where SCADA capability is unavailable."*<br><br>If the TOP's restoration plan has field switching tasks unique to system restoration that are not included in normal operations, then training shall be required. Changes have been made to R11 to clarify this position. | |
| FPL | R1.3 To what level do cranking paths need to be identified?<br>R1.5 should be removed, PER-001 states that Operating personnel have the responsibility and authority to implement actions to ensure reliable operation of the BES up to and including shedding of firm load. |
| **Response:** The SDT did not see the need to be more specific on what a Cranking Path is leaving it to the system restoration plan to identify Cranking Paths consistent with the NERC Glossary of Terms definition and to the necessary detail as required in the system restoration plan. Each Blackstart Resource should have a cranking path to at least one other non blackstart resource. These do not need to be independent the non blackstart resource goals of other Blackstart Resources.<br>The SDT has modified R1.5 (now R1.6) as follows, "A statement accounting for the possibility that restoration can not be completed as expected indicating that in situations where the actual conditions do not match the studied conditions, the System Operator shall use professional judgment to ~~modify~~ deviate from the System restoration plan. **"** | |
| FRCC | EOP-005, R1 and EOP-006, R1 clearly exempt activities that restore from energized systems from having to comply with these standards. If this is the intent of the current draft we would caution that this approach actually reduces reliability by removing "partial shutdown" restoration coordination requirements from the current standards in place. Blackstart and "partial shutdown" restoration - are extremely inter-related and are part of an optimal de-energized system response plan and an integrated approach to restoring Interconnection integrity by whatever means are available. If this is the intent of the DT then this standard should only address "islanded operations" and should clearly transistion to another standard that addresses synchronization of islanded systems or restoration of "partially shutdown" systems. |
| **Response:** The SDT has changed the Title, Purpose and R1 to address these concerns. (Please see the summary consideration of changes following Question 1 on pages 10 and 11 of this document.)<br>Partial shutdowns are already covered by other standards including TOP-001, TOP-004, and EOP-001. | |
| Consumers | R1.4: The transmission operator needs to coordinate with the generator operators when identifying acceptable operating voltage and frequency limits during restoration. Generator underfrequency relaying and terminal bus voltage limits will affect the acceptable limits. |
| **Response:** R14 requires an agreement between the TOP and the GOP with Blackstart Resources. | |
| Southern Transmission | There has been a significant amount of scope creep in the requirements imposed on GOPs and GOs.<br>1. Requirement 1.2: This requires a Blackstart Resource Facility Plan (BRFP) which adds Mvar |

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| | capacity to the data. One can provide Mvar rating but transmission system conditions (load and voltage) will dictate Mvar capacity. |
| **Response:** BRFP has been removed from the standard in the new revision for the second posting. Sub-requirements of R1 have been modified to address the concerns. (Please see the summary consideration of changes following Question 1 on page 10 to see the modifications made to the sub-requirements of R1.) | |
| Manitoba Hydro | In EOP-005-2, R1 - there is a need to more clearly state the type of event that requires a restoration plan and what the intent of the restoration plan is. You cannot have a plan for every conceivable event that requires the use of blackstart resources.<br>The type of approval the RC gives to a TOP plan should be more clearly defined, people have to understand what it means when approval is given or rejected. |
| **Response:** The purpose of a restoration plan is not to restore every MW of Load and Transmission System element to service but to reach a stage whereby the choice of the next Load to be restored is not driven by the need to control frequency or voltage.<br>The SDT has changed the Title, Purpose and R1 to address these concerns. (Please see the summary consideration of changes following Question 1 on pages 10 and 11 of this document to see the changes made to the Title, Purpose and R1.) | |
| NBSO | Revise R1.1 as follows: "Identification of the authority and tasks of the Reliability Coordinator to work with its neighboring Reliability Coordinator(s) and with the Transmission Operators, Balancing Authority and Generation Operators with Blackstart Resources within its area." |
| **Response:** The SDT has deleted R1.1 from the revised standard. Several stakeholders indicated that the authority issue is already addressed in other standards. | |
| New York ISO | Requirement 1.2 has no meaning and it unenforceable. "Units to be started" is every generator on the system. Using that rule, one could assume that something like 50% of a system's transmission would have to be designated "cranking paths".<br>Requirement 1.5 should be a requirement of the restoration plan, not the people. The restoration plan should provide sufficient flexibility to address actual conditions at the time of the blackouts. System Operators always have the obligation and authority to address system conditions, whatever they are. Requirement 1.5 should be eliminated as it is completely redundant with NERC Standard PER-001.<br>PER-001 R1. Each Transmission Operator and Balancing Authority shall provide operating personnel with the responsibility and authority to implement real-time actions to ensure the stable and reliable operation of the Bulk Electric System.<br>M1.4 Written operating procedures that state that, during normal and emergency conditions, operating personnel have the authority to take or direct timely and appropriate real-time actions. Such actions shall include shedding of firm load to prevent or alleviate System Operating Limit Interconnection or Reliability Operating Limit violations. These actions are performed without obtaining approval from higher-level personnel within the Transmission Operator or Balancing Authority. |
| **Response:** R1.2 was deleted from the revised standard. | |

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| Each Blackstart Resource should have a cranking path to at least one other non-blackstart resource. These do not need to be independent from the non-blackstart resource goals of other Blackstart Resources.<br>The SDT has modified R1.5 to clarify that the restoration plan must include, "A statement accounting for the possibility that restoration can not be completed as expected indicating that in situations where the actual conditions do not match the studied conditions, the System Operator shall use professional judgment to ~~modify~~ deviate from the System restoration plan.**"** | |
| IESO | 1. R1: should "its System" be replaced by "its area" since a Reliability Coordinator Area is described in the functional model as opposed to a Reliability Coordinator "System". Also, we don't think the second sentence belongs to R1 since it is itself a requirement for the TOP to follow the direction of the RC. It should be a separate requirement.<br>2. R1.2: We have difficulty visualizing how a restoration plan can be "coordinated" with a Blackstart Resource Facility Plan, a term that is not defined. We understand the need for coordinating actions and provision of critical information. We therefore suggest the requirement to be reworded to "Documented procedure that ensures the ability of the Blackstart Resource to control and maintain voltage and frequency within acceptable limits." Note that the term "Blackstart Resource Facility Plan" is not described or defined anywhere, and hence it use should be avoided.<br>3. R1.2.1: We do not see the how inclusion of information such as "latest date of test, test results and starting method" in the TOP's restoration plan can improve or adverse affect reliability. The important requirement is to identify the resources on the cranking path that need to provide blackstart capability, and that such capability is verified to function when needed. We suggest to remove the last part of this requirement. Note that documentation of the test results, etc. are already required in R14.<br>4. R1.7: The term "critical Load" is subject to interpretation. From a system restoration viewpoint, particular from a balckstart, we would view this to mean load that is critical to provide the needed balance to that portion of the BES to be restored to maintain stability and acceptable voltage. In other words, the load is critical to the restoration process. With respect to the other interpretation that it means the load that is critically dependent on electricity supply, such as off-site power, hospital load, etc., this can be very subjectively determined and can vary from area to area. We feel the determination of which load to be supplied first, if this needs to be addressed, should be left to the discretion of the TOP but not as a requirement in a NERC standard. |
| ISO/RTO | 1. R1: "Its System" should be replaced by "its area" since a Reliability Coordinator's Area is described in the functional model as opposed to a Reliability Coordinator "System". Also, we don't think the second sentence belongs to R1 since it is itself a requirement for the TOP to follow the direction of the RC. It should be a separate requirement.<br>2. R1.2: We have difficulty visualizing how a restoration plan can be "coordinated" with a Blackstart Resource Facility Plan, a term that is not defined. We understand the need for coordinating actions and provision of critical information. We therefore suggest the requirement to be reworded to "Documented procedure that ensures the ability of the Blackstart Resource to control and maintain voltage and frequency within acceptable limits." Note that the term "Blackstart Resource Facility Plan" is not described or defined anywhere, and hence its use should be avoided. |

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| | 3.R1.2.1 We do not see how inclusion of information such as "latest date of test, test results and starting method" in the TOP's restoration plan can improve or adverse affect reliability. The important requirement is to identify the resources on the cranking path that need to provide blackstart capability, and that such capability is verified to function when needed. We suggest to remove the last part of this requirement. Note that documentation of the test results, etc. are already required in R14.<br>4. R1.7: The term "critical Load" is subject to interpretation. From a system restoration viewpoint, particularly from a blackstart, we would view this to mean load that is critical to provide the needed balance to that portion of the BES to be restored to maintain stability and acceptable voltage. In other words, the load is critical to the restoration process. With respect to the other interpretation that it means the load that is critically dependent on electricity supply, such as off-site power, hospital load, etc.; this can be very subjectively determined and can vary from area to area. We feel the determination of which load to be supplied first, if this needs to be addressed, should be left to the discretion of the TOP but not as a requirement in a NERC standard. |
| **Response:**<br>1. R1 has been revised –note that R1 is addressing the Transmission Operator's System, not the Reliability Coordinator's System. The revised EOP-005 R1 uses the phrase, 'Transmission Operator's System'.<br>2. BRFP has been removed from the standard in the new revision for the second posting.<br>3. The SDT agrees that test results should not be a component of R1.2.1. The GOP now has the requirement to maintain these records (R17).<br>4. Critical Load in BES system restoration includes station service for substations, units to be restarted or stabilized, the Load needed to stabilize generation and frequency and provide voltage control for restoring the System. This statement has been added to the standard and the term, 'critical load' has been deleted. | |
| OVEC | EOP-005-2, R1, delete "approved by its Reliability Coordinator" because the approval is not necessary and overly burdensome on the Reliability Coordinator. The RC will be approving system restoration activities during an actual restoration and will not be following entities restoration plan word for word.<br>EOP-005-2, R1.1, revise to the following "Identification of the restoration activities to be performed by the Transmission Operator including the responsibility of the Transmission Operator to coordinate with its Reliability Coordinator and other affected Transmission Operators." The inclusion of "authority" in the R1.1 is duplicating the authority requirement in Standard PER-001, R1. Including "field switching personnel" is not required or desired because these personnel are under the direction and control of a NERC certified system operator.<br>EOP-005-2, R1.2, Delete this requirement because it is written as a measure rather than a requirement. R1.2.1 is too prescriptive and does not enhance system reliability. Suggest deleting R1.2.1. What if an entity has no Blackstart Resources does the requirement still apply?<br>EOP-005-2, R1.5, this requirement seems only to state the obvious and duplicates a requirement in Standard PER-001, R1. Suggest deleting R1.5.<br>EOP-005-2, R1.6, change "procedures" to "guidelines." The word procedure implies little or no flexibility where guidelines would suggest the necessary flexibility that would be needed in a restoration event.<br>EOP-005-2, R1.7, change "procedures" to "guidelines." The word procedure implies little or no |

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| | flexibility where guidelines would suggest the necessary flexibility that would be needed in a restoration event. |
| **Response:** In FERC Order 693, "the Commission directs the ERO to develop a modification to EOP-006-1 through the Reliability Standards *development process that ensures that the reliability coordinator, which is the highest level of authority responsible for reliability of the Bulk-Power System, is involved in the development and approval of system restoration plans."* The SDT believes that the process described in EOP-005-2 and EOP-006-2 meets the Commission directive.<br>R1.1, R1.2.1 and R1.5 have been revised to address these concerns. R1.1 was deleted from the revised standard because several stakeholders indicated that the requirement is redundant with R1 in PER-001.<br><br>R 1.2.1, which required identification of each Blackstart Resource is now R1.3 and no longer includes testing results. Testing results have been moved into R17 and remain with the Generator Operator unless requested by the Reliability Coordinator or Transmission Operator.<br><br>R1.5 is different from PER-001 R1 – several commenters suggested modifications and the drafting team modified the sub-requirement as follows: "A statement accounting for the possibility that restoration can not be completed as expected indicating that in situations where the actual conditions do not match the studied conditions, the System Operator shall use professional judgment to ~~modify~~ deviate from the System restoration plan."<br><br>"Operating Procedures" is the preferred term since it is defined in the NERC Glossary. | |
| KCPL | 1. Do not agree with the requirement in R1 stating the TO restoration plan must be approved by the RC. The primary substance of these plans are local restoration and are of little interest to the RC. This proposed EOP-005-2 contains the requirements for TO to include in their restoration plans to work in conjunction with the RC, to coordinate the restoration of interconnections with others with the RC, to maintain communication with the RC and to take direction from the RC in the restoration effort. This requirement should be for a TO to submit their restoration plans to the RC for review and coordination.<br>2. R1.2.1 requires the TO restoration plan to include records of testing of the Blackstart Resources. This will require unnecessary maintenance and update of the restoration plan without change of restoration plan substance. This requirement should be changed to document the testing results but do not require the results in the restoration plan.<br>3. Suggest removal of R1-5 as it is a requirement with no substance. It is not practical to require something that cannot be adequately measured.<br>4. R1.8 requires the TO to have "procedures to coordinate" their restoration plans with others. This should be a requirement to "coordinate" with others. |
| **Response:** In FERC Order 693, *"the Commission directs the ERO to develop a modification to EOP-006-1 through the Reliability Standards development process that ensures that the reliability coordinator, which is the highest level of authority responsible for reliability of the Bulk-Power System, is involved in the development and approval of system restoration plans."* The SDT believes that the process described in EOP-005-2 and EOP-006-2 meets the Commission directive.<br>R1.2.1 and R1.5 has been revised to address these concerns. R 1.2.1, which required identification of each Blackstart Resource is now R1.3 and no longer includes testing results. Testing results have been moved into R17 and remain with the | |

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| Generator Operator unless requested by the Reliability Coordinator or Transmission Operator.<br><br>R1.5 was modified to clarify that the restoration plan must include: "A statement accounting for the possibility that restoration can not be completed as expected indicating that in situations where the actual conditions do not match the studied conditions, the System Operator shall use professional judgment to ~~modify~~ deviate from the System restoration plan."<br><br>R1.8 has been changed to R2 and the use of the term 'applicable' has been removed. | |
| RFC (1) | R1. The statement "The restoration plan shall have a priority of restoring the integrity of the Interconnection under the direction of the RC" should be a separate requirement or sub-requirement and not listed here if it is something important to the plan.<br>R1.2 Provide an explanation as to why you are referring to "applicable" BRFPs. This statement should be more explicit. Leaves room for a lot of interpretation.<br>R1.3 Provide an explanation of a cranking path and what should be included as part of the diagram. Some entities in our region question what a cranking path consists of. Is it a one-line diagram, flowchart of facility names, etc. ? |
| **Response:** R1 has been revised and R1.2 in the revised standard states that the restoration plan must include, "Procedures for restoring the integrity of the Interconnection under the direction of the Reliability Coordinator. "<br><br>BRFP has been removed from the standard in the new revision for the second posting.<br>The SDT did not see the need to be more specific on what a Cranking Path is leaving it to the system restoration plan to identify Cranking Paths consistent with the NERC Glossary of Terms definition and to the necessary detail as required in the system restoration plan. Each Blackstart Resource should have a cranking path to at least one other non blackstart resource. These do not need to be independent the non blackstart resource goals of other Blackstart Resources. The SDT believes that a one-line diagram or detailed list of facility names in flowchart order would document the requirement. | |
| RFC (2) | R1 requires the TOP to have a restoration plan approved by its RC. If the RC doesn't approve the plan, then the TOP is in violation. This may be outside of the TOP's control. Please consider rewording the requirement to have the TOP submit its restoration to the RC for approval. |
| **Response:** The initial approval will be addressed in the transition plan. Once approved, there will always be an approved plan, even if a new one is in the approval process.<br>In FERC Order 693, *"the Commission directs the ERO to develop a modification to EOP-006-1 through the Reliability Standards development process that ensures that the reliability coordinator, which is the highest level of authority responsible for reliability of the Bulk-Power System, is involved in the development and approval of system restoration plans."*<br>The SDT believes that the process described in EOP-005-2 and EOP-006-2 meets the Commission directive. | |

## EOP-005 — Comments on Requirement 2:

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| Duke Energy | R2 of EOP-005-2 requires that the Transmission Operator's restoration plan be updated within 90 days after completing permanent modifications that would change the planned Cranking Paths or after detecting deficiencies in the restoration plan. We agree with making updates within 90 days for major changes in Cranking Paths, or to correct deficiencies in the plan. For example, changing the |

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| | Cranking Path at the substation level (i.e. breaker or switch change) would not be considered a major change. However changing blackstart units or transmission line path would be a major change. We believe that an annual update is sufficient for any non-major changes. |
| **Response:** The SDT has modified the standard to address these concerns. The revised standard includes the following requirements relative to updating the restoration plan:<br><br>R3. Each Transmission Operator shall review its restoration plan and submit it to its Reliability Coordinator on an annual (rolling 365 days) basis.<br><br>R3.1 If there are no changes to the previously submitted restoration plan, the Transmission Operator shall confirm annually (rolling 365 day basis) to its Reliability Coordinator that it has reviewed its restoration plan and no changes were necessary.<br><br>R4. Each Transmission Operator shall update its restoration plan within ninety calendar days after identifying any permanent System modifications that would change the implementation of its restoration plan.<br><br>R4.1 Each Transmission Operator shall submit its revised restoration plan to its Reliability Coordinator within the same ninety calendar day period | |
| OVEC | EOP-002-2, R2.2, delete this requirement because measure M2 sufficiently covers compliance to requirement R2. Also, confirmation and determination of compliance should be the responsibility or the regional compliance entity not the Reliability Coordinator. |
| ISO/RTO | 5. R2.2: We do not agree that the TOP should be required to certify annually to the RC that the plan has been reviewed. This is part of the ERO self certification process, and we do not believe that there is a need to duplicate the ERO function with the RC. |
| **Response:** RC review and approval of the plan is not an issue of compliance but of coordination and workability with the RC's restoration plan. | |
| NYISO | Requirement R2, as written permits a Transmission Operator to run the system for one quarter of a year with a non-viable restoration plan. That is unacceptable. Does the Transmission Operator not know that wires are being strung and stations built until commissioning is complete and the equipment is energized? Change time requirement to prior to permanent modifications being made. |
| **Response:** There can be unanticipated changes, such as the loss or removal of a Blackstart Resource or other facility on a permanent or long term basis. The SDT believes the 90 day requirement is reasonable. | |
| ATC | Requirement 2 Suggested rewording:<br>Each Transmission Operator shall review its restoration plan at least annually and update, if necessary.<br>Question on Requirement 2:<br>The term deficiencies is not defined by the SDT so will each TOP be allowed to determine the severity of the deficiency that would trigger the update to the plan? |
| First Energy | 3. FE does not agree that it is necessary to review the restoration plan each year. We believe it could be reviewed less frequently without compromising the reliability of the BES. We suggest "every 5 years", and then also a qualifying statement such as "or when changes in the System warrant a more |

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| | frequent review." |
| **Response:** The SDT has revised the wording to address these concerns. In the revised standard, the Transmission Operator is obligated to review its restoration plan once each year and if no changes are needed, the Transmission Operator must notify its Reliability Coordinator that it reviewed its restoration plan and no changes were needed to the prior plan. | |
| WECC RCWG | The WECC RCCWG believes that R2 needs to state criteria for approval or disapproval of Transmission Operator restoration plans. The WECC RCCWG believes that a 2009/2010 implementation to meet this requirement and the coordination requirement in R1 will allow the necessary time to budgeting additional staff required.<br>R2.2: The TOP should not be required to certify annually to the RC that the plan has been reviewed. This should be done through the ERO self certification process.<br>The WECC RCCWG believes that R2.2 should be increased from 30 days to 60 days.<br>The WECC RCCWG believes that R6 should be reworded to indicate that "The Reliability Coordinator shall serve as the primary contact for disseminating information regarding restoration to those parties not immediately involved in the restoration process. The Reliability Coordinator should not be placed in a position to interfere with, or be placed as another communication link to, direct communication between entities immediately involved. |
| **Response:** These comments apply to EOP-006.<br>RC review and approval of the plan is not an issue of compliance but of coordination and workability with the RC's restoration plan. The SDT believes that this gives input to the RC in the development of plans such that the various TOP plans are coordinated with the RC's plan. In FERC Order 693, *"the Commission directs the ERO to develop a modification to EOP-006-1 through the Reliability Standards development process that ensures that the reliability coordinator, which is the highest level of authority responsible for reliability of the Bulk-Power System, is involved in the development and approval of system restoration plans."* The SDT believes that the process described in EOP-005-2 and EOP-006-2 meets the Commission directive.<br>The SDT will supply an Implementation Plan with the posting of the second draft of the standards.<br>RC review and approval of the plan is not an issue of compliance but of coordination and workability with the RC's restoration plan.<br>The SDT believes that 30 days is appropriate.<br>The SDT believes that R6 is appropriate as written since this is the RC's responsibility as per definition. | |

## EOP-005 — Comments on Requirement 3:

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| We Energies | R3.3 – What is meant by Dynamic Limits? During system restoration is stability in the usual sense attainable? |
| **Response:** The SDT has modified the new R6.3 to address these concerns – and the reference to dynamic limits was deleted. R6.3 reads as follows: "The Loads and generating resources required to control voltages and frequency within acceptable operating limits (documented in Requirement R1.5) as the BES is restored." | |
| Southern Transmission | 3. Requirement 3 as written implies that every five years the restoration plan is verified by the methods listed that it accomplishes it intended function. Although the items listed in R3.1-R3.3 are called out as being included in the testing, R3 does not limit the verification to these alone and would |

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| | thus imply that all items in the plans should be verified - including items such as those listed in R1.6 and 1.7. From a practical standpoint it is unclear how this would reasonably be accomplished. Also, the wording of R3.2 and R3.3 makes it unclear what is to be done with the loads referred to when the simulation or testing takes place. |
| SDE&G | R3 This requirement calls for dynamic simulations. Quite often black start units are small, and are not a great contributor to system stability; therefore most of them have a very inaccurate model, a typical model or no dynamic modeling at all. Therefore, performing dynamic simulations maybe impossible or the results will be very inaccurate. |
| Pepco | R3. It is unlikely that most TOs would have an actual event or testing that will satisfy this requirement. Thus the verification will be through steady state and dynamic simulations. Steady state simulations are common and easy to perform. Dynamic simulations are more difficult to perform and involve significant effort. There needs to be some kind of acceptable phase in plan to perform dynamic simulations. |
| IESO<br>RTO/ISO | 5. R3: We do not understand what "testing" mean". The cranking path and associated restoration process cannot be tested live. If it means computer simulation or desk top exercise, then the requirement should be reworded to be more specific.<br>6. R3.3: Acceptable steady-state and dynamic limits are not defined. Reference is made to R1.4 but the latter stipulates operating voltage and frequency limits. Please make them consistent. |
| **Response:** The SDT used the word "verify" to permit a variety of methods. Normal unit response characteristics have been published, and the TOP may determine that these are sufficient for the dynamics.<br>The SDT has changed the wording of the new R6.3 to address the IESO concern – the reference to dynamic limits was removed. The revised sub-requirement reads as follows, "The Loads and generating resources required to control voltages and frequency within acceptable operating limits (documented in Requirement R1.5) as the BES is restored." | |
| Manitoba Hydro | EOP-005-2 R3.3 how far along in the restoration effort are these studies required, does it include right up to the last load applied or is there a logical point the studies should be taken to. |
| **Response:** The purpose of a restoration plan is not to restore every MW of Load and Transmission System element to service but to reach a stage whereby the choice of the next Load to be restored is not driven by the need to control frequency or voltage. Normal state has been eliminated in the text to reflect this purpose. The SDT has changed the Title, Purpose and R1. (See the summary consideration under Question 1 on page 10 of this document to see the specific revisions.) | |
| OVEC | EOP-002-2, R3.2, what if an entity has no load, how can this requirement be satisfied? What if an entity has no network analysis tools because they have never been needed, why should the tools be procured simply to satisfy compliance? |
| **Response:** There is load in every TOP area.<br>The standard does not require the procurement of tools. The SDT used the word "verify" to permit a variety of methods. | |
| Madison G&E | b) R3 and R6 imply that the Transmission Operator owns generation assets. They do not. The rewording of these requirements is needed. |
| **Response:** The SDT disagrees. These are not ownership or operator requirements but performance requirements. | |
| Madison G&E | a) R1.2.1, R1.4, R3.1, R6.2.3, R12, and R14.1 all refer to voltage and in particular megavar capacity. During an actual blackout, the Blackstart Resource may be able to handle the leading MVar's that an |

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| | un-energized transmission line produces. Blackstart Resource owners are not able to accurately test the unit's megavars capacity to absorb Vars since we tend to keep the transmission system energized. The SDT will need to change the wording so Blackstart Resource owners can be compliant with the standard. |
| **Response:** R1.2.1 has been revised to address this concern. R 1.2.1, which required identification of each Blackstart Resource is now R1.3 and no longer includes testing results. Testing results have been moved into R17 and remain with the Generator Operator unless requested by the Reliability Coordinator or Transmission Operator. | |

## EOP-005 — Comments on Requirement 4:

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| NYISO | R4 and R5 in EOP-005 and R4 in EOP-006 should be eliminated as they are completely redundant with EOP-004. If the report required by EOP-004 for a blackout investigation does not include checking restoration performance versus NERC Restoration Standard Requirements, than EOP-004 should be deleted as meaningless. |
| FPL | R4 and R5 should be removed, EOP-004 addresses reporting of disturbances. |
| NYISO | R4 and R5 in EOP-005 and R4 in EOP-006 should be eliminated as they are completely redundant with EOP-004. If the report required by EOP-004 for a blackout investigation does not include checking restoration performance versus NERC Restoration Standard Requirements, than EOP-004 should be deleted as meaningless. |
| FPL | R4 and R5 should be removed, EOP-004 addresses reporting of disturbances. |
| **Response:** EOP-004 is disturbance reporting, not performance during restoration. | |
| IESO | 7. R4.3: “As required” is not measurable. |
| ISO/RTO | 8. R4.3: "As required" is not measurable. |
| **Response:** The RC’s restoration plan will describe what is required. | |
| PG&E (2) | EOP-005-2 R1.7 and R4.2 only lists nuclear stations for high priority of off-site power. |
| WECC OTS | EOP-005-2 R1.7 and R4.2 only lists nuclear stations for high priority of off-site power. Suggest also listing thermal stations where an area may not have nuclear resources and the Thermal stations require off site power to maintain their ability to come back on line quickly. |
| **Response:** FERC Order 693 requires explicit recognition of off-site power to nuclear stations. Critical Load in BES restoration includes station service for substations, units to be restarted or stabilized, the Load needed to stabilize generation and frequency and provide voltage control for restoring the System. This statement has been added to the standard and the term, ‘critical load’ has been deleted | |
| SPP ORWG | R4 - We believe the requirement should be reworded to reflect that TOs should coordinate implementing their restoration plans with their RC. We suggest the following wording: "Following a Disturbance in which one or more areas of the BES shuts down and the use of Blackstart Resources is required to restore the shut down area to service, each affected Transmission Operators shall implement its restoration plan by: R4.1 Working in conjuction with its Reliability Coordinator(s) to determine the extent and condition of the isolated area(s). R4.2. Giving high priority to restoration of |

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| | off-site power to nuclear stations. R4.3. Notifying its Reliability Coordinator of restoration progress as required in the Reliability Coordinator's restoration plan. |
| **Response:** The SDT believes the wording is equivalent. | |
| OVEC | EOP-002-2, R4.2, what qualifies as "off-site power to nuclear stations?" |
| **Response:** Off-site power is any source outside the emergency power sources at the nuclear station. | |

## EOP-005 — Comments on Requirement 5:

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| Entergy (G&M) | R4: This requirement should be applicable whether or not Blackstart Resources are used to restore the system. Consider striking the phrase "and the use of Blackstart Resources is required to restore the shut down area to service." Consider rewording this requirement to state "work in conjunction with it's Reliability Coordinator to:" and then list items 4.1 through 4.3. |
| **Response:** The SDT has changed the Title, Purpose, and R1. (See the summary consideration under Question 1 on page 10 of this document to see the specific revisions.)<br>Partial shutdowns are already covered by other standards including TOP-001, TOP-004, and EOP-001. | |
| PG&E (1) | EOP-005 R5 makes sense when islanding from neighboring areas, however what if the island is within the same area or even same company, would this apply? |
| **Response:** The intent of "neighboring areas" is to describe areas outside the TOP's footprint. | |
| AEP | EOP-005, R5 – As the neighboring Transmission Operator area to be resynchronized may be under a different Reliability Coordinator, we propose the following wording change for R5:<br>Each affected Transmission Operator shall resynchronize islanded area(s) with neighboring Transmission Operator area(s) only with the authorization of the Reliability Coordinator(s) and in accordance with the established procedures of the Reliability Coordinator(s). |
| NBSO | In R5, revise as follows: "The Reliability Coordinator shall authorize and coordinate re-synchronizing isolated RC/BA/TOP areas" |
| **Response:** Note – This comment refers to EOP-006 and not EOP-005. The SDT has revised the new R8 in EOP-006 to address this concern. The revised EOP-006 R8 states: "Following a Disturbance in which one or more areas of the BES shuts down and the use of Blackstart Resources is required to restore the shut down area to service, the Reliability Coordinator shall authorize and coordinate resynchronizing isolated areas that bridge boundaries between Transmission Operators or Reliability Coordinators. " | |

## EOP-005 — Comments on Requirement 6:

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| BCTC | R6.2.3 and R6.2.4 should be moved to R3. Tests to ensure voltage and frequency stability while energized to a minimum Load level may only be possible via simulation since the TO would require the LSE to provide this Load and it is highly unlikely customers would to agree to this type of test. |
| ATC | Requirement 6.3 is a statement not a requirement. ATC recommends that this statement be deleted from the standards. What does a failure of Requirement 6.3 represent? |
| Madison G&E | c) R6.2.3 and R6.2.4 will not be able to be completed if the Blackstart Resource owner can not |

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| | accomplish R6.2.2. R6.2.3. and 6.2.4 need to be reworded incase the Blackstart Resource owner can not accomplish R6.2.2. |
| **Response:** The SDT deleted the old R6.2.3 & R6.2.4 to address these concerns. The SDT believes that the old R6.3 is a valid requirement. | |
| RFC (2) | R6 has the TOP determine and set testing requirements for Blackstart Resources. This is inappropriate. Testing requirements should be consistent across the Interconnection. They should be specified by a NERC standard. |
| **Response:** The SDT believes that there are too many physical differences within the industry; adopting a continent-wide standard would cause us to come up with a Least Common Denominator list of requirements that would end up being a detriment to reliability. The suggested topics are mentioned in the revised text. | |
| OVEC | EOP-002-2, R6, this requirement tends to imply that Transmission Operators shall have Blackstart Resources. Is that the intended interpretation? Suggest revising "Applicability", 4.1, to read "Transmission Operators with Blackstart Resources." |
| Madison G&E | b) R3 and R6 imply that the Transmission Operator owns generation assets. They do not. The rewording of these requirements is needed. |
| **Response:** "with Blackstart Resources" modifies Generator Operator, not Transmission Operator. | |
| Madison G&E | a) R1.2.1, R1.4, R3.1, R6.2.3, R12, and R14.1 all refer to voltage and in particular megavar capacity. During an actual blackout, the Blackstart Resource may be able to handle the leading MVar's that an un-energized transmission line produces. Blackstart Resource owners are not able to accurately test the unit's megavars capacity to absorb Vars since we tend to keep the transmission system energized. The SDT will need to change the wording so Blackstart Resource owners can be compliant with the standard. |
| **Response:** The SDT has revised the requirements to address these concerns. R 1.2.1, which required identification of each Blackstart Resource is now R1.3 and no longer includes testing results. Testing results have been moved into R17 and remain with the Generator Operator unless requested by the Reliability Coordinator or Transmission Operator. | |
| Entergy (G&M) | R6: Are there any fuel supply requirements for a Blackstart Resource? The test should indicate if the test must be performed on the fuel that would be used during a blackstart. Must the fuel supply be able to support a certain length of operation without support from the BES? Are pipelines acceptable sources, or are their certain requirements that would apply if a pipeline were the fuel supply? |
| **Response:** The test includes minimum duration which the SDT believes is equivalent and sufficient. | |
| NPCC RSC<br>HQT | 2) In R6.2, the following is proposed:<br>Delete R6.2.3 and 6.2.4 since the real time testing of such requirements is not feasible.<br>A new R6.2.3 will read:<br>"Ability to energize a transmission line. If it is not possible to energize a transmission line during the test, the testing entity must affirm that the unit has the capability to energize a transmission line." |
| **Response:** The SDT deleted the old R6.2.3 & R6.2.4 to address these concerns. | |
| NYISO | R6 should be eliminated as pointless. At worst, combine it with R14. How is it physically possible for generators to perform the black start tests required in R14 without having possession of the test requirements? |
| **Response:** The new R10 requires distribution of test requirements. | |

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| IESO | 8. R6.2.4: "Acceptable frequency" is subject to interpretation, unless it is referred to the range specified in R1.4. |
| ISO/RTO | 9. R6.2.4: "Acceptable frequency" is subject to interpretation, unless it is referred to the range specified in R1.4. |
| **Response:** The old R6.2.4 was deleted to address these concerns. | |
| KCPL | 5. Requirement R6.1 allows an entity with one Blackstart Resource to test that resource one time in three years. The requirement should be for an entity to test a Blackstart resource on an annual basis and no less than once every three years. If an entity had 5 Blackstart resources, it could schedule testing for all 5 over a three year period, but at least one every year. |
| **Response:** The SDT disagrees in consideration of those TOP's that have numerous Blackstart Resources to test. | |

## EOP-005 — Comments on Requirement 7:

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| NYISO | R7 should be eliminated as unnecessary. This requirement prevents the Transmission Operator from perpetrating a reliability fraud – counting on reliability resources that are known to be non functional. Are reliability frauds possible in all standards but this one? |
| RFC | R7 has the TOP only include Blackstart Resources that have met testing requirements. What if a Blackstart Resource failed a test? The drafting team should consider a timeframe that the TOP must comply with to remove a Blackstart Resource from its restoration plan if it has failed a test. |
| **Response:** The old R7 has been deleted to address this concern. | |

## EOP-005 — Comments on Requirement 9:

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| AEP | EOP-005-2, R9 & EOP-006-2, R7 – The subject R9 and R7 requirements mandate training for "control room personnel". Why change the accepted and more common term of "operating personnel"? The NERC term for certification of personnel is "System Operator Certification Program" (TO, BI, BT, & RC). We recommend keeping the identification name consistent with certification program terminology (System Operators) and PER-003 (Operating Personnel Credentials). OSHA also uses the term "system operator" for personnel in charge of the power system lines or equipment.<br>EOP-005-2, R9 & EOP-006-2, R7 – In the existing approved EOP-005-1, the Compliance Monitoring Process requires "annual training of operating personnel" in the implementation of the Transmission Operator's System Restoration Plans and restoration exercises. EOP-005-2, R9 & EOP-006-2, R7, draft 1, does not identify how often personnel must be trained in the emergency operations topics training program. Is the intent annual? Will this be revealed in draft 2 of these standards with the compliance requirements? There is no compliance monitoring processes in draft 1. |
| OVEC | EOP-002-2, R9, suggest changing "control room personnel identified in its restoration plan" to "system operators." System operators are a specific, narrowly defined group. Control room personnel has too broad of a focus. Delete R9.1 through R9.5. These sub-measures are too prescriptive and should be left to the discretion of the entity to include or not to include in its training |

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| | plan. |
| **Response:** The SDT notes that in FERC Order 693, the FERC determined that "*System restoration requires the participation of not only control room personnel but also those outside of the control room. These include blackstart unit operators and field switching operators in situations where SCADA capability is unavailable."*<br>Since the training cited is within the existing operations training program as defined in the PER-004 standard, the timeframe is included by default**.**<br>Compliance elements of the standard will be added once there is consensus on the requirements. | |
| Southern Transmission | 4. If the Balancing Authority continues to be left out of the Standards as an applicable entity during Restoration, the training required in R9 should also include TOP training in the concepts of frequency control, operating reserves, and perhaps even ACE control if reconnection to the Interconnection is performed and the BA is not involved. It is agreed that R1.8 requires the TOP to coordinate its plan with the BA but there is no requirement or obligation for the BA to take an active role in the TOP's plan. The TOP's plan may say it does everything without the BA and there is nothing in the Standards to prevent this even though it is outside the TOP role in the Functional model. |
| **Response:** The SDT disagrees that the BA has an "applicability" role in the TOP restoration plan or its implementation. Beginning with the system collapse, the TOP restores the Transmission System, restores interconnections, and supplies off-site power to nuclear generating stations. This is accomplished on a command and control basis by the Transmission Operator in conjunction with the GOP. Once interconnections have been reestablished and the Transmission System restored, the restoration of firm Load can begin. The TOP is restoring the System through command and control until a sufficient System has been built where frequency is under control. | |
| PG&E (2) | EOP-005-2 R.9 states each Transmission Operator shall provide training and even lists the training program topics; it does not give a time frame for this training. Is this training to be annually, if so, it should state it? Also, isn't' the existing emergency operations topics training program PER-002 and wouldn't this be a duplicate criteria for the new PER-005-1 System Personnel training? |
| **Response:** Since the training cited is within the existing operations training program as defined in the PER standards, the timeframe is included by default**.** | |
| ATC | Requirement 9 should be rewritten to require the blackstart generator operator to supply the BRFP data to its TOP. ATC does not understand the need to require an agreement for this data. |
| **Response:** BRFP has been removed from the standard in the new revision for the second posting. | |
| Consumers | R9.4: The Standard should be more specific as to the applicability of R9.4. Is this related to synchronizing between transmission networks or between the transmission operator and the generator operator? |
| **Response:** The SDT has revised the requirement to clarify that the training must include synchronizing (re-energized sections of the System). (See R11.4 in the revised standard.) | |
| WECC OTS | EOP-005-2 R.9 states each Transmission Operator shall provide training and even lists the training program topics; it does not give a time frame for this training. Is this training to be annually, if so, it should state it? Also, isn't' the existing emergency operations topics training program PER-002 and wouldn't this be a duplicate criteria for the new PER-005-1 System Personnel training?<br>Training requirements in EOP-005-2 R.11 needs to be clearly defined for the Transmission Operator. Will this be annual training per operator or only upon request of the Reliability Coordinator? |

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| **Response:** Since the training cited is within the existing operations training program as defined in the PER-004 standard, the timeframe is included by default**.**<br>FERC Order 693 mandates that restoration training be included in the blackstart standards. *"The Commission believes that inclusion of periodic system restoration drills and training and review of restoration plans in a system restoration Reliability Standard is the most effective way of achieving the desired goal of ensuring that all participants are trained in system restoration and that the restoration plans are up to date to deal with system changes."* | |
| FPL | R9, All Training requirements should be in the PER Standards. |
| ATC | ATC strongly believes that any training requirement should be moved to the NERC PER standards. This standard should focus on blackstart efforts not training issues. |
| **Response:** FERC Order 693 mandates that restoration training be included in the blackstart standards. *"The Commission believes that inclusion of periodic system restoration drills and training and review of restoration plans in a system restoration Reliability Standard is the most effective way of achieving the desired goal of ensuring that all participants are trained in system restoration and that the restoration plans are up to date to deal with system changes."* | |

## EOP-005 — Comments on Requirement 10:

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| We Energies | R10 – Why the 2 hour training requirement for "all field personnel?" Not sure there is any added value here. And if there is a training requirement, should it be in the Personnel Standards? |
| IESO<br>ISO/RTO | 16. R10: This requirement should be moved to the training standard. |
| ATC | ATC strongly believes that any training requirement should be moved to the NERC PER standards. This standard should focus on blackstart efforts not training issues. |
| **Response:** FERC Order 693 mandates that restoration training be included in the blackstart standards. *"The Commission believes that inclusion of periodic system restoration drills and training and review of restoration plans in a system restoration Reliability Standard is the most effective way of achieving the desired goal of ensuring that all participants are trained in system restoration and that the restoration plans are up to date to deal with system changes."*<br>In FERC Order 693, the ERO is directed to identify time frames for training and review of restoration plan requirements. | |
| Pepco | R10. The requirement states that …training for each of its authorized transmission field switching personnel for the tasks identified in its restoration plan…. Authorized transmission field switching personnel usually means to a TO, all those personnel that are qualified to perform transmission switching. Even though we may dispatch field personnel during a restoration, their duties are their "normally performed duties" under the direction of the System Operator. It is suggested that additional words be added so it is clear that the requirement means training for only those field personnel performing specific restoration tasks during a restoration, beyond normal operating practices. |
| NYISO | R10 should be eliminated. Field switching personnel have no decision making role in restoration. |
| Manitoba Hydro | EOP-005-2 R10 Can this be narrowed down a little to those required or identified in the restoration plan? |
| OVEC | EOP-002-2, R10, suggest deleting this requirement because the organizational structures of entities vary too widely to include such a requirement. Also, entities already provide training to transmission |

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| | field switching personnel for switching tasks. |
| KCPL | 6. Requirement R10 should be removed. It is unnecessary to include training for field switching personnel. These personnel do not act independently and are under the direction of Transmission Operators and Generation Operators who are required to be trained in this proposed standard. |
| **Response:** The SDT notes that in FERC Order 693, the FERC determined that "*System restoration requires the participation of not only control room personnel but also those outside of the control room. These include blackstart unit operators and field switching operators in situations where SCADA capability is unavailable.*"<br>If the TOP's restoration plan has field switching tasks unique to system restoration that are not included in normal operations, then training shall be required. Changes have been made to R10 (R12 in the revised standard) as shown below to clarify this position.<br>**R12.** Each Transmission Operator shall provide a minimum of two hours of System restoration training per year for ~~each of its authorized transmission~~ field switching personnel ~~for the tasks~~ identified ~~in~~ as performing unique tasks associated with its restoration plan~~.~~ and outside of their normal tasks. | |

## EOP-005 — Comments on Requirement 11:

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| Madison G&E | d) R11 and R16 should be combined as one requirement and a time limit set, ie, "once every two years". |
| Entergy | We also suggest TOPs and GOPs should perform a system restoration drill of the TOPs plan once every two years and that requirement should be in EOP-005-2 R11 and R16. |
| KCPL | 7. Suggest combining participation in RC restoration drills into one requirement by combining requirement R11 and R16. |
| **Response:** The SDT believes that participating in the RC's drills is sufficient. There is a statement in EOP-006 covering the once in every two year concept. The SDT has strived to keep the requirements for TOP and GOP separate. | |
| PG&E (2) | Training requirements in EOP-005-2 R.11 needs to be clearly defined for the Transmission Operator. Will this be annual training per operator or only upon request of the Reliability Coordinator?<br>The WECC OTS finds the new System Restoration and Blackstart-Coordination Standards to be duplicating in their training requirements and not well defined in the time frames for this training. The OTS has also identified several training specific needs in other NERC Standards and would like to recommend that all training requirements in the current NERC Standards and future Standards only be identified in the NERC System Personnel Training Standard. |
| **Response:** Since the training cited is within the existing operations training program as defined in the PER standards, the timeframe is included by default**.**<br>FERC Order 693 mandates that restoration training be included in the blackstart standards. "*The Commission believes that inclusion of periodic system restoration drills and training and review of restoration plans in a system restoration Reliability Standard is the most effective way of achieving the desired goal of ensuring that all participants are trained in system restoration and that the restoration plans are up to date to deal with system changes.*" | |
| AEP | EOP-005, R11 & R16 – We do not agree with the verbiage of R11 & R16…. "as requested by its Reliability Coordinator"…… related to drills, exercises and simulations. We feel the verbiage should put a minimum number as to the number of Reliability Coordinator drills, exercises and simulations in |

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| | which the Transmission Operator must participate, and the number should be in agreement with Reliability Coordinator requirements of EOP-006, R8. The present wording would require the Transmission Operator to participate in all drills, regardless of number, if the Reliability Coordinator provided and requested such. The Transmission Operator is required to train all its system operating personnel on their restoration plan, so participation in the Reliability Coordinator's restoration drills and exercises are in addition to the Transmission Operators training drills, exercises, and simulations. We recommend the wording of R11, R16 and M10 be changed to correspond with the wording of the EOP-006-2, R8 requiring Transmission Operator inclusion in a RC black-start restoration drill, exercise, or simulation once every two years. The following wording is suggested for EOP-005, R11 & R16, which specifies the minimum number of participations:<br>"Each Transmission Operator (or Generator Operator for R16) shall participate in its Reliability Coordinator's restoration drills, exercises, or simulations as provided and requested by its Reliability Coordinator at least once every two years". |
| **Response:** The requirement is for the applicable entity and not for individuals. It is up to the TOP (GOP) to get their individual personnel trained as per the standards. | |
| NYISO | R11 should be moved to EOP-006. It is the responsibility of the Reliability Coordinator to insure that all Transmission Operators in that jurisdiction participate in drills and exercises, as required. |
| FPL | R11 Should be removed. 1. The RC should not be responsible for all TOP's in the area to attend regional drills. 2. All TOP's should not be required twice a year to attend regional drills, Some TOP's have no effect on restoration of the BES. |
| **Response:** The RC is responsible for "including the Transmission Operators and Generator Operators with Blackstart Resources in their area of responsibility as dictated by the particular scope of the drill, exercise, or simulation that is being conducted." | |
| ISO/RTO | 10. R11. Should specify an actual frequency that participation in an RC restoration exercise is required. Suggested wording:<br>" R11. Each Transmission Operator shall participate in its Reliability Coordinator's restoration drills, exercises, or simulations at least once every two years when requested by its Reliability Coordinator." |
| **Response:** The SDT will keep the current requirement. The RC can determine by the scope of the event which TOPs need to be included and there is an inclusion requirement in EOP-006. | |

## EOP-005 — Comments on Requirement 12:

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| NPCC RSC<br>HQT | 3) Delete R12 as having no reliability implications beyond those already stipulated in R1.2. |
| NYISO | R12 is a business issue and has no impact on system restoration. It should be eliminated. |
| Southern Transmission | 2. Requirement 12: Is the Blackstart Resource Agreements new or just a new name. Also, most of this information is covered in Requirement 1.2. Why does the TOP need a copy of the start-up |

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| | procedure for the blackstart units? We also feel that a Blackstart Resource Agreement for vertically integrated utilities serves no purpose and should be waived in the proposed Standard for vertically integrated utilities. |
| CenterPoint | EOP-005-2 R12 requires documented agreements specifying terms and conditions. CenterPoint Energy believes it is unnecessary and inappropriate to have such a requirement in a standard. Documented agreements are a business issue between two or more parties and can not be mandated by NERC standards. However, if such a requirement is ultimately established, consideration should be given to requiring such agreements to be for at least a three year term, with the same blackstart resources committed for at least a three year period. This will help ensure competent performance in a blackout event, with the blackstart resources remaining consistent for a reasonable period of time. A three year term would align with the three year testing of Blackstart Resources (R6.1), as well as meeting the five year (minimum) verification of the restoration procedure by actual simulations (R3). Additionally, because changes in blackstart resources significantly impact the blackstart paths, changing the blackstart resources on an annual basis may negatively impact efforts to comply with other reliability standards. For example, CIP-002 requires that "critical assets" and subsequently "critical cyber assets" be identified and that these "critical assets" be identified along the blackstart paths. Changes to the blackstart paths on an annual basis could significantly alter an entity's critical asset list, and significantly impact an entity's ability to project its critical cyber assets associated with each critical asset. While an annual assessment of critical assets is required by CIP-002, CenterPoint Energy does not believe CIP-002 envisions that an entity's critical asset list would change dramatically from year to year. However, changing blackstart resources and ultimately blackstart paths could in fact have a dramatic impact on an entity's critical asset list. |
| **Response:** An agreement provides assurance that the GOP knows they are included in the TOP's restoration plan. In a vertically integrated utility, an internal document would serve as an agreement. | |
| OVEC | EOP-002-2, R12, R13, R14, R15, how is compliance determined for these requirements if an entity has no Blackstart Resources? R15 is again too prescriptive in detailing how many hours of training should occur. Sub-measures R15.1, R15.2, and R15.3 should be deleted because they are to prescriptive and do not enhance system reliability. |
| **Response:** This standard applies to TOPs and to GOPs with Blackstart Resources.<br>In FERC Order 693, the ERO is directed to identify time frames for training and review of restoration plan requirements. | |
| Madison G&E | a) R1.2.1, R1.4, R3.1, R6.2.3, R12, and R14.1 all refer to voltage and in particular megavar capacity. During an actual blackout, the Blackstart Resource may be able to handle the leading MVar's that an un-energized transmission line produces. Blackstart Resource owners are not able to accurately test the unit's megavars capacity to absorb Vars since we tend to keep the transmission system energized. The SDT will need to change the wording so Blackstart Resource owners can be compliant with the standard. |
| **Response:** The SDT has revised the requirements to address these concerns.<br>"Megavar capacity" refers to equipment capability, such as a reactive capability curve, not the results of a test. | |
| Madison G&E | e) R12, For clarity, in the forth sentence, after Transmission Operator's restoration plan add "as identified in R7". |

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| Consumers | R12: Please clarify what is expected to be included in the generator operator's BRFP. Are we to assume that only those items mention in R12 (name of the resource, location, megawatt and megavar capacity, type of unit, fuel type, latest date of test, test results, starting method and procedures for the startup of the blackstart resource) are what is expected? |
| **Response:** BRFP has been removed from the standard in the new revision for the second posting. | |
| FirstEnergy | 2. In EOP-005-2, the "Agreement" between the Transmission Operator (TOP) and the Generator Operator per requirement R12 needs to be coordinated with the Reliability Coordinator (RC), especially since in some instances RC acts as the TOP. Also, requirements regarding this "agreement" should be included in EOP-006-2. Plus this further points to the need for consolidation of EOP-006-2 into EOP-005-2 per our comments to Question #5 above. Additionally, it is not clear what would be considered an acceptable "agreement". We suggest that the SDT consider a similar approach to defining Agreement expectations as is currently done in the BOT approved NUC-001 standard. |
| **Response:** The SDT does not see the need for explicit coordination of 'Blackstart Resource agreement' with the RC. Note the RC already approves the TOP restoration plans. If the RC acts as the TOP then that organization also follows the TOP requirements. | |

## EOP-005 — Comments on Requirement 13:

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| Southern Transmission | 3. Requirement 13: This requirement requires the GOP to review its resource plan annually but TOPs only have to review the the system's every 5 years (R 3). It appears to us that if anyone needs to review the blackstart plan annually, then it should be the TOP not the GOP. Plant systems don't change often and thus does not need the annual review. |
| **Response:** BRFP has been removed from the standard in the new revision for the second posting. | |
| OVEC | EOP-002-2, R12, R13, R14, R15, how is compliance determined for these requirements if an entity has no Blackstart Resources? R15 is again too prescriptive in detailing how many hours of training should occur. Sub-measures R15.1, R15.2, and R15.3 should be deleted because they are to prescriptive and do not enhance system reliability. |
| **Response:** The requirements do not apply to an entity with no Blackstart Resources. | |
| NPCC RSC HQT | 4) Delete R13, R14 and R15 as the Generator Operator has no decision making authority in system restoration. |
| **Response:** BRFP has been removed from the standard in the new revision for the second posting.<br>The SDT notes that in FERC Order 693, the FERC determined that *"System restoration requires the participation of not only control room personnel but also those outside of the control room. These include blackstart unit operators and field switching operators in situations where SCADA capability is unavailable."*<br>Testing is required to assure the Blackstart Resource can meet the requirements of the restoration plan. | |
| NYISO | R13 should be eliminated. The mechanics of how the blackstart facility brings its equipment on-line has no bearing on system restoration. Blackstart operation by definition is independent of external connections. The 90 day notification requirement is purely a contractual business issue which has no place in the reliability requirements. |
| SDE&G | R13 The GOP needs to give a copy of updates to the BRFP to the TOP and RC. |
| **Response:** BRFP has been removed from the standard in the new revision for the second posting. | |

## EOP-005 — Comments on Requirement 14:

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| Southern Transmission | 4. Requirement 14: This requirement adds a considerable amount of test and documentation requirements over the existing EOP-009 including special recording devices for voltage and frequency. As written, it appears that actual system restoration and actual unit blackstart have been included in the scope and added to the requirements, not just verification that blackstart units can start - as was the requirement of EOP-009-0. In general we object to these additions. As a GOP/GO we recommend retaining EOP-009 and removing the associated items from EOP-009 added to this standard. |
| **Response:** The SDT believes that the requirements, as revised for the second draft, are appropriate. The revised requirement (now R17) reads as follows:<br><br>R17. Each Generator Operator of a Blackstart Resource shall perform Blackstart Resource tests, and maintain records of such testing, in accordance with the testing requirements set by the Transmission Operator to verify that the Blackstart Resource can perform as specified in the restoration plan.<br><br>R17.1 Testing records shall include at a minimum: name of the Blackstart Resource, unit tested, date of the test, duration of the test, time required to start the unit, an indication of any testing requirements not met under Requirement R6.<br><br>R17.2 Each Generator Operator shall provide the blackstart test results within thirty calendar days following a request from its Reliability Coordinator or Transmission Operator. | |
| NPCC RSC HQT | 4) Delete R13, R14 and R15 as the Generator Operator has no decision making authority in system restoration. |
| **Response:** BRFP has been removed from the standard in the new revision for the second posting.<br>The SDT notes that in FERC Order 693, the FERC determined that *"System restoration requires the participation of not only control room personnel but also those outside of the control room. These include blackstart unit operators and field switching operators in situations where SCADA capability is unavailable."*<br>Testing is required to assure the Blackstart Resource can meet the requirements of the restoration plan. | |
| OVEC | EOP-002-2, R12, R13, R14, R15, how is compliance determined for these requirements if an entity has no Blackstart Resources? R15 is again too prescriptive in detailing how many hours of training should occur. Sub-measures R15.1, R15.2, and R15.3 should be deleted because they are to prescriptive and do not enhance system reliability. |
| **Response:** The requirement does not apply to an entity with no Blackstart Resources. | |
| IESO | 9. R14.1: "the test including time correlation to Load applied (if any), and the unit frequency profile during the test including time correlation to Load applied (if any)" is not specific. We do not understand what it means by "time correlation to Loads applied" and the clause "if any" is subject the requirement too loose. |
| ISO/RTO | 11. R14.1: "the test including time correlation to Load applied (if any), and the unit frequency profile during the test including time correlation to Load applied (if any)" is not specific. We do not understand what it means by "time correlation to Loads applied" and the clause "if any" is subject the |

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| | requirement too loose. |
| PG&E(1) | EOP-005 R14.1 We interpret there to be no profiles required if there are no external loads connected during the test. If this is not true, we suggest a change to only require profiles when loads are connected external to the facility. |
| **Response:** The SDT has revised the new R15 as suggested. The following phrase was deleted from the revised standard (R17.1); "the voltage profile during the test including time correlation to Loads applied (if any), and the unit frequency profile during the test including time correlation to Loads applied (if any)." | |
| Madison G&E | f) R14.1, First sentence states test results should be provided to "Reliability Coordinator and Transmission Operator." Propose that all reporting on capabilities of black start plan should be performed by transmission provider as they are responsible for black start plan. Generator Operator should provide testing data to Transmission Operator and Transmission Operator should provide data to RC and RE as required.<br>g) R14.1, Last sentence "Loads applied (if any)" does not agree with R6.2.3, that states ".. while isolated from the BES and supplying minimum Load level …" The SDT needs to change the wording so both requirements compliment each other. |
| **Response:** The SDT has revised the requirement so that the GOP is now responsible for maintaining these records. The old R6.2.3 has been deleted as well as the last phrase in R14.1 (now R17.1) has been deleted: "the voltage profile during the test including time correlation to Loads applied (if any), and the unit frequency profile during the test including time correlation to Loads applied (if any)." | |
| Madison G&E | a) R1.2.1, R1.4, R3.1, R6.2.3, R12, and R14.1 all refer to voltage and in particular megavar capacity. During an actual blackout, the Blackstart Resource may be able to handle the leading MVar's that an un-energized transmission line produces. Blackstart Resource owners are not able to accurately test the unit's megavars capacity to absorb Vars since we tend to keep the transmission system energized. The SDT will need to change the wording so Blackstart Resource owners can be compliant with the standard. |
| **Response:** The SDT has revised the requirements to address these concerns. "Megavar capacity" refers to equipment capability, such as a reactive capability curve, not the results of a test. | |
| Consumers | R14: MISO currently does not have an ancillary service market for blackstart services. The testing requirements being established by the transmission operator need to be mutually agreed upon by the generator operator to ensure that (a) the testing requirements are feasible and (b) the testing requirements do not create a significant financial burden on the generator operator. |
| **Response:** The SDT believes that there are too many physical differences within the industry; adopting a continent-wide standard would cause us to come up with a Least Common Denominator list of requirements that would end up being a detriment to reliability. The suggested topics are mentioned in the revised text. | |

## EOP-005 — Comments on Requirement 15:

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| Southern Transmission | 5. Requirement 15: We think that a reasonable amount of training is warranted. However, the standard sets a minimum amount of time for generation and annual frequency. Both of these items |

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| | should be left to the GO or GOP and/or addressed in the new "Blackstart Resource agreement" added in R 12. As a GO, we think it is interesting that the GOP must do a minimum of 4 hours of training where the TOP has to do only 2 hours (R 10). |
| **Response:** BRFP has been removed from the standard in the new revision for the second posting.<br>In FERC Order 693, the ERO is directed to identify time frames for training and review of restoration plan requirements. The training hours for the GOP personnel have been set the same as for field switching personnel. | |
| We Energies | R15 – Is this a GO item? The GO does not determine restoration philosophy. Restoration priorities are not the purview of the GO. Who sponsors this training? What qualifies as acceptable? |
| NPCC RSC<br>HQT | 4) Delete R13, R14 and R15 as the Generator Operator has no decision making authority in system restoration. |
| NYISO | R15 should be eliminated. Generator personnel have no decision making role in restoration. Their tasks and responsibilities in restoration are identical to those under normal and emergency operations. |
| **Response:** The SDT notes that in FERC Order 693, the FERC determined that "*System restoration requires the participation of not only control room personnel but also those outside of the control room. These include blackstart unit operators and field switching operators in situations where SCADA capability is unavailable.*"<br>This is a GOP requirement. | |
| OVEC | EOP-002-2, R12, R13, R14, R15, how is compliance determined for these requirements if an entity has no Blackstart Resources? R15 is again too prescriptive in detailing how many hours of training should occur. Sub-measures R15.1, R15.2, and R15.3 should be deleted because they are to prescriptive and do not enhance system reliability. |
| **Response:** The requirement does not apply to an entity with no Blackstart Resources. | |
| Pepco | R15.1 It is suggested that it be specifically stated in the requirements that the training program also include voltage and frequency control. During a restoration event these controls will probably act differently and are critical to the success of the restoration. |
| **Response:** The SDT believes that the R15.2 (now R18.2) on 'special actions' covers this item. | |
| Consumers | R15: Consumers agrees that it is appropriate for the Standard to require the generator operator to provide training to its operating personnel, however, the generator operator should be allowed flexibility in determining what training is necessary to ensure it meets its obligations set forth in the transmission operators BRFP. |
| **Response:** In FERC Order 693, the ERO is directed to identify time frames for training and review of restoration plan requirements. The training hours for the GOP personnel have been set the same as for field switching personnel. | |
| IESO | 10. R15.3: Who determines the restoration priorities? And whose priorities, the TOP's or the GOP's? Please be specific. |
| ISO/RTO | 12. R15.3: Who determines the restoration priorities? And whose priorities, the TOP's or the GOP's? Please be specific. |
| WECC RCCWG | R15.3. Restoration priorities. It is not clear who determines priorities. |
| **Response:** The SDT has deleted this requirement. | |

## EOP-005 — Comments on Requirement 16:

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| AEP | EOP-005, R11 & R16 – We do not agree with the verbiage of R11 & R16…. "as requested by its Reliability Coordinator"…… related to drills, exercises and simulations. We feel the verbiage should put a minimum number as to the number of Reliability Coordinator drills, exercises and simulations in which the Transmission Operator must participate, and the number should be in agreement with Reliability Coordinator requirements of EOP-006, R8. The present wording would require the Transmission Operator to participate in all drills, regardless of number, if the Reliability Coordinator provided and requested such. The Transmission Operator is required to train all its system operating personnel on their restoration plan, so participation in the Reliability Coordinator's restoration drills and exercises are in addition to the Transmission Operators training drills, exercises, and simulations. We recommend the wording of R11, R16 and M10 be changed to correspond with the wording of the EOP-006-2, R8 requiring Transmission Operator inclusion in a RC black-start restoration drill, exercise, or simulation once every two years. The following wording is suggested for EOP-005, R11 & R16, which specifies the minimum number of participations:<br>"Each Transmission Operator (or Generator Operator for R16) shall participate in its Reliability Coordinator's restoration drills, exercises, or simulations as provided and requested by its Reliability Coordinator at least once every two years". |
| Entergy | We also suggest TOPs and GOPs should perform a system restoration drill of the TOPs plan once every two years and that requirement should be in EOP-005-2 R11 and R16. |
| Madison G&E | d) R11 and R16 should be combined as one requirement and a time limit set, ie, "once every two years". |
| KCPL | 7. Suggest combining participation in RC restoration drills into one requirement by combining requirement R11 and R16. |
| **Response:** The requirement is for the applicable entity and not for individuals. It is up to the TOP (GOP) to get their individual personnel trained as per the standards.<br>The SDT will keep the training requirements separate. | |
| Southern Transmission | 6. Requirement 16: This appears to be a new requirement without any clarification of what is expected of the GOP. Clarify or delete. |
| **Response:** The RC will define the level of participation expected. | |
| BCTC | EOP-005-1 R16 requires each Generator Operator to participate in the RC's restoration drills as requested by the RC. Is this meant to be Generator Operator's with Blackstart Resources or all Generator Operators? |
| **Response:** It is GOPs as requested by the RC. | |

## EOP-005 — Comments on Measures:

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| KCPL | 8. Do not agree with M3 under the measurements. The documentation required here is too vague and can be too onerous. How much of a load flow output should be saved? The assumptions and the end results? The many runs in between to prove a cranking path(s) are viable? Why isn't the |

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| | electronic saved cases sufficient documentation? If a Compliance Monitor wants to dive into the details, they would all be there for their inspection electronically. |
| Southern Transmission | 7. M12 thru M15 need to be revised to reflect comments above. |
| **Response:** The SDT has revised the measures to match the new requirements. | |
| SPP ORWG | M3 - We believe the data storage requirement for this measure is excessive. |
| **Response:** In these days of CD storage, the SDT believes that this cannot be onerous. | |
| OVEC | EOP-002-2, M1, Revised to the following, "Each Transmission Operator shall have a documented System restoration plan." Compliance can be sufficiently measured by the revision.<br>EOP-002-2, M15, the wording "if requested" should be removed. What if a request was never received? Who is the non-compliant entity? |
| **Response:** "Documented" does not mean "approved." The SDT believes that the wording used is correct and that there is proper and sufficient coordination between EOP-005 and EOP-006 to determine who the non-compliant entity is. | |
| NPCC RSC HQT | 1) In EOP-005, the measures for R4 and R5 should be the report of the event required by Standard EOP-004. The report shall address the requirements of R4 presented in proposed Standard EOP-005. |
| **Response:** The requirement is for evidence, not a report. | |
| AEP | EOP-005, R11 & R16 – We do not agree with the verbiage of R11 & R16…. "as requested by its Reliability Coordinator"…… related to drills, exercises and simulations. We feel the verbiage should put a minimum number as to the number of Reliability Coordinator drills, exercises and simulations in which the Transmission Operator must participate, and the number should be in agreement with Reliability Coordinator requirements of EOP-006, R8. The present wording would require the Transmission Operator to participate in all drills, regardless of number, if the Reliability Coordinator provided and requested such. The Transmission Operator is required to train all its system operating personnel on their restoration plan, so participation in the Reliability Coordinator's restoration drills and exercises are in addition to the Transmission Operators training drills, exercises, and simulations. We recommend the wording of R11, R16 and M10 be changed to correspond with the wording of the EOP-006-2, R8 requiring Transmission Operator inclusion in a RC black-start restoration drill, exercise, or simulation once every two years. The following wording is suggested for EOP-005, R11 & R16, which specifies the minimum number of participations:<br>"Each Transmission Operator (or Generator Operator for R16) shall participate in its Reliability Coordinator's restoration drills, exercises, or simulations as provided and requested by its Reliability Coordinator at least once every two years". |
| **Response:** The requirement is for the applicable entity and not for individuals. It is up to the TOP (GOP) to get their individual personnel trained as per the standards.<br>The SDT will keep the training requirements separate. | |
| Entergy (G&M) | M4, M5: As commented for R4, consider removing "in which Blackstart Resources have been utilized…" and phrase it such that it applies during any restoration of service to shut down areas. Also M4 & 5 are redundant, recommend consolidating as one Measure, unless the desire is to have a unique line item Measure for every Requirement. |
| **Response:** The SDT has revised the purpose to cover restoration requiring Blackstart Resources, even if they are external to | |

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| the TOP's System.<br>Every requirement must have at least one measure. | |
| NYISO | M4 and M5 in EOP-005 and M5,M6 and M7 in EOP-006 should be eliminated as they are completely redundant with the stated purpose of EOP-004.<br>M6 and M8 should be eliminates since it is identical to M13. How is it possible to comply with M13 without automatically M6 and M8? |
| **Response:** The requirement is for evidence, not a report. Every requirement must have at least one measure. | |
| OVEC | 1) In EOP-005, the measures for R4 and R5 should be the report of the event required by Standard EOP-004. The report shall address the requirements of R4 presented in proposed Standard EOP-005. |
| **Response:** The requirement is for evidence, not a report. | |

## EOP-006 — Comments on Requirement 1:

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| NYISO | M4 and M5 in EOP-005 and M5,M6 and M7 in EOP-006 should be eliminated as they are completely redundant with the stated purpose of EOP-004. |
| **Response:** The requirement is for evidence, not a report. | |
| ISO/RTO | 13. R1. This sentence should be broken up to add clarity. The requirement for distribution of the restoration plan should be a separate requirement.<br>14. R1.7: Whose reporting requirements does the plan include? This needs to be specified. |
| **Response:** The requirement to make distribution of the plan has been made separate.<br>R1.7 has been modified as shown below to address this concern.<br>R1.7. ~~Documentation of reporting~~ Reporting requirements ~~to~~ for the entities within the Reliability Coordinator Area during a restoration event. | |
| NPCC RSC | 8) R1.6 Please clarify this statement regarding how it applies to Black Start restortation. According to question 2, the scope of the standard is limited to System Restoration when black start resources are utilized. The Restoration of islanding situations may not require the use of blackstart resources. |
| Entergy (G&M) | R1.6: This authority is not appropriate in a NERC standard. Each entity's own procedure may choose to include such language however it should not be a requirement to allow an operator to deviate from a procedure. |
| SPP ORG | R1.6 - We suggest removing this requirement because it has no substance. |
| KCPL | 2. Suggest removal of R1-6 as it is a requirement with no substance. It is not practical to require something that cannot be adequately measured. |
| **Response:** The SDT has changed R1.6 as shown below to accommodate the indicated concern.<br>R1.6. A statement accounting for the possibility that restoration can not be completed as expected indicating that in situations where the actual conditions do not match the studied conditions, the System Operator shall use professional judgment to ~~modify~~ deviate from the System restoration plan. | |
| HQT<br>NPCC RSC | Revise R1.1 as follows: "Identification of the authority and tasks of the Reliability Coordinator to work with its neighboring Reliability Coordinator(s) and with the Transmission Operators and Generation Operators with Blackstart Resources within its area." |

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| | There should be a recognition for the Reliability Plan to be flexible and responsive to unanticipated conditions. |
| **Response:** R1.1 has been revised.<br>The SDT has changed R1.6 as shown below to accommodate the indicated concern.<br>**R1.6.** A statement accounting for the possibility that restoration can not be completed as expected indicating that in situations where the actual conditions do not match the studied conditions, the System Operator shall use professional judgment to ~~modify~~ deviate from the System restoration plan. | |
| IESO | 11. R1.7: whose reporting requirements does the plan include? This needs to be specified. |
| **Response:** R1.7 has been modified as shown below to address this concern.<br>R1.7. ~~Documentation of reporting~~ Reporting requirements ~~to~~ for the entities within the Reliability Coordinator Area during a restoration event. | |
| HQT | 8 ) In R1.6, please clarify this statement regarding how it applies to Blackstart Restoration.<br>Acording to Q2, the scope of this standard is limited to System restoration when Black start resources are utilized. The restoration of only islanding situations may not require the use of blackstart resources. |
| **Response:** The SDT has changed R1.6 as shown below to accommodate the indicated concern.<br>**R1.6.** A statement accounting for the possibility that restoration can not be completed as expected indicating that in situations where the actual conditions do not match the studied conditions, the System Operator shall use professional judgment to ~~modify~~ deviate from the System restoration plan.<br>The purpose of a restoration plan is not to restore every MW of Load and Transmission System element to service but to reach a stage whereby the choice of the next Load to be restored is not driven by the need to control frequency or voltage. Normal state has been eliminated in the text to reflect this purpose.<br>The SDT has changed the Title, Purpose and R1. | |
| Entergy | EOP-006-2 R1 requires the RC to have a restoration plan. The scope of that plan is somewhat vague. We suggest the RC should have a "procedure" that is limited to address re-connection of TOP areas with other TOPs. The TOP restores its area to its "normal state". We suggest replacing the statement " .. restore its area to its normal state following .. " with " .. with restore TOP synchronous operation with other TOP synchronous operation following … ". We also suggest the RC develop that plan in coordination with TOPs.<br>EOP-006-2 R1.5 requires the RC to identify acceptable voltage and frequency limits during restoration, similar to the requirement on TOP in EOP-005-2 R1.4. We believe the establishment of acceptable voltage and frequency limits during the restoration process is a local issue, the perogative of the TOP, the limits should be flexible depend on the operational situation during the restoration process, and those values should not be developed, reviewed, approved or implemented by the RC. During the restoration process the RC should have the limited role of linking the BAs together after the BAs have re-started. |
| **Response:** The purpose of a restoration plan is not to restore every MW of Load and Transmission System element to service but to reach a stage whereby the choice of the next Load to be restored is not driven by the need to control frequency or voltage. Normal state has been eliminated in the text to reflect this purpose.<br>The SDT has changed the Title, Purpose and R1. (See the summary consideration under Question 1 on page 10 of this | |

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| document to see the specific modifications.)<br>The SDT sees no conflict from the early stages of restoration where the TOP is controlling voltage and frequency and the latter stages where the RC takes control. The RC should be aware of the voltage limits set by the TOP. The RC can include in its restoration plan the limits that must be maintained by the TOPs in its area. | |
| Madison G&E | a) R1.6, "System Operator" should be changed to "Reliability Coordinator". |
| **Response:** System Operator is a defined term in the NERC Glossary and includes personnel of the RC. | |
| MISO Stakeholders | In R1 in EOP-006-2, the sentence with the word integrity should be struck? Integrity is a relative term. Requirements should not be relative. Additionally, this sentence adds no additional value. The sub-requirements adequately specify what should be contained in the plan. |
| **Response:** The SDT believes that integrity of the interconnection is a valid and well understood concept and has retained the term although R1 has been altered to place this sentence in a sub-requirement – R1.1 Procedures for restoring the integrity of the Interconnection.' | |

## EOP-006 — Comments on Requirement 2:

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| Entergy | EOP-006-2 requires the RC to review and approve the TOP restoration plans. As stated in the response to Question 6 above, we do not agree the RC should be responsible for the development, review, approval, or implementation of any Blackstart Capability Plan. A BCP is a local requirement incumbent on the Transmission Owner/Operator to develop and implement. Therefore, we suggest R2 be changed to require the RC to be familiar with the TOP blackstart plan. R2.1 should require the RC to ensure his plan is compatible with the TOP restoration plans.<br>We notice that in R2.3 in EOP-006-2 that the RC may not approve the TOP plan. Is there any additional requirement on the TOP to work to modify their plan to gain RC approval? We didn't see one.<br>The standards give the TOP 90 days to update their plans once a change is identified. This may be too long. We recommend 60 days for updating and at least 60 days for the RC to review the plans. |
| KCPL | 1. Disagree with the concept in requirement R2 and the sub-requirements of R2 of the RC approving the TO restoration plans for the reasons stated above in item 1 under the EOP-005-2 comments in this question. The requirements here should be for the RC to provide comments back the TO if the RC sees problems and to document those comments for Compliance purposes with the TO. |
| **Response:** Blackstart Capability Plan is a current requirement for the RRO, which is being retired with this version.<br>In FERC Order 693, "*the Commission directs the ERO to develop a modification to EOP-006-1 through the Reliability Standards development process that ensures that the reliability coordinator, which is the highest level of authority responsible for reliability of the Bulk-Power System, is involved in the development and approval of system restoration plans.*" The SDT believes that the process described in EOP-005-2 and EOP-006-2 meets the Commission directive.<br>The SDT has retained the times for revision and review from Draft 1 | |
| SPP ORG | R2.2 - We suggest rewording the requirement to state the following as clarification: "The Reliability Coordinator shall approve or deny the Transmission Operator's submitted restoration plan within ninety days." |
| MISO Stakeholders | In R2 of EOP-006-2, the "if acceptable" language should be removed. The sub-requirements should |

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| | define what acceptable is. They do not adequately do this now. |
| IESO | 12. R2: "if acceptable" is not needed since the RC shall review and approve the TOP's restoration plan. The RC would not approve it if it doesn't find the plan acceptable. |
| ISO/RTO | 15. R2: "if acceptable" is not needed since the RC shall review and approve the TOP's restoration plan. The RC would not approve it if it doesn't find the plan acceptable.<br>What is the recourse if the RC does not approve plan? |
| **Response:** The SDT modified the standard to address this concern and the phrase, 'if acceptable' has been deleted. | |
| FPL | EOP-006-2 R2.2 The RC should not be responsible for approving or disapproving with a written response the TOP's system restoration plan, this should be the responsibility of the RRO for compliance monitoring. |
| **Response:** RC review and approval of the plan is not an issue of compliance but of coordination and workability with the RC's restoration plan. | |
| AEP | EOP-006-2: Add a new requirement as R 2.4: The Reliability Coordinator shall provide to the Transmission Operator written documentation of approval of the Transmission Operator's restoration plan. |
| **Response:** The SDT believes the new R5.3 does this. | |
| Madison G&E | b) R2.2, The thirty day window for the RC to respond to the TO's plan may not be enough time. The RC may be reviewing multiple plans and will need to model and simulate the (un) expected outcomes for restoration of the interconnection. Time frame should be expanded. |
| **Response:** No RC has expressed this concern. | |

## EOP-006 — Comments on Requirement 4:

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| NYISO | R4 and R5 in EOP-005 and R4 in EOP-006 should be eliminated as they are completely redundant with EOP-004. If the report required by EOP-004 for a blackout investigation does not include checking restoration performance versus NERC Restoration Standard Requirements, than EOP-004 should be deleted as meaningless.<br>M4 and M5 in EOP-005 and M5,M6 and M7 in EOP-006 should be eliminated as they are completely redundant with the stated purpose of EOP-004. |
| **Response:** The requirement is for evidence, not a report. | |
| We Energies | R4 – Sounds good up to the part stating ". . . and take actions to restore the Bulk Electric System frequency to normal. Such actions would consider but not be limited to: adjusting generation, placing generation on line, or shedding load." I suspect that the RC will not have sufficient infrastructure to monitor frequencies in each island that could potentially form, much less track and react to the information. Based on the exercises conducted with our TO, it will be a significant chore for the system control operators building the islands to maintain frequency and voltage to specified bounds within that island. Once there is a "Bulk Electric System frequency," then the RC might be more active.<br>The list of actions should include opening circuits to save part of the "interconnect" in the event flows dictate. |
| **Response:** The SDT believes that the RC should be kept informed of island frequency bands at all stages of restoration and | |

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| this can be required by the RC's restoration plan. Additionally, the RC is coordinating with the TOPs in its Area, and the TOPs monitor frequency and communicate with the GOPs until such time that the frequency variations have reached a point that the BAs can be brought back into the operation.<br>Ordering the disconnection of lines to prevent damage is a normal procedure included in TOP-001-1. | |
| Madison G&E | R4, Forth sentence, "normal" should be changed to "within acceptable limits". |
| **Response:** The SDT has revised the requirement (R7 in the revised standard) to clarify that the frequency must be restored to within acceptable operating limits | |
| Manitoba Hydro | EOP-006-2 R4 This requirement gets into taking action to restore frequency, which is more of an emergency operations event than a system restoration event. it could be limited to the following: "Each Reliability Coordinator shall work in conjunction with affected Balancing Authorities, Generator Operators, and Transmission Operators as well as neighboring Reliability Coordinators to monitor and coordinate restoration progress." The rest can be deleted from the requirement. "take actions to restore the Bulk Electric System frequency to normal. Such actions would consider but not be limited to: adjusting generation, placing additional generators on line, or shedding Load." |
| **Response:** The SDT will retain the existing requirements noting that frequency restoration in electrical islands is an inherent task of system restoration. | |

## EOP-006 — Comments on Requirement 5:

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| ATC | Requirement 5 (suggested rewrite)<br>The Reliability Coordinator will authorize and coordinate re-synchronizing neighboring TOPs. |
| SPP ORG | R5 - We suggest rewording this requirement to the following: "The Reliability Coordinator shall authorize and coordinate re-synchronizing between isolated neighboring areas." to coincide with EOP-005-2 R5. |
| KCPL | 3. Requirement R5 should read like R5 in EOP-005-2. The way this is written implies islanded areas within a TO and not between TO's. |
| HQT<br>NPCC RSC | 6 ) In R5, revise as follows: "The Reliability Coordinator shall authorize and coordinate re-synchronizing isolated RC/BA/TOP areas" |
| **Response:** The SDT has revised the requirement as follows:<br>R8. ~~The~~ Following a Disturbance in which one or more areas of the BES shuts down and the use of Blackstart Resources is required to restore the shut down area to service, the Reliability Coordinator shall authorize and coordinate re-synchronizing isolated areas that bridge boundaries between Transmission Operators or Reliability Coordinators. | |
| We Energies | R5 – Need to bring the BA function in here (the standard is applicable only to the RC). This will be particularly important if there is more than a single BA involved. Tie line flow control will dictate whether AGC control is desirable. |
| **Response:** The SDT disagrees that the BA has an "applicability" role in the TOP restoration plan or its implementation. Beginning with the system collapse, the TOP restores the Transmission System, restores interconnections, and supplies off-site power to nuclear generating stations. This is accomplished on a command and control basis by the Transmission Operator in conjunction with the GOP. Once interconnections have been reestablished and the Transmission System restored, the restoration of firm Load can begin. The TOP is restoring the System through command and control until a sufficient System has been built where frequency is under control. | |

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| ISO/RTO | 16. R5: The TOP is to follow established procedure of the RC to re-synchronize of isolated areas. We suggest changing deleting the word "coordinate" in this requirement, and add a sub-requirement in R1 that the RC develop the re-synchronization procedure. |
| IESO | 13. R5: The TOP is to follow established procedure of the RC to re-synchronize of isolated areas. We suggest changing deleting the word "coordinate" in this requirement, and add a sub-requirement in R1 that the RC develop the re-synchronization procedure. |
| **Response:** The SDT believes that "authorize" permits the RC to establish procedures to be followed. | |

## EOP-006 — Comments on Requirement 6:

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| KCPL | 4. Requirement R6 seems to be worded funny. Suggest the following change in the text to, "neighboring Reliability Coordinators, Transmission Operators, and Balancing Authorities". The "or" in the submitted text might imply it would be acceptable to exclude a TO or a BA. |
| SPP ORG | R6 - We suggest rewording this requirement to the following: "The Reliability Coordinator shall serve as the primary contact for disseminating information regarding restoration to neighboring Reliability Coordinators, Transmission Operators, and Balancing Authorities within its Reliability Coordinator Area." |
| **Response:** The SDT agrees and has revised the new R9 as follows:<br>R9. ~~The~~ Following a Disturbance in which one or more areas of the BES shuts down and the use of Blackstart Resources is required to restore the shut down area to service, the Reliability Coordinator shall serve as the primary contact for disseminating information regarding restoration to neighboring Reliability Coordinators, and to Transmission Operators ~~or~~, and Balancing Authorities within its Reliability Coordinator Area. | |

## EOP-006 — Comments on Requirement 7:

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| WECC RCCWG | EOP-006 The WECC RCCWG requests clarification of the phrase "control room personnel" in R7. Who does that term refer to? As this standard is applicable to the Reliability Coordinator, we suggest changing that wording to "Reliability Coordinator identified in the restoration plan". Furthermore, this training requirement should be moved to a PER standard, such as PER-005-R3. |
| ATC | Requirement 7<br>Should be removed from this Standard and be placed in a PER Standard. |
| **Response:** The SDT notes that in FERC Order 693, the FERC determined that *"System restoration requires the participation of not only control room personnel but also those outside of the control room. These include blackstart unit operators and field switching operators in situations where SCADA capability is unavailable."*<br>The RC can identify the personnel in its restoration plan.<br>FERC Order 693 mandates that restoration training be included in the blackstart standards. *"The Commission believes that inclusion of periodic system restoration drills and training and review of restoration plans in a system restoration Reliability Standard is the most effective way of achieving the desired goal of ensuring that all participants are trained in system restoration and that the restoration plans are up to date to deal with system changes."* | |

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| SPP ORG | R7 - We believe the provided training for the Reliability Coordinator should also include Restoration Priorities, Synchronizing, and Review of the restoration plan to coincide with the training for the TO in EOP-005-2 R9. |
| IESO | 14. R7: Add R7.3 to include directing re-synchronizing isolated areas. |
| ISO/RTO | 17. R7: Add R7.3 to include directing re-synchronizing isolated areas. |
| **Response:** The SDT believes this is included in the revised R8:<br>R8. ~~The~~ Following a Disturbance in which one or more areas of the BES shuts down and the use of Blackstart Resources is required to restore the shut down area to service, the Reliability Coordinator shall authorize and coordinate re-synchronizing isolated areas that bridge boundaries between Transmission Operators or Reliability Coordinators. | |
| AEP | EOP-005-2, R9 & EOP-006-2, R7 – The subject R9 and R7 requirements mandate training for "control room personnel". Why change the accepted and more common term of "operating personnel"? The NERC term for certification of personnel is "System Operator Certification Program" (TO, BI, BT, & RC). We recommend keeping the identification name consistent with certification program terminology (System Operators) and PER-003 (Operating Personnel Credentials). OSHA also uses the term "system operator" for personnel in charge of the power system lines or equipment.<br>EOP-005-2, R9 & EOP-006-2, R7 – In the existing approved EOP-005-1, the Compliance Monitoring Process requires "annual training of operating personnel" in the implementation of the Transmission Operator's System Restoration Plans and restoration exercises. EOP-005-2, R9 & EOP-006-2, R7, draft 1, does not identify how often personnel must be trained in the emergency operations topics training program. Is the intent annual? Will this be revealed in draft 2 of these standards with the compliance requirements? There is no compliance monitoring processes in draft 1. |
| **Response:** The terms used by the SDT were due to the differentiation required between those personnel working in a control room and those personnel designated as field personnel – both of whom must be trained as per FERC Order 693. The SDT believes that the terms used sufficiently describe who is to be trained as part of this standard.<br>FERC Order 693 mandates that restoration training be included in the blackstart standards. "*The Commission believes that inclusion of periodic system restoration drills and training and review of restoration plans in a system restoration Reliability Standard is the most effective way of achieving the desired goal of ensuring that all participants are trained in system restoration and that the restoration plans are up to date to deal with system changes.*"<br>Since the training cited is within the existing operations training program as defined in the PER-004 standard, the timeframe is included by default**.** | |

## EOP-006 — Comments on Requirement 8:

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| WECC RCCWG | EOP-006 R8 would require two System restoration drills, exercises, or simulations per year. The WECC RCCWG feels a requirement for one such drill, exercise, or simulation per year is sufficient, while two is excessive. The WECC RCCWG feels that this training requirement should be part of PER-005-R3 and should not be part of this standard, which is not a training standard. |
| SPP ORG | R8 - This requirement should be reworded to state that the Reliability Coordinator should request each Transmission Operator and Generator Operator participate at least every two years to make it |

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| | consistent with R11 and R16 in EOP-005-2. |
| PG&E (1) | EOP-006 R8 Requiring two drills per year for the RC seems more than necessary. The intent seems to be that each TO/GO be included every two years, thus the RC should be able to implement this requirement as necessary to have everyone involved and trained. |
| NPCC RSC | 9) EOP-006 R8 requiring two drills per year is excessive.<br>NPCC participating members feel that the quality of drills conducted is more important than the quantity. In addition, the last sentence in EOP-006 R8 should be a separate requirement R9. |
| HQT | 9 ) EOP-006 R8 requiring two drills per year is excessive. NPCC participating members feel that the quality of drills conducted is more important than the quantity.<br>In addition, EOP-006 R8 , last sentence, should be a separate requirement (R9) |
| Duke Energy | R8 of EOP-006-2 requires the RC to conduct two drills, exercises or simulations each year, and to include Transmission Operators and Generator Operators with Blackstart Resources at least every two years. We believe the RC should only be required to conduct one annual drill, and to include Transmission Operators and Generator Operators with Blackstart Resources at least every two years. |
| FPL | EOP-006-2 R8 Conducting a System restoration drill twice a year with all Transmission operators and generation operators of the blackstart resources is an overkill. I would recommend that a drill be conducted once a year with only the TOP's and GOP's that play a major role in restoring the BES. |
| Entergy | EOP-006-2 requires the RC to conduct two system restoration drills per year and include TOPs and GOP at least every two years. EOP-006-2 should require the RC to conduct one, not two, system restoration drill per year on the RCs limited scope of interconnecting TOPs. |
| **Response:** In FERC Order 693, the ERO is directed to identify timeframes for training and review of restoration plan requirements.<br>The SDT believe that two drills each year is appropriate. The RC determines the scope of the drills. | |
| NPCC RSC | 7) Remove the Generator Operator from R8. |
| HQT | 7 ) Remove the Generator Operator from R8. |
| **Response:** The SDT disagrees noting the importance of blackstart to the restoration process. Additionally, the SDT notes that in FERC Order 693, the FERC determined that "*System restoration requires the participation of not only control room personnel but also those outside of the control room. These include blackstart unit operators and field switching operators in situations where SCADA capability is unavailable."* | |
| MISO Stakeholders | R8 in EOP-006-2 only requires each TOP and GOP to participate in drills every two years. No BA participation is required. We believe BA participation should be required and annual participation should be required. |
| **Response:** The SDT disagrees that the BA has an "applicability" role in the TOP restoration plan or its implementation. Beginning with the system collapse, the TOP restores the Transmission System, restores interconnections, and supplies off-site power to nuclear generating stations. This is accomplished on a command and control basis by the Transmission Operator in conjunction with the GOP. Once interconnections have been reestablished and the Transmission System restored, the restoration of firm Load can begin. The TOP is restoring the System through command and control until a sufficient System has been built where frequency is under control. | |
| KCPL | Requirement R8 should be for "Each Transmission Operator and Generator Operator with Blackstart Resources shall be invited to participate in". It is up to the TO and GO to meet their own participation |

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| | requirements as dictated in EOP-005-2. It is only necessary for the RC to advertise drills and make them available to the TO's and BA's. |
| **Response:** The SDT believes that the requirement is correctly placed on the RC. | |
| IESO | 15. R8:<br>d) "Drill" needs to be more specific or clarified – whether it is a full scale drill involving actual switching of equipment, or just a simply desk top exercise.<br>(ii) The TOP and GOP with Blackstart Resources are to be include in the drill. However, there might be other entities on the cranking path, and they also need to participate in the drill. The requirements should therefore be revised to include all entities identified on the cranking path.<br>(iii) The way R8 is worded is a bit confusing. The first sentence says the RC shall conduct two restoration drills, exercises or simulations per year with the TOP and GOP with blackstart resources. The second sentence says each TOP and GOP with blackstart<br>resources shall be included in a drill, exercise, or simulation at least every two years. If the first sentence already includes these entities twice a year, why would the second sentence be required? That said, we think twice a year or even once every two year is to frequent. We suggest a drill, exercise or simulations be conducted once every 3 years. |
| ISO/RTO | 18. R8:<br>d) "Drill" needs to be more specific or clarified – whether it is a full scale drill involving actual switching of equipment, or just a simply desk top exercise.<br>(ii) The TOP and GOP with Blackstart Resources are to be include in the drill. However, there might be other entities on the cranking path, and they also need to participate in the drill. The requirements should therefore be revised to include all entities identified on the cranking path.<br>(iii) The way R8 is worded is a bit confusing. The first sentence says the RC shall conduct two restoration drills, exercises or simulations per year with the TOP and GOP with blackstart resources. The second sentence says each TOP and GOP with blackstart resources shall be included in a drill, exercise, or simulation at least every two years. If the first sentence already includes these entities twice a year, why would the second sentence be required?<br>We think restoration drills, exercises or simulations should be conducted at the most once very two years.<br>The RC should not be responsible for the following statement: "Each Transmission Operator and Generator Operator with Blackstart Resources shall be included in a drill, exercise, or simulation at least every two years." If a GOP or TOP fails to participate, is the RC non-compliant? |
| **Response:** The RC determines the scope of the drills.<br>The SDT has revised the drill participants to include entities identified in the RC's restoration plan.<br>The SDT has revised the new R11 to clarify the compliance aspects of the requirement by clarifying that the Reliability Coordinator shall, 'request' each Transmission Operator and Generator Operator identified in its restoration plan to participate. | |
| Madison G&E | d) R8, Transmission Operator's do not own Blackstart Resources, delete from paragraph. Transmission Operator's may have Blackstart Resources within their transmission operating area. Last sentence states the Generator operator shall be included in a drill, exercise, or simulation at least |

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| | every two years, yet the first sentence requires to test twice a year. The STD needs to reword R8 so it is clear and understandable. |
| **Response:** The SDT has modified the new R10 to address this concern by clarifying that the Reliability Coordinator shall, 'request' each Transmission Operator and Generator Operator identified in its restoration plan to participate. | |

## EOP-006 — Comments on Measures:

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| WECC RCCWG | EOP-006 R1.6 requires "A statement indicating that in situations where the actual conditions do not match the studied conditions, the System Operator shall use professional judgment to modify the System restoration plan." This standard is only applicable to the Reliability Coordinator. The WECC RCCWG requests removal of requirements for other entities. |
| **Response:** System Operator is a term defined in the NERC Glossary of Terms and includes the RC. | |
| MISO Stakeholders | M4 in EOP-006-2 indicates that the RC shall have the TOP plans in its control center. Can they be electronic? If yes, can the wording be changed to access to the plans? If the plans reside on a central storage device, it technically is not likely in the control center. If only paper copies are acceptable, this should be specified.<br>M6 in EOP-006-2 mentions an isolated area. What is meant by isolated area? Could this be the loss of a single transmission circuit with multiple load taps? Technically, one could argue it is isolated but we do not think that is the intent here. We suggest you consider defining isolated area or provide more detailed explanation in the measure. |
| **Response:** "Access to" would be acceptable if access was available during a system shutdown. | |
| SPP ORG | M3 - We believe that this measure should be reworded to the following: "Each Reliability Coordinator shall provide evidence, such as a written approval letter, that it has reviewed its Transmission Operator's submitted restoration plan(s) in accordance with Requirement R2."<br>M5 - "A Disturbance" in this measure should be qualified as "A Disturbance in which Blackstart Resources have been utilized in restoring the shut down area of the System to service."<br>M7 - "A Disturbance" in this measure should be qualified as "A Disturbance in which Blackstart Resources have been utilized in restoring the shut down area of the System to service." |
| **Response:** The Measures have been revised to address these concerns. | |