
**UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**

**NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION**

) **Docket No. RR10-1-____**
) **Docket No. RR13-3-____**

**ANNUAL REPORT
OF THE NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION
ON WIDE-AREA ANALYSIS OF TECHNICAL FEASIBILITY EXCEPTIONS**

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I. INTRODUCTION

The North American Electric Reliability Corporation (“NERC”) hereby provides the 2014 Annual Report on Wide-Area Analysis of Technical Feasibility Exceptions (the “2014 Annual Report”) in compliance with Paragraphs 220 and 221 of the Federal Energy Regulatory Commission’s (“FERC” or “Commission”) Order No. 706¹ and Appendix 4D of the NERC Rules of Procedure (“ROP”).

In Order No. 706, FERC approved eight Critical Infrastructure Protection (“CIP”) Reliability Standards and, among other things, directed NERC to develop a set of conditions or criteria that a Responsible Entity must follow to obtain a Technical Feasibility Exception (“TFE”) from specific requirements in the CIP Reliability Standards.² The Commission stated that the TFE process must include: mitigation steps, a remediation plan, a timeline for eliminating the use of the TFE unless appropriate justification otherwise is provided, regular review of the continued need for the TFE, internal approval by senior managers, and regional approval through the Electric Reliability Organization (“ERO”).³

Order No. 706 also required that NERC submit an annual report to the Commission that provides a wide-area analysis of the use of TFEs and their effect on Bulk-Power System reliability.

The Commission stated:

The annual report must address, at a minimum, the frequency of the use of such provisions, the circumstances or justifications that prompt their use, the interim mitigation measures used to address vulnerabilities, and efforts to eliminate future reliance on the exception. . . [T]he report should contain aggregated data with sufficient detail for the Commission to understand the frequency with which

¹ *Mandatory Reliability Standards for Critical Infrastructure Protection*, 122 FERC ¶ 61,040 (January 18, 2008) (“Order No. 706”).

² *Id.* at P 178.

³ *Id.* at P 222.

specific provisions are being invoked as well as high level data regarding mitigation and remediation plans over time and by region⁴

In October 2009, NERC filed amendments to its ROP to implement the Commission's directive in Order No. 706, proposing Section 412 (Requests for Technical Feasibility Exceptions to NERC Critical Infrastructure Protection Reliability Standards) and Appendix 4D (Procedure for Requesting and Receiving Technical Feasibility Exceptions to NERC Critical Infrastructure Protection Reliability Standards). In a January 21, 2010 order, the Commission approved NERC's amended ROP.⁵

On April 8, 2013, NERC filed revisions to Appendix 4D of the ROP to streamline the TFE approval process reflecting NERC, Regional Entity and industry experience processing TFE requests since the inception of the program. On September 3, 2013, FERC approved the proposed revisions and directed limited revisions to Appendix 4D, including modifications to: (1) specify a time frame for reporting Material Changes to TFEs upon identification and discovery; and (2) require the annual TFE report to include information on Material Change Reports and TFE expiration dates.⁶ NERC submitted a compliance filing consistent with the directives from the September 2013 Order, which the Commission approved on January 30, 2014.⁷ Sections 11.2.4 and 13 of Appendix 4D set forth the requirements for the annual TFE report, as modified in

⁴ *Id.* at P 220.

⁵ *North American Electric Reliability Corp.*, 130 FERC ¶ 61,050 (2010), *order on compliance*, 133 FERC ¶ 61,008 (2010) (October 1 Order), *order on reh'g*, 133 FERC ¶ 61,209 (2010), *order on compliance*, 135 FERC ¶ 61,026 (2011) (April 12 Order). The Commission requested further information and clarification regarding certain aspects of the TFE process. On April 21, 2010, NERC submitted its compliance filing in response to the January 21 Order. On October 1, 2010, the Commission issued an order accepting NERC's April 2010 filing as partially compliant and directing further changes to the TFE Procedure. October 1 Order, 133 FERC ¶ 61,008. On December 23, 2010, NERC submitted a compliance filing in response to the Commission's October 1 Order, which the Commission subsequently accepted. April 12 Order, 135 FERC ¶ 61,026.

⁶ *North American Electric Reliability Corporation*, 144 FERC ¶ 61,180 (2013) ("September 2013 Order").

⁷ Letter Order, Docket No. RR13-3-001 (Jan. 30, 2014).

accordance with the September 2013 Order. The 2014 Annual Report includes the information required by the September 2013 Order.

II. NOTICES AND COMMUNICATIONS

Notices and communications with respect to this filing may be addressed to:

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III. 2014 ANNUAL REPORT

In accordance with Appendix 4D of the ROP, NERC prepared the 2014 Annual Report in consultation with the Regional Entities. The Regional Entities provided regular reports to NERC regarding the types of Covered Assets for which the Regional Entities have approved TFEs.⁸ In addition, each Regional Entity provided information on the 10 elements identified in Section 13 of Appendix 4D to be included in the 2014 Annual Report. NERC compiled and analyzed the TFE data provided by the Regional Entities in preparation for the 2014 Annual Report.

In addition to the new information required by the September 2013 Order regarding Material Change Reports and TFE expiration dates, there are two other differences between the 2014 Annual Report and prior annual reports. First, as a result of the new streamlined TFE process approved in the September 2013 Order, there is no longer a two-step process for evaluating TFE requests. Prior to the revisions, the Regional Entities would conduct an initial review to determine

⁸ As defined in Appendix 4D, a Covered Asset is a Cyber Asset or Critical Cyber Asset that is subject to a TFE.

whether the request was complete and could move to a formal ERO review (i.e., initial acceptance or rejection). Data regarding this initial step was included in prior annual reports.⁹ As that initial step is no longer part of the TFE approval process and a request for a TFE proceeds directly to formal review, the 2014 Annual Report does not include any data on initial acceptances or rejections, only the number of TFE requests that were submitted and approved/disapproved.

Second, during the course of the reporting period for the 2014 Annual Report, Requirement R2.6 of Reliability Standard CIP-005-3a was retired.¹⁰ Because TFEs for CIP-005-3a, Requirement R2.6 were only applicable for a portion of the reporting period and are not relevant going forward, the 2014 Annual Report does not include data on TFEs for CIP-005-3a, Requirement R2.6.

a. Elements Required by Appendix 4D, Section 13.1

The following is a summary of the TFE data reported by each Regional Entity for the 10 elements identified in Section 13.1 of Appendix 4D:¹¹

1. *The frequency of use of the TFE Request process, disaggregated by Regional Entity and in the aggregate for the United States and for the jurisdictions of other Applicable Governmental Authorities, including (A) the numbers of TFE Requests that have been submitted, accepted/rejected, and approved/disapproved during the preceding year and cumulatively since the effective date of this Appendix, (B) the numbers of unique Covered Assets for which TFEs have been approved, (C) the numbers of approved TFEs that are still in effect as of on or about the date of the Annual Report; (D) the numbers of approved TFEs that reached their Expiration Dates or were terminated during the preceding year;*

⁹ Tables 2 and 3 of the 2013 Annual Report included information on the initial acceptances and rejections, respectively.

¹⁰ *Electric Reliability Organization Proposal to Retire Requirements in Reliability Standards*, 145 FERC ¶ 61,147 (2013).

¹¹ Unless stated otherwise, a table or reference to “2014” refers to the reporting period for this report: July 1, 2013 – June 30, 2014.

and (E) the numbers of approved TFEs that are scheduled to reach their Expiration Dates during the ensuing year.

a. TFE Requests that have been Submitted and Approved/Disapproved

During the 2014 reporting period (July 1, 2013 through June 30, 2014) there were 692 new TFE requests submitted, of which 611 were approved. For purposes of this report, “submitted” indicates a new request (as opposed to an amendment or change to a previously received request).¹² Table 1, below, provides the number of new TFE requests submitted to the ERO during the 2014 reporting period per CIP requirement and Region.

U.S. Entities only	Table 1: Requests for New TFEs Submitted during Report Period								
	FRCC	MRO	NPCC	RF	SERC	SPP	TRE	WECC	Total
005 R2.4	0	0	1	0	2	2	0	0	5
005 R3.1	0	0	0	3	1	0	0	2	6
005 R3.2	0	0	1	4	13	1	0	3	22
006 R1.1	0	0	0	7	6	0	0	0	13
007 R2.3	0	0	3	9	8	2	3	25	50
007 R3	14	4	0	10	3	9	7	9	56
007 R4	13	3	31	35	45	13	13	65	218
007 R5.3	4	2	11	10	22	13	6	21	89
007 R5.3.1	0	0	0	5	5	2	0	9	21
007 R5.3.2	3	0	6	17	15	2	7	11	61
007 R5.3.3	2	0	6	11	15	2	2	9	47
007 R6	2	3	6	13	22	7	4	30	87
007 R6.3	0	0	5	1	4	2	1	4	17
Totals	38	12	70	125	161	55	43	188	692

Table 2 shows the number of those new TFE requests that were approved and Table 3 shows the number of those new TFE requests that were disapproved during the 2014 report period.

¹² Information regarding amendment to active TFEs approved during the 2014 reporting period is provided below in Table 13.

U.S. Entities only	Table 2: TFE Requests Submitted & Approved during Report Period								
	FRCC	MRO	NPCC	RF	SERC	SPP	TRE	WECC	Total
005 R2.4	0	0	1	0	1	1	0	0	3
005 R3.1	0	0	0	2	1	0	0	2	5
005 R3.2	0	0	1	4	13	1	0	3	22
006 R1.1	0	0	0	6	5	0	0	0	11
007 R2.3	0	0	3	8	7	2	2	25	47
007 R3	6	4	0	10	2	7	1	9	39
007 R4	12	3	31	31	34	13	12	60	196
007 R5.3	3	3	11	9	22	12	6	21	87
007 R5.3.1	0	0	0	4	2	2	0	8	16
007 R5.3.2	3	0	6	11	8	2	6	10	46
007 R5.3.3	2	0	6	9	11	2	2	7	39
007 R6	1	3	6	13	21	7	4	29	84
007 R6.3	0	0	5	1	4	2	0	4	16
Totals	27	13	70	108	131	51	33	178	611

U.S. Entities only	Table 3: TFE Requests Submitted & Disapproved during Report Period								
	FRCC	MRO	NPCC	RF	SERC	SPP	TRE	WECC	Total
005 R2.4	0	0	0	0	1	1	0	0	2
005 R3.1	0	0	0	1	0	0	0	0	1
005 R3.2	0	0	0	0	0	0	0	0	0
006 R1.1	0	0	0	1	1	0	0	0	2
007 R2.3	0	0	0	1	1	0	1	0	3
007 R3	8	0	0	0	1	2	6	0	17
007 R4	0	0	0	4	11	0	1	5	21
007 R5.3	0	-1	0	1	0	1	0	0	1
007 R5.3.1	0	0	0	1	3	0	0	1	5
007 R5.3.2	0	0	0	6	7	0	1	1	15
007 R5.3.3	0	0	0	2	4	0	0	2	8
007 R6	0	0	0	0	1	0	0	1	2
007 R6.3	0	0	0	0	0	0	1	0	1
Totals	8	-1	0	17	30	4	10	10	78

Table 4 provides the cumulative total of TFE requests submitted since the program's inception, including the 2014 reporting period.

U.S. Entities only	Table 4: TFE Requests Submitted - Cumulative (new submissions and amendments)								
	FRCC	MRO	NPCC	RF	SERC	SPP	TRE	WECC	Total
005 R2.4	2	12	2	10	6	3	16	42	93
005 R3.1	1	0	0	17	2	2	0	32	54
005 R3.2	5	12	4	13	35	17	106	84	276
006 R1.1	12	14	0	74	29	2	13	15	159
007 R2.3	57	31	7	117	84	12	84	237	629
007 R3	23	25	5	101	25	20	13	51	263
007 R4	138	168	66	856	391	165	378	1087	3249
007 R5.3	83	46	45	465	223	50	96	217	1225
007 R5.3.1	22	14	6	76	99	18	107	154	496
007 R5.3.2	71	49	35	337	205	45	151	245	1138
007 R5.3.3	45	55	18	169	87	28	105	201	708
007 R6	53	44	13	235	174	30	141	391	1081
007 R6.3	47	24	11	89	82	15	96	180	544
Totals	559	494	212	2559	1442	407	1306	2936	9915

Tables 5 and 6 show the cumulative number of TFEs that the ERO has approved and disapproved, respectively, since the inception of the program. As noted above, because the TFE program prior to the revisions to Appendix 4D approved in the September 2013 Order included an initial “Accepted/Rejected” phase, the totals in Tables 5 and 6 do not match the totals from Table 4. Numerous submissions included in Table 4 were initially rejected and sometimes more than once. Tables 5 and 6 only reflect those TFE requests that were accepted in the initial stage and ultimately approved or disapproved. Additionally, the automated tracking of amendments early in the TFE program resulted in amendments to existing requests or active TFE to be counted in the same way as the submission of a new TFE request. As such, the aggregated “submissions” total in Table 4 is significantly includes both new requests and amendments and is different from the “Approved” and “Disapproved” total of new TFE requests.

U.S. Entities only	Table 5: New TFE Requests Submitted and Approved – Cumulative								
	FRCC	MRO	NPCC	RF	SERC	SPP	TRE	WECC	Total
005 R2.4	1	9	3	4	2	1	10	6	36
005 R3.1	1	0	0	13	1	0	0	7	22
005 R3.2	3	9	10	12	24	7	54	25	144
006 R1.1	7	11	3	40	11	1	12	4	89
007 R2.3	26	25	24	69	30	10	44	97	325
007 R3	8	20	14	67	13	10	6	28	166
007 R4	95	130	316	522	229	71	228	390	1981
007 R5.3	43	35	89	278	106	30	50	89	720
007 R5.3.1	13	12	18	51	38	10	62	41	245
007 R5.3.2	44	36	71	193	104	37	95	76	656
007 R5.3.3	20	42	35	101	26	17	66	61	368
007 R6	29	39	57	139	116	27	86	135	628
007 R6.3	27	18	42	53	69	12	58	75	354
Totals	317	386	682	1542	769	233	771	1034	5734

U.S. Entities only	Table 6: New TFE Requests Submitted and Disapproved – Cumulative								
	FRCC	MRO	NPCC	RF	SERC	SPP	TRE	WECC	Total
005 R2.4	0	0	0	0	1	1	2	3	7
005 R3.1	0	0	0	1	0	2	0	2	5
005 R3.2	0	0	0	0	3	4	9	18	34
006 R1.1	2	0	0	1	9	0	0	5	17
007 R2.3	8	1	0	2	34	0	7	30	82
007 R3	12	1	0	0	4	6	6	3	32
007 R4	7	0	0	21	63	36	16	98	241
007 R5.3	6	-1	0	6	58	7	2	32	110
007 R5.3.1	3	0	0	4	16	4	5	40	72
007 R5.3.2	3	3	0	9	37	0	6	42	100
007 R5.3.3	3	3	0	5	10	2	5	42	70
007 R6	5	0	0	9	22	4	9	48	97
007 R6.3	2	0	0	7	8	1	10	40	68
Totals	51	7	0	65	265	67	77	403	935

b. Number of Unique Covered Assets for which TFEs have been Approved

Tables 7a and 7b provide the number of unique Covered Assets for which the ERO has approved TFEs. Specifically, Table 7a details the numbers of assets, by Regional Entity, covered by TFEs for the respective requirements. Table 7b takes the total number of assets and groups them by category. Table 8 provides several examples of devices that are not clearly assigned to the more common categories and listed as “Other” in Table 7b.

U.S. Entities only	Table 7a: Assets for which TFEs were Approved								
	FRCC	MRO	NPCC	RF	SERC	SPP	TRE	WECC	Total
005 R2.4	0	0	2	534	43	12	0	8	599
005 R3.1	0	0	0	47	5	0	0	1	53
005 R3.2	0	0	0	63	154	16	0	22	255
006 R1.1	1	0	0	8	219	0	0	0	228
007 R2.3	118	0	24	1,047	506	296	4	149	2,144
007 R3	14	13	0	953	373	81	0	17	1,451
007 R4	194	8	356	3,457	3,382	703	186	840	9,126
007 R5.3	85	41	237	2,278	2,383	379	61	411	5,875
007 R5.3.1	0	0	0	60	592	12	0	66	730
007 R5.3.2	109	0	238	1,706	1,716	245	89	134	4,237
007 R5.3.3	7	0	24	1,974	600	41	64	95	2,805
007 R6	80	7	73	1,657	2,365	377	34	583	5,176
007 R6.3	109	0	18	52	653	9	0	19	860
Totals	717	69	972	13,836	12,991	2,171	438	2,345	33,539

U.S. Entities only	Table 7b: Assets for which TFEs were Approved (includes new and amended TFEs)				
	Network Data Communications Device	Relay	Workstation/Server	Other*	
FRCC	76	87	15		539
MRO	6	0	18		45
NPCC	218	2	35		717
RF	1,713	5,384	2,890		3,849
SERC	2,757	1,218	2,244		6,772
SPP	374	724	240		833
TRE	229	0	44		165
WECC	297	880	47		1,121
Totals	5,670	8,295	5,533		14,041

*see Table 8 for a list of assets considered within the category of "Other"

Table 8: Examples of Asset Types Considered as "Other"

Adapter (to convert serial data streams to/from attached devices into TCP/IP traffic)	Industrial Process Control System	Physical security measures
Badge reader controllers	Infrastructure for managing real-time data and events	Remote access applications for keyboard, mouse, video
Communications media	Intrusion Detection and Protection System (IDP)	Remote power controller for server rack
Data Communications Device	Intrusion Detection System (IDS)	Remote Terminal Unit (RTU)
Data mover for storage network	Intrusion Prevention System (IPS)	Scanner (for assessing security of internal networks, devices, & applications)
Database application	Legacy EMS application	Storage Area Network (SAN) switch
Default and shared accounts	Management interface for blade unit	TrueTime clock
Electronic Access Control System	Management interface for Enterprise Service Bus	Uninterruptible Power Supply (UPS)
Environmental monitoring systems and devices	Network appliance to improve traffic performance and extend appliance utilization	Video streaming devices
Ethernet switches	Network attached storage appliance	Video Wall Controller
Firewalls in high availability (HA) configuration acting as virtual firewall	Network copper and fiber optic cables between PSPs.	Virtual network appliance
Hardware administrative interface for blade chassis	Phasor Data Concentrator (PDC)	

c. Numbers of Approved TFEs still in effect as of the 2014 Annual Report

As of the date of the 2014 Annual Report, there are 959 TFEs that remain in effect.

Table 9 provides a breakdown of these TFEs by requirement and Region.

Table 9: TFEs - Active

U.S. Entities only	FRCC	MRO	NPCC	RF	SERC	SPP	TRE	WECC	Total
005 R2.4	0	2	0	8	0	2	0	3	15
005 R3.1	0	0	0	3	0	0	0	2	5
005 R3.2	0	1	0	0	1	3	1	2	8
006 R1.1	1	1	0	0	1	0	0	1	4
007 R2.3	5	9	1	25	4	11	12	9	76
007 R3	2	10	1	14	3	4	1	4	39
007 R4	9	36	25	71	46	38	33	97	355
007 R5.3	4	18	0	47	13	19	15	12	128
007 R5.3.1	0	1	0	2	12	1	1	7	24
007 R5.3.2	4	8	7	30	26	22	13	9	119
007 R5.3.3	3	4	1	17	7	11	4	11	58
007 R6	3	7	4	26	12	14	9	24	99
007 R6.3	4	2	2	3	5	1	1	11	29
Totals	35	99	41	246	130	126	90	192	959

d. Number of TFEs that Expired or Terminated During the Reporting Period

Table 10 provides the numbers of TFEs that expired or terminated during the 2014 reporting period. During the 2014 reporting period, no TFEs were terminated due to a material misrepresentation by the Responsible Entity as to the facts relied upon by the Regional Entity in approving the TFE.

U.S. Entities only	Table 10: TFEs that Expired or Terminated during Report Period								
	FRCC	MRO	NPCC	RF	SERC	SPP	TRE	WECC	Total
005 R2.4	0	0	0	0	0	0	0	0	0
005 R3.1	0	0	0	0	0	0	0	0	0
005 R3.2	0	0	2	0	1	0	0	0	3
006 R1.1	0	0	0	2	0	0	0	0	2
007 R2.3	0	0	0	0	3	0	0	0	3
007 R3	0	0	3	1	0	0	1	0	5
007 R4	0	0	16	1	17	1	1	0	36
007 R5.3	0	0	8	1	9	0	0	0	18
007 R5.3.1	0	0	0	0	2	0	0	0	2
007 R5.3.2	0	0	3	0	14	1	0	0	18
007 R5.3.3	0	0	1	0	6	0	0	0	7
007 R6	0	0	5	0	10	0	0	0	15
007 R6.3	0	0	1	0	6	0	0	0	7
Totals	0	0	39	5	68	2	2	0	116
005 R2.6	2	2	22	10	24	3	5	4	72
Overall	2	2	61	15	92	5	7	4	188

e. Number of Approved TFEs Scheduled to Reach their Expiration Dates during the Ensuing Year

Table 11 provides the numbers of approved TFEs scheduled to reach their Expiration Dates during the ensuing year.

U.S. Entities only	Table 11: TFEs Scheduled to Expire or Terminate in the next Report Period								
	FRCC	MRO	NPCC	RF	SERC	SPP	TRE	WECC	Total
005 R2.4	0	0	0	0	0	0	0	0	0
005 R3.1	0	0	0	0	0	0	0	0	0
005 R3.2	0	0	2	0	1	0	0	0	3
006 R1.1	0	0	0	2	0	0	0	0	2
007 R2.3	0	0	0	0	3	0	0	0	3
007 R3	0	0	3	1	0	0	1	0	5
007 R4	0	0	16	1	17	1	1	0	36
007 R5.3	0	0	8	1	9	0	0	0	18
007 R5.3.1	0	0	0	0	2	0	0	0	2
007 R5.3.2	0	0	3	0	14	1	0	0	18
007 R5.3.3	0	0	1	0	6	0	0	0	7
007 R6	0	0	5	0	10	0	0	0	15
007 R6.3	0	0	1	0	6	0	0	0	7
Totals	0	0	39	5	68	2	2	0	116

2. *Categorization of the submitted and approved TFE Requests to date by broad categories such as the general nature of the TFE Request, the Applicable Requirements covered by submitted and approved TFE Requests, and the types of Covered Assets that are the subject of submitted and approved TFE Requests.*

NERC and the Regional Entities categorize submitted and approved TFEs by Applicable Requirement and type of Covered Asset. The types of Covered Assets for which the ERO has approved TFEs has remained generally consistent since the program's inception. Tables 7a, 7b, and 8, above, provide details about the types of Covered Assets that are the subject of submitted and approved TFE requests. Further, Tables 1-4 identify the Applicable Requirements for which the ERO has approved or disapproved TFEs.

3. *Categorization of the circumstances or justifications on which the approved TFEs to date were submitted and approved, by broad categories such as the need to avoid replacing existing equipment with significant remaining useful lives, unavailability of suitable equipment to achieve Strict Compliance in a timely manner, or conflicts with other statutes and regulations applicable to the Responsible Entity.*

The categories of circumstances or justifications on which TFEs to date were submitted and approved have not changed since the inception of the TFE program. They include:

- Not technically possible
- Operationally infeasible

- Precluded by technical limitations
 - Adverse effect on bulk electric system reliability
 - Cannot achieve by compliance date
 - Excessive cost that exceeds reliability benefit
 - Conflicts with other statutory or regulatory requirement
 - Unacceptable safety risks
4. *Categorization of the compensating measures and mitigating measures implemented and maintained by Responsible Entities pursuant to approved TFEs, by broad categories of compensating measures and mitigating measures and by types of Covered Assets.*

As described in previous annual reports, Regional Entities find that Responsible Entities are employing multiple strategies to protect Covered Assets that are unable to meet applicable Reliability Standards. Typically, Responsible Entities apply more than one strategy to mitigate the risk posed by a TFE. The principal strategies employed include protecting devices with physical and logical security controls. A significant portion of compensating and mitigating measures involve firewalls, the use of Intrusion Detection and Intrusion Prevention systems, and strong access policies.

The compensating and mitigating measures used most often is an Electronic Security Perimeter (“ESP”). Other significant compensating and mitigating measures deployed include Physical Security Perimeter (“PSP”), Authentication, Intrusion Detection and Prevention (“IDS/IPS”), and System Status Monitoring. Table 13 provides information on the common compensating and mitigating measures reported by the Regional Entities. As described below, the use of these compensating and mitigating measures has resulted in adequate protection for the bulk electric system.

Table 12: Compensating & Mitigating Measures	
Electronic Security Perimeter (ESP)	Covered Assets asserted in the TFE are protected as they reside within a defined ESP and access to/from these assets is controlled via defined access points.
Physical Security Perimeter (PSP)	Covered Assets asserted in the TFE are protected as they reside within a defined PSP and access to these assets is controlled via defined access points.
Status Monitoring	Covered Assets are protected by implementation of System Status Monitoring of all cyber assets residing within a defined ESP. Detection and alerting of system state and condition provides early warning and proactive troubleshooting and corrective action.
Enhanced Authentication	Access to Covered Assets asserted in the TFE and all cyber assets that reside within a defined ESP are protected by multi-factor authentication services (e.g. , SecurID, Biometrics).
Intrusion Detection and Prevention Systems	Covered Assets asserted in the TFE are protected by network or host based IDS/IPS services. Anomalous data traffic is detected and alerted on and/or prevented from affected Covered Assets.
Training	Covered Assets are protected by general cyber security training and awareness related to CIP-004 or augmented training is provided due to the lack of strict compliance.
Host-Based Malware Prevention	When Covered Assets asserted in a TFE cannot implement anti-virus or anti-malware tools, they are protected by all other cyber assets within a defined ESP having these security controls installed and managed. Propagation of viruses (e.g. , Trojans) to Critical Cyber Assets (CCAs) is a low risk.
Physical Monitoring	When other mandatory controls cannot be implemented, Covered Assets and/or access to them are physically monitored by Responsible Entity staff.
Data Encryption	When other mandatory controls cannot be implemented, data is encrypted between cyber assets to protect data confidentiality.

5. For each TFE Request that was rejected or disapproved, and for each TFE that was terminated, but for which, due to exceptional circumstances as determined by the Regional Entity, the Effective Date was later than the latest date specified in Section 5.1.5, 5.2.6, or 9.3, as applicable, a statement of the number of days the Responsible Entity was not subject to imposition of findings of violations of the Applicable Requirement or imposition of penalties or sanctions pursuant to Section 5.3.

All eight Regional Entities reported that during the 2014 reporting period there were no instances of rejection, disapproval, or termination of TFE requests where the effective date was extended past the latest date specified in Section 5.1.5, 5.2.6, or 9.3, as applicable.

6. A discussion, on an aggregated basis, of Compliance Audit results and findings concerning the implementation and maintenance of compensating measures and mitigating measures, and the implementation of steps and the conduct of research and analyses to achieve Strict

Compliance with the Applicable Requirements, by Responsible Entities in accordance with approved TFEs.

The TFE Procedure, in conjunction with the Compliance Monitoring and Enforcement Program (“CMEP”), is the framework that Regional Entities use to review and audit TFE requests. During a compliance audit, a Responsible Entity that has a TFE for a particular requirement is *not* evaluated against the applicable Reliability Standard for which a TFE was accepted and approved. Instead, the Responsible Entity is evaluated against the alternative compliance obligations assumed by the Responsible Entity (*i.e.*, compensating and mitigating measures).

All eight Regional Entities have conducted Compliance Audits where approved or terminated TFEs were in scope. Typically, an audit of a Registered Entity with TFEs will be managed according to the TFEs that need to be reviewed; *i.e.*, based on factors such as quantity, locations, etc. Reviews include interviewing subject matter experts specifically about TFEs, sampling evidence pertaining to a TFE’s mitigating and compensating measures, etc. As was indicated in previous annual reports, Regional Entities continue to report that Responsible Entities are managing and maintaining their TFEs within the procedural requirements of Appendix 4D. Regional Entities have also issued audit findings that identify TFEs to be processed consistent with the CMEP.

7. *Assessments, by Regional Entity (and for more discrete areas within a Regional Entity, if appropriate) and in the aggregate for the United States and for the jurisdictions of other Applicable Governmental Authorities, of the wide-area impacts on the reliability of the Bulk Electric System of approved TFEs in the aggregate, including the compensating measures and mitigating measures that have been implemented.*

The Regional Entity representatives who are designated “TFE Managers” continue to hold regular meetings to discuss various topics, including those pertaining to issues related to the impact of TFEs. The consensus from those discussions is that there have been no negative wide-area

impacts on the reliability of the bulk electric system as a result of any TFEs. Any wide-area impact of approved TFEs on the reliability of the bulk electric system, in the aggregate, remains negligible.

The Regional Entities have reported similar experiences with the execution and management of the TFE process and the manner in which it impacted the reliability of the bulk electric system. Regional Entities reported that a large majority of Responsible Entities have implemented multiple compensating and mitigating measures for Covered Assets, and, in general, the mitigating and compensating measures of approved TFEs that were implemented in lieu of strict compliance with applicable CIP Reliability Standards accomplished the stated alternate compliance objective. As a result, the level of security for the bulk electric system achieved through the TFE process is comparable to strict compliance with the applicable Reliability Standards.

8. Discussion of efforts to eliminate future reliance on TFEs.

Regional Entities reported that they are undertaking a number of efforts to eliminate future reliance on TFEs, including:

- Upgrading or replacing Covered Assets that will enable implementation of security controls defined in CIP Standards and Requirements.
- Removing Critical Cyber Assets that are covered by approved TFEs that reside within defined ESPs.
- Retiring legacy systems that are now subject to coverage by an approved TFE.
- Implementing previously unused or unidentified functionality on Covered Assets that will achieve Strict Compliance with the Applicable Requirement

Where applicable, upgrades of Covered Assets will result in strict compliance without having to rely on TFEs.

In addition, efforts to better train personnel on the requirements of applicable Reliability Standards and coordination with Regional Entity compliance monitoring and enforcement staff

regarding the need for TFEs have led to the continuing decline of devices that rely on a TFE for compliance. Moreover, non-essential devices are also being evaluated for continued inclusion within a defined ESP. Where a device does not need to reside within the ESP for operational necessity, Covered Assets have been relocated outside of the ESP, eliminating the need for a TFE and reducing residual risk to devices remaining within the ESP.

The Regional Entities have observed that the primary barrier to the elimination of TFEs continues to be the inherent design of much BES equipment, particularly legacy equipment that is unable to satisfy various requirements of the CIP Standards. The anticipated implementation of the Version 5 CIP Reliability Standards will provide additional compliance options, but the need for TFEs will remain. Regional Entities have noted the difficulty in providing flexibility for future technology and security changes when developing a standard, thereby making it difficult to eliminate the TFE.

Additionally, the Regional Entities support requirements in the standards to use products that have been independently certified as offering adequate and appropriate security measures. Applying enhanced security features often requires that properly operating equipment be replaced with a more modern, secure models. Therefore, in order to eliminate the need for a TFE, replacement costs may become a barrier to implementing enhanced security features. Without a concerted and coordinated effort from industry, manufacturers will continue with the status quo.

9. *Data and information regarding Material Change Reports, including the number of Material Change Reports filed annually and information regarding the types of circumstances or events that led to Material Changes, as well as any additional information NERC believes would be useful.*

As Responsible Entities update their systems, replace equipment, and add assets to inventory, requests to modify existing TFEs have become more common. The update to the TFE procedure in Appendix 4D streamlined that process, moving from a formal approval process to the

submission of a “Material Change Report” (“MCR”). An MCR does not require approval by the respective Regional Entity, but information from an MCR is available to the Regional Entity and is helpful for subsequent compliance activities (e.g., audits, spot checks, self-certifications, etc.).

The revision to Appendix 4D was approved during the period covered by this report and Regional Entities are in the process of implementing the MCR process, which requires updating the compliance portals. Regional Entities and Responsible Entities use the portals to submit TFE data, and are being modified to support the submission of MCRs. From a reporting perspective, the ERO views TFEs that have been amended prior to the Appendix 4D revisions or changed via an MCR as the same, and for the purposes of the data in the 2014 Annual Report, the terms are synonymous. Table 13 provides the number of active TFE that were amended/changed during the 2014 reporting period.¹³

U.S. Entities only	Table 13: TFE Amendments & Changes during the Report Period								
	FRCC	MRO	NPCC	RF	SERC	SPP	TRE	WECC	Total
005 R2.4	0	2	0	3	0	2	0	1	8
005 R3.1	0	0	0	4	0	0	0	0	4
005 R3.2	0	1	0	1	1	2	0	1	6
006 R1.1	1	1	0	0	1	0	0	0	3
007 R2.3	5	5	1	10	4	3	10	3	41
007 R3	2	4	0	12	3	0	0	2	23
007 R4	13	23	24	58	56	11	20	24	229
007 R5.3	5	11	0	30	19	5	8	6	84
007 R5.3.1	0	1	0	5	14	1	0	5	26
007 R5.3.2	5	7	7	46	30	6	8	3	112
007 R5.3.3	4	4	1	19	8	5	2	7	50
007 R6	4	4	3	14	15	5	6	5	56
007 R6.3	4	2	2	4	5	1	0	3	21
Totals	43	65	38	206	156	41	54	60	663

Table 14 provides additional data about active TFEs that were amended or changed during the reporting period. As indicated by that data, over two-thirds of the changes and amendments pertain to asset count changes and administrative updates.

¹³ Approximately 1/3 of amendments/changes reported during the 2014 reporting period were submitted via MCRs.

Table 14: Request Categories – Amendments & Changes	
Category of Request	Percentage
Updates to asset data (added quantities, modify types, manufacturer, etc.)	59%
Updated security measures (procedural changes, implement new equipment, response to audit findings, etc.)	22%
Administrative (update point of contact information, correct typographical errors, termination date change, etc.)	12%
Other	6%

10. *Additional information about TFEs and their expiration dates, including the number of TFEs by expiration year and CIP Standard requirement, the percentage of currently approved TFEs without expiration dates, and the number of new TFEs approved without expiration dates annually.*

In the September 2013 Order, the Commission directed NERC to provide additional information in the annual reports related to TFEs with and without expiration dates. As has been the case in previous annual reports, the majority of TFEs (approximately 82%) do not have expiration dates. As shown in Table 15, below, of the 959 active TFEs, 787 TFEs do not have an expiration dates. TFEs are approved without expiration dates where the system, device, or technology in question is fundamentally unable to satisfy the corresponding CIP requirement, and there is no indication that such a capability is likely in the foreseeable future. In most cases, these open ended TFEs are considered to be the best approach for managing the applicable devices because of uncertainty about if or when compliant equipment will become available. Of the 172 TFEs with expiration dates, 116 are scheduled to expire in the ensuing year (see Table 11).

U.S. Entities only	Table 15: Active TFEs, Amended & Approved, with no Expiration Date (2014)								
	FRCC	MRO	NPCC	RF	SERC	SPP	TRE	WECC	Total
005 R2.4	0	0	0	3	0	2	0	3	8
005 R3.1	0	0	0	4	0	0	0	2	6
005 R3.2	0	0	0	1	1	3	1	2	8
006 R1.1	1	0	0	0	1	0	0	1	3
007 R2.3	5	0	1	10	4	11	12	9	52
007 R3	0	1	1	11	3	0	1	1	18
007 R4	8	1	25	57	46	39	33	97	306
007 R5.3	4	0	0	30	13	18	15	12	92
007 R5.3.1	0	0	0	4	12	1	1	6	24
007 R5.3.2	5	0	7	45	26	15	13	8	119
007 R5.3.3	3	0	1	16	7	7	4	10	48
007 R6	2	0	4	13	12	14	8	23	76
007 R6.3	3	0	2	4	5	1	1	11	27
Totals	31	2	41	198	130	111	89	185	787

b. Consistency in Review, Approval and Disapproval of TFE Requests

Appendix 4D requires that NERC and the Regional Entities collaborate to assure “consistency in the review, approval and disapproval of TFE Requests....”¹⁴ Also, as noted above, Section 11.2.4 of the NERC Rules of Procedure requires that NERC submit with each Annual Report certain information concerning the manner in which Regional Entities have made determinations to approve or disapprove TFE requests.

NERC has received no reports of inconsistency either in assessing the accuracy or validity of TFEs submitted by Responsible Entities, or in the decisions approving or rejecting TFEs. NERC and the Regional Entities review TFE requests for consistency. Primary and alternate representatives from each Regional Entity, facilitated by NERC staff, meet regularly to discuss common issues. Those representatives also led the efforts at their respective Regional Entities for receiving, reviewing, and reporting TFE-related data.

¹⁴ Section 11 of Appendix 4D of the NERC Rules of Procedure.

In addition to regularly scheduled conference calls and face-to-face meetings, the TFE Managers communicate regularly by email and in person at workshops and regular meetings with the goal of reaching consistency among the Regional Entities on the pertinent issues.

IV. CONCLUSION

For the foregoing reasons, NERC respectfully requests that the Commission accept the 2014 Annual Report as compliant with the directives contained in Order No. 706, the September 2013 Order, and Appendix 4D of NERC's Rules of Procedure.

Respectfully submitted,

/s/ Shamai Elstein

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September 30, 2014

CERTIFICATE OF SERVICE

I hereby certify that I have served a copy of the foregoing document upon all parties listed on the official service list compiled by the Secretary in this proceeding.

Dated at Washington, D.C. this 30th day of September, 2014.

/s/ Shamai Elstein
Shamai Elstein

*Attorney for North American Electric
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