

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

NORTH AMERICAN ELECTRIC) Docket No. RR10-1-000
RELIABILITY CORPORATION) Docket No. RR13-3-000

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

The North American Electric Reliability Corporation (“NERC”) hereby provides the 2019 Annual Report on Wide-Area Analysis of Technical Feasibility Exceptions (the “2019 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”). The 2019 Annual Report covers the period from July 1, 2018 through June 30, 2019.

I. BACKGROUND

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 registered 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 the registered entity provides appropriate justification, regular review of the

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

² *Id.* at P 178.

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 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)⁵ and Appendix 4D (Procedure for Requesting and Receiving Technical Feasibility Exceptions to NERC Critical Infrastructure Protection Reliability Standards). On January 21, 2010, the Commission approved NERC’s amended ROP.⁶

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

3 *Id.* at P 222.

4 *Id.* at PP 220-21.

5 Section 411 in the currently effective ROP (January 2019).

6 *N. Am. Elec. Reliability Corp.*, 130 FERC ¶ 61,050 (2010) (“January 21 Order”), *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. *See* October 1 Order. On December 23, 2010, NERC submitted a compliance filing in response to the Commission’s October 1 Order, which the Commission subsequently accepted. *See* April 12 Order.

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.⁷ NERC submitted a compliance filing consistent with the directives from the September 2013 Order, which the Commission approved on January 30, 2014.⁸ Sections 11.2.4 and 13 of Appendix 4D set forth the requirements for the annual TFE report, as modified in accordance with 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. 2019 ANNUAL REPORT

This section provides the TFE information required by Appendix 4D of the ROP. In accordance with Appendix 4D, NERC prepared the 2019 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.⁹ In addition, each Regional Entity provided information on the elements identified in Section 13 of Appendix 4D to be

⁷ *N. Am. Elec. Reliability Corp.*, 144 FERC ¶ 61,180 at PP 14, 17-18 (2013) (“September 2013 Order”).

⁸ *N. Am. Elec. Reliability Corp.*, Docket No. RR13-3-001 (Jan. 30, 2014) (delegated letter order).

⁹ Appendix 2 of the ROP defines the term “Covered Asset” as “any BES Cyber Asset, BES Cyber System, Protected Cyber Asset, Electronic Access Control or Monitoring System, or Physical Access Control System that is subject to” a TFE.

included in the 2019 Annual Report. NERC compiled and analyzed the TFE data provided by the Regional Entities in preparation for the 2019 Annual Report. In preparing the 2019 Annual Report, NERC identified errors in certain TFE data reported for 2018. The correct data is reported below. NERC has implemented additional controls to ensure that data reported for 2019 and in future years is complete and accurate.

The 2019 Annual Report is the last annual report that will depict TFE data for Florida Reliability Coordinating Council (“FRCC”). The dissolution of FRCC resulted in the transition of 35 registered entities to SERC Reliability Corporation (“SERC”). SERC is responsible for maintaining TFE information for the registered entities transitioning into its region, and its annual report incorporated the transitioning entity’s TFE information.

The transition to the CIP cybersecurity Reliability Standards approved in Order No. 791,¹⁰ commonly referred to as the CIP version 5 standards, resulted in a significant decrease to the number of TFEs. As a result, the Regional Entities have been able to better evaluate the risk and impact of TFEs, and gain a better understanding of the value of the TFE process compared to the administrative burden it places on registered entities and Regional Entities. As discussed below, NERC is considering alternatives to the current TFE process to reduce that burden.

IV. Corrections to 2018 Annual Report

In the course of preparing the 2019 Annual Report, NERC identified several errors in some of the data reported in the 2018 Report.¹¹ NERC identified that the numbers of registered entities

¹⁰ *Version 5 Critical Infrastructure Protection Reliability Standards*, 145 FERC ¶ 61,160 (2013) (“Order No. 791”), *order on clarification and reh’g*, 146 FERC ¶ 61,188 (2014).

¹¹ *North American Electric Reliability Corporation 2018 Annual Report of the Wide Area Analysis of Technical Feasibility Exceptions*, Docket Nos. RR10-1-000 and RR13-3-000 (filed Sep. 28, 2018).

reported for 2018 reflected only that activity for the 2018 reporting year, and not all approved TFEs. The correct numbers are:

- WECC had a total of 35 registered entities with approved TFEs in 2018;¹²
- NPCC had a total of 14 registered entities with approved TFEs in 2018;¹³
- Texas RE had a total of 12 registered entities with approved TFEs in 2018;¹⁴
- RF had a total of 13 registered entities with TFE activity in 2018;¹⁵ and
- Across the ERO Enterprise, 120 registered entities had approved TFEs in 2018, not 77 as originally reported.

In light of the importance of having accurate TFE data to NERC’s reporting and analysis, NERC’s TFE Task Force implemented additional measures in 2019 to help ensure that data submitted and reported is accurate and complete. These measures include additional review processes of raw data.

V. Summary of 2019 TFE Data

The following is the summary of the TFE data reported by each Regional Entity for the elements identified in Section 13.1 of Appendix 4D:¹⁶

1. Frequency of use of the TFE Request process

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 and approved/disapproved during the preceding year and

¹² NERC originally reported that WECC had nine registered entities with approved TFEs in 2018. *See* 2018 Report at 7.

¹³ NERC originally reported that NPCC had six registered entities with approved TFEs in 2018. *See* 2018 Report at 7.

¹⁴ NERC originally reported that Texas RE had three registered entities with approved TFEs in 2018. *See* 2018 Report at 7.

¹⁵ NERC originally reported that RF had 27 registered entities with approved TFEs in 2018. *See* 2018 Report at 8.

¹⁶ Unless stated otherwise, a table or reference to “2019” refers to the reporting period for this report: July 1, 2018–June 30, 2019.

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

The data from this reporting period indicates that the number of registered entities that are engaging in the TFE program has stabilized. **Figure 1** shows a breakdown of the number of registered entities with approved TFEs within each Region.

Figure 1: Number of registered entities within each Region with approved TFEs as of 6/30/2019

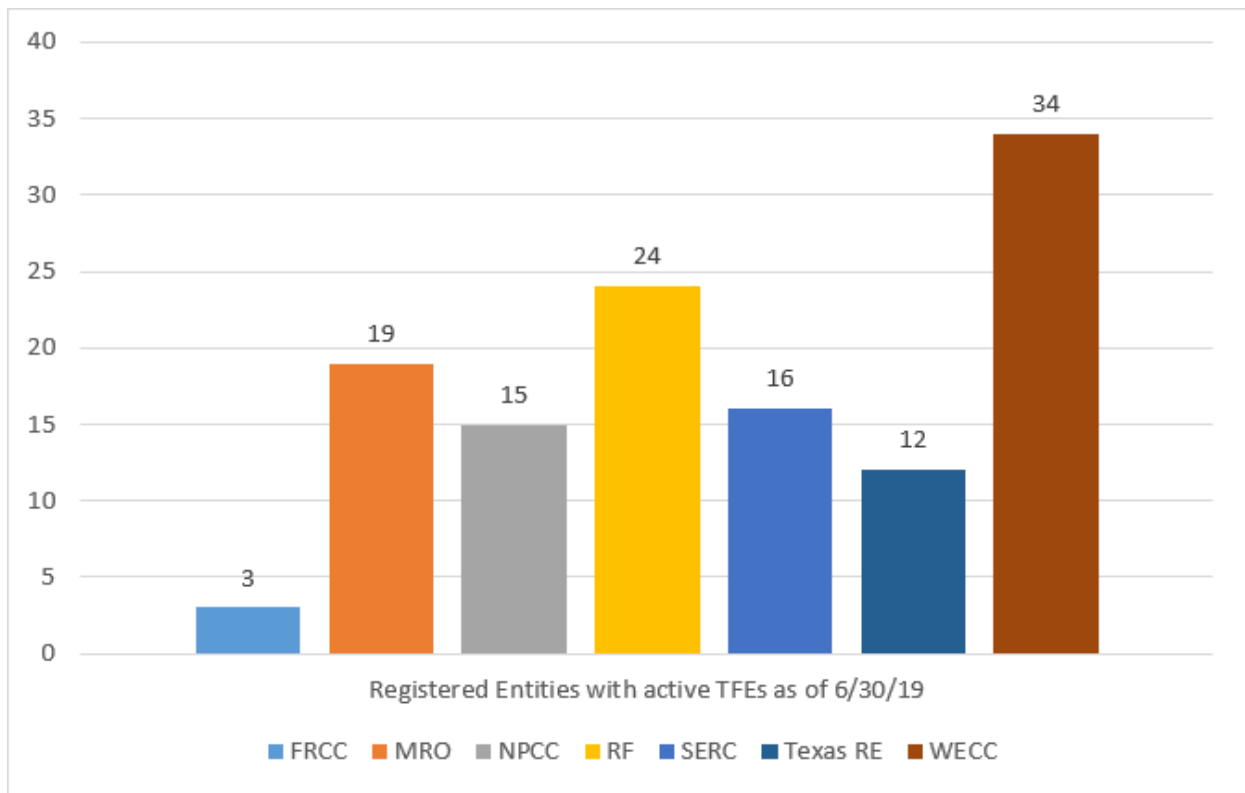


Figure 2 provides a timeframe of registered entities with approved TFEs. This chart shows how many TFEs each region had for the last two reporting periods and this current report period. Utilizing the corrected numbers for WECC, NPCC, and Texas RE (*see* Section IV, above), the number of registered entities with approved TFEs increased modestly from 120 registered entities

in 2018 to 123 registered entities in 2019. This year-over-year stabilization in the number of registered entities with approved TFEs may have been influenced by increases in consolidated registrations and mergers of registered entities.

Figure 2: Three Year Trend of Registered Entities with Approved TFEs

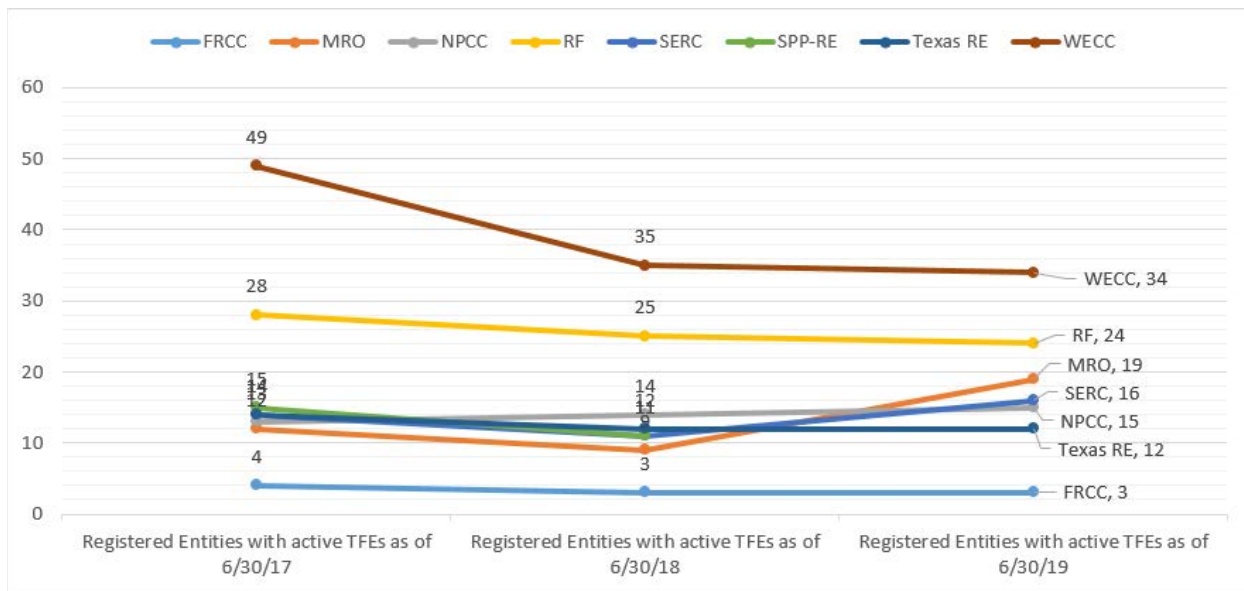


Figure 3 provides data on the use of the TFE program. The first column of **Figure 3** shows the number of registered entities subject to the CIP Reliability Standards. The CIP Reliability Standards apply to the registered entities designated in Applicability Section 4.1 of CIP-002-5 through CIP-014-2 (e.g., Balancing Authority, certain Distribution Providers, etc.). From an industry-wide perspective, the number of “CIP applicable” entities in the U.S. (i.e., with registrations to which the CIP Reliability Standards apply) has increased by just over two percent since last year’s report, from 1442 to 1475.

The second column of **Figure 3** depicts the number of CIP applicable registered entities (i.e., those listed in the first column) that report having high or medium impact BES Cyber Systems

(“BCS”).¹⁷ In 2017, 594 registered entities claimed to have systems that meet that criteria; in 2018, that number decreased nearly 40% to 365. Consolidation of entity registration and Multi-Regional Registered Entities contributed to the decrease. For the 2019 report period, the number increased slightly, less than two percent, to 372 registered entities claiming high or medium impact BCS.

The third column of **Figure 3** shows the number of registered entities with high or medium impact BCS (i.e., those listed in the second column) that have approved TFEs. Using the corrected numbers for 2018, 33 percent of entities claiming high or medium impact BCS had an approved TFE. That percentage stayed the same for 2019.

Figure 3: Frequency of Use (7/1/2018 to 6/30/2019)¹⁸

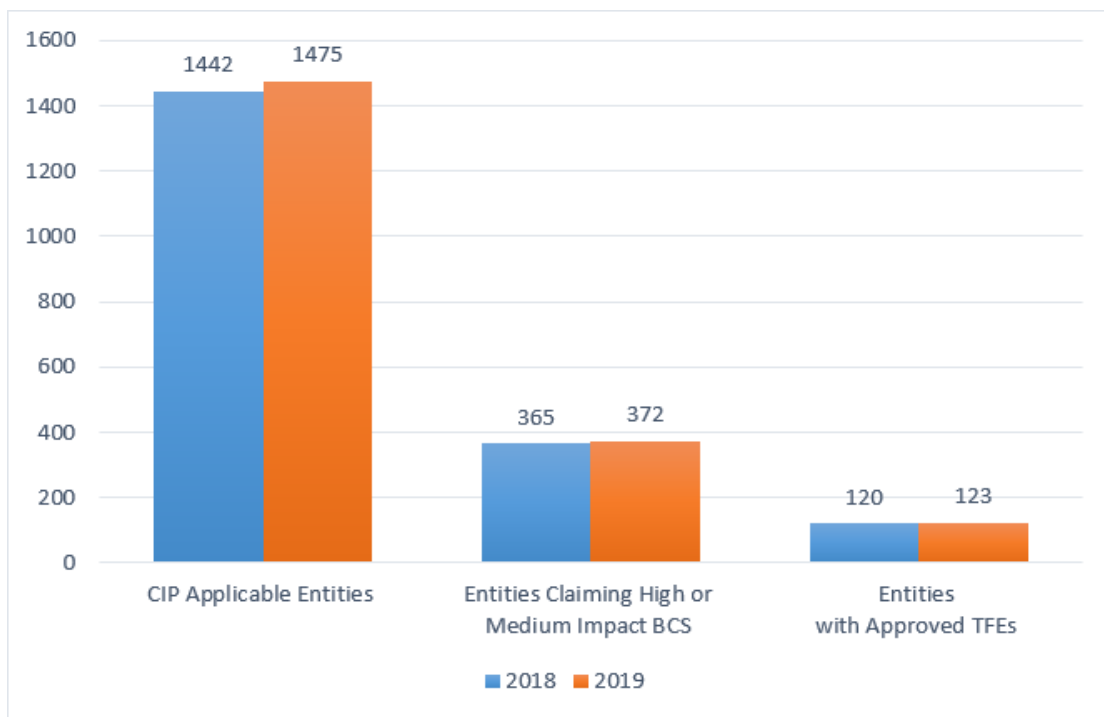


Figure 4 depicts the percentage of registered entities with TFE activity (e.g., submissions of new requests or amendments, terminations, etc.) with the number of registered entities that are

¹⁷ During the reporting period, only requirements applicable to high and medium impact BCS were subject to TFEs.

¹⁸ This figure includes the corrected number of 112 Registered Entities with Approved TFEs from 2018.

subject to the CIP Reliability Standards for the 2018 and 2019 report years. As shown below, the percentage of TFE activity has decreased significantly, from a total of 94 entities with TFE activity in 2018 to 35 entities with TFE activity in 2019. Stated differently, three and a half percent of registered entities that are subject to compliance with the CIP Reliability Standards had some type of activity with TFEs in 2019, compared to seven and a half percent in 2018. MRO believes the decrease for its region is due to the merger of SPP-RE registered entities without much increase of registered entity TFE activity. WECC believes the drop for its region is due to registered entities' CIP programs maturing along with the registered entities undergoing their first full CIP version 5 Standard compliance audits.

Figure 4: TFE Activities, per Number of Applicable Registered Entities

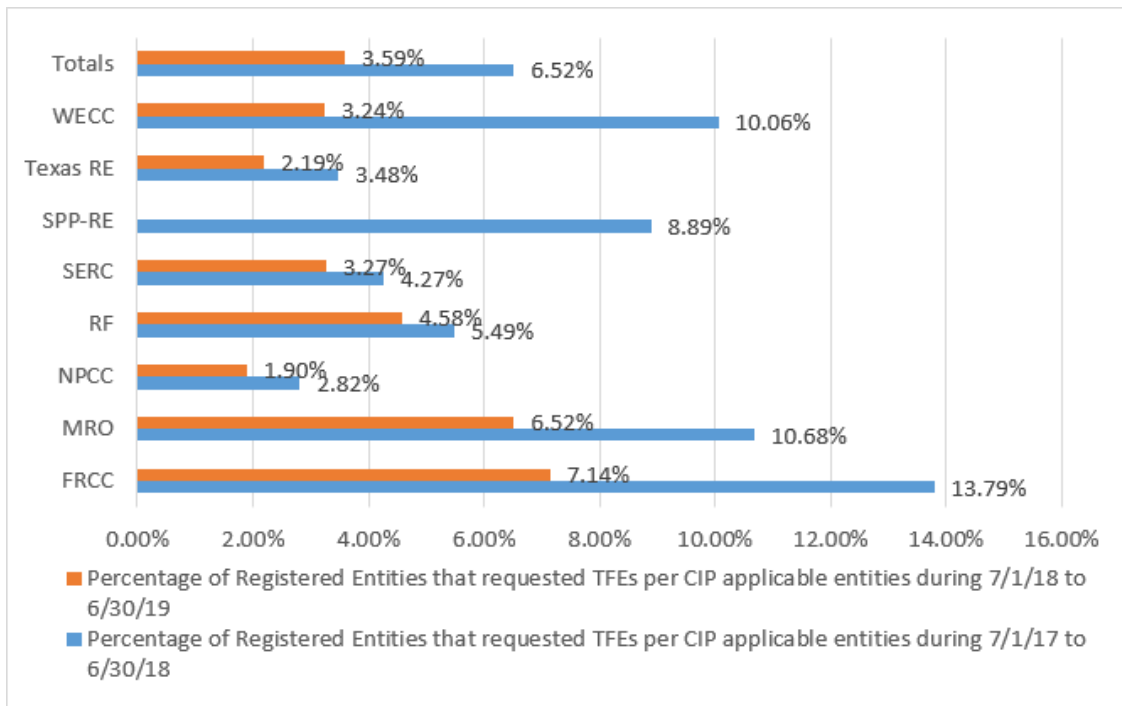


Figure 5 depicts TFE activity by comparing the number of TFE “transactions” (submittals, modifications, terminations, etc.) to the number of registered entities with high or medium impact BES Cyber Systems. The 2018 TFE report showed that, across the ERO Enterprise, almost 30

percent of registered entities that claim high or medium impact BES Cyber Systems had TFE activity.

In 2019, the overall average of entities with high and medium impact BES Cyber Systems that had TFE activity dropped to almost 14 percent. The decrease of activity versus registered entities claiming high or medium impact BES Cyber Systems is due to almost all registered entities having completed their first CIP version 5 audit and the anticipation of the new NERC Align¹⁹ tool. **Figure 5** illustrates the imbalance of TFE activity among Regional Entities; the ERO Enterprise TFE Task Force observes that the effort to maintain and manage TFEs has not leveled off, and in fact continues to be overly burdensome. TFE record-keeping, as currently required in Appendix 4D of the NERC ROP, is burdensome for the Regional Entities and registered entities alike, creating work efforts that may outweigh any perceived benefit to reliability and security. TFE mitigation efforts are being reviewed onsite as Regional Entities sample and assess devices during compliance monitoring engagements.

¹⁹ The Align Project, formerly known as the CMEP Technology Project, is a culmination of strategic efforts that began in 2014 with the goal of improving and standardizing processes across the ERO Enterprise. As the ERO Enterprise matures to use a risk-based approach to its regulatory posture for the CMEP, the need to develop a more comprehensive system to manage and analyze information is more acute. The Align tool roll out has been delayed till the first or second quarter 2020. More on the Align Project can be found here: <https://www.nerc.com/ResourceCenter/Pages/CMEPTechnologyProject.aspx>.

Figure 5: TFE Activity Compared to the Number of Registered Entities with High or Medium Impact BES Cyber Systems

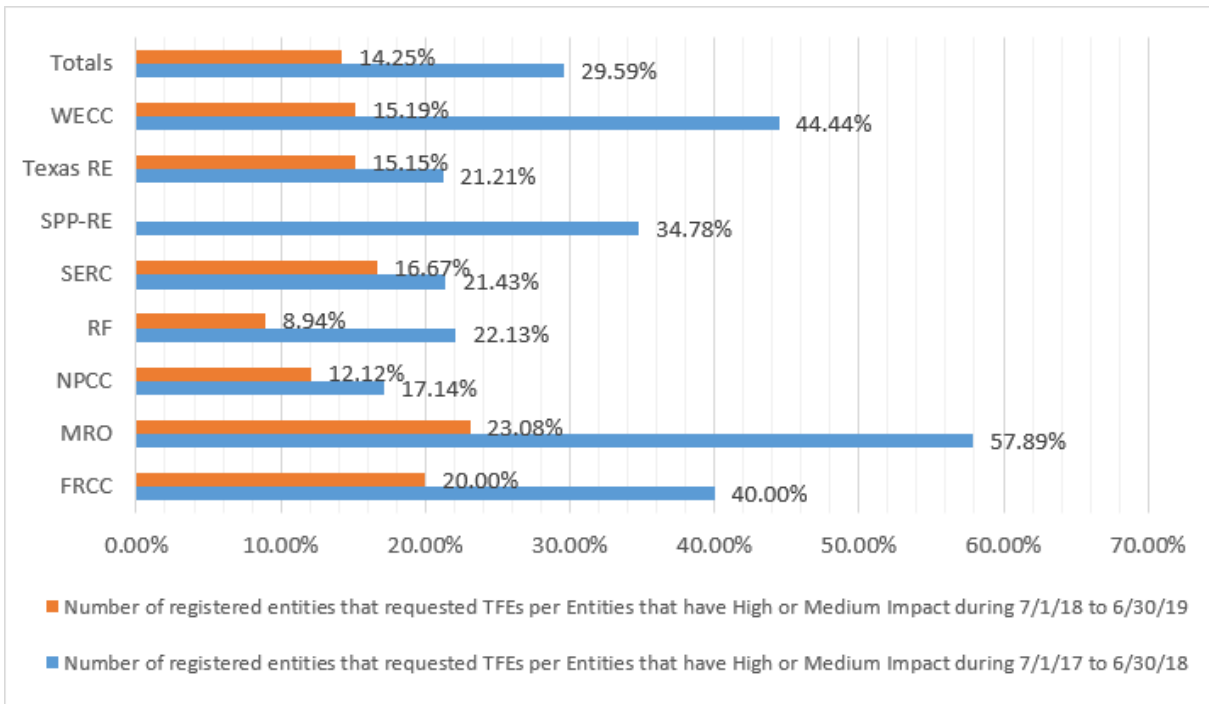


Figure 6 depicts the percentage of registered entities with TFE program activity, compared to the number of registered entities with approved TFEs. This percentage has dropped significantly due to various factors. First, a number of registered entities have consolidated registration for themselves and their affiliates. Second, several Multi-Region Registered Entities had consolidated their TFEs in previous years and may therefore not have any TFE activity this year. SPP RE is included in the report to show a correlation between the activity of the registered entities that were under SPP RE and the subsequent dissemination of the registered entities to MRO and the SERC regions. MRO and SERC both showed significant decreases in TFE activity, even with the absorption of registered entities from the former SPP RE.

Figure 6: Percentage of TFE Interaction per Approved TFEs

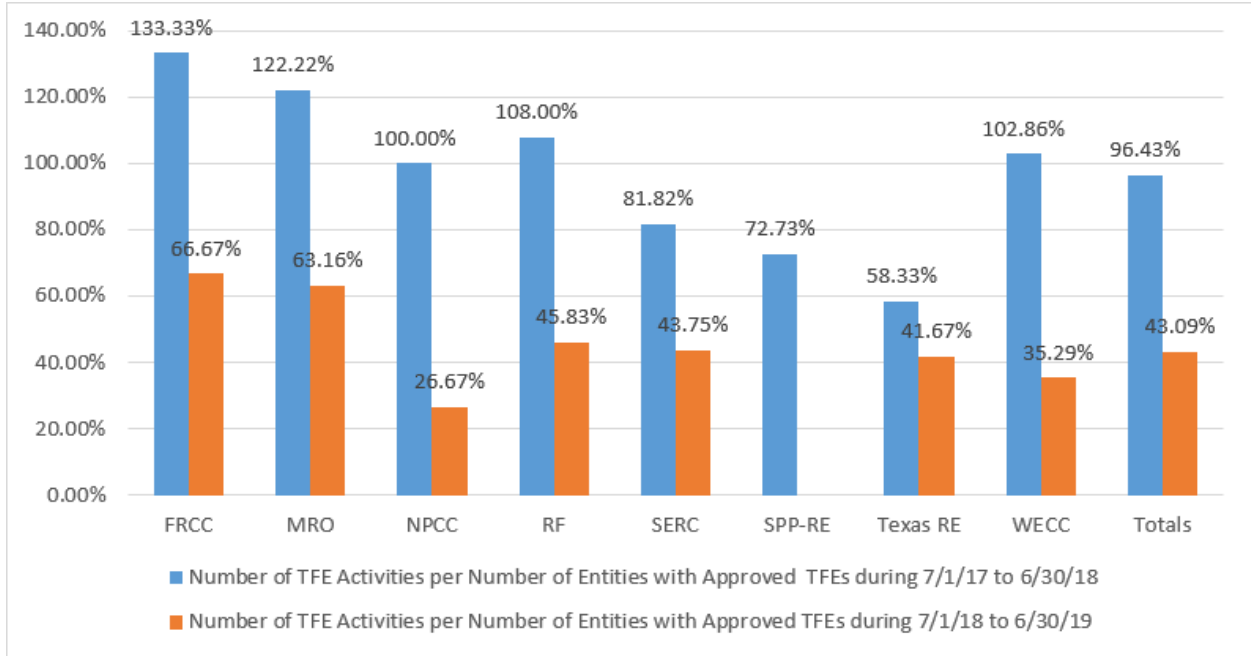


Figure 7 depicts the percentage of registered entities with TFE program activity, compared to the number of total approved TFEs. **Figure 7** uses the corrected data from 2018 as a comparison to 2019 data. The average percentage of approved TFEs having some type of activity has dropped significantly. Only a few Regional Entities have remained relatively the same throughout a two year overview.

Figure 7: Percentage of TFE Program Activity Correlated with Total Approved TFEs

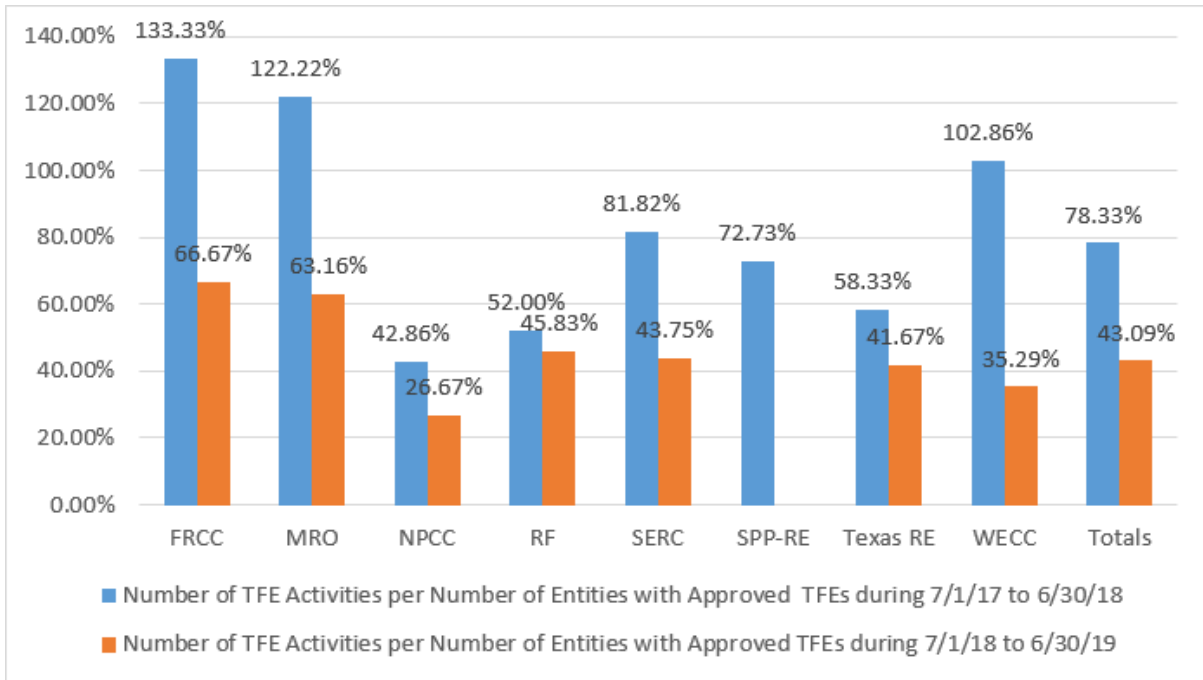
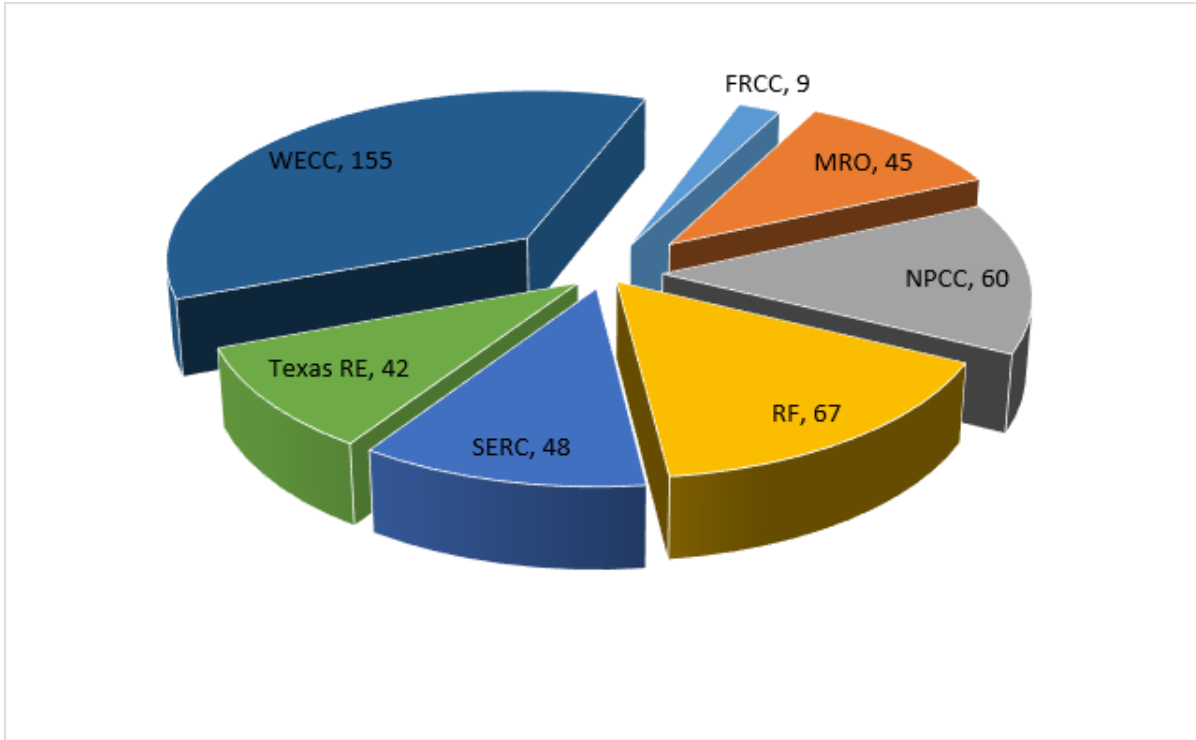


Figure 8 depicts the breakout, per Regional Entity, of the 426 ERO Enterprise approved TFEs. Registered entities in WECC continue to maintain the majority of the approved TFEs, while FRCC contained the least.

Figure 8: Total number of Approved TFEs



Registered entities submitted 161 TFE amendments during the reporting period. **Figure 9** provides a breakdown of that activity by Regional Entity. As shown below, the Regional Entities approved a majority of the amendments submitted. Of the 161 submitted amendments, the Regional Entities did not approve 12, or 7.4%. RF disapproved three TFEs due to the entity not submitting enough details and explanation for control and monitoring measures. SERC disapproved three TFEs due to the registered entity’s extensive compliance record, and SERC is working with the registered entity toward a solution. Additionally, there were six TFEs still under review as of June 30, 2019.

Figure 9: Submitted TFE Amendment Activity

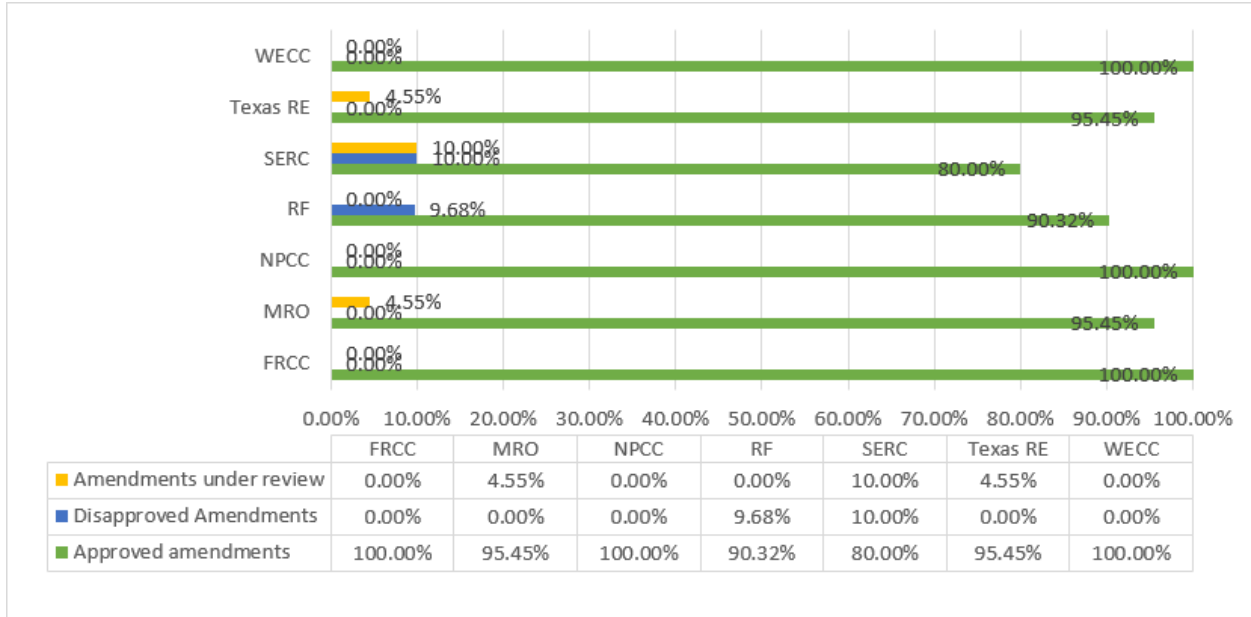


Figure 10 depicts the minimum, mean, and maximum quantity of TFEs for each registered entity that has an approved TFE as of June 30, 2019. As shown below, the ERO Enterprise mean average is 3.4 TFEs per registered entity that has an approved TFE. The fewest number of TFEs a single registered entity has is one TFE. The largest number of TFEs a single registered entity has is 32 TFEs; this registered entity is located in the WECC region. WECC has the highest average at 4.56 average TFEs per registered entity that has an approved TFE. RF has the lowest mean average of 2.68 TFEs per registered entity that has an approved TFE.

Figure 10: Average TFE Quantity per Registered Entity with an Approved TFE

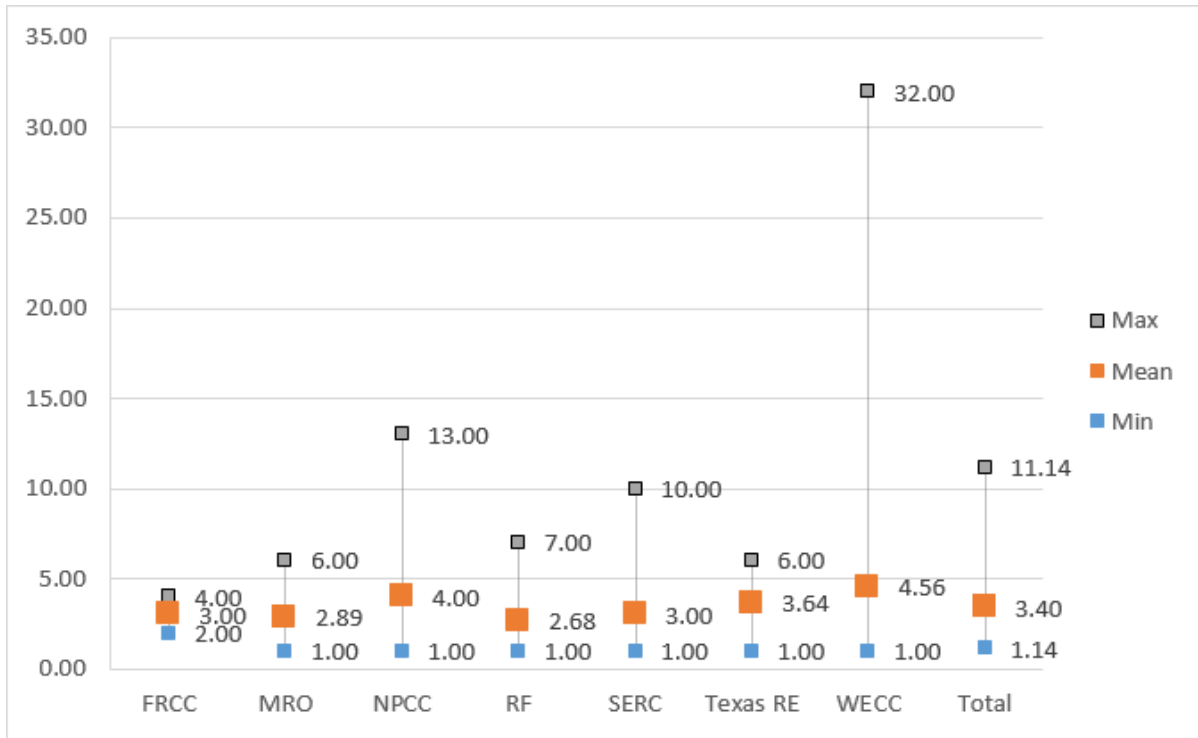
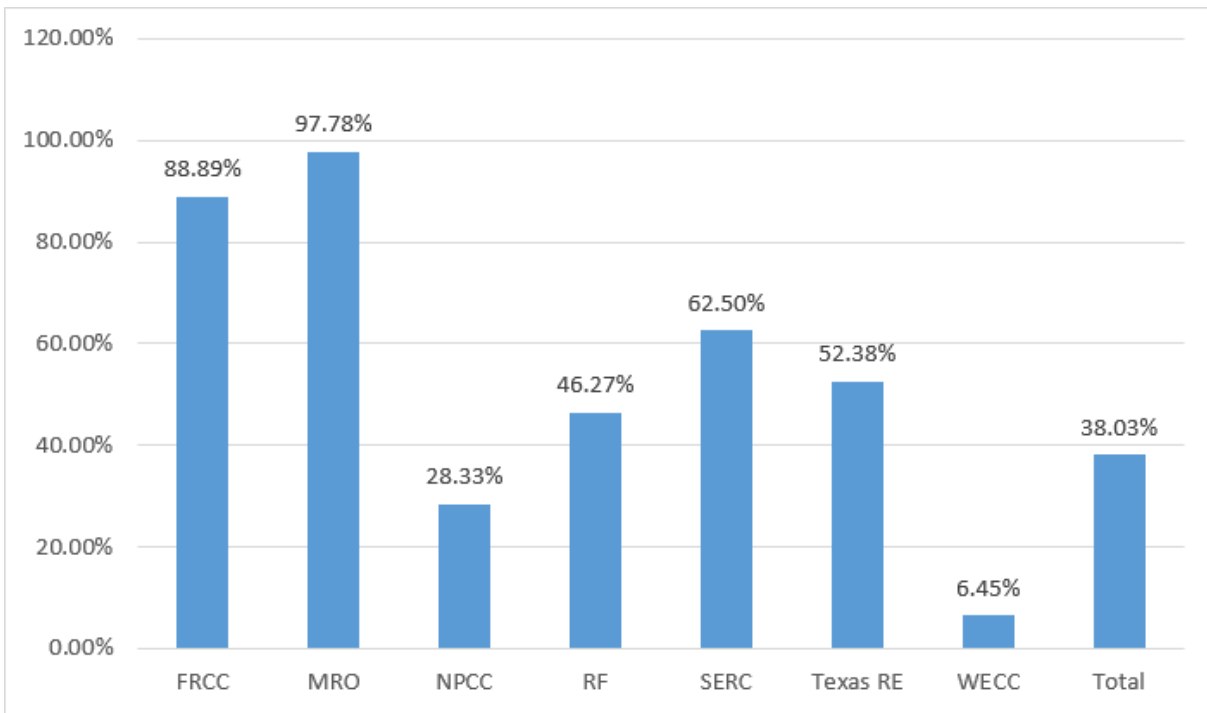


Figure 11 depicts the average percentage of TFE transactions per approved TFE during the report period. On an average, across the ERO Enterprise, when a registered entity had a TFE, 38.03% of them had a TFE transaction in 2019. In the WECC region, an average of 6.45% of registered entities with an approved TFE had some type of TFE transaction in 2019, due to the relatively high number of approved TFEs compared to a relatively small number of transactions. In comparison, MRO, with its relatively low number of approved TFEs compared to its almost equal number of TFE transactions, has an average of 97.78% approved TFEs that had some type of TFE transaction in 2019.

Figure 11: Average TFE Percentage per Registered Entities with TFE Activity



2. Categorization of the submitted and approved TFE Requests

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.

To better align with the CIP standards, the TFE Task Force changed the categorization of the assets within TFEs from “Network Data Communications,” “Relays,” “Workstation/server,” and “Other” to “Electronic Access Control and Monitoring (EACM),” “Physical Access Control System (PACS),” “Protected Cyber Asset (PCA),” “BES Cyber Asset (BCA),” “BES Cyber System (BCS),” and “Other.” The “Other” category remained for those assets that do not fall into the other categories. For instance, telecommunication modems, protective relays, remote terminal units (RTUs), satellite clocks, etc. A total of 153 TFEs have assets within the “Other” category, and just over 28.5% of the “Other” assets are located within the WECC region. These assets make up over 99.5% of the TFEs that have assets within the “Other” category. Due to the categorization

changes from the 2018 report to the 2019 report, the ERO Enterprise cannot perform a comparison between specific categories. Notwithstanding, NERC reported in 2018 that TFEs cover 16,704 unique assets across the ERO Enterprise. In 2019, the total unique assets covered by TFEs totals 19,801.

Additionally, in the 2018 report, NERC discussed two TFEs from WECC that accounted for 7,608 assets,²⁰ which comprised almost half the assets covered by TFEs in the WECC region. WECC reviewed these TFEs outside the 2018 compliance monitoring engagement and determined that these TFEs are still valid, even with the high number of assets. These two TFEs originate at a large entity and cover devices within numerous substations. Furthermore, in 2018 NERC reported a single TFE within the Texas RE region that made up over half of the covered assets within its region. Texas RE just completed a compliance monitoring engagement that had the applicable Standard and Requirement within the audit scope, but it was outside the timeframe for this report. NERC will report on this TFE specifically in the 2020 TFE report.

Figure 12 shows total number of assets within each asset category by Regional Entity. The only consistency across Regional Entities is BES Cyber Assets as the largest asset category, except for WECC. For instance, FRCC's major asset category is BES Cyber Assets which covers 58 percent of its TFE assets, while MRO has nearly 72 percent of its assets categorized as BES Cyber Asset. Within WECC, the largest category is "Other" at almost 54 percent, with BES Cyber Assets at almost 40 percent. MRO has stated that there are three older TFEs within its TFE tracking software where the registered entity did not initially categorize the total assets; these TFEs were submitted during the CIP version 5 transition and before the software was updated to force registered entities to input categorizations of assets rather than just total asset counts, and the

²⁰ See 2018 Report at 15-16. WECC's two TFEs covering 7,608 assets will be assessed at the next compliance monitoring engagement.

registered entity has not modified the TFE since MRO began tracking asset type. MRO reported that the registered entity addresses the uncategorized asset types by providing a count of how many assets within each asset category the TFE covers while updating its TFEs, but some have not required updating. MRO also tries to encourage entities to validate their TFEs during compliance monitoring engagements.

Figure 12: Total Number of Assets with Asset Categories for Each Regional Entity

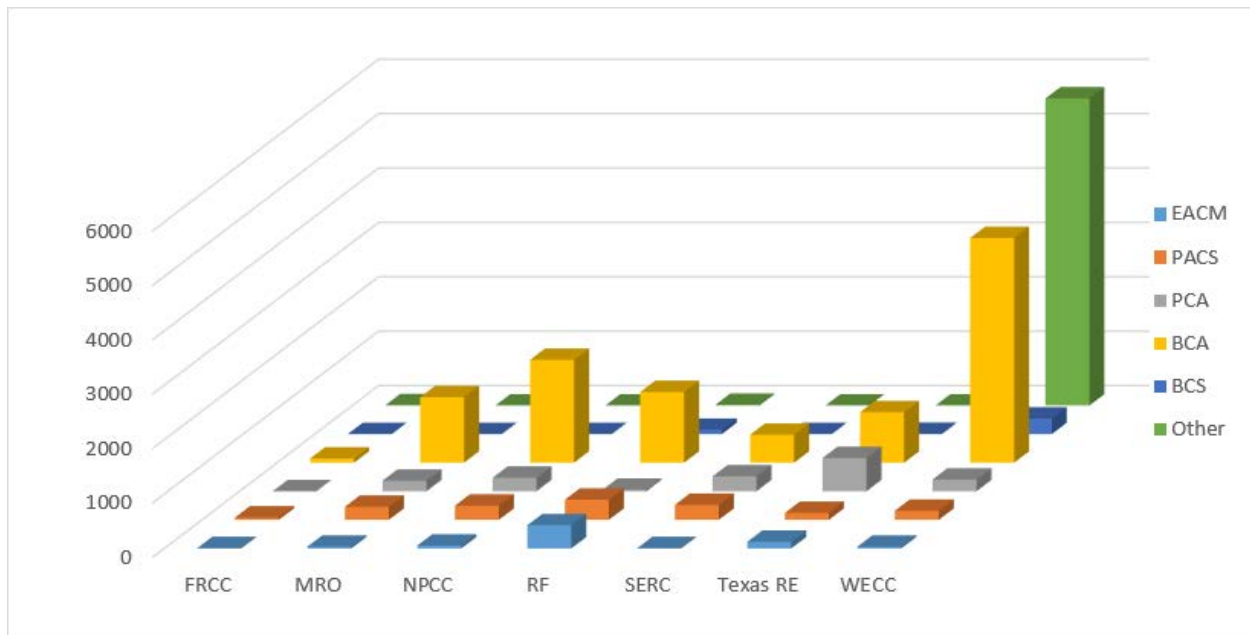


Figure 13 shows the percentage of assets within each asset category, and separated by region, compared to the total number of assets covered by TFEs in the entire ERO Enterprise. Due to the change of asset categorization, this report shows that the majority of assets that have an approved TFE are “Other.” The “Other” categorization makes up almost 29 percent of the total TFE assets within the ERO Enterprise. The second highest number of assets is in the BES Cyber Asset category, making up almost 21 percent of the assets covered by TFEs. The majority of assets covered by TFEs are located within the WECC region due to the two TFEs that account for almost half of the total amount of covered assets.

Figure 13: Percentage of Assets in each Asset Categories Compared to Total Number of Assets Covered by TFEs in the ERO Enterprise

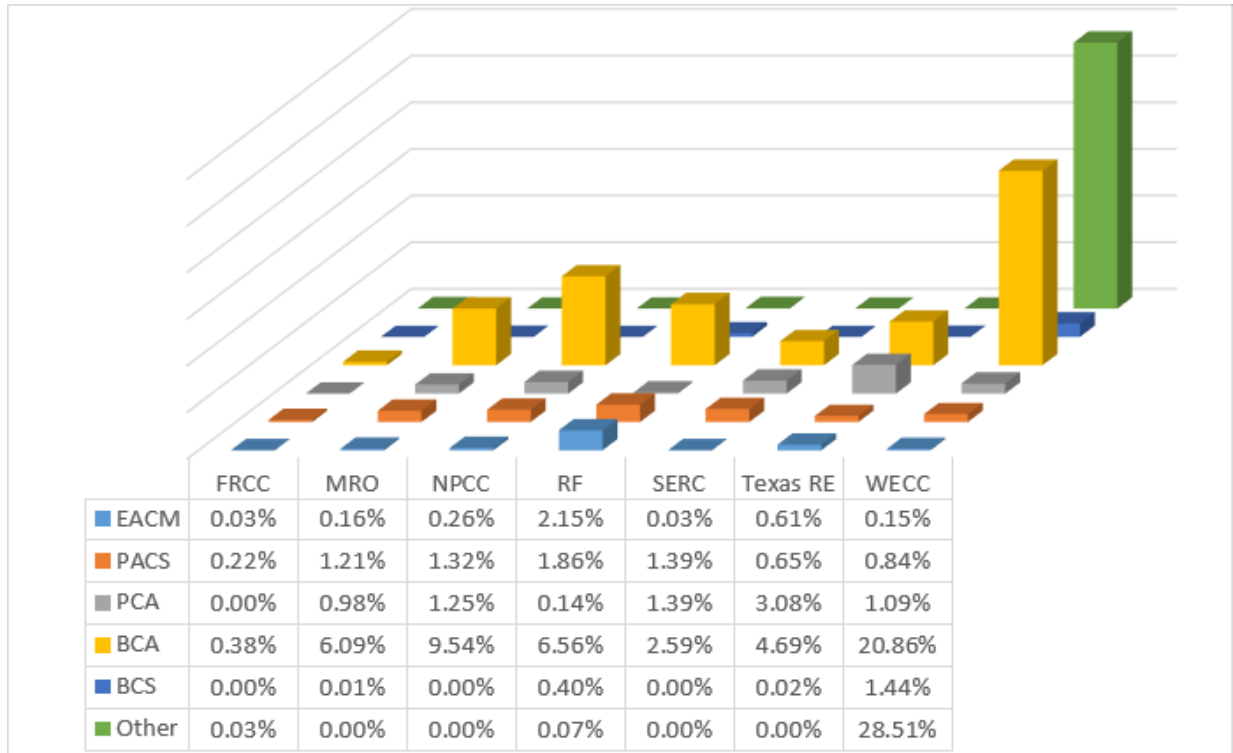
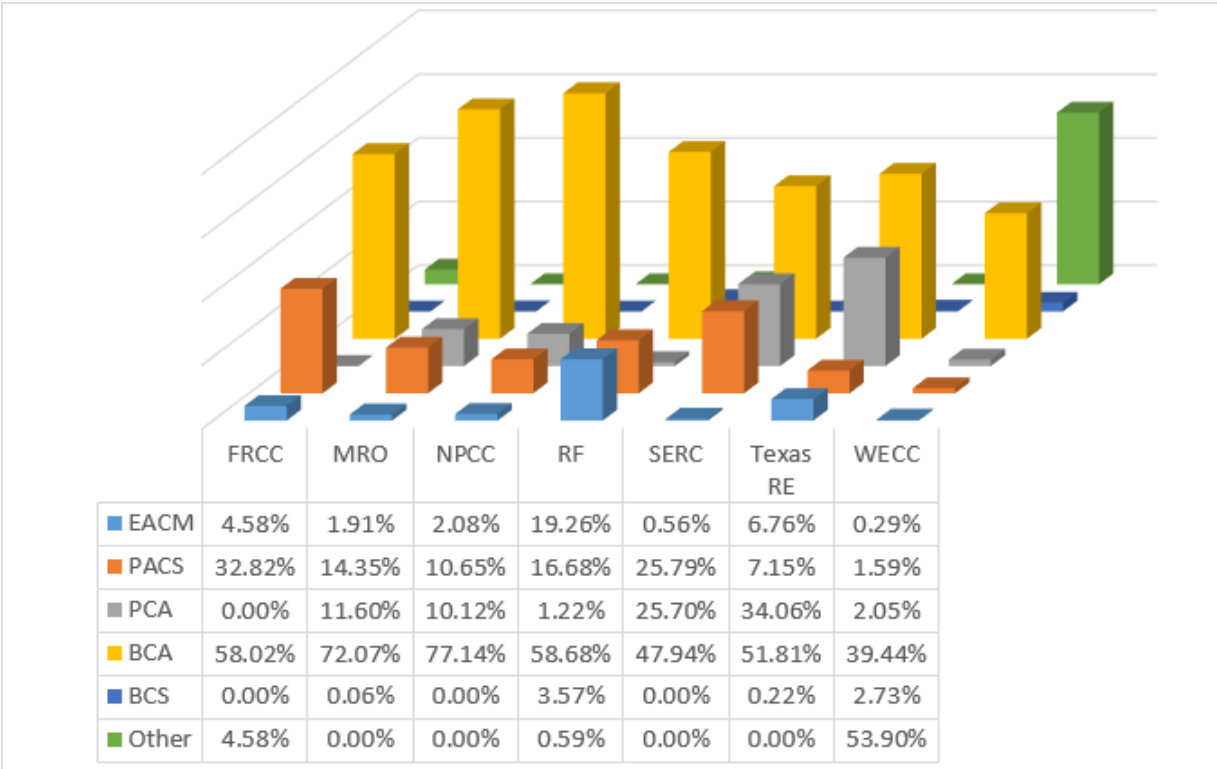


Figure 14 shows the total asset allocation broken out by Regional Entity. **Figure 14** is different from **Figure 12**, as **Figure 12** shows the raw number of assets for each category and within each region. **Figure 14** shows the proportion of assets in each region attributed to each category. This also shows that within each region, the BCA category has the majority of the assets, except for WECC, where the Other category contains the most assets.

Figure 14: Percentage of Assets Covered by TFEs per Regional Entity



3. Categorization of the circumstances or justification

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 Registered Entity.

The following are criteria that a registered entity may use to request a TFE:

- 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

As in past years, registered entities tend to request a TFE based on one of the first three criteria listed above. To date, there have been no reports of Regional Entities approving TFEs based on the last two criteria.

4. Categorization of the compensating measures and mitigating measures implemented and maintained

Categorization of the compensating measures and mitigating measures implemented and maintained by registered entities pursuant to approved TFEs, by broad categories of compensating measures and mitigating measures and by types of Covered Assets.

The ERO Enterprise continues to evaluate the extent and effectiveness of compensating measures documented in TFE requests. The registered entities accomplish the majority of compensating and/or mitigating measures by compliance with requirements in related CIP Standards. As most TFEs relate to the same types of assets, the registered entities are applying the same mitigation measures for each of the TFEs to address the known risks. For instance, one registered entity filed a TFE for the inability to technically or procedurally enforce password changes (CIP-007-6 R5 Part 5.6), and the mitigating measure is the utilization of firewall rules and keeping assets logically isolated inside defined Electronic Security Perimeters. To compensate for TFEs on some BES Cyber Assets, registered entities disable interactive remote user access or physically locate assets within Physical Security Perimeters and perform background checks and training for individuals with authorized physical access (CIP-005-5 R2 Part 2.3). For BES Cyber Assets that have ports unable to be closed (CIP-007-6 R1 Part 1.1), restrictions on the Electronic Security Perimeter to utilize that particular port is often the mitigating and compensating measure.

5. TFE rejection or disapproval

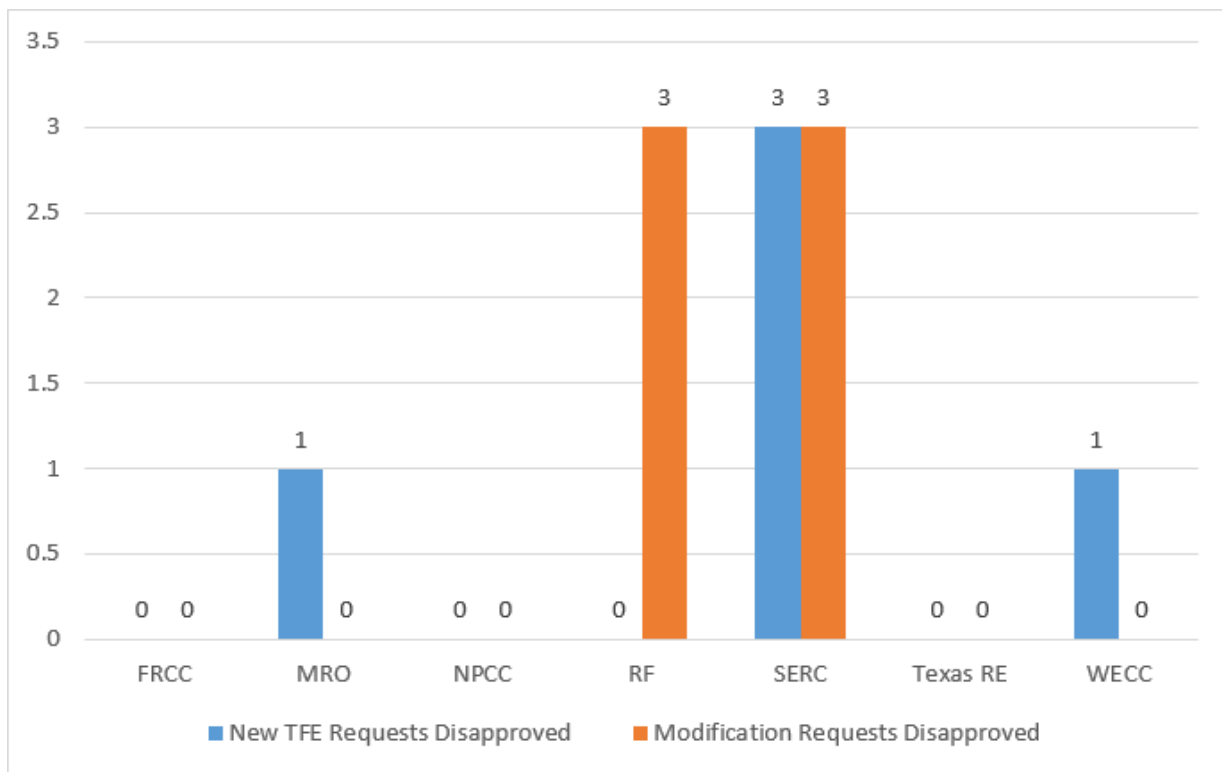
For each TFE Request that was rejected or disapproved, and for each TFE that was terminated, but for which, due to exceptional circumstances as determined by the Regional Entity, the TFE Termination Date was later than

the latest date specified in Section 5.2.6, or 9.3, as applicable, a statement of the number of days the Registered 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.

During the reporting period, the Regional Entities disapproved five new TFEs. Additionally, Regional Entities did not approve six TFE modifications. During the 2019 reporting period, there were no TFE termination requests that caused the effective date to be extended beyond the latest date specified in Section 5.2.6 or Section 9.3 of Appendix 4D, as applicable. For the single new TFE submitted to MRO, MRO's compliance department had a conversation with the entity's compliance contact. In this instance, the requirement for which the entity requested a TFE was neither required nor allowed, so MRO disapproved the TFE. For the RF disapprovals, the TFEs required more explanation for control and monitoring measures. For two of the new TFEs submitted to SERC, the registered entity retracted the request prior to SERC approving or disapproving. For the other disapprovals within SERC region, including the modification disapprovals, the registered entity is potentially in noncompliance with the related requirement and is working towards a solution with SERC's guidance. For WECC's single TFE disapproval, after discussing with the registered entity, it was determined that the registered entity did not need the TFE based upon the language of the associated Reliability Standard.

Figure 15 depicts the overview of these disapproved TFEs broken down by region.

Figure 15: Disapproved TFEs



6. Compliance Audit results and findings concerning the implementation and maintenance of compensating measures and mitigating measures

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 registered entities in accordance with approved TFEs.

Appendix 4D of NERC’s ROP is part of the Compliance Monitoring and Enforcement Program (“CMEP”) that forms the framework for Regional Entities to review and audit TFE requests. During a compliance monitoring engagement, the Regional Entity would not evaluate the registered entity on a particular requirement from the applicable Reliability Standard for which a TFE was accepted and approved, but instead evaluated against the alternative compliance obligations assumed by the registered entity (*i.e.*, compensating and mitigating measures).

All Regional Entities conduct compliance monitoring engagements where applicable approved TFEs are within the determined scope. Typically, during a compliance monitoring engagement of a registered entity with TFEs within scope, the TFEs will be reviewed (*i.e.*, based on relevant factors such as quantity, locations, etc.). Reviews include interviewing subject matter experts specifically about TFEs, and sampling evidence pertaining to a TFE's mitigating and compensating measures, among other things. Regional Entities continue to report that registered entities are managing and maintaining their TFEs within the procedural requirements of Appendix 4D. Regional Entities and registered entities are processing TFEs consistent with the CMEP framework.

7. Assessments of impacts on the reliability of the BES

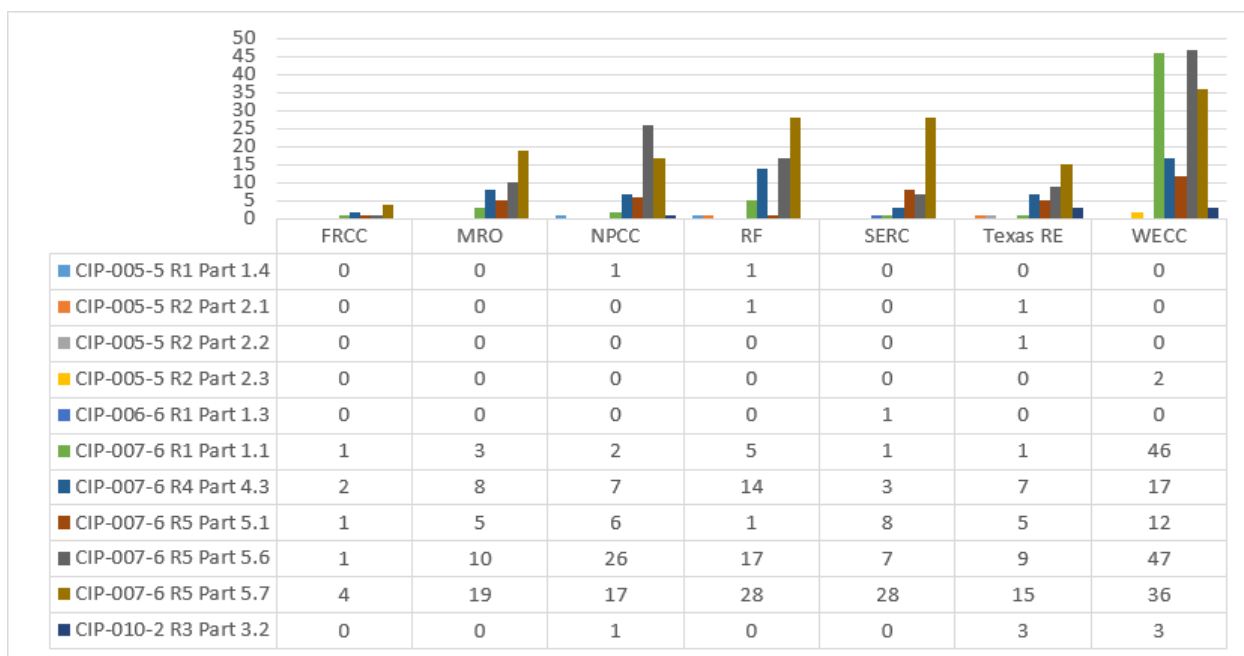
Assessments, by Regional Entity (and for more discrete areas within a Regional Entity, if appropriate) and in the aggregate for the United States and for the jurisdictions of other Applicable Governmental Authorities, of the Wide-Area impacts on the reliability of the Bulk Electric System of approved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

The ERO Enterprise TFE Task Force, comprised of subject matter experts from each Regional Entity and NERC, reviews TFE requests to verify sufficiency and consistency of the requests' disposition. In addition, the ERO Enterprise TFE Task Force verifies the TFEs are available for review; the ERO Enterprise performs the review when initially submitted or modified, and during compliance monitoring engagements. The ERO Enterprise TFE Task Force reports that the use of TFEs has not had an adverse impact on BES reliability. The members of the ERO Enterprise TFE Task Force reported similar experiences (among different regions) with the execution and management of the TFE process and the manner in which it impacted BES reliability. Additionally, the Task Force reports that a large majority of registered entities have implemented multiple compensating and mitigating measures for Covered Assets. In general, the

mitigating and compensating measures implemented for approved TFEs in lieu of strict compliance with applicable CIP Reliability Standards have accomplished the stated alternate compliance objectives. As a result, the level of BES security achieved through the TFE process is comparable to strict compliance with the applicable Reliability Standards.

Figure 16 shows, per region, the number of TFEs for each requirement that registered entities submitted to the Regional Entities. The majority of the approved TFEs are for CIP-007-6 R5 Part 5.7. CIP-006-6 R1 Part 1.3 and CIP-005-5 R2 Part 2.2 have the fewest number of TFEs with one TFE each.

Figure 16: TFE Breakout per Requirement and Part



8. Efforts to eliminate future reliance on TFEs

Discussion of efforts to eliminate future reliance on TFEs.

In the past, the value of a TFE was the safe harbor it provides when a registered entity could not achieve strict compliance to certain Reliability Standards. As referenced in Order No. 706, TFEs are rooted in the problem of legacy equipment and the economic considerations

involved in the replacement of such equipment before the end of its useful life.²¹ As registered entities increasingly move away from legacy equipment, the value of the TFE program, as currently constructed, is diminishing in comparison to the program's administrative burden. However, despite the decrease in the number of approved TFEs and the total assets covered by TFEs, the level of effort required of the registered entity and Regional Entity to maintain and administer a TFE continues to increase. TFE record-keeping, as currently required by Appendix 4D of the NERC ROP, is burdensome for the Regional Entities and registered entities alike, creating work efforts that may outweigh any perceived benefit. In addition, ERO Enterprise CMEP processes used to assess general compliance with the CIP Reliability Standards are equally effective in evaluating the compensating and mitigation measures when strict compliance is "technically infeasible." The ERO Enterprise TFE Task Force does not believe that registered entities achieve additional reliability or security benefits by administratively submitting and modifying TFEs.

To that end, NERC and the Regional Entities are considering alternatives to the current TFE program to alleviate the administrative burden on registered entities and the ERO Enterprise. During quarterly meetings, the ERO Enterprise TFE Task Force has focused on TFE management, administrative processes, and approaches to making the processes more effective and efficient for the Regional Entities and registered entities. The members of the ERO Enterprise TFE Task Force concluded that the existing TFE processes are labor intensive and do not provide additional mitigation of significant risks apart from the application of existing CMEP tools such as Compliance Audits, Spot Checks, Self-Certifications, and Self-Reports. The ERO Enterprise TFE Task Force has stated that there may be opportunities to retain the same awareness and risk

²¹ Order No. 706 at P 157.

mitigation of the TFE program while reducing the administrative burden. For example, NERC could allow a registered entity to maintain the exception without prior approval, provided that the registered entity could demonstrate during compliance monitoring engagements that: (i) the exception is reasonable; and (ii) the registered entity implemented appropriate mitigation measures in lieu of strict compliance. As NERC considers alternatives to the TFE program as presently constituted, it will consult with Commission staff. NERC will seek Commission approval for any proposed changes to the NERC ROP. Additionally, the Standards Drafting Team for Project 2016-02 Modifications to CIP Standards²² may propose changes to the TFE language as found in currently approved CIP Reliability Standards.

9. Material Change Reports

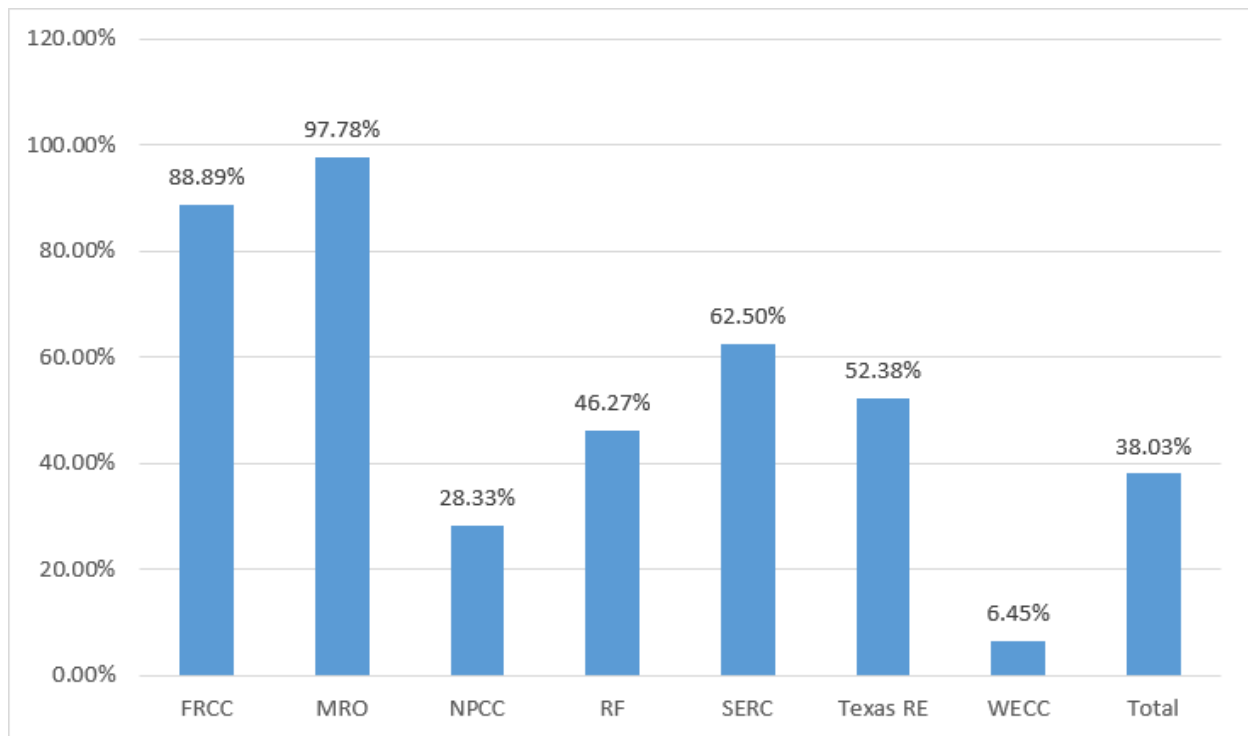
Data and information regarding Material Change Reports, including the number of Material Change Reports filed annually and information regarding the types of circumstances or events that led to Material Changes, as well as any additional information NERC believes would be useful.

When registered entities modify the information associated with approved TFEs, the registered entity submits updates to the relevant Regional Entity via a Material Change Report (“MCR”). An MCR requires approval by the Regional Entity, which can then refer to the updated, current data when undertaking compliance monitoring activities (e.g., Compliance Audits, Spot Checks, Self-Certifications, etc.). **Figure 17** below shows the percentage of amendments per approved TFEs within each region. The majority of requested changes occur for asset count changes and administrative updates, such as changing the primary contact’s information. MCR requests have declined from 2018 to 2019. In 2018, some regions reported that every approved TFE had an MCR submitted for it. The 2019 average across the ERO Enterprise is just over 38%,

²² Project 2016-02 Modifications to CIP Standards, [https://www.nerc.com/pa/Stand/Pages/Project 2016-02 Modifications to CIP Standards.aspx](https://www.nerc.com/pa/Stand/Pages/Project%2016-02%20Modifications%20to%20CIP%20Standards.aspx).

which means there is a 38% chance a registered entity submitted an MCR to modify an approved TFE.

Figure 17: TFE Amendments to Approved TFEs per Regional Entity



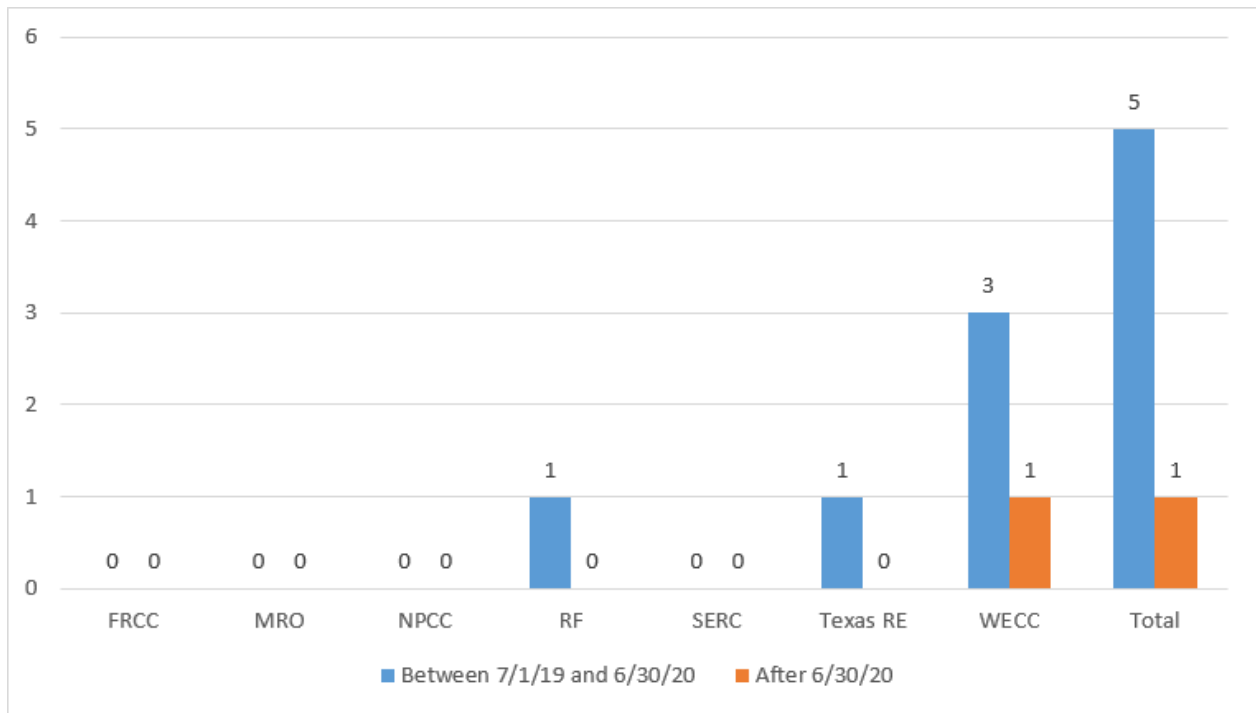
10. Additional information about TFEs and their TFE Expiration Dates

Additional information about TFEs and their TFE Expiration Dates, including the number of TFEs by expiration year and CIP Standard requirement, the percentage of currently approved TFEs without TFE 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 TFE reports related to TFEs with and without expiration dates. As reported previously, most TFEs do not have expiration dates. For the next TFE reporting period, July 1, 2019 to June 30, 2020, there are five TFEs scheduled to expire. In addition, one TFE for CIP-005-5 Requirement R2, Part 2.3 is scheduled to expire in the 2021 TFE reporting period.

Figure 18 shows the breakdown of TFEs with future expiration dates.

Figure 18: TFEs to Expire in Future



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

Appendix 4D, Section 11.1 of the NERC ROP requires that NERC and the Regional Entities collaborate to assure “consistency in the review, approval and disapproval of TFE Requests....” Also, as noted above, Section 11.2.4 of the Appendix 4D requires that NERC submit with each Annual TFE Report certain information concerning the manner in which Regional Entities have made determinations to approve or disapprove TFE requests. The scope document for the ERO Enterprise TFE Task Force describes activities and deliverables that support this effort:

- Review Regional Entities’ processes and performance in administering TFE Requests and Material Change Reports;
- Evaluate whether the administration of TFE activities among the Regional Entities yields consistent results;
- Assess compensating and mitigating measures described in TFEs for quality and sufficiency;

- Review approved and disapproved TFE Requests or Material Change Reports for consistency; and
- Monitor approved TFEs throughout their life cycle to determine whether they remain necessary and effective.

NERC and the ERO Enterprise TFE Task Force will continue to collaborate on these actions in 2019 and 2020. Additionally, NERC and the ERO Enterprise TFE Task Force will be conducting more rigorous reviews of the TFE data throughout the year to verify correct information is being presented to FERC.

VI. CONCLUSION

For the foregoing reasons, NERC respectfully requests that the Commission accept the 2019 Annual Report.

Respectfully submitted,

/s/ Lauren A. Perotti

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