

NERC

NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

Compliance Monitoring and Enforcement Program Quarterly Report

Q2 2019

August 14, 2019

RELIABILITY | RESILIENCE | SECURITY



3353 Peachtree Road NE
Suite 600, North Tower
Atlanta, GA 30326
404-446-2560 | www.nerc.com

Table of Contents

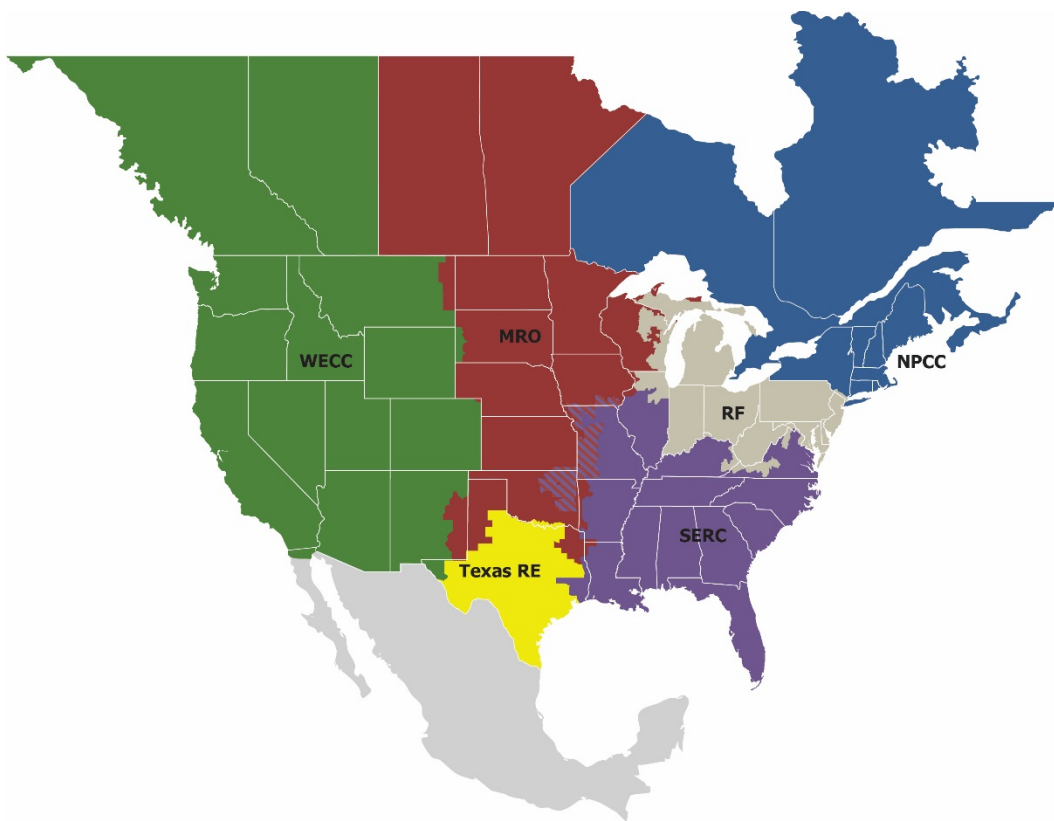
Preface.....	iii
Executive Summary	iv
Chapter 1 : CMEP Activities.....	1
Program Alignment.....	1
FRCC Transition	1
Align: CMEP Technology Project.....	1
CORES.....	1
Coordinated Oversight Program.....	2
Chapter 2 : RE Oversight	3
Enforcement Oversight.....	3
Serious Risk Issues	3
Spreadsheet NOPs	3
Annual Find, Fix, Track, and Report and Compliance Exception Programs Review.....	4
Compliance Monitoring Oversight.....	4
NERC Oversight.....	4
Inherent Risk Assessment Completion and Compliance Oversight Plans.....	4
Compliance Guidance	4
Certification.....	4
Q2 Certification Completions	4
Registration	5
Chapter 3 : ERO Enterprise Performance Objectives.....	6
Priorities for 2019	6
Appendix A: Enforcement	7
Appendix B: Compliance Assurance	13
Appendix C: Registration.....	15
Appendix D: Certification and Bulk Electric System.....	16

Preface

Electricity is a key component of the fabric of modern society, and the Electric Reliability Organization (ERO) Enterprise serves to strengthen that fabric. The vision for the ERO Enterprise, which is comprised of the North American Electric Reliability Corporation (NERC) and the six Regional Entities (REs), is a highly reliable and secure North American bulk power system (BPS). Our mission is to assure the effective and efficient reduction of risks to the reliability and security of the grid.

Reliability | Resilience | Security
Because nearly 400 million citizens in North America are counting on us

The North American BPS is divided into six RE boundaries as shown in the map and corresponding table below. The multicolored area denotes overlap as some load-serving entities participate in one region while associated Transmission Owners/Operators participate in another.



MRO	Midwest Reliability Organization
NPCC	Northeast Power Coordinating Council
RF	ReliabilityFirst
SERC	SERC Reliability Corporation
Texas RE	Texas Reliability Entity
WECC	Western Electricity Coordinating Council

Executive Summary

This report highlights key ERO Enterprise¹ Compliance Monitoring and Enforcement Program (CMEP) activities that occurred in Q2 2019 and provides information and statistics regarding those activities.

In Q2 2019, CMEP activities throughout the ERO Enterprise reflected continued implementation of a risk-based approach and program alignment. The ERO Enterprise:

- Continued the development of the Align tool;
- Prepared the Centralized Organization Registration ERO System (CORES) project, which was released on July 15;
- Approved 10 multi-region registered entities (MRREs) for entry into the Coordinated Oversight Program;
- Certified one new Reliability Coordinator and reviewed six already-certified and operational registered entities;
- Processed 81 functional registration changes;
- Filed four Full Notices of Penalty (NOP);
- Filed nine Spreadsheet Notices of Penalty (SNOP);
- Published two CMEP Practice Guides; and
- Began conducting outreach on the revised Compliance Oversight Plan template.

¹ The “ERO Enterprise” refers to the affiliation between NERC and the six REs for the purpose of coordinating goals, objectives, metrics, methods, and practices across statutory activities. The operation of the ERO Enterprise does not conflict with obligations of each organization through statutes, regulations, and delegation agreements. The activities discussed in this report relate to compliance monitoring and enforcement performed in connection with United States registered entities. ERO Enterprise activities outside of the United States are not specifically addressed.

Chapter 1: CMEP Activities

Program Alignment

The ERO Enterprise is enhancing alignment of CMEP activities under a broader ERO Enterprise Program Alignment Process (Program Alignment).² In Q2, NERC staff completed the remaining three NERC-submitted issues and two CMEP Practice Guides, closing out all open issues.

NERC staff, along with Compliance and Certification Committee (CCC) Alignment Working Group members, will provide Program Alignment outreach at the two-day Compliance and Standards Workshop held in Minneapolis during Q3.

FRCC Transition

On June 14, 2019, the Federal Energy Regulatory Commission approved NERC's request for the following:

- A one-time advance to the Florida Reliability Coordinating Council (FRCC) of up to \$1,500,000 from NERC's operating contingency reserve to assist in FRCC's wind-down costs associated with its dissolution of FRCC as an RE;
- To deviate from its Rules of Procedure to replenish its operating contingency reserves via certain penalty funds, and to the extent such penalty funds are not sufficient, via a special assessment to former FRCC registered entities; and
- To amend the termination agreement between NERC and FRCC in accordance with NERC's requested changes, including to submit an informational report on or before June 1, 2020.

Align: CMEP Technology Project

The Align project team is continuing to prepare for the initial release of Align. The team held a tabletop exercise and demonstration of Release 1 in May with the RE subject-matter experts. In response to the feedback from the subject-matter experts and in an effort to ensure a quality product to end-users, the Align project team decided to extend the development and testing phases by approximately six to eight weeks. As a result, the Align project team rescheduled the RE staff and registered entity training sessions for after September 15, 2019. NERC will publish a revised training schedule in August.

CORES

The CORES project was released on July 15, 2019. All development and testing of CORES was completed, including several pilot sessions with registered entities and the CORES focus group. After release, CORES will launch to the industry in several stages – pilot entities first, MRREs second, and last by RE. This staging is to ensure ERO Registration staff will have sufficient resource availability and be able to provide more effective and targeted outreach messages, including training opportunities. The registered entity experience was important throughout the project, and the CORES release and launch activities will provide a smoother registered entity transition to the new software.

The timing of the CORES release is in a sequence with other projects. The first project release was for enhancing security for the ERO Portal (CORES is an application on the ERO Portal). On June 18, 2019, the Multi-Factor Authentication (MFA) project was released. All registered entities were encouraged to register with the ERO Portal and activate the MFA. As a result, when CORES was released on July 15, 2019, it had enhanced security with the use of MFA. The next project is the ERO Enterprise Helpdesk, which will be released in August 2019. The ERO Enterprise Helpdesk will enhance service to registered entities across the ERO Enterprise for CORES and other applications. These projects are sequenced to be completed for the Align project release in Q4.

² <http://www.nerc.com/pa/comp/Pages/EROEnterProAlign.aspx>

A secondary development cycle for a series of requested enhancements is underway. The schedule will be released in approximately two months.

Coordinated Oversight Program

The purpose of the Coordinated Oversight Program is to increase efficiency and eliminate unnecessary duplication of compliance monitoring and enforcement activities for MRREs. A registered entity operating in or owning assets in two or more REs' jurisdictions with one or more NERC Compliance Registry (NCR) identification number is a potential candidate for inclusion in the voluntary Coordinated Oversight Program. In connection with the program, the ERO Enterprise takes into account reliability considerations such as, but not limited to, a registered entity's registered functions, load and generation capacity, transmission assets, and transmission and generation control centers.

In Q2 2019, the ERO Enterprise approved 10 additional MRREs for entry into the Coordinated Oversight Program, increasing the total count of registered entities participating to 210.³

³ Appendix B includes further information on the MRREs participating in the Coordinated Oversight Program.

Chapter 2: RE Oversight

Enforcement Oversight

Serious Risk Issues

In Q2 of 2019, NERC filed four Full NOPs. NP19-10 and NP19-11 were two companion Full NOPs stemming from a Compliance Audit conducted by staff of the Federal Energy Regulatory Commission. NP19-10 and NP19-11 included 13 and 12 violations, respectively, of the Critical Infrastructure Protection (CIP) Reliability Standards and a two million dollar combined penalty. These issues displayed the following contributing causes:

- Insufficient procedures that lacked specific details on how to manage physical access keys;
- Inadequate oversight, in which the registered entities did not include periodic reviews to ensure compliance with CIP Reliability Standards;
- Inadequate processes, including a lack of controls to ensure the registered entities enabled only logical network accessible ports and services deemed necessary; and
- Insufficient processes and a lack of controls around the deployment of malware prevention protections.

The registered entities engaged with the REs during the enforcement process to comprehensively evaluate and improve their overall security posture. This work enabled the registered entities to identify the changes that were necessary to address the underlying issues in their CIP compliance program to implement an effective and sustainable CIP program.

In addition to focusing on the cultural and enterprise-wide changes necessary for the registered entities to establish the foundation for a sustainable CIP program, the registered entities are focusing on key risk areas, including patching, identifying deficiencies, and identifying strategies for the continual improvement of their security posture and program sustainability.

Additionally, NERC filed NP19-14 in Q2, resolving 21 violations of CIP Reliability Standards with a \$775,000 penalty. The violations were a result of the registered entities' adjustment to CIP Version 5 Reliability Standards. CIP Version 5 involved a major expansion in scope for some of the registered entities' business units that had a new CIP compliance program. As a result, when CIP Version 5 standards became effective, the registered entities were formalizing a CIP internal controls program. Because supporting controls and training were not in place, the registered entities applied their CIP procedures in an inconsistent manner; however, the registered entities discovered and self-reported the noncompliance and submitted mitigation in a timely manner, demonstrating their strong culture and commitment to security and compliance.

NERC also filed NP19-13, a single-violation vegetation contact case with a \$120,000 penalty. In NP19-13, Big Rivers Electric Corporation (BREC) discovered a fast-growing tree beneath a 345 kV line that grew into the line and caused a momentary interruption. The tree was encroaching four feet into the Minimum Vegetation Clearance Distance (MVCD). Upon investigation, BREC determined that a small branch shoot from the fast-growing tree beneath the line grew toward the phase conductors and encroached four feet into the MVCD and burned clear. The cause of the violation was BREC's deficient Transmission Vegetation Management Program – specifically, that the program did not require annual inspections of the lines at a time of year when foliage was present on the tree, and did not require an inspector to focus solely on vegetation when performing aerial inspections.

Spreadsheet NOPs

In Q2 2019, NERC filed nine SNOPs that included 21 violations of NERC Reliability Standards and carried a total combined penalty of approximately \$104,000. Thirteen of the violations were violations of the CIP Reliability Standards, while the remaining eight were violations of non-CIP Reliability Standards.

Annual Find, Fix, Track, and Report and Compliance Exception Programs Review

In Q2, NERC concluded its review of the Annual Find, Fix, Track, and Report (FFT) and Compliance Exception programs. NERC shared feedback points with all six REs to identify positive aspects of the programs in each RE and areas of opportunity. NERC will issue a final closure letter in Q3.

Compliance Monitoring Oversight

NERC Oversight

In Q2, NERC executed monitoring oversight activities planned for 2019. These activities include the following:

- RE-specific follow-up related to prior oversight recommendations,
- Planned audit observation activities, and
- Recurring oversight coordination specific to ERO Enterprise efforts around Compliance Oversight Plan enhancement and alignment during 2019.

Inherent Risk Assessment Completion and Compliance Oversight Plans

During Q2 2019, RE progress toward completion of initial Inherent Risk Assessments (IRAs) continued on track according to regional plans.⁴ By the end of 2019, all REs will have completed initial IRAs for all registered entities and will continue to update existing IRAs. IRA updates and initial IRAs for newly registered entities will consider registered functions, risk priorities, and regional resources. REs continue to conduct internal control review activities and implement processes for conducting reviews of internal controls during CMEP activities, such as Compliance Audits.

Additionally, REs started to develop Compliance Oversight Plans (COPs) using results of the IRA and performance considerations such as internal controls, mitigation plans, compliance history, event analysis trends, or other regional considerations to identify key risks. These COPs will include the NERC Reliability Standards associated with identified risks, the interval of monitoring activities, and the type of CMEP tool(s) (such as Compliance Audit, Spot Check, or Self-Certification). NERC will continue to monitor development of COPs throughout the remainder of 2019 to ensure ERO Enterprise alignment.

Compliance Guidance

During Q2 2019, the ERO Enterprise received four new proposed Implementation Guidance documents; one received endorsement and three are currently under review. Additionally, in Q2 the ERO Enterprise published two CMEP Practice Guides.

Certification

Q2 Certification Completions

In Q2, the ERO Enterprise certified one new Reliability Coordinator and reviewed changes at six already-certified and operational registered entities. The ERO Enterprise declined to further review changes at 11 other already-certified and operational registered entities. The following certification activities were completed:

- NERC certified California Independent System Operator (NCR05048) (dba RC West) for an initial Reliability Coordinator Area;
- NERC reviewed the new Control Center in the Transmission Operator Area of American Electric Power Service Corp., as agent for AEP Texas Inc., and Public Service Company of Oklahoma (NCR04006);
- NERC reviewed the new Control Center City of Homestead (NCR00037) used in its Balancing Authority and Transmission Operator Areas;

⁴ Additional information regarding the percentage of IRAs completed for all registered entities within each RE across the ERO Enterprise is available in Appendix B. REs will continue to prioritize IRA completions based on registered functions and registration changes throughout the year.

- NERC reviewed the expanded Transmission Operator Area of Bonneville Power Administration (NCR05032);
- NERC reviewed the new Control Center that Cube Hydro Carolinas, LLC (NCR01169) used in their Balancing Authority and Transmission Operator Areas;
- NERC reviewed Public Service Company of Colorado's (NCR05521) expanded Balancing Authority Area;
- NERC reviewed the new Control Center that Turlock Irrigation District (NCR05435) used in their Balancing Authority and Transmission Operator Areas.

Registration

In Q2 NERC processed 91 functional registration changes of which 39 were activations and 52 were deactivations. Of the 52 deactivations:

- One was due to a NERC-led panel deactivation decision;
- Two were determined not to meet registration criteria;
- Two were sold to another registered entity;
- Three were determined to meet criteria as a DP-UFLS Only and were registered as such;
- Thirteen were due to facility shutdowns;
- Thirteen were due to compliance responsibility being assumed by another registered entity; and
- Eighteen were due to consolidation into a mutually-owned registered entity.

Chapter 3: ERO Enterprise Performance Objectives

Priorities for 2019

To guide CMEP Activities throughout 2019, NERC identified the following key objectives in support of the ERO Enterprise Operating Plan goal of risk-informed Entity Registration, Compliance Monitoring, Mitigation, and Enforcement:

- Review effectiveness of the Compliance Guidance program and develop a plan to enhance the program. In Q2, NERC developed a project plan to solicit input from pre-qualified organizations and ERO Enterprise personnel. Later in 2019, NERC will host a webinar to introduce enhancements.
- Evaluate opportunities to expand industry-led development of guidance to other program areas as a part of the Compliance Guidance project discussed in the previous bullet.
- NERC has completed its priority to enhance the CMEP Practice Guide development process to solicit and incorporate feedback from NERC Committees (e.g. CCC, Critical Infrastructure Protection Committee). The Practice Guide now includes NERC Committee feedback as part of its workflow in development of CMEP Practice Guides. For example, in Q2, there were two CMEP Practice Guides NERC completed that were coordinated for feedback from the CCC's Alignment Working Group and the Critical Infrastructure Protection Committee.
- Track the development and completion of CMEP Practice Guides through the Program Alignment Issues and Recommendations Tracking spreadsheet located on NERC's website. As of Q2, NERC tracks all CMEP Practice Guides in the Spreadsheet, and will continue to track new ones as they are developed.⁵
- Provide training and education on control evaluations to industry with supporting guidance to the REs for consistent implementation in audits. The training and education for industry was prepared in Q2, which includes RE personnel and industry presenters, and NERC administered the training at the 2019 NERC Compliance and Standards Workshop in July 2019. The supporting training and guidance in support of this priority occurred during Q2 as well at the 2019 CMEP staff workshop in Atlanta in April 2019.
- Work on controls-related topics for industry that will be presented at the July 2019 Compliance and Standards Workshop as discussed in the previous bullet; and
- Improve alignment in processes across REs and – when appropriate – memorialize the aligned processes into the design of the CMEP Tool. A key part of the Align project included deliberate review of business practices across all CMEP activities, resulting in harmonization of primary CMEP processes that will be incorporated into Align.

The ERO Enterprise continues to support the development of Align. Additionally, the ERO Enterprise evolved the COP template and will use the revised template during the latter half of 2019. The ERO Enterprise began conducting outreach on the revised template in Q2 and will continue outreach throughout the remainder of 2019.

⁵ <https://www.nerc.com/pa/comp/Pages/EROEnterProAlign.aspx>

Appendix A: Enforcement

CMEP Metrics

Mitigation Completion Status

Figure A.1 shows the current percentage of mitigation completion by discovery year. Table A.1 below shows the progress in mitigation completion in Q2 compared to Q1. The 0.8 percent remaining from 2015 is from six violations that were part of a large filing in 2019. They have an expected completion date of the end of early Q3 2019. The remainder from 2016, 6.5 percent, is from 74 violations or instances of noncompliance. Sixty of these have expected mitigation completion dates by the end of 2019. Fourteen have expected completion dates in 2020. NERC continues to monitor for mitigation completion.

Discovery year	Q2	Q1
2019	86.7%	95.4%
2018	51.2%	63.9%
2017	21.2%	27.5%
2016	6.5%	8.0%
2015	0.8%	0.8%

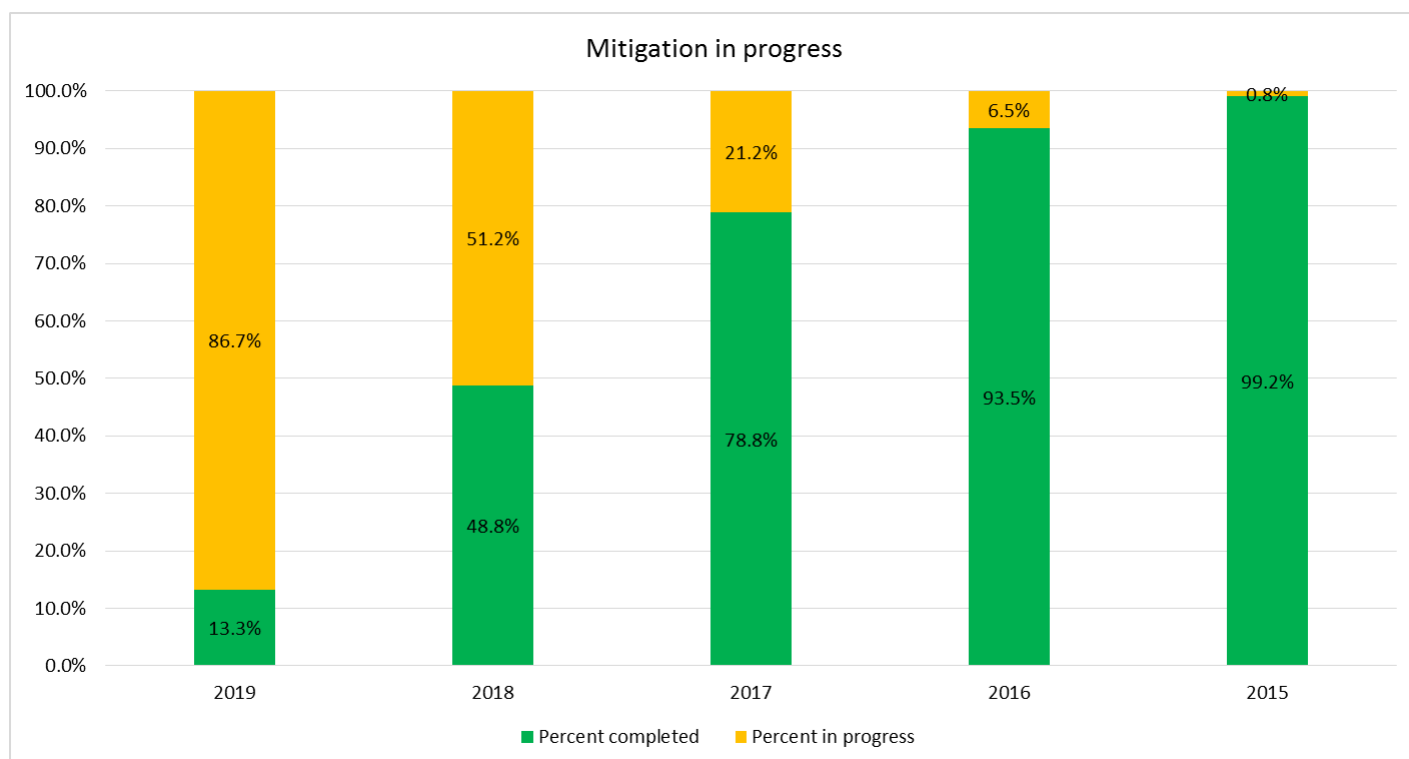


Figure A.1: Mitigation Completion by Discovery Year

Age of Noncompliance in ERO Enterprise Inventory

Figure A.2 shows all noncompliance in the ERO Enterprise inventory, organized by discovery year.⁶ Twenty-five percent of the ERO Enterprise inventory is more than two years old. The ERO Enterprise is committed to resolving the oldest violations while also assessing and ensuring mitigation of newly discovered noncompliance.

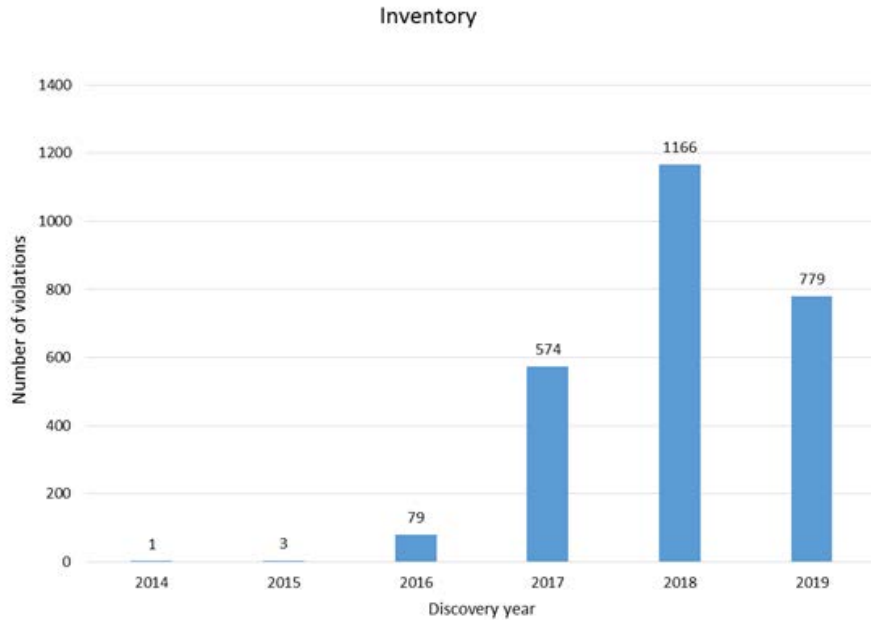


Figure A.2: Age of Noncompliance in the ERO Enterprise Inventory

Disposition of Noncompliance

Figure A.3 shows the percentage of all noncompliance processed by disposition type through the end of Q2 2019. The ERO Enterprise processed a majority of instances of noncompliance in Q2 as Compliance Exceptions.

Disposition Breakdown in Q2 2019

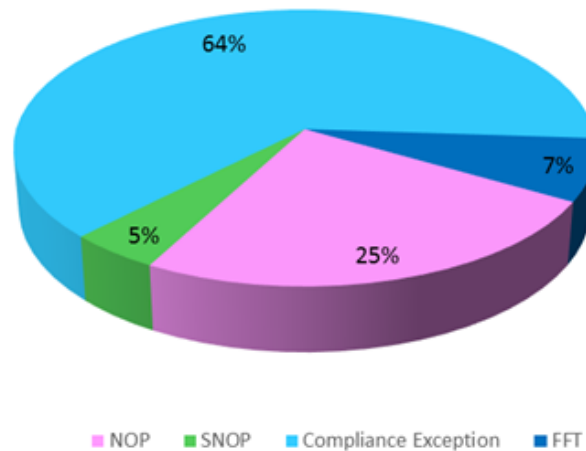


Figure A.3: Disposition Type of Noncompliance Processed in 2019

⁶ The number of instances of noncompliance in the inventory is often higher than the number of instances of noncompliance that is unmitigated because registered entities may complete their mitigating activities while enforcement disposition is under review and determination.

Vegetation Management

NERC regularly reports on two items related to vegetation management. First, NERC tracks all sustained outages caused by vegetation contacts submitted to REs on a quarterly basis. Those outages are displayed in Figure A.4 below. Second, NERC tracks transmission outages resulting from possible violations of FAC-003. These are usually submitted to REs through Self-Reports. Not all sustained outages caused by vegetation contacts are possible violations of FAC-003; however, some outages may fall into both tracking items. Historically, vegetation-related issues that were both FAC-003 violations and resulted in sustained outages have been Category 1B outages. Similar to other instances of noncompliance, the FAC-003 issues are posted or filed on the NERC website.

Four sustained outages from vegetation fall-ins from outside of the transmission right-of-way have been reported in 2019.⁷

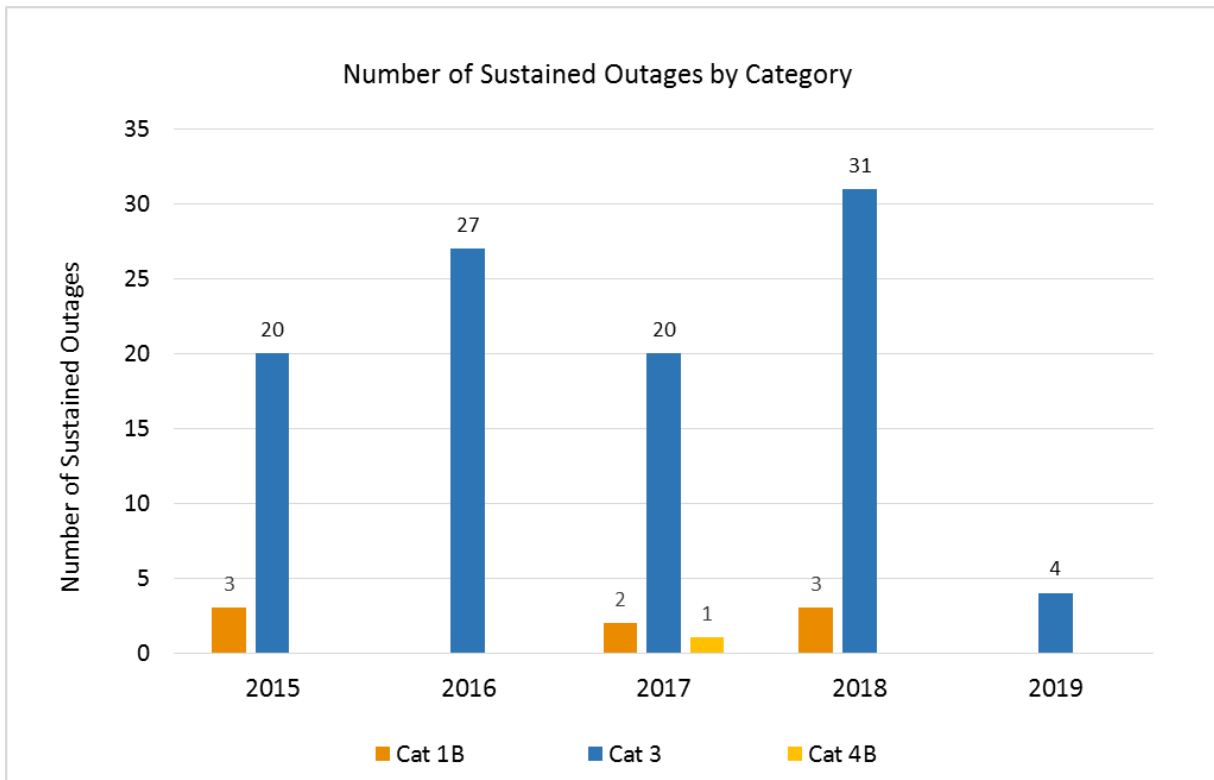


Figure A.4: Vegetation-related Outages by Category

⁷ Please note the periodic data reporting timing per FAC-003. The number in this report reflects outages submitted by the end of Q1 2019 periodic data reporting.

Serious Risk Averages

Figures A.5 and A.6 show the percentage of serious risk violations over a rolling three-year average. The percentages are determined based on the number of serious risk violations compared to the total number of noncompliance filed in a given three-year period. Figure A.5 shows the breakdown for non-CIP noncompliance, and Figure A.6 includes CIP violations.

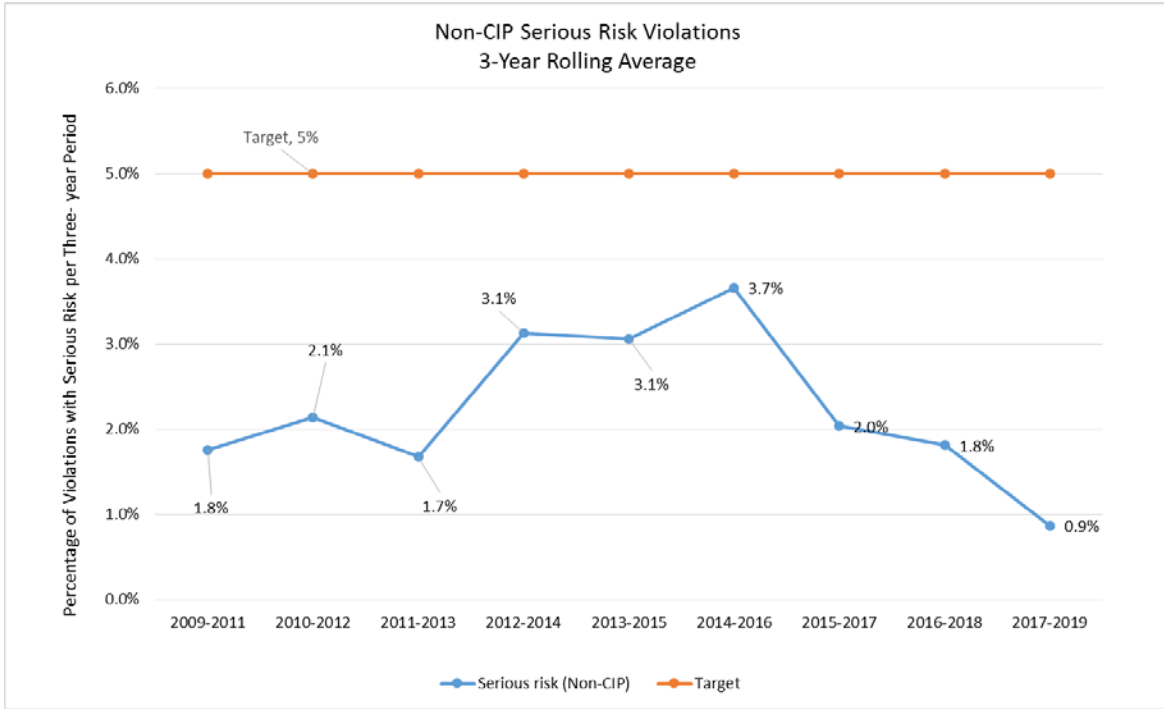


Figure A.5: Rolling Average of Serious Risk Violations (non-CIP)

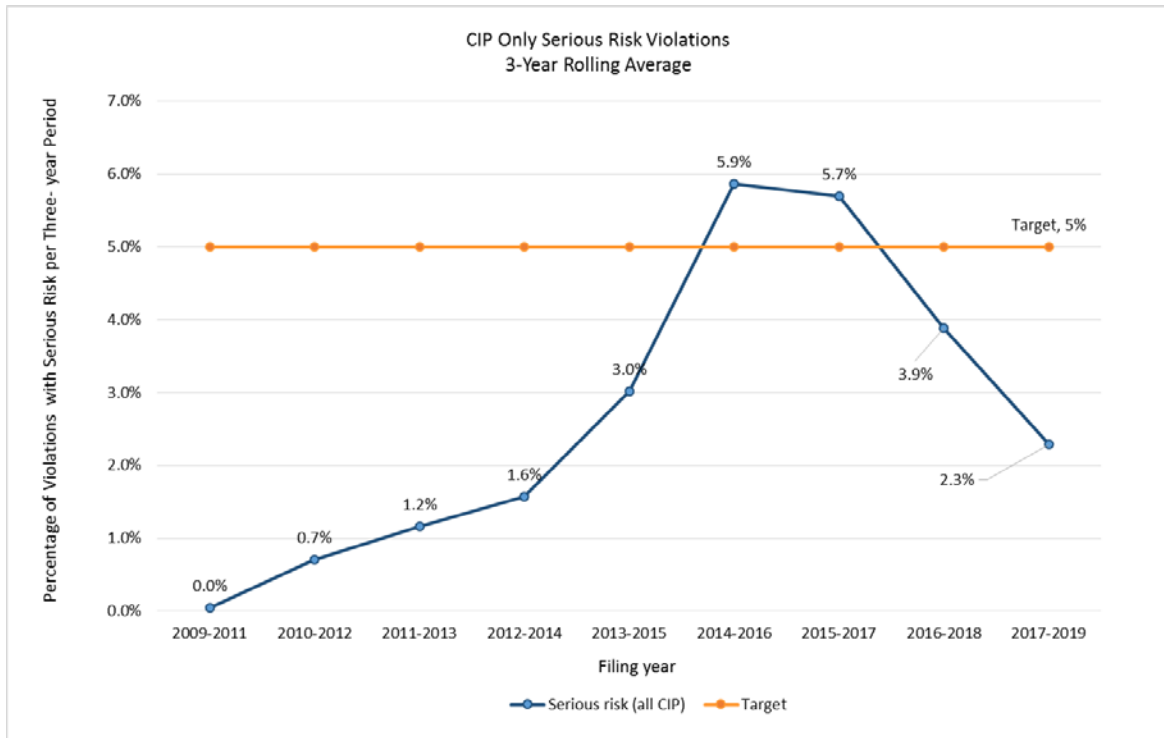


Figure A.6: Rolling Average of Serious Risk Violations (CIP)

Reduced Repeat Moderate and Serious Risk Violations

The ERO Enterprise monitors compliance history (defined as a prior violation of the same Reliability Standard and requirement) and repeat noncompliance with similar conduct (defined as a prior violation that stemmed from the similar actions or conduct) to further explore the relationship of prior mitigation to repeat noncompliance and to identify any additional areas of focus and future actions.

Figure A.7 compares three categories of moderate and serious risk noncompliance: noncompliance with compliance history (blue columns), noncompliance with compliance history involving similar conduct (orange line), and all filed moderate and serious risk noncompliance (gray line). Noncompliance with similar conduct is a subset of the wider group of repeat noncompliance. The total moderate and serious noncompliance, shown by the gray line, includes both “new” noncompliance and repeat noncompliance.

The full NOPs filed in 2019 involved violations with similar prior conduct, which also carried larger penalty amounts.

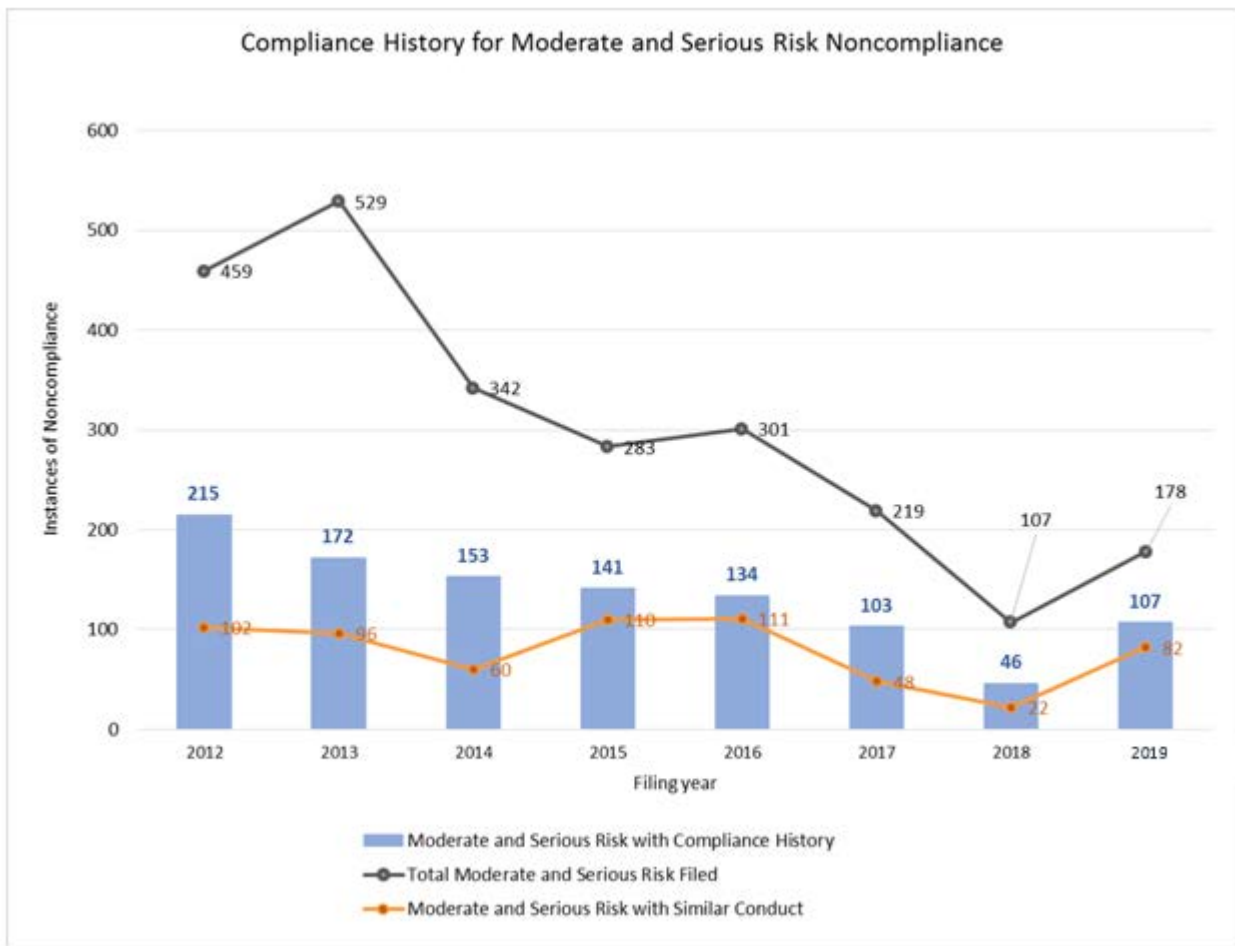


Figure A.7: Compliance History and Similar Conduct for Moderate and Serious Risk Violations

Self-Assessment and Self-Identification of Noncompliance

As part of an effort to reduce risk from noncompliance, the ERO Enterprise is looking beyond the broad categories of internal and external discovery and instead closely monitoring self-reported issues beginning in 2018 and continuing in 2019. Figure A.8 shows the percentage of noncompliance by discovery method. The percentage of self-reported noncompliance varies quarterly but often remains above the threshold. Registered entities self-reported more than 80 percent of the noncompliance reported so far in 2019.

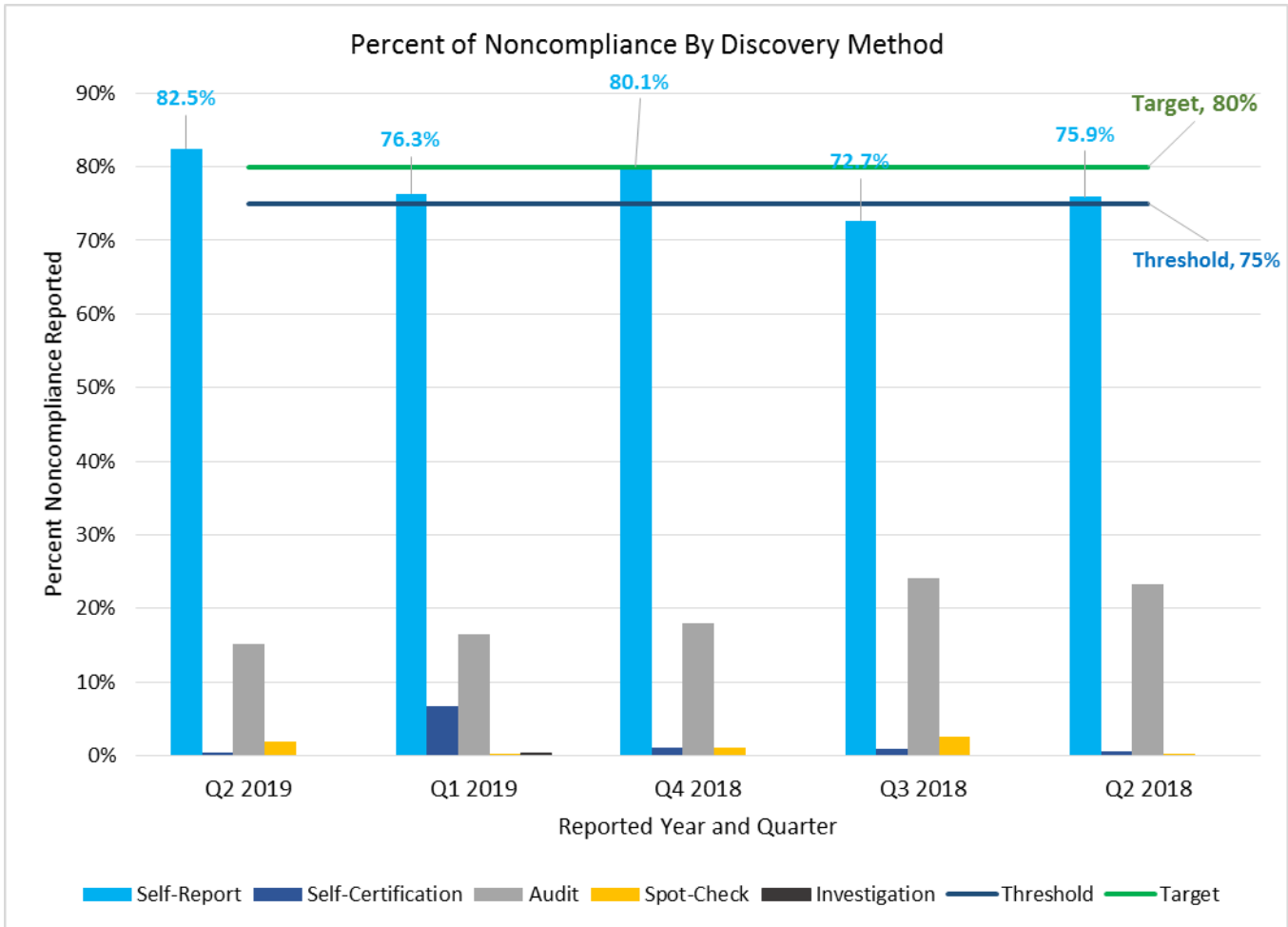


Figure A.8: Percent of Noncompliance by Discovery Method

Appendix B: Compliance Assurance

Coordinated Oversight Program for MRREs

Figure B.1 represents the distribution of the 50 MRRE groups by Lead RE, comprised of 210 MRREs. Figure B.2 represents the distribution of MRREs by registered function.

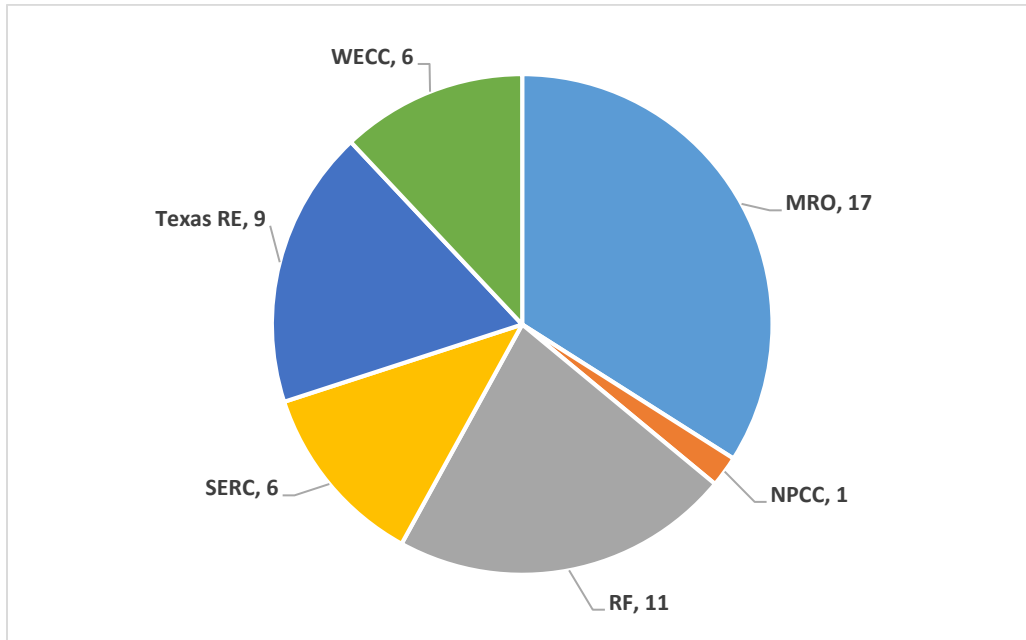


Figure B.1: Distribution of MRREs under Coordinated Oversight by Lead RE

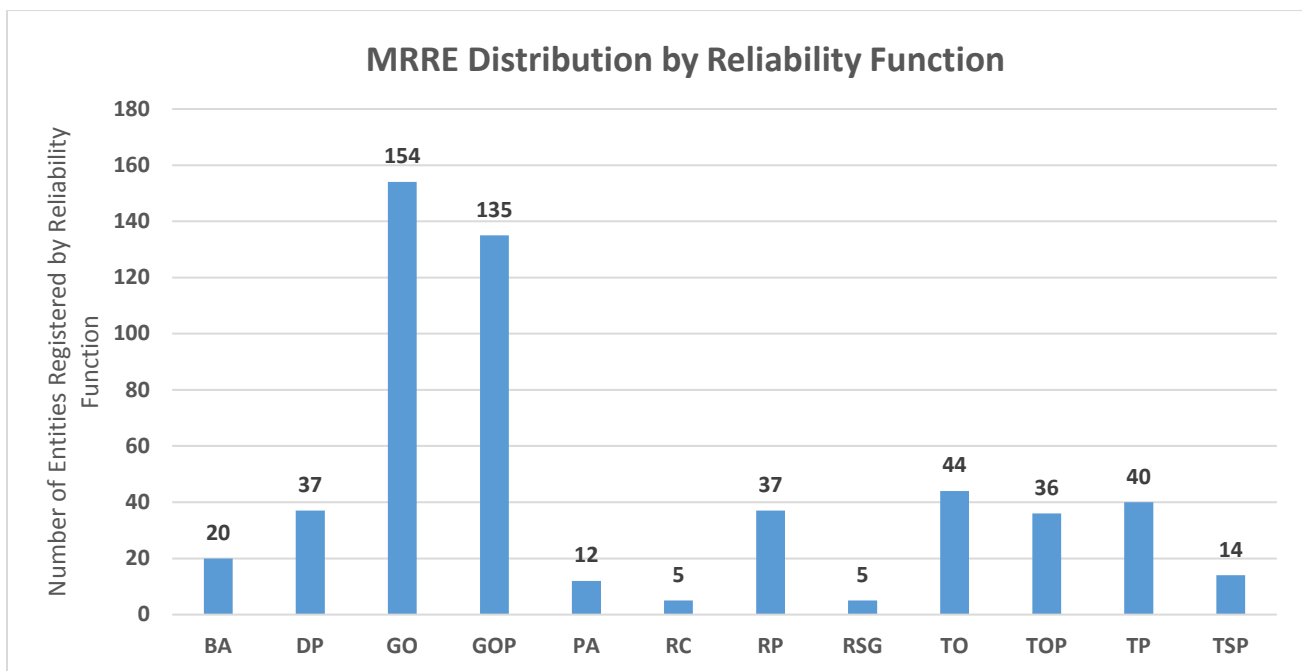


Figure B.2: Coordinated Oversight Distribution by Registered Function

ERO Enterprise Completion of Initial IRAs

Figure B.3 identifies the number of IRAs completed by each RE. As of the end of Q2 2019, the REs have completed 1,323 IRAs for 1,496 registered entities.⁸ The ERO Enterprise completed IRAs for approximately 88 percent of the total number of registered entities.⁹ All REs have completed IRAs for all entities registered as Reliability Coordinators and Balancing Authorities, with one remaining Transmission Operator scheduled for completion in 2019. NERC and the REs anticipate registration changes that will affect overall IRA completion. Therefore, IRA activity prioritization will consider registered functions and registration changes to ensure IRAs are completed.

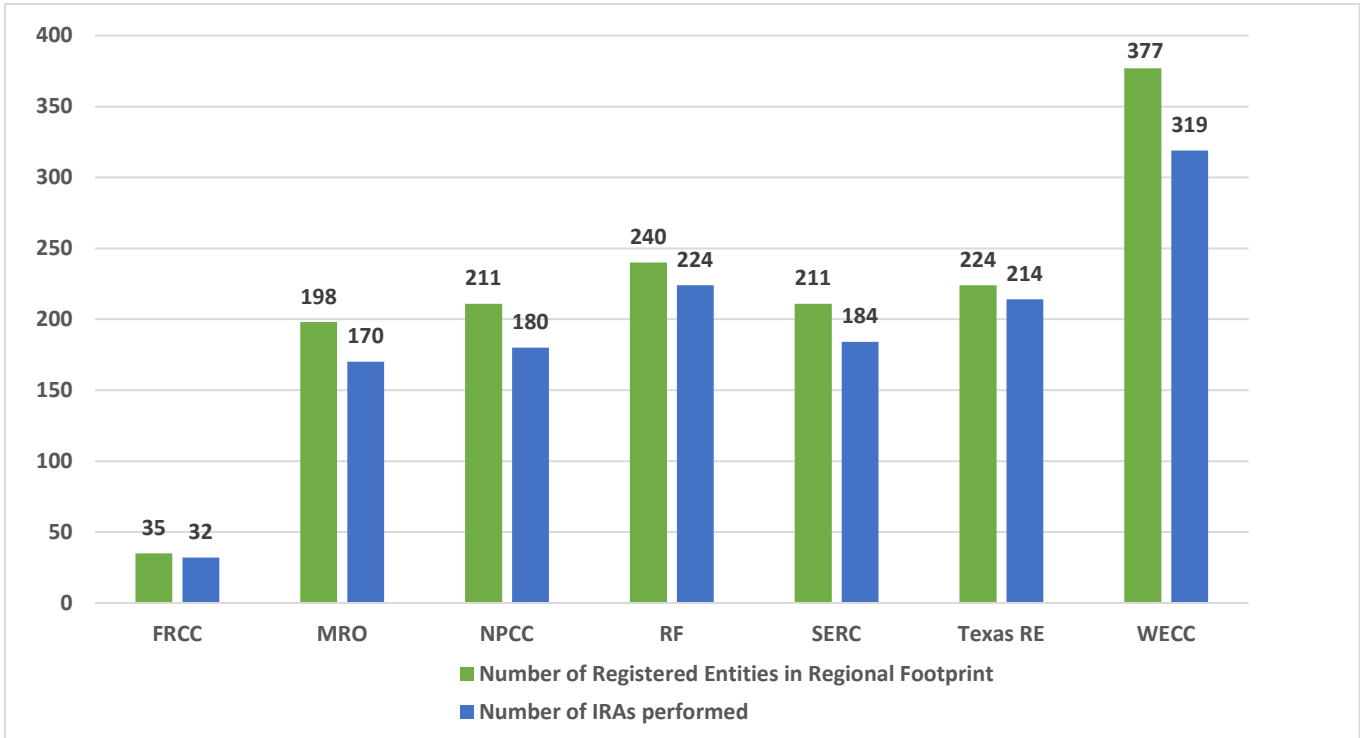


Figure B.3: RE Completion of IRAs

⁸ NERC bases the number of registered entities on the registration cut-off date in Q2 2019, which includes all newly registered entities. NERC does not include deregistered entities. The chart does not reflect the number of IRAs that have been updated by the REs.

⁹ Some of the registered entities are MRREs in the Coordinated Oversight Program. As such, until the Lead RE completes the IRA for that MRRE, the numbers do not update for the Affected REs. Therefore, some of the REs included in Figure B.3 do not receive credit until their IRAs are completed.

Appendix C: Registration

The following charts depict Q2 2019 registration change activity by function.

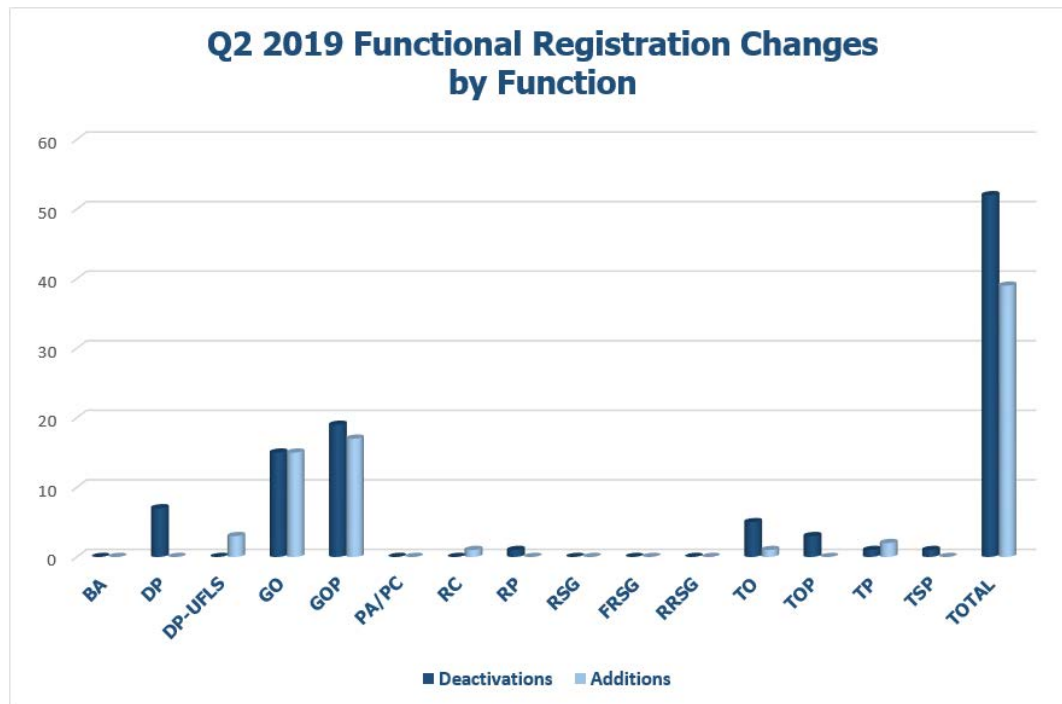


Figure C.1: Q2 2019 Registration Change Activity by Function

	BA	DP	DP-UFLS	GO	GOP	PA/PC	RC	RP	TO	TOP	TP	TSP	TOTAL
Deactivations	0	7	0	15	19	0	0	1	5	3	1	1	52
Activations	0	0	3	15	17	0	1	0	1	0	2	0	39

REs provide justification when approving registration change activity. NERC reviews these justifications before processing is completed. Table C.2 reflects the changes that were processed in Q2 2019.

NERC-Led Panel Deactivation	1
Determined to Not Meet Registration Criteria	2
Sold to Another Registered Entity	2
Determined to Meet Criteria as DP-UFLS Only and Registered as Such	3
Facility shut down.	13
Compliance Responsibility Assumed by Another Registered Entity.	13
Consolidated to Another Mutually-owned Registered Entity	18

Appendix D: Certification and Bulk Electric System

ERO Enterprise Organization Certification Utilization

Certification activities are responsive to the number of new entities requiring certification and the types of changes implemented to already-certified and operational entities. Program utilization metrics help to plan resource needs, including staff, travel, and training.

Figure D.1 identifies the number of new entity certifications completed by each RE during Q2 2019 and the number of new entity certifications actively being processed. Figure D.2 identifies the number of reviews of changes to already-certified and operational entities completed by each RE during Q2 2019 and the number of certification reviews currently being processed. The in-process certification activity for FRCC transitioned to SERC on July 1, 2019.

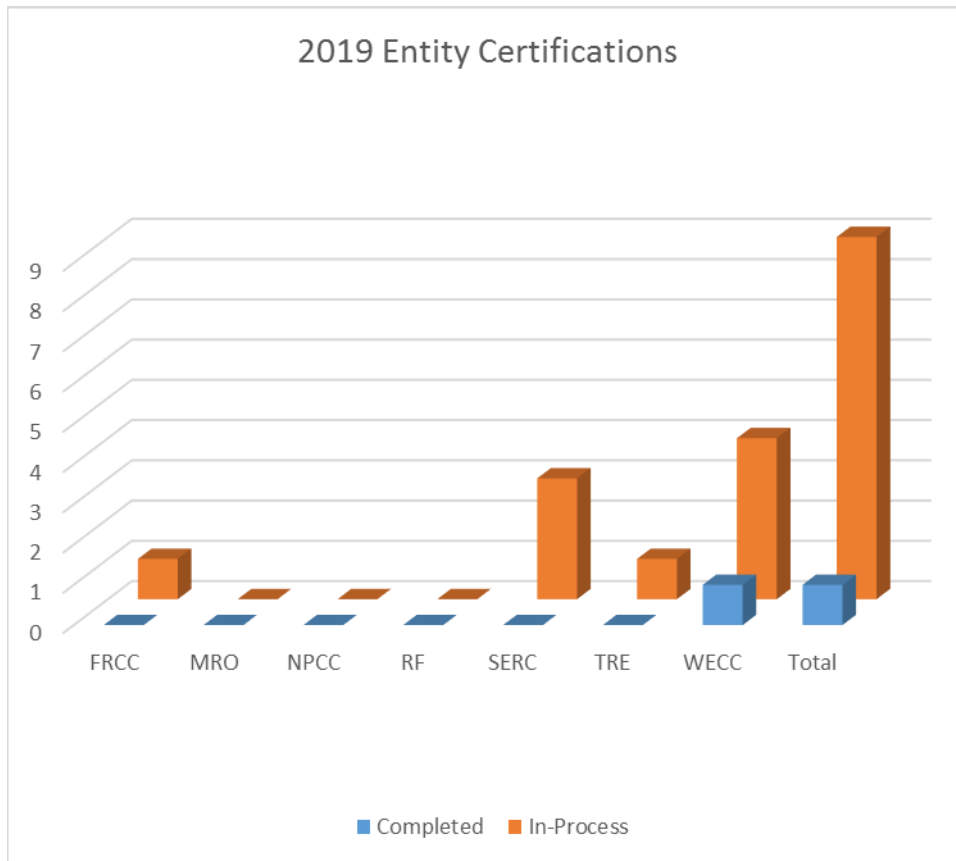


Figure D.1: Q2 2019 New Entity Certifications by RE

Table D.1: Q2 2019 Organization Certification functions	
Reliability Coordinator	1
Transmission Operator	0
Balancing Authority	0

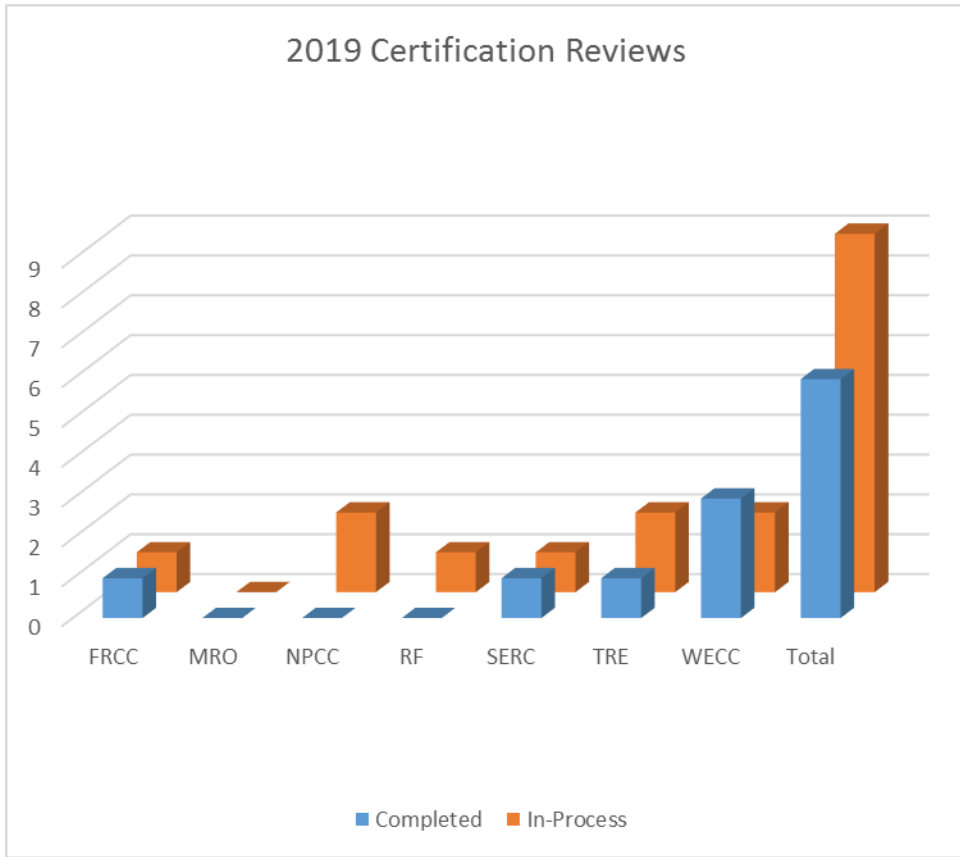


Figure D.2: Q2 2019 Certification Review Activity by RE

Table D.2: Q2 2019 Certification Review Change Basis	
Changes to a Registered Entity’s Footprint	2
Relocation of the Control Center	4
Changes to Supervisory Control and Data Acquisition (SCADA)/Energy Management System (EMS) System	0