UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Transmission Operation Reliability	**)**	
Standards and Interconnection	**)**	**Docket No. RM15-16-000**
Reliability Operations and Coordination	**)**	
Reliability Standards	**)**	

JOINT COMMENTS OF INDEPENDENT ELECTRICITY SYSTEM OPERATOR, ISO NEW ENGLAND INC., MIDCONTINENT INDEPENDENT SYSTEM OPERATOR, NEW YORK INDEPENDENT SYSTEM OPERATOR, INC., PJM INTERCONNECTION, L.L.C., AND SOUTHWEST POWER POOL, INC.

Pursuant to Rule 213 of the Rules of Practice and Procedure of the Federal Energy Regulatory Commission[1] (the "Commission"), Independent Electricity System Operator, ISO New England Inc., Midcontinent Independent System Operator, New York Independent System Operator, Inc., PJM Interconnection, L.L.C., and Southwest Power Pool ("together, the "ISOs/RTOs") submit these comments in response to the Notice of Proposed Rulemaking ("NOPR") issued by the Commission in the above-referenced docket on June 18, 2015, proposing approval of revisions to the Transmission Operations ("TOP") and Interconnection Reliability and Operations and Coordination ("IRO") Reliability Standards developed by the North American Electric Reliability Corporation ("NERC").[2] The Commission proposes to find that NERC has adequately addressed the concerns raised by the Commission in the Remand NOPR issued in November 2013, in which the Commission proposed to remand an earlier version of proposed TOP and IRO Reliability Standards. Although the Commission is proposing to approve the TOP and IRO Reliability Standards, it also seeks clarifying comments on, among

[1] 18 C.F.R. § 385.213 (2013).

[2] *See Transmission Operations Reliability Standards and Interconnection Reliability Operations and Coordination Reliability Standards*, 151 FERC ¶ 61,236 (2015), 80 Fed. Reg. 36280 (June 24, 2015).

other issues, monitoring of non-bulk electric system ("BES") facilities, and data exchange capabilities. The ISOs/RTOs[3] hereby provide comments on those two issues.

I. IDENTIFICATION OF FILING PARTIES

Independent Electricity System Operator is the regional transmission organization ("RTO") for Ontario, Canada. ISO New England Inc. is the private, non-profit entity that serves as the RTO for the six New England states. Midcontinent Independent System Operator is the RTO for fifteen states in the United States and the Canadian province of Manitoba. The New York Independent System Operator is the ISO for the New York Control Area. PJM Interconnection, L.L.C. serves as the RTO in all or part of thirteen states and the District of Columbia. Southwest Power Pool, Inc., is the RTO for all or part of eight states. Among other functions, the ISOs/RTOs are registered with NERC as Reliability Coordinators.

II. COMMENTS

A. Non-BES Facilities to be Monitored Should be Included in the Definition of BES through the Rules of Procedure Exception Process, and the Language in Reliability Standards IRO-002-4, Requirement R3, IRO-010-2, Requirement R1.1, and TOP-003-3, Requirement R1.1 Should be Clarified Accordingly.

In its petition, NERC explains how the proposed Reliability Standards address the recommendations in the 2011 Southwest Outage Blackout Report, in particular with respect to Finding 17 concerning the impact of sub-100 kV facilities on the reliability of the interconnected transmission network.[4] Specifically, NERC explains that proposed Reliability Standard IRO-002-4, Requirement R3 addresses monitoring of non-BES facilities by requiring each Reliability Coordinator to monitor facilities and necessary non-BES facilities in order to identify System

[3] The Independent Electricity System Operator ("IESO") as signatory to these comments should not be interpreted as the IESO's support of the proposed approval of TOP-001-3, as it includes the retirement of TOP-004-2 R4. The IESO sees this requirement as not being adequately mapped into TOP-001-3. The IESO submitted comments on this docket on June 12, 2015; refer to FERC Accession Number 20150612-5184.

[4] NOPR at P 55 (citing NERC Petition at 61).

Operating Limit and Interconnection Reliability Operating Limit exceedances within its Reliability Coordinator Area. In addition, NERC states that proposed Reliability Standards IRO010-2, Requirement R1.1, and TOP-003-3, Requirement R1.1, address non-BES system data by specifically requiring Reliability Coordinators and Transmission Operators to incorporate any non-BES system data as deemed necessary into their operational planning analyses, real-time monitoring, and real-time assessments.[5]

NERC further explained that, while the standard drafting team included non-BES monitoring for the Reliability Coordinator in proposed Reliability Standard IRO-002-4, Requirement R3, it concluded that it was not necessary to include non-BES monitoring for the Transmission Operator in proposed Reliability Standard TOP-001-3, Requirement R10. Instead, the standard drafting team determined that any non-BES facility elements that are necessary for reliable operation of the BES would be included in the BES through the exception process provided in Appendix 5C to the NERC Rules of Procedure. NERC stated that the exception process provides the means for Transmission Operators and Reliability Coordinators to include elements in the BES that are necessary for the reliable operation of the interconnected transmission system but not identified in the BES definition.[6]

In the NOPR, the Commission proposes to find that NERC adequately addressed the 2011 Southwest Outage Blackout Report recommendation in connection with sub-100 kV facilities for IRO-002-4, Requirement R3, IRO-010-2, Requirement R1.1, and TOP-003-3, Requirement R1.1.[7] The Commission went on to state, however, that the Transmission Operator may have a more granular perspective than the Reliability Coordinator of its necessary non-BES

[5] NOPR at P 55 (citing NERC Petition at 61).

[6] *Id.* at P 56 (citing NERC petition at 47-48).

[7] *Id*. at P 57.

exceedances, and it is not clear whether or how the Transmission Operator would communicate any insight it may have to the Reliability Coordinator to ensure monitoring of all necessary facilities. For this reason, the Commission seeks comment on how NERC will ensure that the Reliability Coordinator will receive information from the Transmission Operator regarding which non-BES facilities should be monitored, and states that including such non-BES facilities in the definition of BES through the Rules of Procedure exception process could be an option to address any potential gaps for monitoring facilities. The Commission states that, because there may be potential efficiencies gained by using a more expedited method to include non-BES facilities that require monitoring, it seeks comments on whether the exception process should be used exclusively in all cases.[8]

The ISOs/RTOs respectfully request that, as suggested by the Commission, non-BES facilities to be monitored be included in the definition of BES facilities through the Rules of Procedure exception process, and that this approach be reflected in revisions to proposed Reliability Standards IRO-002-4, Requirement R3, IRO-010-2, Requirement R1.1, and TOP003-3, Requirement R1.1.

To address the 2011 Southwest Outage Blackout Report's Finding 17, which concerned the impact of sub-100 kV facilities on the reliability of the interconnected transmission network, the standard drafting team initially used the words "sub-100 kV facilities" in proposed Reliability Standards IRO-002-4, Requirement R3, IRO-010-2, Requirement R1.1, and TOP-

[8] NOPR at P 58. In the alternative, the Commission seeks comment regarding whether this concern should be addressed through a review process of the Transmission Operators' systems to determine if there are important nonBES facilities that require monitoring. For example, Commission staff could work with NERC, Regional Entities, and applicable entities to review their system modeling and perform an analysis to identify non-BES facilities that need monitoring. *Id*. at P 59. As explained below, the exception process has been approved by the Commission and should be used to address any potential gaps for monitoring facilities.

003-3, Requirement R1.1. The language was also originally used in proposed Reliability Standard TOP-001-3, Requirement 10.

When the initial versions of the proposed Reliability Standards were posted for comment, various commenters pointed out to the standard drafting team that sub-100 kV transmission equipment is not subject to reliability standards unless it is deemed to be a part of the BES. To address these comments, the standard drafting team replaced "sub-100 kV" with "non-BES facilities." When the revised versions of the proposed Reliability Standards were posted for comment, commenters (including the Standards Review Committee ("SRC") of the ISO/RTO Council) explained that the term "non-BES facilities" is outside the scope of Reliability Standards and, accordingly, they requested that the term "non-BES" be removed from the proposed Reliability Standards. The SRC explained that the BES inclusion process should capture any equipment that is sub-100 kV and affects BES reliability so as to bring it into the scope of Reliability Standards. The standard drafting team did not remove the language from proposed Reliability Standards IRO-002-4, Requirement R3, IRO-010-2, Requirement R1.1, and TOP-003-3, Requirement R1.1, and those proposed standards were approved by the NERC Board of Trustees, with the "non-BES" language included, on November 13, 2014. The standard drafting team, however, adequately addressed the comments it received by removing the "non-BES" language from proposed Reliability Standard TOP-001-3, Requirement 10. That proposed standard was approved by the NERC Board of Trustees on February 12, 2015. As already mentioned, in its Petition, NERC explained that, for TOP-001-3, Requirement R10, any non-BES facility elements that are necessary for reliable operation of the BES would be included in the BES through the exception process provided in Appendix 5C to the NERC Rules of Procedure.

In Order No. 773, the Commission accepted NERC's proposal to use the exception process provided in the NERC Rules of Procedure to add elements to, and remove elements from, the BES, on a case-by-case basis.[9] The Commission found that the exception process balances the need for effective and efficient administration with due process and clarity of expectations and promotes consistency in determinations and eliminates regional discretion by having all decisions on exception requests made at NERC.[10] The Commission also found that the exception process provides for involvement of persons with applicable technical expertise in making decisions on exception requests and allows for an entity to appeal a final NERC decision to the Commission.[11] Thus, the Commission concluded that the exception process provides a reasonable mechanism for the Electric Reliability Organization to determine whether a facility or element should be added to, or removed from, the BES on a case-by case basis.[12]

Based on the foregoing findings by the Commission, the ISOs/RTOs respectfully submit that any non-BES facility elements to be monitored should be included in the BES through the exception process. In other words, the approach used to address sub-100 kV facilities in proposed Reliability Standard TOP-001-3, Requirement 10, should also be used for the other three proposed Reliability Standards. Accordingly, proposed Reliability Standards IRO-002-4, Requirement R3, IRO-010-2, Requirement R1.1, and TOP-003-3, Requirement R1.1 should be clarified by deleting the "non-BES" language (as was done for Reliability Standard TOP-001-3, Requirement 10). In the alternative, to clarify the proposed Reliability Standards and make them more precise, the words "non-BES facilities" in proposed Reliability Standard IRO-002-4,

[9] *Revisions to Electric Reliability Organization Definition of Bulk Electric System and Rules of Procedure*, Order No. 773, 141 FERC ¶ 61,236 (2012) at P 251.

[10] *Id.*

[11] *Id.*

[12] *Id.* at P 252.

Requirement 3, should be replaced with "sub-100 kV facilities identified as part of the BES through the BES exception process."[13] Similarly, in Reliability Standards IRO-010-2, Requirement R1.1, and TOP-003-3, Requirement R1.1, the words "non-BES data" should be replaced with "data from sub-100 kV facilities identified as part of the BES through the BES exception process."[14]

B. Reliability Risks Associated with Establishing Redundant and Diverse Routing Data Exchange Capabilities are Adequately Addressed by the Suite of Currently Effective COM and EOP Reliability Standards and the Proposed TOP and IRO Reliability Standards.

In the NOPR that is the subject of this proceeding, the Commission states that it approved Reliability Standards COM-001-2 (Communications) and COM-002-4 (Operating Personnel Communications Protocols) in Order No. 808, and that, in the NOPR underlying that Order ("COM NOPR"), it had raised concerns on whether Reliability Standard COM-001-2 addresses "facilities that directly exchange or transfer data." In response to that concern in the COM

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[13] With the proposed revisions, Reliability Standard IRO-002-4, Requirement R3 (blacklined) reads as follows: Each Reliability Coordinator shall monitor Facilities, the status of Special Protection Systems, and non-BES facilities sub100 kV facilities identified as part of the BES through the BES exception process identified as necessary by the Reliability Coordinator, within its Reliability Coordinator Area and neighboring Reliability Coordinator Areas to identify any System Operating Limit exceedances and to determine any Interconnection Reliability Operating Limit exceedances within its Reliability Coordinator Area.

[14] With the proposed revisions, Reliability Standard IRO-010-2, Requirement R1.1 (blacklined) reads as follows: The Reliability Coordinator shall maintain a documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. The data specification shall include but not be limited to:
1.1. A list of data and information needed by the Reliability Coordinator to support its Operational Planning Analyses, Real-time monitoring, and Realtime Assessments including non-BES data data from sub-100 kV facilities identified as part of the BES through the BES exception process and external network data, as deemed necessary by the Reliability Coordinator.
With the proposed revisions, Reliability Standard TOP-003-3, Requirement R1.1 (blacklined) reads as follows: Each Transmission Operator shall maintain a documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. The data specification shall include, but not be limited to:
1.1. A list of data and information needed by the Transmission Operator to support its Operational Planning Analyses, Real-time monitoring, and Realtime Assessments including non-BES data data from sub-100 kV facilities identified as part of the BES through the BES exception process and external network data as deemed necessary by the Transmission Operator.

NOPR, NERC clarified that Reliability Standard COM-001-2 did not need to include requirements regarding data exchange capability because such capability is covered under other existing and proposed standards.[15] Based on that explanation, the Commission decided not to make any determinations in Order No. 808 and stated that it would address the issue in this TOP and IRO rulemaking proceeding.[16] The Commission states that it appears that facilities for data exchange capabilities are addressed in NERC's proposal in the instant proceeding. However, the Commission seeks further explanation or clarification regarding whether and how the proposed TOP and IRO Reliability Standards address redundancy and diverse routing or an equally effective alternative to redundancy and diverse routing. Further, if NERC or others believe that redundancy and diverse routing are not addressed, the Commission seeks comment on whether there are associated reliability risks of interconnected transmission networks for any failure of data exchange capabilities that are not redundant and diversely routed.[17]

As explained in detail below, the ISOs/RTOs respectfully submit that reliability risks of interconnected transmission networks related to failure of data exchange capabilities that are not redundantly and diversely routed are addressed in the suite of currently-effective COM and EOP Reliability Standards and the proposed TOP and IRO Reliability Standards.

First, the likelihood appears low that important data communication systems will not include redundancy or not be diversely routed. The proposed TOP and IRO Reliability

[15] NOPR at P 67. NERC indicated in its response to the COM NOPR that Reliability Standard COM-001-2 need not include requirements regarding data exchange capability because such capability is or would be covered by other existing or proposed standards. Specifically, NERC explained that data exchange is addressed by the currently enforceable Reliability Standards IRO-010-1a and IRO-014-1. In addition, NERC stated that data exchange transfer capabilities are directly addressed in proposed Reliability Standard TOP-001-3, as well as in proposed Reliability Standard IRO-002-4, Requirement R1. NERC also stated that the data itself is covered in proposed Reliability Standard IRO-010-2 and proposed Reliability Standard TOP-003-3. *Id*. at P 71.

[16] *Id.*

[17] NOPR at P 74.

Standards specifically require a Reliability Coordinator to have monitoring systems that provide information utilized by the Reliability Coordinator's operating personnel and that give particular emphasis to alarm management and awareness systems, automated data transfers, and synchronized information systems, *over a redundant infrastructure*. More generally, the suite of currently-effective Reliability Standards and the proposed TOP and IRO Reliability Standards establish performance-based requirements for Reliability Coordinators, Balancing Authorities and Transmission Operators that create the need for those entities to have diverse and redundantly routed data communication systems. Specifically, Reliability Coordinators, Transmission Operators, and Balancing Authorities are required to perform assessments in real-time (every thirty minutes or less) and to continuously monitor the status of facilities[18] and, in order to meet those requirements, Reliability Coordinators, Transmission Operators and Balancing Authorities need to have redundant or diversely routed data exchange capabilities. In addition, Reliability Standards IRO-010-1a, Requirement R3,[19] TOP-005-2a, Requirement R2,[20] and proposed Reliability Standard TOP-003-3, Requirement R5,[21] require compliance with data

[18] *See* Reliability Standards IRO-008-1, Requirement R2; IRO-002-2, Requirement R7; TOP-006-2, Requirements R1 and R2.

[19] Reliability Standard IRO-010-1a, Requirement R3 provides that "[e]ach Balancing Authority, Generator Owner, Generator Operator, Interchange Authority, Load-serving Entity, Reliability Coordinator, Transmission Operator, and Transmission Owner shall provide data and information, as specified, to the Reliability Coordinator(s) with which it has a reliability relationship."

[20] Reliability Standard TOP-005-2a, Requirement R2 provides that "[u]pon request. Each Balancing Authority and Transmission Operator shall provide to other Balancing Authorities and Transmission Operators with immediate responsibility for operational reliability, the operating data that are necessary to allow these Balancing Authorities and Transmission Operators to perform operational reliability assessments and to coordinate reliable operations. Balancing Authorities and Transmission Operators shall provide the types of data as listed in Attachment 1-TOP-005 "Electric System Reliability Data," unless otherwise agreed to by the Balancing Authorities and Transmission Operators with immediate responsibility for operational reliability."

[21] Under proposed Reliability Standard TOP-003-3, Requirement R5, each Transmission Operator, Balancing Authority, Generator Owner, Generator Operator, Load-Serving Entity, Transmission Owner, and Distribution Provider receiving a data specification in Requirement R3 or R4 shall satisfy the obligations of the documented specifications using: a mutually agreeable format; a mutually agreeable process for resolving data conflicts; a mutually agreeable security protocol.

exchange specifications intended to support real-time assessments. Thus, applicable entities need redundancy and/or diverse routing in order to comply with the requirements of those Reliability Standards in case an interruption (planned or unplanned, maintenance or event-related) occurs in their data exchange capabilities. Moreover, the proposed TOP and IRO Reliability Standards recognize that outages of data exchange and other capabilities will be necessary and, accordingly, the standards require plans, functionality, coordination, and communication when those outages take place.[22]

Second, in the event that there is a loss or failure of data communications and the Reliability Coordinator, Balancing Authority or Transmission Operator that suffers the loss or failure does not have diverse and redundant data communication systems, the functional entity should be able to rely on the redundant and diversely routed voice capabilities that it is required to maintain pursuant to the COM Reliability Standards.[23] This voice capability would enable the Reliability Coordinator, Balancing Authority or Transmission Operator to obtain the system operations data it needs in the short term to maintain situational awareness while it re-establishes its data communications capability. If the failure or loss were long-term in nature, the Reliability Coordinator, Balancing Authority or Transmission Operator would rely on its operating plan to continue to meet its functional obligations with regard to the reliable operations of the BES, which could include operating from a Backup Control Center[24] that provides backup functionality.[25]

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[22] *See* proposed Reliability Standard TOP-001-3, Requirements R9 and R16; proposed Reliability Standard IRO002-4, Requirement R2.

[23] *See* Reliability Standard COM-001-2.

[24] Pursuant to Reliability Standard EOP-008-1, Requirement R1.2.2, the Operating Plan for backup functionality describing the manner in which a Reliability Coordinator, Balancing Authority, or Transmission Operator continues to meet its functional obligations with regard to the reliable operations of the BES in the event that its primary control center functionality is lost must include a summary description of the data communications required to

(continued...)

When viewed collectively, the currently-effective COM and EOP Reliability Standards and the proposed TOP and IRO Reliability Standards appear sufficient to mitigate the risks identified by the Commission.

Finally, the ISOs/RTOs note that redundancy of data exchange capabilities is not itself a core reliability function, but rather a tool used to accomplish core reliability functions. To that end, to the extent that FERC determines that the existing Reliability Standards identified above do not adequately address redundancy concerns, the ISOs/RTOs suggest that NERC can address those concerns through its certification process, rather than through an additional stand-alone Reliability Standard. At the time of certification, tools needed to support reliability—such as redundant data exchange capabilities—can be examined to determine their suitability for accomplishing the required reliability functions.

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support the backup functionality. Reliability Standard EOP-008-1, Requirement R4 provides that "[e]ach Balancing Authority and Transmission Operator shall have backup functionality (provided either through a facility or contracted services staffed by applicable certified operators when control has been transferred to the backup functionality location) that includes monitoring, control, logging, and alarming sufficient for maintaining compliance with all Reliability Standards that depend on a Balancing Authority and Transmission Operator's primary control center functionality respectively. To avoid requiring tertiary functionality, backup functionality is not required during:

- Planned outages of the primary or backup functionality of two weeks or less
- Unplanned outages of the primary or backup functionality"

[25] Notably, the Reliability Coordinator, Balancing Authority or Transmission Operator would be required to make a report to the Electric Reliability Organization if it were experiencing a long-term loss of data communications capability.

III. CONCLUSION

The ISOs/RTOs respectfully request that the Commission consider the foregoing comments on the proposed TOP and IRO standards.

Respectfully submitted,

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Dated: August 24, 2015