

REPORT OF THE SYSTEM RELIABILITY, PLANNING, AND SECURITY COMMITTEE

This report summarizes developments at the Federal Energy Regulatory Commission related to system reliability, planning, and security of the bulk power system that occurred between July 1, 2018 and June 30, 2019.*

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I. RELIABILITY GOVERNANCE, STRUCTURE, AND RULES OF PROCEDURE

A. Rules of Procedure Filings and Approvals

1. Revisions to Appendix 4E (October 2018)

On October 16, 2018, the North American Electric Reliability Corporation (NERC) filed a petition with the Federal Energy Regulatory Commission (FERC) in Docket No. RR19-1-000 seeking approval of proposed revisions to the hearing

procedures (CCCPP-004) and mediation procedures (CCCPP-006) of the Compliance and Certification Committee with Appendix 4E of NERC Rules of Procedure.¹ On March 1, 2019, FERC issued a letter order accepting NERC's petition.²

2. Revisions to Compliance Filing (November 2018)

On November 16, 2018, in Docket No. RR17-6-000, NERC submitted a "compliance filing in accordance with the [FERC's] July 19, 2018 Order," which had approved in part and denied in part amendments to NERC Rules of Procedure.³ The compliance filing sought to restore sections 603, 604, and 605, as well as to correct typographical errors in sections 600 and 900, which address personnel certification as well as training and education, respectively.⁴ On January 25, 2019, FERC issued a letter order accepting NERC's uncontested compliance filing.⁵

3. Revisions to Appendix 3A (November 2018)

On November 19, 2018, NERC submitted a petition with FERC in Docket No. RR19-2-000 for "approval of proposed revisions to the Standards Processes Manual, Appendix 3A to [] NERC Rules of Procedure."⁶ The proposed revisions are intended to: (1) "enhance[] processes for field tests to support standards development and for the posting of supporting technical documents"; (2) improve "processes for appeals and interpretations"; (3) provide "language to clarify [existing] standard processes"; and (4) streamline language or punctuation, "and make other necessary updates."⁷ On March 1, 2019, FERC issued a letter order approving NERC's proposed amendment.⁸

B. Governance and Structure-Related Filings and Approvals

1. Amendments to NERC Bylaws (September 2018)

On September 25, 2018, in Docket No. RR18-7-000, FERC issued a letter order approving amendments to NERC bylaws.⁹ NERC proposed the amendments

1. Petition of N. Am. Elec. Reliability Corp. for Approval of Proposed Revisions to the Rules of Procedure, FERC Docket No. RR19-1-000 (Oct. 16, 2018).

2. Letter Order, Revised Appendix 4E to the N. Am. Elec. Reliability Corp. Rules of Procedure, FERC Docket No. RR19-1-000 (Mar. 1, 2019).

3. Compliance Filing of the N. Am. Elec. Reliability Corp. in Response to Order Approving in Part and Denying in Part Amendments to the Electric Reliability Organization's Rules of Procedure, RR17-6-000 (Nov. 16, 2018).

4. *Id.*

5. Letter Order, Compliance Filing on Amendments to Rules of Procedure, FERC Docket No. RR17-6-000 (Jan. 25, 2019).

6. Petition of N. Am. Elec. Reliability Corp. for Approval of Proposed Revisions to the Rules of Procedure, FERC Docket No. RR19-2-000 (Nov. 19, 2018).

7. *Id.*

8. Letter Order, Revised Standard Processes Manual, FERC Docket No. RR19-2-000 (Mar. 1, 2019).

9. Letter Order, Amended N. Am. Elec. Reliability Corp. Bylaws, FERC Docket No. RR18-7-000 (Sept. 25, 2018).

on June 4, 2018.¹⁰ The uncontested proposal reduces the day “prior notice requirement for Board of Trustees meetings [to be] held in closed session” from five days to twenty-four hours, which would permit the board “to address matters that may be considered during a closed session” in a timelier manner when necessary.¹¹

2. Registration Transfer of WPSC and UMERC (September 2018)

On September 26, 2018, in Docket No. RR18-11-00, a joint petition was filed by NERC, the Midwest Reliability Organization (MRO) and ReliabilityFirst Corporation (RF) for the approval of the proposed registration transfer of Wisconsin Public Services Corporation (WPSC) and Upper Michigan Energy Resources Corporation (UMERC) from MRO to RF.¹² FERC approved the uncontested request through a letter order issued on December 11, 2018.¹³

3. Dissolution of FRCC Regional Entity (February 2019)

On February 27, 2019, NERC, the Florida Reliability Coordinating Council, Inc. (FRCC) and the SERC Reliability Corporation (SERC) submitted a joint petition for approval in connection with the dissolution of the Florida Reliability Coordinating Council Regional Entity (FRCC RE).¹⁴ Later, on May 16, 2019, NERC requested advance funds from its operating contingency reserves to support the dissolution of the FRCC’s Regional Entity Division.¹⁵ On June 14, 2019, FERC issued a letter order approving NERC’s request, as well as obligating NERC to submit an informational report on or before June 1, 2020, documenting whether an advance from NERC’s operating contingency reserves was provided to FRCC and in what amount, with supporting information showing how the specific amount advanced was determined and from what sources NERC replenished its operating contingency reserves.¹⁶

4. Approval of Amended Compliance and Certification Committee Charter (March 2019)

On March 1, 2019, FERC issued a letter order accepting NERC’s November 30, 2018 filing of an amended Compliance and Certification Committee (CCC)

10. *Id.*

11. *Id.*

12. Joint Petition of N. Am. Elec. Reliability Corp., Midwest Reliability Organization, Inc., and ReliabilityFirst Corp. for Approval of Registration Transfer Request, FERC Docket No. RR18-11-000 (Sept. 26, 2018).

13. Letter Order, Transfer of Registered Entities and Revised Regional Delegation Agreements, FERC Docket No. RR18-11-000 (Dec. 11, 2018).

14. Joint Petition of N. Am. Elec. Reliability Corp., Florida Reliability Coordinating Council, and SERC Reliability Corp., FERC Docket No. RR19-4-000 (Feb. 27, 2019).

15. Request of N. Am. Elec. Reliability Corp. to Advance Funds from its Operating Contingency Reserves to Support Dissolution of FRCC Inc.’s Regional Entity’s Division, FERC Docket No. RR19-4-001 (May 16, 2019).

16. Letter Order, *N. Am. Elec. Reliability Corp.*, 167 F.E.R.C. ¶ 61,225 (2019).

Charter, made to reflect the dissolution of the Southwest Power Pool (SPP) Regional Entity.¹⁷ Specifically, NERC's proposed amendments "were made to reflect the dissolution of the SPP RE by removing . . . SPP RE from the Regional Entity sector in the CCC membership structure."¹⁸ The letter order accepted the uncontested proposal.¹⁹

5. Amendments to Texas RE Bylaws (March 2019)

On March 20, 2019, in Docket RR19-5-000, NERC and Texas Reliability Entity, Inc. (Texas RE) filed a joint petition for FERC Approval of "amendments to the Texas RE Bylaws."²⁰ The petition stated that the "revisions resulted after Texas RE reviewed its bylaws for consistency with the Texas Business Organization Code and Texas RE's current business practices."²¹

II. NERC BUSINESS PLAN AND BUDGET

On August 24, 2018, NERC submitted its request for approval of the "2019 Business Plans and Budgets of NERC, the eight Regional Entities, and the Western Interconnection Regional Advisory Board" (WIRAB).²²

NERC's proposed 2019 budget was \$80,049,655, representing "an increase of 9.5% over the" prior year.²³ Of this amount, \$27,395,627 was for the Electricity Information Sharing and Analysis Center (E-ISAC), representing "34.2% of the total 2019 budget."²⁴ If the E-ISAC funding is excluded, NERC's year-over-year change was +2.7%.²⁵ Of the total NERC budget for 2019, \$10,246,354 was to come from non-assessment sources, including \$550,000 of penalty assessments, which would be released from NERC's Assessment Stabilization Reserve, \$7,486,353 in third-party funding for DOE's Cybersecurity Risk Information Sharing Program (CRISP), \$1,790,000 in testing fees for NERC programs such as operator certification, \$40,000 in revenues from services & software, "\$195,000 in attendance fees for [w]orkshops," and \$185,000 in interest income.²⁶

NERC's 2019 budget reflected an overall increase of 5.64 full time equivalents ("FTEs"), which in turn was based on "an increase [in] 8.46 FTEs [for] the E-ISAC and a decrease of 2.82 FTEs in other" functions.²⁷ Of the various NERC programs, by far the highest expenditure was for E-ISAC (which includes

17. Letter Order, Amended Compliance and Certification Committee Charter, FERC Docket No. RR19-3-000 (Mar. 1, 2019).

18. *Id.*

19. *Id.*

20. Joint Petition of N. Am. Elec. Reliability Corp. and Texas Reliability Entity, Inc., for Approval of Amendments to the Texas Reliability Entity, Inc. Bylaws, FERC Docket No. RR19-5-000 (Mar. 20, 2019).

21. *Id.*

22. NERC, Request for Acceptance of 2019 Business Plans and Budgets of NERC and Regional Entities and for Approval of Proposed Assessments to Fund Budgets, FERC Docket No. RR18-9-000 (Aug. 24, 2018).

23. *Id.* at 15.

24. *Id.* at 15-16.

25. *Id.* at 16.

26. *Id.*

27. FERC Docket No. RR18-9-000, *supra* note 22, at 17.

CRISP).²⁸ The next largest area was compliance assurance, compliance analysis, organization registration and certification, and compliance enforcement.²⁹ After that, the next largest area by expenditures was reliability risk management, which includes situation awareness, event analysis, and performance analysis.³⁰

On October 18, 2018, FERC approved the “business plans and budgets for NERC, the Regional Entities, and WIRAB.”³¹ Regarding NERC, FERC concluded that “NERC’s 2019 budget is reasonable and that the associated costs of NERC’s jurisdictional functions are equitably allocated among end users in the United States.”³² As to the Regional Entities, FERC concluded that “each Regional Entity submission reasonably supports the level of expenditures identified in their respective budgets and that each Regional Entity is focused on adequately staffing and funding all of their respective program areas to perform the delegated, statutory functions.”³³

On September 25, 2018, FERC also accepted NERC’s filing from May 30, 2018 reporting the comparison between budgeted and actual costs for 2017 for NERC and the Regional Entities.³⁴

With respect to the dissolution of FRCC as a Regional Entity and the addition of the historic FRCC Region to the SERC Region, on February 27, 2019, NERC, FRCC, and SERC asked for approval of certain expenditures and assessments related to wind-down costs.³⁵ Given the need to wind-down FRCC’s Regional Entity operations and the increased costs to SERC as a result of the added burden of acting as the Regional Entity for the FRCC Region, this group asked FERC to allow SERC to use FRCC’s third and fourth quarter assessments for 2019 for these operations, and to allow a special one-time assessment of \$630,000.³⁶ These entities also asked that FERC allow the use of penalty costs processed and submitted to NERC between July 1, 2018 and July 1, 2019 for wind-down costs.³⁷ FERC approved all of these requests.³⁸

Also related to the dissolution of FRCC, on May 16, 2019 NERC asked for FERC authorization to advance “up to \$1,500,000 from NERC’s operating contingency reserve to assist in FRCC wind-down costs.”³⁹ According to NERC, this amount would be used to cover costs “FRCC is contractually obligated to incur” and that “advances[s] will only be made if” on July 1, 2019 FRCC lacks sufficient

28. *Id.* at 19.

29. *Id.*

30. *Id.*

31. Order Accepting 2019 Business Plans and Budgets, *N. Am. Elec. Reliability Corp.*, 165 F.E.R.C. ¶ 61,023 (2018).

32. *Id.* at P 14.

33. *Id.* at P 16.

34. Letter Order, Report of Comparisons of Budgeted to Actual Costs for 2017, FERC Docket No. RR18-6-000 (Sept. 25, 2018).

35. 167 F.E.R.C. ¶ 61,225, at P 2.

36. *Id.*

37. *Id.*

38. *N. Am. Elec. Reliability Corp.*, 167 F.E.R.C. ¶ 61,095 (2019).

39. 167 F.E.R.C. ¶ 61,225, at P 1.

funds to cover costs through August 31, 2019.⁴⁰ NERC explained that this request was a result of unanticipated changes in “FRCC’s cash flow projection[s]” and would not adversely impact “NERC’s operating contingency reserve position or its ability” to otherwise address contingencies.⁴¹ As part of the request, NERC also asked that it be allowed to “replenish its operating contingency reserves” to match any advances to FRCC through penalty funds received from the FRCC Region.⁴² In the event penalty amounts are insufficient, NERC asked that it be able to replenish its operating contingency reserve through a special assessment to the FRCC footprint.⁴³ All these requests were approved by FERC.⁴⁴

III. RELIABILITY STANDARDS (DRAFTING RESPONSIBILITY-NERC)

A. FERC Order No. 848 Cyber Security Incident Reporting Reliability Standards

On July 19, 2018, FERC issued a final rule in Order No. 848, directing NERC to “develop and submit modifications to the Reliability Standards to require the reporting of Cyber Security Incidents that compromise, or attempt to compromise, a responsible entity’s Electronic Security Perimeter (ESP) or associated Electronic Access Control or Monitoring Systems (EACMS).”⁴⁵

The rule consists of four elements, which are intended to enhance the previous Cyber Security Incident reporting requirement:

(1) responsible entities must report Cyber Security Incidents that compromise, or attempt to compromise, a responsible entity’s ESP or associated EACMS; (2) required information in Cyber Security Incident reports should include certain minimum information to improve the quality of reporting and allow for ease of comparison by ensuring that each report includes specific fields of information; (3) filing deadlines for Cyber Security Incident reports should be established once a compromise or disruption to reliable BES operation, or an attempted compromise or disruption, is identified by a responsible entity; and (4) Cyber Security Incident reports should continue to be sent to the E-ISAC, rather than the FERC, but the reports should also be sent to the Department of Homeland Security (DHS) Industrial Control Systems Cyber Emergency Response Team (ICS-CERT).⁴⁶

In response to Order No. 848, NERC submitted a petition for approval of proposed Reliability Standard CIP-008-6 on March 7, 2019 to address Order No. 848 directives.⁴⁷

40. *Id.* at P 3.

41. *Id.*

42. *Id.* at P 1.

43. *Id.* at P 6.

44. 167 F.E.R.C. ¶ 61,225, at P 9.

45. Order No. 848, *Cyber Security Incident Reporting Reliability Standards*, 164 F.E.R.C. ¶ 61,033 at P 1 (2018) (codified at C.F.R. pt. 40) [hereinafter Order No. 848].

46. *Id.* at P 3.

47. Petition of the N. Am. Elec. Reliability Corp. for Approval of Proposed Reliability Standard CIP-008-6 addressing Cyber Security Incident Reporting and Response Planning, FERC Docket No. RD19-3-000 (Mar. 7, 2019).

B. NERC Petition for PER-003-2

On July 23, 2018, NERC filed a petition with FERC seeking the approval of proposed Reliability Standard PER-003-2 (Operating Personnel Credentials) and the retirement of Reliability Standards PER-003-1 and PER-004-2 (Reliability Coordination – Staffing).⁴⁸ Proposed Reliability Standard PER-003-2 is identical to PER-003-1, but includes footnotes following every applicable requirement reading, “NERC certificates referenced in this standard pertain to those certificates identified in the NERC System Operator Certification Program Manual.”⁴⁹ The footnotes clarify references to NERC “certificates” that appear in the Reliability Standard.⁵⁰ NERC requested that PER-004-2 be retired because other reliability standards fulfill the same functions.⁵¹

NERC’s petition to FERC was unopposed, and on November 21, 2018, FERC’s Office of Electric Reliability approved NERC’s petition.⁵²

C. NERC Petition for BAL-002-3 (Disturbance Control Standard-Contingency Reserve for Recovery from a Balancing Contingency Event)

On August 17, 2018, NERC filed a petition seeking FERC’s approval of proposed Reliability Standard BAL-002-3 (Disturbance Control Standard-Contingency Reserve for Recovery from a Balancing Contingency Event) and the retirement of Reliability Standard BAL-002-2.⁵³ NERC submitted the proposed Reliability Standard in response to FERC’s directive in Order No. 835 to revise Reliability Standard BAL-002-2.⁵⁴

In Order No. 835, FERC approved Reliability Standard BAL-002-2, finding that the standard would “streamline and clarify the obligations for responsible entities to deploy contingency reserves to stabilize system frequency in response to system contingencies.”⁵⁵ In that order, FERC directed NERC to amend Reliability Standard BAL-002-2 to “require an entity to provide certain information to the reliability coordinator when the entity does not timely recover ACE due to an intervening disturbance.”⁵⁶ In its petition, NERC stated that Reliability Standard BAL-002-3 addressed this directive by requiring balancing authorities and reserve sharing groups “(1) to notify the reliability coordinator of the conditions preventing it from complying with the 15-minute ACE recovery period and (2) to provide the reliability coordinator with its ACE recovery plan, including [the] target[ed]

48. Letter Order, Petition of N. Am. Elec. Reliability Corp. for Approval of Proposed Reliability Standard PER-003-2 and Retirement of Reliability Standard PER-004-2, FERC Docket No. RD19-9-000 (Nov. 21, 2018).

49. *Id.*

50. *Id.*

51. *Id.*

52. *Id.*

53. Petition of N. Am. Elec. Reliability Corp. for Approval of Proposed Reliability Standard BAL-002-3, FERC Docket No. RD18-7-000 (Sept. 25, 2018).

54. *Id.*

55. Order No. 835, *Disturbance Control Standard, Contingency Reserve for Recovery from a Balancing Contingency Event Reliability Standard*, 158 F.E.R.C. ¶ 61,030 at P 21 (2017) (codified at 18 C.F.R. pt. 40).

56. *Id.* at P 2.

recovery time.”⁵⁷ There were no objections to proposed Reliability Standard BAL-002-3, and on September 25, 2018, the standard was approved by FERC’s Office of Electric Reliability.⁵⁸

D. Petition of NERC for Approval of Proposed Reliability Standard VAR-001-5—Voltage and Reactive Control

On September 6, 2018, NERC submitted a petition to FERC for the approval of Reliability Standard VAR-001-5—Voltage and Reactive Control.⁵⁹ The stated purpose of Reliability Standard “VAR-001-5 is to ensure that voltage levels, reactive flows, and reactive resources are monitored, controlled, and maintained within the limits in Real-time to protect equipment and the reliable operation of the Interconnection.”⁶⁰

NERC stated that the revisions in Reliability Standard VAR-001-5 are contained in the Variance for entities in the WECC region, and that the Variance continues to remain “more stringent than the continent-wide Requirements it replaces.”⁶¹ The main proposed change to the Variance was a deletion of Requirement E.A. 15 because the requirement was duplicative of Requirement R2 Part 2.3 in Reliability Standard VAR-002-4.1.⁶² FERC issued a letter order approving the Reliability Standard VAR-001-5 on October 15, 2018.⁶³

E. Petition of NERC for Approval of the Revised Implementation Plans for the Reliability Standards MOD-026-1—Verification of Models and Data for Generation Excitation Control System or Plant Volt/Var Control Functions and MOD-027-1—Verification of Models and Data for Turbine/Governor and Load Control or Active Power/Frequency Control Functions

NERC submitted a petition for the approval of the revised Implementation Plans for Reliability Standards MOD-026-1 and MOD-027-1 on October 12, 2018.⁶⁴ The Reliability Standards were originally approved by FERC in 2014 in Order No. 796.⁶⁵

The revisions to these Implementation Plans correct the error in the original Implementation Plans, which referenced “‘verification date’ instead of ‘transmittal date’ to set the periodicity for reverification under each standard.”⁶⁶ FERC issued

57. FERC Docket No. RD18-7-000, *supra* note 53.

58. *Id.*

59. Petition for Approval of Proposed Reliability Standard VAR-001-5, *North Am. Elec. Reliability Corp.*, FERC Docket No. RR18-9-000 (Sept. 6, 2018).

60. *Id.* at 3.

61. *Id.* at 4.

62. *Id.* at 9.

63. Letter Order, Petition for Approval of Proposed Reliability Standard VAR-001-5, *North Am. Elec. Reliability Corp.*, FERC Docket No. RD18-8-000 (Oct. 15, 2018).

64. Petition of N. Am. Elec. Reliability Corp. for Approval of Revised Implementation Plans for the Reliability Standards MOD-026-1 and MOD-027-1, FERC Docket No. RM13-16-000 (Oct. 12, 2018).

65. See Order No. 796, *Generation Verification Reliability Standards*, 79 Fed. Reg. 17,011 (2014) (codified at 18 C.F.R. pt. 40).

66. FERC Docket No. RM13-16-000, *supra* note 64, at 1.

a letter order on December 11, 2018 approving the revised Implementation Plans for Reliability Standards MOD-026-1 and MOD-027-1.⁶⁷

F. FERC Order No. 850 Approving Supply Chain Risk Management Reliability Standards

On October 18, 2018, FERC issued Order No. 850 approving the supply chain risk management Reliability Standards CIP-013-1 (Cyber Security—Supply Chain Risk Management), CIP-005-6 (Cyber Security—Electronic Security Perimeter(s)) and CIP-010-3 (Cyber Security—Configuration Change Management and Vulnerability).⁶⁸ NERC proposed the standards on September 26, 2017 in response to FERC Order No. 829.⁶⁹ FERC stated that the Reliability Standards were both “responsive to Order No. 829 and improve the electric industry’s cybersecurity posture by requiring that entities mitigate certain cybersecurity risks associated with the supply chain” for Bulk Electric System (BES) Cyber Systems.⁷⁰

FERC stated that “the supply chain risk management Reliability Standards are forward-looking and objective-based and require each affected entity to develop and implement a plan that includes security controls for supply chain management for industrial control system hardware, software, and services associated with bulk electric system operations.”⁷¹ FERC approved the standards as consistent with Order No. 829’s focus on the four security objectives of: “(1) software integrity and authenticity; (2) vendor remote access protections; (3) information system planning; and (4) vendor risk management and procurement controls.”⁷²

NERC stated that the focus of proposed Reliability Standard CIP-013-1 “is on the steps that responsible entities must take ‘to consider and address cybersecurity risks from vendor products and services during BES Cyber System planning and procurement.’”⁷³ NERC stated that the Reliability Standard improves reliability by “ensur[ing] that responsible entities establish organizationally-defined processes that integrate a cybersecurity risk management framework into the system development lifecycle.”⁷⁴

“Reliability Standard CIP-005-6 includes two new parts, 2.4 and 2.5, [which] address vendor remote access.”⁷⁵ “Reliability Standard CIP-010-3 includes [one]

67. Letter Order, Petition of N. Am. Elec. Reliability Corp. for Approval of a Revision to the Implementation Plans for Reliability Standards MOD-026-1 and MOD-027-1, FERC Docket No. RD-19-1-000 (Dec. 11, 2018).

68. Order No. 850, *Supply Chain Risk Management Reliability Standards*, 165 F.E.R.C. ¶ 61,020 (2018) [hereinafter Order No. 850].

69. See Petition of N. Am. Elec. Reliability Corp. for Approval of Proposed Reliability Standards CIP-013-1, CIP-005-6 and CIP-010-3 addressing Supply Chain Cybersecurity Risk Management, FERC Docket No. RD17-13-000 (Sept. 26, 2017) [hereinafter NERC Petition] (citing Order No. 829, *Revised Critical Infrastructure Protection Reliability Standards*, 156 F.E.R.C. ¶ 61,050 (2016)).

70. Order No. 850, *supra* note 68, at P 1.

71. *Id.* at P 2.

72. *Id.*

73. *Id.* at P 15 (quoting NERC Petition, *supra* note 69, at 22).

74. *Id.*

75. Order No. 850, *supra* note 68, at P 18.

new part, Part 1.6, [which] address[es] software integrity and authenticity.⁷⁶ In approving the proposed Reliability Standards, FERC directed NERC to develop modifications to include Electronic Access Control and Monitoring Systems (EACMS) “associated with medium and high impact Bulk Electrical Systems Cyber Systems within the scope of the supply chain risk management Reliability Standards.”⁷⁷ Since the issuance of Order No. 850, NERC submitted a report evaluating “cyber security supply chain risks associated with certain categories of assets not currently subject to the Supply Chain Standards.”⁷⁸

G. FERC Order No. 851 Geomagnetic Disturbance Reliability Standard; Reliability Standard for Transmission System Planned Performance for Geomagnetic Disturbance Events

On November 15, 2018, FERC issued Order No. 851, approving Reliability Standard TPL-007-2 (Transmission System Planned Performance for Geomagnetic Disturbance Events).⁷⁹ The Reliability Standard responds to directives in FERC Order No. 830, instructing NERC to develop standards requiring registered entities to mitigate risks to the bulk power system caused by geomagnetic disturbances.⁸⁰

Reliability Standard TPL-007-2 complies with Order 830 by mandating that registered entities address the risks caused by geomagnetic disturbance by (1) conducting a supplemental GMD vulnerability assessment and a thermal impact assessment using a new supplemental GMD event definition; (2) collecting “geomagnetically induced current (GIC) monitoring and magnetometer data”; and (3) setting deadlines for the creation and implementation of corrective action plans addressing system risks discovered from the benchmark testing event.⁸¹

In its order, FERC directed NERC to make two modifications to TPL-007-2.⁸² First, NERC must modify TPL-007-2 to “require the development and completion of corrective action plans to mitigate assessed supplemental GMD event vulnerabilities” within twelve months of TPL-007-2 becoming effective.⁸³ Second, NERC must revise Requirement R7.4 so that extensions of time to complete Corrective Action Plans would be considered on a-case-by-case basis.⁸⁴

76. *Id.* at P 19.

77. *Id.* at P 5.

78. Letter and Report, N. Am. Elec. Reliability Corp. Cyber Security Supply Chain Risks: Staff Report and Recommended Actions, FERC Docket No. RM17-13-000 (May 28, 2019).

79. Order No. 851, *Geomagnetic Disturbance Reliability Standard; Reliability Standard for Transmission System Planned Performance for Geomagnetic Disturbance Events*, 165 F.E.R.C. ¶ 61,124 (2018) [hereinafter Order No. 851].

80. *Id.* at P 2.

81. *Id.* at P 3.

82. *Id.* at P 18.

83. *Id.* at PP 18-19.

84. Order No. 851, *supra* note 79, at P 19.

Additionally, on February 20, 2019, NERC submitted proposed Reliability Standard TPL-007-3 to the applicable governmental authorities in Canada, including Ontario.⁸⁵ Reliability Standard TPL-007-3 contains a Canada-specific variance that allows Canadian registered entities to utilize “alternative benchmark GMD events or supplemental GMD planning event(s) for their GMD Vulnerability Assessments” and considers “provincial processes for approving investments identified in Corrective Action Plans.”⁸⁶

H. NERC Petition for Approval of Reliability Standard TPL-001-5 (Transmission System Planning Performance Requirements)

On December 7, 2018, NERC filed a petition with FERC for the approval of proposed Reliability Standard TPL-001-5 (Transmission System Planning Performance Requirements).⁸⁷ NERC states that proposed Reliability Standard TPL-001-5 addresses: (1) reliability issues regarding the analysis of single points of failure in protection systems; and (2) two FERC directives in Order No. 786 pertaining to the study of planned maintenance outages and study of spare equipment strategy in stability analysis.⁸⁸

NERC stated that proposed Reliability Standard TPL-001-5 requires “[p]lanning [a]uthorities and [t]ransmission [p]lanners to develop studies of their portions of the Bulk Electric System” in order to develop a bulk electric system “that will operate reliably over a broad spectrum of system conditions.”⁸⁹ Proposed Reliability Standard TPL-001-5 would require entities to include a more comprehensive assessment of the potential impacts of a protection system single point of failure (i.e. non-redundant component of a Protection System failure of failure on their systems).⁹⁰

NERC further stated that proposed TPL-001-5 responded to FERC directives in Order No. 786 by requiring that future planning assessments account for “planned maintenance outages of less than six months in duration.”⁹¹ Additionally, the Reliability Standard would require entities to assess in their stability studies the impact of the possible unavailability of “long lead time equipment” consistent with their spare equipment strategies.⁹²

On June 20, 2019, FERC issued a Notice of Proposed Rulemaking (NPR) to approve Reliability Standard TPL-001-5.⁹³ FERC proposes to direct NERC to develop modifications to TPL-005-1 to “require responsible entities to develop

85. Petition of the N. Am. Elec. Reliability Corp. for Approval of Proposed Reliability Standard TPL-007-3, Ontario Energy Board File No. EB-2018-0119 (Feb. 20, 2019).

86. *Id.* at 2.

87. Petition of the N. Am. Elec. Reliability Corp. for Approval of Proposed Reliability Standard TPL-001-5, FERC Docket No. RM19-10-000 (Dec. 7, 2018).

88. *See id.* at 1 (citing Order No. 786, *Transmission Planning Reliability Standards*, 145 F.E.R.C. ¶ 61,051 (2013)).

89. *Id.* at 3.

90. *Id.* at 3-4.

91. Notice of Proposed Rulemaking, *Transmission Planning Reliability Standard TPL-001-5*, 84 Fed. Reg. 30,639 at 30,641 (2019).

92. *Id.*

93. *Id.*

corrective actions plans to address protection system single points of failure in combination with a three-phase fault if planning studies indicate potential cascading.”⁹⁴

I. IRO-006-WECC-3

On March 6, 2019, NERC and the Western Electricity Coordinating Council (WECC) filed a joint petition seeking approval of proposed regional Reliability Standard IRO-006-WECC-3 (Qualified Path Unscheduled Flow (USF) Relief).⁹⁵ NERC and WECC stated that IRO-006-WECC-3 “addresses requests for transmission relief due to unscheduled flow on Qualified Paths in the Western Interconnection.”⁹⁶ The petition also requested that the term “Qualified Transfer Path” be removed from NERC Glossary of terms and be replaced with the term “Qualified Path.”⁹⁷ In addition, the petition requested that certain obsolete terms, no longer appearing “in any WECC regional reliability standard,” be removed from NERC Glossary of Terms.⁹⁸

NERC’s petition was uncontested, and on May 10, 2019, FERC’s Office of Electric Reliability approved NERC’s petition.⁹⁹

J. *Petition of NERC for Approval of Proposed Reliability Standard CIP-008-6—Cyber Security—Incident Reporting and Response Planning*

On March 7, 2019, NERC submitted a petition to FERC for approval of proposed Reliability Standard CIP-008-6. NERC stated that the proposed standard was developed in response to FERC directives in Order No. 848.¹⁰⁰ Order No. 848 directed NERC to make modifications to the Reliability Standards “to require reporting of Cyber Security Incidents that compromise, or attempt to compromise, a Responsible Entity’s Electronic Security Perimeter (ESP) or an associated Electronic Access Control or Monitoring Systems (EACMS) to the E-ISAC and the Department of Homeland Security Industrial Control Systems Cyber Emergency Response Team (ICS-CERT).”¹⁰¹ NERC states that proposed Reliability Standard CIP-008-6 requires Responsible Entities to develop and implement Cyber Security Incident response plans, which provide a course of action for Responsible Entities to detect incidents that affect BES Cyber Systems, minimize loss and destruction, mitigate weaknesses that were exploited and help to restore capabilities.¹⁰² CIP-

94. *Id.* at 30,642-43.

95. Joint Petition of the N. Am. Elec. Reliability Corp. and W. Elec. Coordinating Council for Approval of Proposed Regional Reliability Standard IRO-006-WECC-3, FERC Docket No. RD19-4-000 (Mar. 6, 2019).

96. *Id.* at 2.

97. *Id.*

98. *Id.*

99. Letter Order, Joint Petition of the N. Am. Elec. Reliability Corp. and W. Elec. Coordinating Council for Approval of Proposed Regional Reliability Standard IRO-006-WECC-3, FERC Docket No. RD19-4-000 (May 10, 2019).

100. See Petition of the N. Am. Elec. Reliability Corp. for Approval of Proposed Reliability Standard CIP-008-6 addressing Cyber Security Incident Reporting and Response Planning, FERC Docket No. RD19-3-000 (Mar. 7, 2019); see generally Order No. 848, *supra* note 45.

101. FERC Docket No. RD19-3-000, *supra* note 100, at 1.

102. *Id.* at 2.

008-6 broadens the Cyber Security Incident reporting requirements by expanding NERC Glossary definition of Reportable Cyber Incident and Cyber Security Incident as well as requiring Responsible Entities to report Cyber Security Incidents that meet criteria identified in the Requirements.¹⁰³

NERC additionally requested in the petition that FERC approve: (1) the CIP-008-6 Implementation Plan; (2) “the proposed revised definitions of Cyber Security Incident and Reportable Cyber Security Incident”; (3) “the associated Violation Risk Factors and Violation Severity Levels”; and (4) “the retirement of FERC-approved Reliability Standard CIP-008-5.”¹⁰⁴ FERC issued a letter order on June 20, 2019 approving NERC’s petition.¹⁰⁵

K. NERC Petition for Approval of Proposed Reliability Standard CIP-012-1 and FERC Notice of Proposed Rulemaking Approving Reliability Standard CIP-012-1—Cyber Security—Communications between Control Centers

On April 18, 2019, FERC issued a NOPR to approve Reliability Standard CIP-012-1.¹⁰⁶ NERC previously submitted a petition for approval of the proposed Reliability Standard in September 2018 in response to directives in FERC Order No. 822.¹⁰⁷

FERC Order No. 822 directed NERC to modify the Critical Infrastructure Program Reliability Standards “to require Responsible Entities to implement controls to protect communication links and sensitive Bulk Electric System (BES) data communication between BES Control Centers.”¹⁰⁸ NERC stated that proposed Reliability Standard CIP-012-1 improves reliability and satisfies the directive of Order No. 822 by requiring “Responsible Entities to protect the confidentiality and integrity of sensitive data pertaining to Real-time operations while being transmitted between BES Control Centers.”¹⁰⁹ NERC further stated that the proposed Reliability Standard “requires Responsible Entities to develop a plan to mitigate risk posed by unauthorized modification (integrity) and unauthorized disclosure (confidentiality) of Real-time Assessment and Real-time monitoring data.”¹¹⁰ The plans must include: “(1) identification of security protection used to meet the security objective; (2) identification of where the Responsible Entity applied the security protection; and (3) identification of the responsibilities of each Responsible Entity for applying the security protection, if the communication Control Centers are owned by different entities.”¹¹¹

103. *Id.* at 15.

104. *Id.* at 2.

105. Letter Order, *Reliability Standard CIP-008-6—Cyber Security—Incident Reporting and Response Planning*, 167 F.E.R.C. ¶ 61,230 at P 1 (2019).

106. Notice of Proposed Rulemaking, *Critical Infrastructure Protection Reliability Standard CIP-012-1—Cyber Security—Communications Between Control Centers*, 167 F.E.R.C. ¶ 61,055 (2019) (to be codified at 18 C.F.R. pt. 40) [hereinafter NOPR on CIP-012-1].

107. *See* Petition of the N. Am. Elec. Reliability Corp. for Approval of Proposed Reliability Standard CIP-012-1, FERC Docket No. RM18-20-000 (Sept. 18, 2018).

108. *Id.* at 1.

109. *Id.* at 2.

110. *Id.* at 3.

111. *Id.*

On April 18, 2019, in Docket No. RM18-20-000, FERC issued a NOPR proposing to approve Reliability Standard CIP-012-1.¹¹² In the NOPR, FERC proposed to direct NERC to: “(1) require protections regarding the availability of communication links and data communicated between bulk electric system Control Centers; and (2) clearly identify the types of data that must be protected.”¹¹³

L. Petition of NERC for Approval of Proposed Reliability Standard CIP-003-8—Cyber Security—Security Management Controls

On May 21, 2019, NERC submitted a petition to FERC for the approval of proposed Reliability Standard CIP-003-8 Cyber Security—Security Management Controls.¹¹⁴ NERC submitted the proposed Reliability Standard pursuant to FERC Order 843, which directed NERC to “develop modifications to CIP-003-8 to mitigate the risk of malicious code that could result from third-party transient electronic devices for low impact BES Cyber Systems.”¹¹⁵

NERC stated that proposed Reliability Standard CIP-003-8 improved the cyber security posture of the Responsible Entities using third-party services by requiring the Responsible Entities to mitigate the risks associated with contracting with third-party vendors.¹¹⁶ Specifically, proposed Reliability Standard CIP-003-8 added a new subsection 5.2.2, which included “additional requirements applicable to Responsible Entities with low impact Systems to mitigate the risks of the introduction of malicious code from third-party Transient Cyber Assets.”¹¹⁷ NERC’s petition is currently pending FERC approval.¹¹⁸

M. IRO-002-6

On May 30, 2019, NERC and WECC filed a joint petition at FERC seeking the approval of proposed Reliability Standard IRO-002-6 (Reliability Coordination – Monitoring Analysis).¹¹⁹

IRO-002-6 added a regional Variance that would apply exclusively to Reliability Coordinators in the Western Interconnection.¹²⁰ NERC explained that at the end of 2019, the Western Interconnection’s sole Reliability Coordinator, Peak Reliability, will dissolve, and several Reliability Coordinators will begin providing services in the Western Interconnection.¹²¹ In order to ensure that the multiple

112. NOPR on CIP-012-1, *supra* note 106, at 1.

113. *Id.* at 3.

114. Petition of the N. Am. Elec. Reliability Corp. for Approval of Proposed Reliability Standard CIP-003-8—Cybersecurity—Security Management Controls, FERC Docket No. RD19-5-000 (May 21, 2019) [hereinafter NERC Petition for CIP-003-8].

115. See NERC Petition for CIP-003-8, *supra* note 114, at 1; see also Order No. 843, *Revised Critical Infrastructure Protection Reliability Standard CIP-003-7—Cyber Security—Security Management Controls*, 163 F.E.R.C. ¶ 61,032 (2018) (codified at 18 C.F.R. pt. 40).

116. See NERC Petition for CIP-003-8, *supra* note 114, at 8-10.

117. *Id.* at 8.

118. See generally *id.*

119. Joint Petition of the N. Am. Elec. Reliability Corp. and W. Elec. Coordinating Council for Approval of Proposed Reliability Standard IRO-002-6, FERC Docket No. 19-16-000 at 1 (May 30, 2019).

120. *Id.* at 4.

121. *Id.* at 3.

Reliability Coordinators work collaboratively with one another, IRO-002-6 will (1) require Reliability Coordinators in the Western Interconnection to develop a common method for “modeling and monitoring of elements necessary for providing situational awareness”; and (2) apply that method when executing their Reliability Coordinator duties.¹²² NERC’s petition was uncontested, and on July 11, 2019, FERC’s Office of Electric Reliability approved Reliability Standard IRO-002-6.¹²³

N. Petition of NERC for Approval of Reliability Standards IRO-002-7, TOP-001-5, and VAR-001-6, Developed Under NERC Standards Efficiency Review

On June 7, 2019, NERC submitted a petition for FERC approval of three proposed Reliability Standards, and the retirement of the currently effective versions of those standards.¹²⁴ The proposed Reliability Standards are: (1) IRO-002-7—Reliability Coordination—Monitoring and Analysis; (2) TOP-001-5—Transmission Operations; and (3) VAR-001-6—Voltage and Reactive Control.¹²⁵ NERC states that the proposals in the petition “originate from the first phase of work under NERC’s Standards Efficiency Review (SER),” an initiative in which the ERO Enterprise worked to identify and review those Reliability Standards “that were administrative in nature, duplicative to other standards, and provided no benefit to reliability.”¹²⁶ NERC states that the SER is a multi-year project to improve efficiency and effectiveness and helps the ERO establish the necessary “risk-based controls to minimize risk” to the bulk power system.¹²⁷

NERC stated that it “proposes to revise the IRO-002 and TOP-001 Reliability Standards to retire three similar requirements related to data exchange capabilities for data needed for next-day planning because they are redundant to other requirements in the TOP and IRO Reliability Standards.”¹²⁸ Specifically, NERC proposed to retire Requirement R1 from IRO-002-5 and Requirements R19 and R22 from TOP-001-4.¹²⁹ For the VAR-001 Reliability Standard, NERC states that it “proposes to retire Requirement R2 of the currently effective standard” because it

122. *Id.* at 4.

123. Joint Petition of the N. Am. Elec. Reliability Corp. and W. Elec. Coordinating Council for Approval of Proposed Reliability Standard IRO-002-6, FERC Docket No. RD19-6-000 (July 11, 2019).

124. Petition of the N. Am. Elec. Reliability Corp. for Approval of Reliability Standards IRO-002-7, TOP-001-5, and VAR-001-6, Developed Under NERC Standards Efficiency Review, FERC Docket No. RM19-17-000 (June 7, 2019) [hereinafter SER Petition—IRO/TOP/VAR].

125. *Id.* at 1.

126. *Id.* at 1-2.

127. *Id.* at 3.

128. *Id.* at 12 (stating that the purpose of Reliability Standards IRO-002-7 and TOP-001-5 remain unchanged. The purpose of IRO-002-7 is “to provide System Operators with the capabilities necessary to monitor and analyze data needed to perform their reliability functions.” The purpose of TOP-001-5 is “to prevent instability, uncontrolled separation, or Cascading outages that adversely impact the reliability of the Interconnection by ensuring prompt action to prevent or mitigate such occurrences.”).

129. SER Petition—IRO/TOP/VAR, *supra* note 124, at 12.

is “redundant to those in other Reliability Standards and is not necessary for reliability.”¹³⁰

O. Standards Efficiency Review—INT/FAC/PRC/MOD

On June 7, 2019, NERC filed a petition for the Approval of Revised and Retired Reliability Standards under NERC Standards Efficiency Review.¹³¹

NERC explained that NERC Standards Efficiency Review is an initiative to streamline NERC’s Reliability Standards by retiring standards and requirements that are overly administrative, redundant, or do not promote improved reliability.¹³² NERC’s petition proposed to: (1) retire ten currently effective reliability standards on the basis that those standards do not improve reliability, and (2) revise four currently effective Reliability Standards “to retire individual requirements.”¹³³

This petition proposed the retirement of the following Reliability Standards in their entirety: (1) FAC-013-2 (Assessment of Transfer Capability for the Near-term Transmission Planning Horizon), (2) INT-004-3.1 (Dynamic Transfers), (3) INT-010-2.1 (Interchange Initiation and Modification for Reliability), (4) MOD-001-1a (Available Transmission System Capability), (5) MOD-004-1 (Capacity Benefit Margin), (6) MOD-008-1 (Transmission Readability Margin Calculation Methodology), (7) MOD-020-0 (Providing Interruptible Demands and Direct Control Load Management Data to System Operators and Reliability Coordinators), (8) MOD-028-2 (Area Interchange Methodology), (9) MOD-029-2a (Rated System Path Methodology), (10) MOD-030-3 (Flowgate Methodology).¹³⁴

This petition also proposed the following Reliability Standards in which individual requirements from the currently effective versions of the standards are retired: (1) FAC-008-4 (Facility Rating), (2) INT-006-5 (Evaluation of Interchange Transaction), (3) INT-009-3 (Implementation Interchange), and (4) PRC-004-6 (Protection System Misoperation Identification and Correction).¹³⁵ At the time of writing, this petition is pending before FERC.

IV. RELIABILITY COMPLIANCE, ENFORCEMENT, AND NOTICE OF PENALTY

A. Significant Filings and Orders

On September 26, 2018, in Docket No. RR18-11-000, NERC, the Midwest Reliability Organization (MRO), and ReliabilityFirst (RF) (Joint Petitioners) requested that FERC approve a registration transfer of Wisconsin Public Service Corporation’s (WPSC) and Upper Michigan Energy Resources Corporation’s

130. *Id.* at 18 (stating that the purpose of Reliability Standard VAR-001-6 remains unchanged, it is “to ensure that voltage levels, reactive flows, and reactive resources are monitored, controlled, and maintained within limits in Real-time to protect equipment and the reliable operation of the Interconnection.”).

131. *See generally* SER Petition—IRO/TOP/VAR, *supra* note 124.

132. *Id.* at 1.

133. *Id.* at 2-4.

134. *Id.* at 2.

135. *Id.* at 3.

(UMERC) NERC registrations from MRO to RF.¹³⁶ The Joint Petitioners explained that the transfer would satisfy FERC's standard that a Regional Entity's boundary change "should be carefully considered and should serve to improve the effectiveness or efficiency of the Regional Entities' and NERC's administration of reliability and should not merely benefit an individual registered entity."¹³⁷ The Joint Petitioners explained that: (i) "WPSC/UMERC's facilities have more geographical and electrical boundaries with RF than with MRO"; (ii) registration transfer "will have a negligible impact on other BPS owners, operators, and users," and that American Transmission Company and Dairyland Power Cooperative will remain Transmission Operators for those WPSC assets they currently operate; and (iii) RF will serve as WPSC/UMERC's Lead Regional Entity for all Compliance Monitoring and Enforcement Program activity pursuant to the Coordinated Oversight Program, allowing RF to maintain regulatory oversight for the entities.¹³⁸ Upon FERC approval, "the parties propos[ed] to amend the Regional Delegation Agreements between NERC and MRO, and NERC and RF, respectively, to reflect the new regional boundaries."¹³⁹ FERC approved this request.¹⁴⁰

On September 28, 2018, in Docket Nos. RR13-3-000 and RR10-1-000, NERC provided its 2018 annual report on Technical Feasibility Exceptions (TFE).¹⁴¹ The reporting period considered TFEs submitted between July 1, 2017 and June 30, 2018. Like last year, the 2018 Annual Report includes TFE data for the suite of Critical Infrastructure Protection (CIP) cybersecurity Reliability Standards, CIP-002-5 through CIP-011-2. Notable items in the report included the following:

- In 2018, 77 entities had active TFEs. Overall, that percentage of registered entities with active TFEs decreased by nearly 50% in 2018. NERC stated that this was due to the transition to CIP Version 5 Standards;
- Each Regional Entity shows a significant reduction in the number of registered entities with TFEs from 2016 to 2017 (i.e., as the CIP version 5 standards were implemented). This trend moderated in 2018 in most regions, although the WECC saw a slight increase in the number of registered entities with TFEs in 2017 followed by a drastic decline in 2018;
- The 2018 Annual Report is the last annual report that will depict TFE data for Southwest Power Pool - Regional Entity (SPP-RE). The dissolution of SPP-RE resulted in the transition of 122 registered entities to MRO and SERC;

136. FERC Docket No. RR18-11-000, *supra* note 12, at 3.

137. *Id.*

138. *Id.* at 4-7.

139. *Id.* at 8.

140. FERC Docket No. RR18-11-000, *supra* note 13.

141. Annual Report of the N. Am. Elec. Reliability Corp. on Wide-Area Analysis of Technical Feasibility Exceptions, FERC Docket Nos. 10-1-000 and RR13-3-000 (Sept. 28, 2018).

- The report states that the availability and utilization of TFEs in lieu of strict compliance has not had an adverse impact on BES reliability.¹⁴²

On October 16, 2018, in Docket No. RR19-1-000, NERC requested that FERC approve its proposed revisions to Appendix 4E (Compliance and Certification Committee (CCC) Hearing Procedures, and Mediation Procedures) of NERC Rules of Procedure (ROP) to align the rules and procedural steps of the Hearing Procedures used in the Compliance Monitoring and Enforcement Program (“CMEP”) as per the CCC Charter. NERC’s proposed updates to Section CCCPP-004 of Appendix 4E included “revisions to clarify ambiguities within the Hearing Procedures” addressing Hearing Panel submissions, “representations deemed to be made before them, Hearing Panel termination and composition, ex parte communication exceptions,” and requirements related to Settlements.¹⁴³ NERC’s proposed revisions to Section CCCPP-006 are not substantive, but instead update the Mediation Procedures to match NERC’s most recent template and formatting changes.¹⁴⁴ FERC accepted all these changes.¹⁴⁵

On November 1, 2018, in Docket No. RC11-6-000, NERC provided its annual report on the Find, Fix & Track (FFT) program for remediating minor Reliability Standard violations. Under the FFT program, NERC and Regional Entities dispose of noncompliance posing a lesser risk to the reliability of the bulk power system in an abbreviated spreadsheet format without the imposition of a monetary penalty. Building on the success of the FFT program, the ERO Enterprise developed the Compliance Exception (CE) “program in February 2014 to streamline further the resolution of lesser-risk noncompliance with NERC Reliability Standards.”¹⁴⁶ FERC approved this report.¹⁴⁷

In 2018, NERC and FERC staff completed their annual joint coordinated review of FFTs and the second annual joint review of CEs and found that the ERO Enterprise appropriately handles noncompliance posing a minimal or moderate risk through these programs.¹⁴⁸ “[T]he percentage of noncompliance resolved through FFT increased from 21% of moderate risk noncompliance in 2015 to 45% in 2018 through” the second quarter of 2018.¹⁴⁹ “In addition, the ERO Enterprise used CEs to resolve 91.6% of the minimal risk noncompliance in 2017, and 87.6% in 2018 through” the second quarter of 2018.¹⁵⁰ The review included

(a) [an] evaluat[ion] [of] the Regional Entities’ current FFT and CE procedures and processes; (b) [a] review[] [of] a sample of minimal and moderate risk issues processed as FFTs and CEs; (c) [an] assess[ment] [of the] successful completion of mitigation for FFTs and CEs requiring the performance of ongoing mitigation activities;

142. *Id.* at 3-4.

143. FERC Docket No. RR19-1-000, *supra* note 1.

144. *Id.*

145. FERC Docket No. RR19-1-000, *supra* note 2.

146. N. Am. Elec. Reliability Corp. Annual Report on the Find, Fix, Track and Report and Compliance Exception Programs, FERC Docket No. RC11-6-000 (Nov. 1, 2018) [hereinafter NERC FFT Report 2018].

147. Letter Order, *N. Am. Elec. Reliability Corp.*, FERC Docket No. RC11-6-008 (Jan. 24, 2019).

148. NERC FFT Report 2018, *supra* note 146, at 1-2.

149. *Id.* at 4.

150. *Id.* at 5.

(d) [an] evaluat[ion] [of] the Regional Entities' assessment of registered entities' internal controls; (e) identif[ying] region-specific best practices and areas for improvement; and (f) provid[ing] observations to the Regional Entities related to the completeness of the programs.¹⁵¹

B. Significant Penalties

In the time period covered by this report, NERC continued its progress in filing Notices of Penalty with higher penalty amounts.¹⁵² In Docket No. NP18-24, AEP Texas Inc. and Public Service Company of Oklahoma (AEPSC) settled two violations of a Reliability Standard.¹⁵³ "AEPSC neither admit[ted] nor denie[d] the violations," and was assessed a \$225,000 penalty "in addition to other remedies and actions."¹⁵⁴ "Texas RE determined that AEPSC did not establish Facility Ratings for its solely and jointly owned Facilities that are consistent with the associated Facility Ratings Methodology" and "determined that AEPSC did not provide accurate Facility Ratings" to its RC.¹⁵⁵

In Docket No. NP19-4, NERC filed a NERC submitted Notice of Penalty regarding a settlement that a set of undisclosed companies (Companies) entered into with multiple Regional Reliability Entities (REs) to resolve 127 violations of at least nine separate (CIP Reliability Standards.¹⁵⁶ The Companies agreed to an assessed penalty of \$10,000,000, the largest NERC-imposed fine ever assessed and the largest penalty for reliability standard violations outside of a bulk-power system disturbance.

The penalty amount resulted from violations discovered during CIP Compliance Audits and through Self-Reports the companies submitted from 2015 through 2018. The violations involved the following CIP Standards: CIP-002, CIP-003, CIP-004, CIP-005, CIP-006, CIP-007, CIP-009, CIP-010, CIP-011, and CIP-014.¹⁵⁷ The Notice provides detailed descriptions of each of the violations. Thirteen of the violations were characterized by the REs as posing a serious and substantial risk to the reliability of the BPS. For example, the Companies were alleged to have granted employees and vendors unnecessary physical and electronic access to cyber assets and did not conduct access verification reviews in compliance with CIP-004-6 R4.¹⁵⁸ Additionally, many of the violations lasted for significant amounts of time. For example, the Notice explained that the Companies failed to protect Critical Cyber Asset (CCAs) information in accordance with their information protection program.¹⁵⁹ The violation started when the Companies failed to mark CCA information and ended when the Companies effectively revoked access

151. *Id.* at 6.

152. *Id.* at 5.

153. NERC Full Notice of Penalty Regarding American Electric Power Service Corp. as Agent for AEP Texas Inc. and Public Service Company of Oklahoma, FERC Docket No. NP18-24 -000 (Aug. 30, 2018).

154. *Id.*

155. *Id.* at 2.

156. Motion to Intervene and Request of Public Citizen, Inc. for the Commission to Direct the Public Release of the Violator Under 18 C.F.R. § 39.7(b)(4), FERC Docket No. NP19-4 (Feb. 19, 2019).

157. *Id.*

158. FERC Docket No. NP19-4 -000 (Jan. 25, 2019).

159. *Id.* at 17.

rights to unauthorized personnel fifty-one months later. For almost all the violations, the Notice explains that the primary causes of the issues were “managerial oversight” with contributing causes including deficient procedures, inadequate training, and a lack of internal controls, among other things.¹⁶⁰ Overall the REs determined that the 127 violations collectively posed a serious risk to the security and reliability of the bulk power system.

In addition to mitigation measures and the penalty amounts, the Companies also committed to engage in the following activities: (i) “[i]ncreasing senior leadership involvement and oversight”; (ii) “[c]reating a centralized CIP oversight department and restructuring roles within that department to focus on areas such as Standards, Enterprise Oversight, Enterprise CIP Tools, compliance metrics, and regulatory interactions”; (iii) “[c]onducting industry surveys and benchmark discussions to help develop best practices relating to sustainable security and compliance practices”; and (iv) “[c]ontinuing to develop an in-house CIP program and talent development program.”¹⁶¹ The “Companies [also] committed to implement measures” which will “support and assist [their] staff in implementing a sustainable CIP compliance program.”¹⁶²

In Docket No. NP19-9, FRCC and an Unidentified Registered Entity (URE) entered into a settlement to resolve 10 violations of 4 CIP Reliability Standards for \$301,000.¹⁶³ All 10 violations were submitted as Self-Reports, with the majority of the Self-Reports submitted after URE received an audit notification letter. Historically, URE was “compliant with the CIP Standards; however, during the transition from CIP Version 3 to CIP Version 5, [URE] had a breakdown in compliance with the CIP Standards.”¹⁶⁴ The violations demonstrated “insufficient management oversight, a lack of internal controls, and poorly documented and poorly followed processes and procedures.”¹⁶⁵

In Docket No. NP19-10, an unidentified Regional Entity and a URE entered into a settlement to resolve 13 CIP violations for \$1,000,000.¹⁶⁶ The Notice of Penalty noted that the violations were all considered repeat violations, which was an aggravating factor.¹⁶⁷ In addition, many of the violations were considered to create serious or substantial risk.

In Docket No. NP19-11, an unidentified Regional Entity and a URE entered into a settlement to resolve 12 CIP violations for \$1,000,000, all of which appear

160. *Id.* at 26.

161. *Id.* at 11.

162. *Id.*

163. NERC Full Notice of Penalty Regarding Unidentified Registered Entity, FERC Docket No. NP19-9 - 000 (Apr. 30, 2019).

164. *Id.*

165. *Id.* at 4.

166. NERC, COMPLIANCE MONITORING AND ENFORCEMENT PROGRAM QUARTERLY REPORT (Aug. 14, 2019), <https://www.nerc.com/pa/comp/CE/Compliance%20Violation%20Statistics/Compliance%20Monitoring%20and%20Enforcement%20Program%20Q2%202019%20Report.pdf#search=NP19%2D>.

167. *Id.*

to have been identified during a compliance audit.¹⁶⁸ The entity's prior compliance history was considered an aggravating factor, and some of the violations were considered serious or substantial risk.¹⁶⁹

In Docket No. NP19-14, SERC and a group of UREs entered into a settlement to resolve 21 CIP violations for \$775,000.¹⁷⁰ The Notice of Penalty noted that the violations stemmed from the UREs' transition to CIP Version 5 and that the UREs "were formalizing a CIP [compliance] program when the standards became effective."¹⁷¹ Three of the violations were considered to create serious or substantial risk to reliability.¹⁷² For several of the violations, the root cause was "a lack of managerial oversight."¹⁷³

V. RELIABILITY REPORTS AND ASSESSMENTS

A. 2018 Generation Retirement Scenario Special Reliability Assessment

On December 18, 2018, NERC issued a special reliability assessment regarding generation retirement scenarios, as part of NERC's ongoing efforts to assess the potential implications of the changing generation resource mix on the reliability of the North American bulk power system and to provide recommendations to address the identified risks.¹⁷⁴ The purpose of the assessment was to product a stress-test scenario, and not a predictive forecast.¹⁷⁵ NERC's "key conclusion [was] that [ongoing] generator retirements . . . are disproportionately affecting large baseload, solid-fuel generation" such as coal and nuclear.¹⁷⁶ NERC stated that if these retirements outpace the system's response "with replacement generation, including any necessary transmission facilities or replacement fuel infrastructure, [then] significant reliability problems could occur."¹⁷⁷ It recommended that state and provincial resource planners, "as well as wholesale electric[] market operators, should use their full suite of tools to manage the pace of retirement and ensure replacement infrastructure can be developed and placed in service."¹⁷⁸ Additionally, new transmission and fuel infrastructure will likely be needed to ensure reliability throughout the next several years of significant retirement.¹⁷⁹

168. *Id.*

169. *Id.*

170. NERC Full Notice of Penalty Regarding Unidentified Registered Entity, FERC Docket No. NP19-4-000 (June 27, 2019).

171. *Id.* at 2-4.

172. *Id.* at 7.

173. *Id.* at 12.

174. N. AM. ELEC. RELIABILITY CORP., GENERATION RETIREMENT SCENARIO (Dec. 18, 2018), https://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/NERC_Retirements_Report_2018_Final.pdf.

175. *Id.* at v.

176. *Id.*

177. *Id.*

178. *Id.*

179. GENERATION RETIREMENT SCENARIO, *supra* note 174, at v.

B. 2018 Long Term Reliability Assessment

On December 20, 2018, NERC issued its 2018 Long-Term Reliability Assessment.¹⁸⁰ Based on its key findings, NERC recommended doing the following: (1) “enhance [its] reliability assessment process”; (2) “develop guidelines to assess fuel limitations and disruption scenarios”; (3) “improve interconnection frequency response modeling”; (4) “ensure system studies incorporate” distributed energy resources; and (5) “ensure sufficient flexible ramping capacity, including large-scale energy storage, needed to offset variable energy production.”¹⁸¹

C. Summer Assessments

On August 14, 2018, NERC issued its 2018 summer reliability assessment, covering the four-month summer period between June and September 2018.¹⁸² The assessment’s key findings included the following: (1) “[t]he majority of assessment areas maintain sufficient resources to meet and exceed their Planning Reference Margin Levels for this summer,” although certain areas (e.g., Texas RE-ERCOT) face additional operating challenges from either a resource shortfall or a diminishing resource surplus; (2) “[a]lthough MISO projects adequate reserves, more frequent reliance on behind-the-meter generation and demand response” means that “MISO operators will have to . . . initiate emergency operating procedures more often than in the past”; (3) CAISO faces significant risk of encountering operating conditions that could result in operating reserve shortfalls; (4) internal and external market monitors should continue to assess ISO-NE’s new Pay-for-Performance market design, scheduled for implementation on June 1, 2018; (5) NERC “continues to raise awareness on inverter-based resource performance through [] alerts and industry outreach”; “WECC staff reported significant efforts on the potential loss of solar generation associated with inverter controls”; and (6) “[d]espite substantial progress . . . in coordinating the interdependencies between natural gas and electric infrastructure, the growing reliance on natural gas continues to raise bulk power system reliability concerns. “Planning approaches, operational procedures and regulatory partnerships are needed to assure fuel deliverability, availability, security (physical and cyber), and resilience from potential disruptions.”¹⁸³

On June 3, 2019, NERC issued its 2019 summer reliability assessment, covering the four-month summer period between June and September 2019.¹⁸⁴ The assessment’s key findings included the following:

- (1) ERCOT anticipates Energy Emergency Alerts may be needed to address resource shortfalls during periods of peak demand;
- (2) most assessment areas meet or exceed

180. N. AM. ELEC. RELIABILITY CORP., 2018 LONG-TERM RELIABILITY ASSESSMENT (Dec. 2018), https://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/NERC_LTRA_2018_12202018.pdf.

181. *Id.* at 9.

182. N. AM. ELEC. RELIABILITY CORP., 2018 SUMMER ASSESSMENT (Aug. 14, 2018), https://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/NERC_SRA_05252018_Final.pdf.

183. *Id.* at 6.

184. N. AM. ELEC. RELIABILITY CORP., 2019 SUMMER ASSESSMENT (June 3, 2019), https://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/NERC_SRA_2019.pdf.

reference margin levels and have sufficient electricity resources for anticipated conditions and more extreme scenarios; (3) California faces ramping capability concerns; (4) natural-gas-fired electric generation in Southern California will continue to need fuel from natural gas storage facilities for summer reliability; and (5) elevated risk for wildfires in the Western United States and parts of Canada poses risk to bulk power system reliability.¹⁸⁵

D. Winter Assessments

On December 12, 2018, NERC issued its 2018/2019 winter reliability assessment, which covers the December 2018-February 2019 winter period.¹⁸⁶ The report's key findings were: (1) anticipated resources in all areas meet or exceed their respective reference margin levels for the upcoming winter period; (2) generator unit winter preparedness programs continue to receive significant attention as a means to mitigate seasonal reliability risks; (3) incentives in market areas that target generator performance (e.g., ISO-NE's pay for performance) represent a useful tool for incentivizing generator performance during extreme weather conditions; (4) entities are implementing processes and strategies to reduce risks of generator fuel supply issues; and (5) "natural gas constraints in southern California continue to have the potential to impact electric generators in extreme conditions."¹⁸⁷

VI. GRID SECURITY AND CRITICAL ASSET SECURITY

A. Joint FERC/DOE-led Technical Conference on Grid Security

On March 28, 2019, FERC held a joint technical conference with the Department of Energy (DOE) regarding security investments for energy infrastructure.¹⁸⁸ The purpose of the technical conference was to identify: (1) the need for security investments beyond those of the NERC Reliability Standards; (2) methods for cost recovery of those investments; and (3) the necessity and design of additional incentives for making such investments.¹⁸⁹

B. NERC E-ISAC Updates

In May 2018, NERC E-ISAC announced a partnership with the Large Public Power Council launching an initiative called the Industry Augmentation Program that fosters enhanced collaboration and information sharing with member utilities by inviting utility staff for multi-day visits to work alongside E-ISAC personnel.¹⁹⁰ The program's goals include: (1) "[r]aising awareness of E-ISAC cyber and physical security analysis processes, data protections and the separation from NERC's

185. *Id.* at 4.

186. N. AM. ELEC. RELIABILITY CORP., 2018/2019 WINTER RELIABILITY ASSESSMENT (Dec. 12, 2018), https://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/NERC_WRA_2018_2019_Draft.pdf.

187. *Id.* at 5-6.

188. Notice of Technical Conference re Security Investments for Energy Infrastructure Technical Conference, FERC Docket No. AD19-12-000 (Feb. 4, 2019).

189. *Id.*

190. N. AM. ELEC. RELIABILITY CORP., E-ISAC EXPANDS INDUSTRY ENGAGEMENT PROGRAM (May 7, 2018), <https://www.nerc.com/news/Documents/EISAC%20Augmentation%20Announcement%2007May18.pdf>.

compliance functions”; (2) “[i]ncreasing opportunities for E-ISAC to receive feedback from industry on tools and communications protocols”; and (3) “strengthening utility security programs and staff expertise.”¹⁹¹

On January 16, 2019, NERC, E-ISAC, and the Water Information Sharing and Analysis Center (WaterISAC) “launched a new security partnership aimed at enhancing cross-sector coordination and taking advantage of the interdependencies of the electricity and water industries.”¹⁹² Under this partnership, “staff from WaterISAC will join the E-ISAC in Washington, D.C., to improve coordination on potential security risks related to the supply of electricity to water and wastewater treatment plants, and the supply of water to electric utilities for cooling power plant turbines and for office operations.”¹⁹³

Then on February 27, 2019, NERC E-ISAC and the MultiState Information Sharing & Analysis Center (MS-ISAC) “announced an agreement to improve information sharing among the organizations and their members with the goal of strengthening the cyber security of the nation’s critical electric infrastructure.”¹⁹⁴ The Department of Homeland Security “has designated MS-ISAC as the key cybersecurity resource for state, local tribal and territorial governments, including chief information officers, Homeland Security advisors and fusion centers.”¹⁹⁵

Through a variety of tools, the E-ISAC and WaterISAC, and MS-ISAC monitor and “analyze potential physical and cyber security threats” to their respective industries and “use their respective secure portals to alert and advise members on mitigating [real] threats.”¹⁹⁶ The goals of the E-ISAC partnerships include: (1) improving “security collaboration on common threat information and incident response”; (2) providing “joint analysis of security concerns and events”; (3) advancing “shared processes for information sharing and situational awareness”; and (4) improving “information sharing among all ISACs . . . agree[ing] to use existing policies and procedures for safeguarding sensitive information under the partnership.”¹⁹⁷

C. Executive Order No. 13,865

On March 26, 2019, the President of the United States issued an Executive Order on Coordinating National Resilience to Electromagnetic Pulses (EMP).¹⁹⁸ The Executive Order calls for collaboration and information sharing among government agencies and private industry as appropriate to promote resilience to

191. *Id.*

192. E-ISAC, NERC, NERC, WATER SECTOR LAUNCH SECURITY INFORMATION SHARING EFFORT TO PROMOTE CROSS-SECTOR COLLABORATION (Jan. 16, 2019), <https://www.nerc.com/news/Headlines%20DL/WaterISAC%20Announcement%2014JAN19.pdf>.

193. *Id.*

194. N. AM. ELEC. RELIABILITY CORP., NERC, COMMUNITY-OWNED UTILITIES GROUP LAUNCH INFORMATION SHARING PARTNERSHIP TO STRENGTHEN GRID’S CYBER, PHYSICAL SECURITY (Feb. 27, 2019), <https://www.nerc.com/news/Headlines%20DL/MS-ISAC%20Announcement%2027FEB19%20final.pdf>.

195. *Id.*

196. *Id.*

197. *Id.*

198. Exec. Order No. 13,865, 84 Fed. Reg. 12,041 (Mar. 29, 2019).

EMPs, particularly with regard to “threat and vulnerability assessments.”¹⁹⁹ The Executive Order also directed the federal government to provide incentives as appropriate to “encourage innovation that strengthens critical infrastructure against the effects of EMPs through the development and implementation of best practices, regulations, and appropriate guidance.”²⁰⁰ The Executive Order assigned various agencies different areas of focus. Of particular relevance, the Executive Order tasks the Secretary of Energy to perform initial research and development and develop pilot programs that would identify potential failures modes, contingency preparedness, and mitigations regarding the risk to the electric power grid.²⁰¹

“In April 2019, NERC launched [its own] efforts to identify reliability concerns associated with [EMPs] and potential methods for promoting resilience.”²⁰² NERC created “a task force to identify key issues and scope areas of improvement for the industry.”²⁰³ The task force will also submit, as necessary, “best practices and reliability guidelines to NERC technical committees for review and endorsement.”²⁰⁴ And if necessary, submit a standards authorization request to the NERC Standards Committee by the end of the year.²⁰⁵

Also, in April 2019, the Electric Power Research Institute (EPRI) released a report defining “the EMP threat, assess[ing] vulnerabilities/risks, and [making] mitigation recommendations, in addition to laying the groundwork for the technical basis to develop a potential” NERC Reliability Standard.²⁰⁶ The EPRI report highlights a DOE action plan from January 2017 on EMP Resilience.²⁰⁷ The project had five areas of focus: 1) to “improve and share understanding of EMP threats, effects, and impacts”; 2) to identify priority infrastructure; 3) to “test and promote mitigation and protection approaches”; 4) to “enhance response and recovery capabilities”; and 5) to “share best practices across government and industry.”²⁰⁸

VII. OTHER FERC RELIABILITY INITIATIVES

A. FERC/DOE-led Technical Conference on Grid Security

On June 27, 2019, FERC held a technical conference regarding policy issues related to the reliability of the bulk power system.²⁰⁹ Panelists at the technical

199. *Id.* at 12,042.

200. *Id.*

201. *Id.* at 12,043.

202. N. AM. ELEC. RELIABILITY CORP., ELECTROMAGNETIC PULSES TASK FORCE, <https://www.nerc.com/pa/Stand/Pages/EMPTaskForce.aspx>.

203. *Id.*

204. *Id.*

205. *Id.*

206. *Id.*

207. ELECTROMAGNETIC PULSES TASK FORCE, *supra* note 202.

208. *Id.*

209. Supplemental Notice of Reliability Technical Conference, FERC Docket No. AD19-13-000, (June 13, 2019).

conference discussed four topics.²¹⁰ First, the status of NERC as the electric reliability organization and bulk power system reliability.²¹¹ Second, how cloud-based services and virtualization impacts system operations, planning, and security.²¹² Third, challenges and opportunities due to changes in communications.²¹³ Finally, the existing and emerging seams issues between reliability coordinators.²¹⁴

B. 2019 FERC and NERC Staff Report: The South Central United States Cold Weather Bulk Electric System Event of January 17, 2018

On July 18, 2019, FERC staff, in consultation with NERC staff and the REs, released a report stressing the need for generation owners and operators to prepare for winter weather conditions adequately to ensure bulk power system reliability (Report).²¹⁵ The Report analyzed an event occurring in January 2018, when “a large area of the south central region of the United States experienced unusually cold weather . . . result[ing] in a total of 183 individual generating units . . . experiencing either an outage, a derate, or a failure to start.”²¹⁶ The report found that the majority of these problems “were attributable, either directly or indirectly, to the cold weather itself.”²¹⁷ Specifically, attributable to the “failure to properly prepare or ‘winterize’ the generation facilities for cold temperatures.”²¹⁸ Issues with adequate supply of natural gas also contributed to the January 2018 cold weather event.

Based on the staff analysis of the January 2018 cold weather event, the Report recommended a “three-pronged approach” to improve the reliability of the BPS during extreme cold weather.²¹⁹ First, the Report found NERC should develop or enhance mandatory Reliability Standards to ensure generator owners and operators prepare for cold weather and provide their reliability coordinators and balancing authorities with information on their preparations.²²⁰ The Report also recommends enhanced outreach to generator owners and operators.²²¹ Finally, the Report recommends market incentives for those generator owners and operators in organized markets.²²²

210. *Id.* at 2.

211. *Id.*

212. *Id.*

213. *Id.*

214. FERC Docket No. AD19-13-000, *supra* note 209.

215. FED. ENERGY REG. COMM’N & N. AM. ELEC. RELIABILITY CORP., THE SOUTH CENTRAL UNITED STATES COLD WEATHER BULK ELECTRIC SYSTEM EVENT OF JANUARY 17, 2018 (July 2019), <https://www.ferc.gov/legal/staff-reports/2019/07-18-19-ferc-nerc-report.pdf>.

216. *Id.* at 6.

217. *Id.* at 10.

218. *Id.* at 80.

219. *Id.* at 86.

220. THE SOUTH CENTRAL UNITED STATES COLD WEATHER BULK ELECTRIC SYSTEM EVENT OF JANUARY 17, 2018, *supra* note 215, at 86.

221. *Id.*

222. *Id.*

The report also had 13 other recommendations it directed to specific entities.²²³ For example, the report recommended to reliability coordinators that they “perform real-time voltage stability analysis,”²²⁴ benchmark models to actual events,²²⁵ perform periodic impact studies,²²⁶ and revise certain procedures to enhance communications.²²⁷ The report recommended that balancing authorities and transmission operators “conduct periodic capacity and energy emergency drills.”²²⁸ The report recommended that transmission planners and planning authorities develop and study more-extreme condition modeling.²²⁹ To address system operating limit issues, the report recommended transmission owners and operators to analyze the difference between summer and winter facility ratings and provide any limits and ratings to their reliability coordinator and other applicable entities.²³⁰ The report also noted five “sound practices” for transmission-related entities and 16 for generation entities involved in the event that went beyond actions required by NERC Reliability Standards.²³¹

223. *Id.* at 86-99.

224. *Id.* at 90.

225. THE SOUTH CENTRAL UNITED STATES COLD WEATHER BULK ELECTRIC SYSTEM EVENT OF JANUARY 17, 2018, *supra* note 215, at 91.

226. *Id.*

227. *Id.* at 92.

228. *Id.* at 91.

229. *Id.* at 94.

230. THE SOUTH CENTRAL UNITED STATES COLD WEATHER BULK ELECTRIC SYSTEM EVENT OF JANUARY 17, 2018, *supra* note 215, at 96-97.

231. *Id.* at 99.

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