UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

NORTH AMERICAN ELECTRIC	**)**	**Docket No. RR10-1-___**
RELIABILITY CORPORATION	**)**	**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 2015 Annual Report on Wide-Area Analysis of Technical Feasibility Exceptions (the "2015 Annual Report") in compliance with Paragraphs 220 and 221 of the Federal Energy Regulatory Commission's ("FERC" or "Commission") Order No. 706[1] 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

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[1] *Mandatory Reliability Standards for Critical Infrastructure Protection*, 122 FERC ¶ 61,040 (Jan. 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 region . . . .[4]

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

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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 Corp.*, 144 FERC ¶ 61,180 (2013) ("September 2013 Order").

7 *North American Electric Reliability Corp.*, Docket No. RR13-3-001 (Jan. 30, 2014) (unpublished delegated letter order).

accordance with the September 2013 Order. The 2015 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. 2015 ANNUAL REPORT

In accordance with Appendix 4D of the ROP, NERC prepared the 2015 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 2015 Annual Report. NERC compiled and analyzed the TFE data provided by the Regional Entities in preparation for the 2015 Annual Report.

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:[9]

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*

[8] As defined in Appendix 2 of the ROP, a Covered Asset is a Cyber Asset or Critical Cyber Asset that is subject to a TFE.

[9] Unless stated otherwise, a table or reference to "2015" refers to the reporting period for this report: July 1, 2014 – June 30, 2015.

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

a. Frequency of Use of the TFE Request Process

Table 1 provides an industry-wide view of Registered Entities subject to the currently-effective CIP Reliability Standards and the frequency by which they have requested TFEs, by region. Column 1 reflects the number of Registered Entities in each region that are subject to the CIP Reliability Standards, as defined by CIP-002-3. Column 2 reflects the number of entities that have identified Critical Cyber Assets ("CCAs"), Column 3 provides the number of entities with CCAs that have requested TFEs (since the beginning of the TFE program), and Column 4 provides the number of entities with active TFEs.

U.S. Entities only	Table 1: Frequency of Use			
	# of entities CIP applicable (by registration)	# claiming CCAs	# entities that have requested TFEs	# entities with active TFEs as of 6/30/2015
FRCC	48	8	8	6
MRO	93	19	19	16
NPCC	211	42	42	33
RF	212	66	66	38
SERC	185	18	17	17
SPP-RE	110	16	16	16
TRE	197	29	29	23
WECC	326	58	58	48
Totals	1272	256	255	197

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

During the 2015 reporting period (July 1, 2014 through June 30, 2015) there were 342 new TFE requests submitted and approved, and 911 TFEs for which amendments were requested and

approved. There were also 51 submissions during the period that were subsequently terminated during that same reporting period. Table 2 shows the breakdown per region and also includes other data pertaining to TFE requests that were received during the 2015 reporting period

U.S. Entities only	Table 2: TFE activity during report period ending 6/30/15						
	New TFEs - Approved	Amended TFEs - Approved	Requested & Terminated during Same Report Period	New TFEs - Disapproved	Amended TFEs - Disapproved	Awaiting Action (recently received)	Totals
FRCC	1	50	2				53
MRO	18	33	4				55
NPCC	56	99	9				164
RF	116	287	28				431
SERC	23	69	4	1	3		100
SPP-RE	28	119	3				150
TRE	30	67	1	1		11	110
WECC	70	187					257
Totals	342	911	51	2	3	11	1320

Table 3 provides a breakdown of the applicable CIP Reliability Standard requirements for new and amended TFE requests that were submitted during the reporting period.

U.S. Entities only	Table 3: Number and Types of TFE Requests Submitted, 7/1/14 - 6/30/15																	
	FRCC		MRO		NPCC		RF		SERC		SPP-RE		TRE		WECC		Totals	
	New	Changes	New	Changes	New	Changes	New	Changes	New	Changes	New	Changes	New	Changes	New	Changes	New	Changes
CIP-005 R2.4				1	1			18				1				3	1	23
CIP-005 R3.1								5								1	0	6
CIP-005 R3.2		1			1		4	2	3		1	2		1	1	1	10	7
CIP-006 R1.1					1		1								1		3	0
CIP-007 R2.3		5	1	3	3	2	10	41	1	3	1	12	2	13	3	12	21	91
CIP-007 R3		5	1		3		1	8	1		2	5	1	3	7		16	21
CIP-007 R4		14	5	15	18	48	35	80	6	25	8	36	13	23	25	109	110	350
CIP-007 R5.3		5	4	5	11	14	11	43	5	7	7	23	9	15	5	8	52	120
CIP-007 R5.3.1			1		1	2	9	2		3		3			5	1	16	11
CIP-007 R5.3.2		8	2	1	7	12	16	32		16	2	14	2	1	4	10	33	94
CIP-007 R5.3.3	1	9	2	2	2	10	15	31	1	5	2	5	1		6	6	30	68
CIP-007 R6		2	2	2	7	8	7	18	5	9	3	15	2	7	9	26	35	87
CIP-007 R6.3		1		4	1	3	7	7	1	1	2	3		4	4	10	15	33
SubTotals	1	50	18	33	56	99	116	287	23	69	28	119	30	67	70	187	342	911
Total	51		51		155		403		92		147		97		257		1253	

Table 4 provides the cumulative total of TFE requests submitted since the program's inception, including the 2015 reporting period.[10]

U.S. Entities only	Table 4: TFE Requests Submitted, cumulative (through 6/30/15)																	
	FRCC		MRO		NPCC		RF		SERC		SPP-RE		TRE		WECC		Totals	
	New	Changes	New	Changes	New	Changes	New	Changes	New	Changes	New	Changes	New	Changes	New	Changes	New	Changes
CIP-005 R2.4	2		6	11	2		12	38	1		3	3	8		31	21	65	73
CIP-005 R3.1	4	1					16	22	1		1	1			28	10	50	34
CIP-005 R3.2	6	1	10	7	14		19	8	20	1	15	15	49	8	69	21	202	61
CIP-006 R1.1	11	4	10	4	4		43	26	7	3	1	1	9	3	15	6	100	47
CIP-007 R2.3	45	34	29	25	20	3	89	151	12	13	13	30	47	27	190	86	445	369
CIP-007 R3	23	9	25	21	25	3	70	75	4	3	23	13	11	5	51	16	232	145
CIP-007 R4	125	60	140	105	243	77	627	605	68	120	155	169	218	100	846	542	2422	1778
CIP-007 R5.3	66	54	50	45	99	18	304	290	53	51	54	64	65	45	191	71	882	638
CIP-007 R5.3.1	17	9	14	2	24	2	69	50	4	16	18	12	48	12	144	28	338	131
CIP-007 R5.3.2	68	36	41	38	68	22	263	305	16	58	50	65	72	35	220	74	798	633
CIP-007 R5.3.3	38	23	48	29	30	12	135	184	20	13	27	28	51	11	181	52	530	352
CIP-007 R6	47	25	42	21	56	13	174	177	50	37	32	42	74	31	312	146	787	492
CIP-007 R6.3	43	22	18	16	35	4	77	74	20	16	16	16	46	11	168	45	423	204
SubTotals	495	278	433	324	620	154	1898	2005	276	331	408	459	698	288	2446	1118	7274	4957
Total	773		757		774		3903		607		867		986		3564		12,231	

Table 5 details the cumulative submissions of new TFE requests by 12-month periods, per region.[11]

U.S. Entities only	Table 5: New TFEs - Submitted (by report period)						
	6/30/2010	6/30/2011	6/30/2012	6/30/2013	6/30/2014	6/30/2015	Total
FRCC	260	77	86	47	40	1	511
MRO	278	30	72	38	13	18	449
NPCC	241	50	166	69	70	56	652
RF	993	155	311	247	129	116	1951
SERC	37	22	65	89	37	23	273
SPP-RE	205	18	61	71	56	28	439
TRE	516	27	76	69	43	30	761
WECC	1132	385	485	287	191	70	2550
Totals	3662	764	1322	917	579	342	7586

[10] Figures in this table may differ from those contained in prior reports due to incomplete data that was unknowingly considered at that time. This report clarifies and corrects any prior information

[11] Some submissions listed in Table 5 may seem to indicate a disparity when compared to the data listed in Table 4; however, Table 5 includes submissions that were later revised, sometimes more than once, so a "single" TFE may incorporate multiple instances of activity.

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

Tables 6 and 7 provide information regarding the Covered Assets for which the ERO has approved TFEs. A single TFE often affects multiple assets in multiple categories; thus, Tables 6 and 7 cannot be sorted in a manner that gives a "grand total", insofar as the mix of assets often overlaps across several category types. Table 6 provides the number of Covered Assets for which TFE were approved by region.

U.S. Entities only	Table 6: Assets for which TFEs Approved - report period ending 6/30/15			
	Network Data Communications	Relay	Workstation/ Server	Other
FRCC	154	0	254	835
MRO	72	2,128	67	2,198
NPCC	1,518	2,474	498	2,740
RF	4,924	6,534	874	8,072
SERC	2,512	1,465	606	706
SPP-RE	85	0	40	2,087
TRE	1,025	763	309	4,081
WECC	164	0	4	24,734
Totals	10,454	13,364	2,652	45,453

Table 7 reflects the same data, with assets grouped by requirement.

U.S. Entities only	Table 7: Assets Covered by TFE Requests, by Requirement - reporting period ending 6/30/15			
	Network Data Communications Device	Relay	Workstation/ Server	Other
CIP-005 R2.4	0	0	1	107
CIP-005 R3.1	0	0	0	47
CIP-005 R3.2	15	0	0	421
CIP-006 R1.1	0	0	0	4
CIP-007 R2.3	350	456	2	2,038
CIP-007 R3	817	639	150	987
CIP-007 R4	3,807	4,289	807	12,957
CIP-007 R5.3	2,326	2,162	229	8,733
CIP-007 R5.3.1	184	0	0	2,564
CIP-007 R5.3.2	714	281	1,321	1,622
CIP-007 R5.3.3	430	802	157	6,901
CIP-007 R6	1,385	4,156	14	7,783
CIP-007 R6.3	426	579	9	1,289
Total	10,454	13,364	2,690	45,453

Table 8 provides several examples of devices that are not clearly assigned to the more common categories and listed as "Other" in Tables 6 and 7.

Table 8: Examples of Asset Types categorized as "Other"		
Access Control Controllers	Database application	Management interface for Enterprise Service Bus
Adapter (to convert serial data streams to/from attached devices into TCP/IP	Engine vibration monitoring devices	Network appliance to improve traffic performance & appliance utilization
Annunciator	Environmental monitoring systems and devices	Network attached storage appliance
Appliance and Thin Client	Firewall	Network wiring within ESP but outside PSP
Application Interface	Frequency Appliances	Phasor Data Concentrator (PDC)
Backup Concentrators	Hardware administrative interface for blade chassis	Programmable Logic Controller (PLC)
Badge Reader controllers	Hypervisor, also called virtual machine manager (VMM)	Remote Access Controller
Blade Chassis Components	Input/Output (I/O) devices	Remote power controller for server rack
Camera	Infrastructure for managing real-time data and events	Satellite Clock
Centralized Storage Appliance	Integrated Lights Out (ILO) Management Console	SCADA Application
Communications media	Intrusion Detection and Protection System (IDP)	Security Event Management Console
Communications Processors	Intrusion Detection System (IDS)	Serial to network interface
Control Panels	Intrusion Prevention System (IPS)	Storage Area Network (SAN) switch
Data Controller / Data Logger	Legacy EMS application	Uninterruptible Power Supply (UPS)
Data mover for storage network	Management interface for blade unit	Video Wall Controllers and monitors

d. Numbers of Approved TFEs in Effect as of the 2015 Annual Report

As of the date of the 2015 Annual Report, over 4,300 TFEs remain active. Table 9 provides a breakdown of these TFEs by requirement and region.

U.S. Entities only	Table 9: Approved TFEs that Remain Active, as of 6/30/15								
	FRCC	MRO	NPCC	RF	SERC	SPP-RE	TRE	WECC	Totals
CIP-005 R2.4		3	2	3	1	2	4	6	21
CIP-005 R3.1				7	1			6	14
CIP-005 R3.2	3	3	2	10	17	5	17	21	78
CIP-006 R1.1	3	5	3	21	9		6	10	57
CIP-007 R2.3	30	10	18	44	19	4	22	90	237
CIP-007 R3	7	8	3	24	6	9	5	31	93
CIP-007 R4	102	78	211	312	150	61	133	574	1,621
CIP-007 R5.3	53	23	81	140	82	38	32	113	562
CIP-007 R5.3.1	15	3	17	31	20	5	25	44	160
CIP-007 R5.3.2	54	17	54	132	65	19	50	87	478
CIP-007 R5.3.3	28	11	35	70	29	12	24	67	276
CIP-007 R6	33	21	41	76	74	12	37	198	492
CIP-007 R6.3	32	6	25	27	34	9	21	80	234
Total	360	188	492	897	507	176	376	1,327	4,323

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

Table 10 provides the numbers of TFEs that expired or terminated during the 2015 reporting period. During the 2015 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: Terminated TFEs - report period ending 6/30/15								
	FRCC	MRO	NPCC	RF	SERC	SPP-RE	TRE	WECC	Totals
CIP-005 R2.4		1							1
CIP-005 R3.1								1	1
CIP-005 R3.2	1			1	4		3		9
CIP-006 R1.1		1							1
CIP-007 R2.3		1	1		5	1		2	10
CIP-007 R3	3	4	1	6	1	2	1	1	19
CIP-007 R4		4	31	5	25	5	20	10	100
CIP-007 R5.3		1	11	1	20	2	6	1	42
CIP-007 R5.3.1				2		1	5	1	9
CIP-007 R5.3.2		3	11	3		2	5	2	26
CIP-007 R5.3.3		2	1	4		1	7	2	17
CIP-007 R6		1	9	3	10		4	2	29
CIP-007 R6.3			2		2		3	1	8
Total	4	18	67	25	67	14	54	23	272

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

As the CIP Version 5 standards become mandatory and enforceable on April 1, 2016, over 82% of the currently active TFEs will become obsolete and longer accountable in the program. Table 11 depicts the TFEs that will be administratively terminate as of April 1, 2016 because there are no comparable requirements in the CIP Version 5 standards which authorize TFEs.

U.S. Entities only	Table 11: Active TFEs to be Administratively Terminated when the CIP Version 5 Reliability Standards become enforceable, 4/1/16								
	FRCC	MRO	NPCC	RF	SERC	SPP-RE	TRE	WECC	Totals
CIP-005 R3.1				7	1			6	14
CIP-005 R3.2	3	3	2	10	17	5	17	21	78
CIP-006 R1.1	3	5	3	21	9		6	10	57
CIP-007 R3	7	8	3	24	6	9	5	31	93
CIP-007 R4	102	78	211	312	150	61	133	574	1,621
CIP-007 R5.3	53	23	81	140	82	38	32	113	562
CIP-007 R5.3.1	15	3	17	31	20	5	25	44	160
CIP-007 R5.3.2	54	17	54	132	65	19	50	87	478
CIP-007 R6	33	21	41	76	74	12	37	198	492
Total	270	158	412	753	424	149	305	1,084	3,555

There will be some TFEs from the CIP Version 3 standards that will remain active because there is a comparable requirement in the CIP Version 5 reliability standards. Table 12 shows the requirements that permit TFEs in the CIP Version 3 standards and their counterpart in the CIP Version 5 standards. After April 1, 2016, while the records for active TFEs in these areas will be changed to reflect the new reference, the underlying issues will continue to be managed accordingly and reported with the new reference in next year's report.

Table 12: V3 Requirements that Authorize TFEs and the V5 Counterpart	
V3	**V5**
CIP-005-3 R2.4	CIP-005-5 R2.3
CIP-007-3 R2.3	CIP-007-5 R1.1
CIP-007-3 R6.4	CIP-007-5 R4.3
CIP-007-3 R5.3.3	CIP-007-5 R5.6

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 continue to categorize submitted and approved TFEs by Applicable Requirement and type of Covered Asset. The types of Covered Assets for which TFEs have been approved has remained generally consistent since the program's inception. Tables 6 – 8, above, list the types of Covered Assets that are the subject of submitted and approved TFE requests, while Tables 3 and 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. Use of these compensating and mitigating measures has resulted in adequate protection for the bulk electric

system.

Table 13: Compensating and 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 2015 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 process in Appendix 4D of the ROP, 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.

As the risk-based emphasis on compliance becomes the standard approach, the existence of TFEs and the relative risks for the systems they support will be an important component for consideration during the Inherent Risk Assessment ("IRA") that is a component in determination of audit scope.

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 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.*

As noted above, the transition to the CIP Version 5 reliability standards is having a substantial impact on requirements for which TFEs have been or will be available. This issue is being addressed by the ERO to prepare Responsible Entities for a successful and effective implementation of the CIP Version 5 reliability standards. While the overall impact on the "reliance" on TFEs remains to be seen, it is hoped that the Version 5 Standards emphasis on BES

Cyber Systems will provide an effective and supportable structure for maintaining BES reliability in a compliant manner without substantial reliance on TFEs.

It seems likely, however, that the need for TFEs will remain for the foreseeable future. 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 need for TFEs entirely.

The ERO continues to support the inclusion of 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. 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. NERC notes, however, there is anecdotal evidence that vendors and manufacturers are offering improved security features, perhaps in response to industry concerns about implementation of the CIP Version 5 reliability standards. There remains many potentially insecure systems and devices throughout the industry that continue performing well from an operational perspective. Thus, decisions about replacing them are likely to remain financially-based as well as reliability-based.

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.).

From a reporting perspective, the shift from formal amendments to MCRs has been transparent. In the tables above, "changes" refers to activity that was noted, and that activity could have been either an MCR or an amendment. For Responsible Entities and Regional Entities, however, the MCR has alleviated a substantial amount of administrative effort, so the process is significantly less time consuming than was the case when the TFE program was initially undertaken.[12] Tables 3 and 4 above include data about active TFEs that were amended or changed during the reporting period and cumulatively. A substantial majority of the changes that are noted pertain to asset count changes and administrative updates.

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 its 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 reported previously, most TFEs do not have expiration dates. With the advent of the CIP Version 5 standards, and as depicted in Table 11 above, the "new" era will cause most existing TFEs to be eliminated. The prevalence of non-expiring TFEs at that time is yet to be determined.

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…."[13] Also, Section 11.2.4

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

[13] Section 11 of Appendix 4D of the NERC ROP.

of the NERC ROP 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.

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 pertinent issues.

IV. CONCLUSION

For the foregoing reasons, NERC respectfully requests that the Commission accept the 2015 Annual Report.

Respectfully submitted,

/s/ Shamai Elstein

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September 28, 2015

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 28th day of September, 2015.

/s/ Shamai Elstein
Shamai Elstein

Attorney for North American Electric Reliability Corporation