

Texas Reliability Entity, Inc.
Texas RE Member Representatives Committee
Meeting Agenda

December 8, 2021, at 9:00 a.m. Central Time**
805 Las Cimas Parkway, Suite 200, Austin, TX 78746
(Via video conference only)

WebEx Link:

<https://texasre.webex.com/texasre/j.php?MTID=m88f5e5f5f6debcffb6885eca09e43f79>

Dial-In: +1-855-797-9485 US Toll free
Meeting Number: 2559 267 7396

Item	Member Representatives Committee Meeting
1.	Call to Order <i>Curt Brockmann, MRC Vice Chair</i>
2.	Antitrust Admonition* <i>Derrick Davis, General Counsel and Corporate Secretary</i>
3.	Approval of August 18, 2021, Meeting Minutes* (Vote) <i>Curt Brockmann, MRC Vice Chair</i>
4.	Approval of Work Plan for Project SAR-012: Revisions to the Standards Development Process* (Vote) <i>Rachel Coyne, Manager, Reliability Standards</i>
5.	NERC BOT Meeting Update <i>Daniela Hammons, MRC Transmission/Distribution Sector Representative</i>
6.	Special Topics: <ul style="list-style-type: none"> a. Odessa Disturbance Report* <i>Mark Henry, Director, Reliability Services and Registration</i> b. Facility Ratings* <i>Curtis Crews, Director, Compliance Assessments</i>
7.	NSRF Update* <i>Eric Shaw</i>
8.	CIPWG Update* <i>Christine Hasha</i>
9.	NERC Standing Committee Updates: <ul style="list-style-type: none"> a. NERC Reliability and Security Technical Committee* <i>Venona Greaff & Christine Hasha</i> b. Compliance and Certification Committee* <i>Martha Henson</i>
10.	NERC Program Area Reports: <i>(Staff may not present on these reports, but will be available to answer questions)</i> <ul style="list-style-type: none"> a. Align Project Update* <i>Rochelle Brown, Manager, CMEP Coordination and Special Projects</i> b. Reliability Services and Registration Report*

	<p><i>Mark Henry, Director, Reliability Services and Registration</i></p> <p>c. Enforcement and Reliability Standards Report* <i>Joseph Younger, Vice President and COO</i></p> <p>d. Compliance Monitoring Report* <i>Curtis Crews, Director, Compliance Assessments</i></p>
11.	<p>Other Business & Future Agenda Items</p> <p><i>Curt Brockmann, MRC Vice Chair</i></p>
Adjourn Meeting 11:00 a.m.	

* Background material may be distributed electronically prior to or at meeting.

** Start and end times may be adjusted should meetings conclude early or extend past their scheduled end time.

ANTITRUST ADMONITION

Texas Reliability Entity, Inc. (Texas RE) strictly prohibits persons participating in Texas RE activities from using their participation as a forum for engaging in practices or communications that violate antitrust laws. Texas RE has approved antitrust guidelines available on its website. If you believe that antitrust laws have been violated at a Texas RE meeting, or if you have any questions about the antitrust guidelines, please contact the Texas RE General Counsel.

PUBLIC MEETING

Notice of this meeting was posted on the Texas RE website and the open portion of this meeting is being held in public. Participants should keep in mind that the listening audience may include members of the press, representatives from various governmental authorities, and industry stakeholders.

Member Representatives Committee Meeting
August 18, 2021
(Via video conference only)

Attendance

1. The attendees were as follows:

Name	Company	Sector	In Person	Called -In
Liz Jones, Chair	Oncor Electric Delivery Company	Transmission/Distribution		x
Curt Brockmann, Vice Chair	CPS Energy	Municipal		x
Betty Day	ERCOT	System Coord & Planning		
Chad Thompson (Alternate)	ERCOT	System Coord & Planning		x
Daniela Hammons	CenterPoint Energy Houston Electric, LLC	Transmission/Distribution		x
Bobby Christmas	Guadalupe Valley Electric Cooperative	Cooperative		x
Shari Heino	Brazos Electric Power Cooperative	Cooperative		x
Travis Chrest (Alternate)	South Texas Electric Cooperative	Cooperative		x
Smith Day	Denton Municipal Electric	Municipal		x
Tom Pierpoint (Alternate)	Austin Energy	Municipal		x
Amanda Frazier	Vistra Energy Corp.	Generation		x
Bryan Sams	Calpine Corporation	Generation		x
Brad Cox	Tenaska Power Services, Inc.	Load Serving & Marketing		
Venona Greaff	Occidental Power Services, Inc.	Load Serving & Marketing		x
Milton B. Lee	Texas RE Board Chair			x
Suzanne E. Spaulding	Texas RE Board Vice Chair			x
Crystal E. Ashby	Texas RE Independent Director			x
Jeffrey A. Corbett	Texas RE Independent Director			x
Jimmy Glotfelty	Public Utility Commission of Texas			
Chris Ekoh	Office of Public Utility Commission of Texas			x
Jim Albright	Texas RE			x
Derrick Davis	Texas RE			x
Judy Foppiano	Texas RE			x

Curtis Crews	Texas RE			X
Mark Henry	Texas RE			X
J.W. Richards	Texas RE			X
Kara Murray	Texas RE			X
Joseph Younger	Texas RE			X
Paul Curtis	Texas RE			X
Matthew Barbour	Texas RE			X
Rochelle Brown	Texas RE			X
Rachel Coyne	Texas RE			X
Christine Hasha	ERCOT			X
Martha Henson	Oncor Electric Delivery Company			X
Eric Shaw	Oncor Electric Delivery Company			X
Trevor Tidwell	PNM Resources			X
Other Texas RE staff members and stakeholders attended in person and via conference call				

At least two-thirds of the voting representatives on the MRC, either in person or by proxy, are required to constitute a quorum. A quorum was established.

Discussions and Activities

1. Call to Order, Announce Proxies and Telephone Attendees; Antitrust Admonition

Chair Jones called the MRC meeting to order at 9:01 a.m. Central Time. Brad Cox designated Venona Greaff as his proxy for the meeting. All attendees participated by phone or video conference. Derrick Davis reviewed the antitrust admonition.

2. Approval of Minutes from May 19, 2021 MRC Meetings

Curt Brockmann make a motion to approve the minutes from the May 19, 2021 meeting. Daniela Hammons seconded the motion. The motion passed by unanimous voice vote with Chair Jones abstaining.

3. Standard Authorization Request - Revisions to Standard Development Process* (Vote)

Rachel Coyne presented a recommendation to accept the Standard Authorization Request (SAR) to revise the Regional Standards Development Process.

Bobby Christmas made a motion to accept the SAR. Venona Greaff seconded the motion. The motion passed by unanimous voice vote.

4. NERC BOT Meeting Update

Daniela Hammons provided an update on NERC BOT activities.

5. NSRF Update

Eric Shaw of Oncor Electric Delivery Company informed the MRC what the NSRF discussed during meetings in May, June, and July, and reviewed upcoming effective dates for Reliability Standards. Additionally, Mr. Shaw provided updates on several NERC projects.

6. CIPWG Update

Trevor Tidwell, Vice Chair of CIPWG provided an update on CIPWG activities from the past three meetings that included: discussion of PUC updates on Cyber Monitoring, Intel Sharing Program, CIP-012-1, and Senate Bill 2116 concerning foreign-owned entities.

7. NERC Standing Committee Updates

Venona Greaff of Occidental Power Services, Inc. presented a Reliability and Security Technical Committee (RSTC) update, noting that RSTC Vice Chair David Zwegel retired and Rich Hydzik was appointed to fill the remainder of his term. Ms. Greaff said the RSTC in June discussed the 2021 State of Reliability Report, SPIDERWG Presentation on the Modeling Survey, Energy Reliability Assessments Task Force (ERATF), and Standing Committee Coordination Group (SCCG).

Martha Henson of Oncor Electric Delivery Company provided an update on the Compliance and Certification Committee (CCC) including: they voted on how the Nominating Committee would select future members of the CCC, discussed risk based compliance and risk assessment frameworks, and have a joint task force working on issues concerning facility ratings.

8. Membership Renewals and MRC Elections

Matt Barbour, Manager of Communications and Training for Texas RE, explained how companies benefit from being a Member of Texas RE, and explained how to sign up or renew their Membership. He also explained the process for upcoming MRC Sector Representative Elections.

9. Program Area Quarterly Reports

Rochelle Brown provided an Align project update. Mark Henry provided a report on Event and Reliability and Performance Indicators. Joseph Younger provided updates on Standards and Registration and on Enforcement activities. Curtis Crews provided updates on Compliance Monitoring.

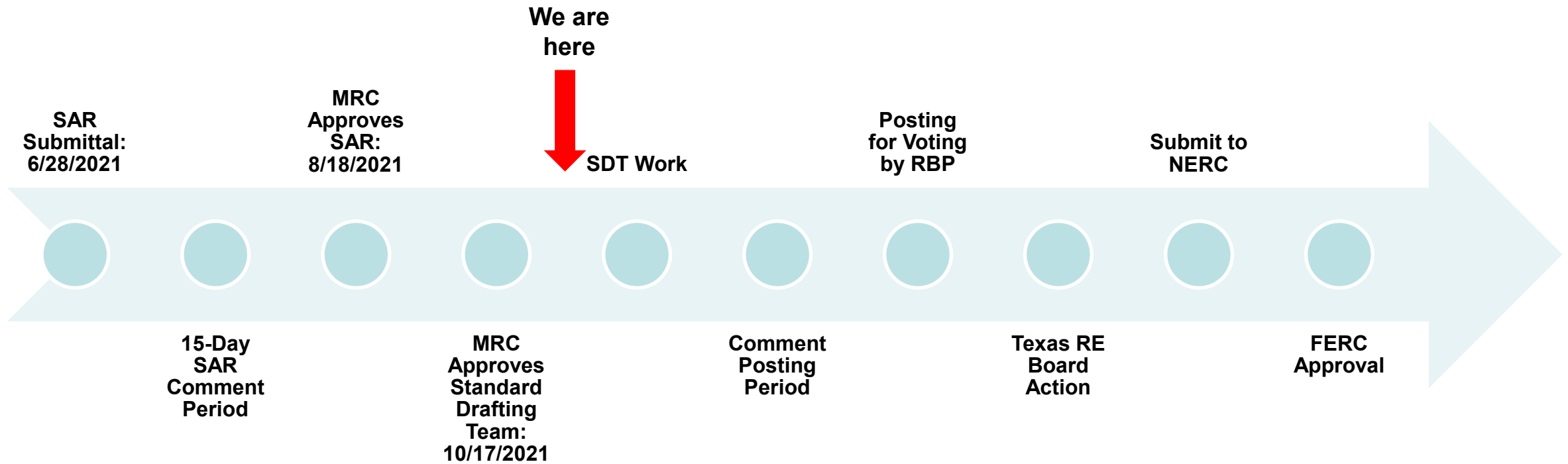
10. Other Business & Future Agenda Items

None.

The meeting adjourned at approximately 11:15 a.m. Central Time.

Approval of Work Plan for Project SAR-012: Revisions to the Standards Development Process

SAR-012 Progress



Work Plan

Project SAR-012 Revisions to Standards Development Process

The Standard Drafting Team (SDT) and the Manager, Reliability Standards Program (RSM) developed the following work plan for Project SAR-012 Revisions to Standards Development Process. This work plan lays out the steps for revising a Regional Standard in accordance with Texas RE's Standards Development Process (SDP) document.

<u>Milestone</u>	<u>Anticipated Date</u>	<u>Location</u>	<u>Comments</u>
Standard Drafting Team Kick-off Meeting <ul style="list-style-type: none"> The SDT shall elect the permanent chair and vice chair. 	November 10, 2021	Conference Call	
RSM and SDT develop a work plan	November 10, 2021	Conference Call	
Work plan delivered to the MRC.	December 8, 2021	Webinar	
The MRC shall declare a preliminary date on which a completed draft of the SDT's work product and associated supporting documentation will be available for 30-day public comment period. (The RSM and SDT recommend August 31, 2022.)	December 8, 2021	Webinar	
SDT has first working meeting <ul style="list-style-type: none"> SDT drafts the work product 	January 2022	Webinar	
SDT submits work product to MRC.			
MRC directs the RSM and SDT to post the work product for a 30-day public comment period.			
The RSM shall post the work product for a 30-day public comment period.			
The RSM shall send a notice for registered entities to join the Registered Ballot Pool (RBP).			
The SDT shall meet to discuss comments received within 30 days			

<p>of the conclusion of the posting period. During the meeting, the SDT shall:</p> <ul style="list-style-type: none"> • prepare responses to comments received; and • prepare a “modification report”. 			
<p>Placeholder for second comment period if necessary.</p>			
<p>If the MRC concurs that that all of the requirements for the retirement of the standard have been met, the RSM will post the work product for ballot.</p>			
<p>The RBP shall be able to vote on the proposed retirement of the standard during a 15-day period.</p>			
<p>If the work product receives 2/3 or greater affirmative votes during the 15-day voting period, the MRC will forward the work product to the Texas RE Board for approval.</p>			
<p>If deemed appropriate, the Texas RE Board will approve the work product.</p>			
<p>The RSM will submit the work product to NERC.</p>			

MEMORANDUM

To: Texas RE Member Representatives Committee
From: Rachel Coyne, Reliability Standards Manager (RSM)
Date: December 8, 2021
Re: Approval of Work Plan for Project SAR-012: Revisions to Standards Development Process

Consistent with the [Standards Development Process](#), the MRC is requested to take action on the following for project SAR-012: Revisions to Standards Development Process:

- Receive the work plan. Based on the work plan, declare a preliminary date for posting and direct the RSM to post a completed draft of the standard development team's (SDT's) work product and associated supporting documentation will be available for 30-day public comment period. The RSM and SDT recommend a preliminary date of August 31, 2022, to provide time for the SDT to draft the work product, conduct a Quality Review, and for the MRC to approve the work product for posting.

Odessa Solar Report

**Member Representatives Committee Meeting
December 8, 2021**

NERC Solar Disturbance Reports and Alerts

- Blue Cut Fire (August 16, 2016)
- Canyon 2 Fire (October 9, 2017)
- Palmdale Roost and Angeles Forest (April 20 / May 11, 2018)
- San Fernando (July 7, 2020)



Reliability Guidelines:

- BPS-Connected Inverter-Based Resource Performance (September 2018)
- Improvements to Interconnection Requirements for BPS-Connected Inverter-Based Resources (September 2019)

NERC Odessa Disturbance Report – May 9, 2021

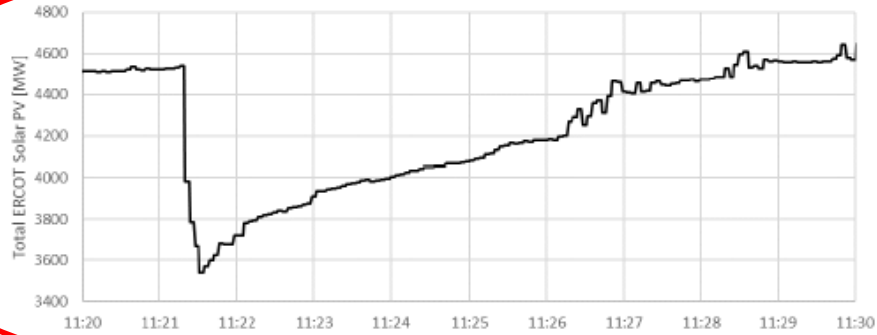


Table I.1: Predisturbance Resource Mix		
BPS Operating Characteristic	MW	%
Internal Net Demand	47,434	-
Solar PV Output	4,533	9%
Wind Output	15,952	34%
Synchronous Generation	26,383	56%

*ERCOT was importing 566 MW through dc ties

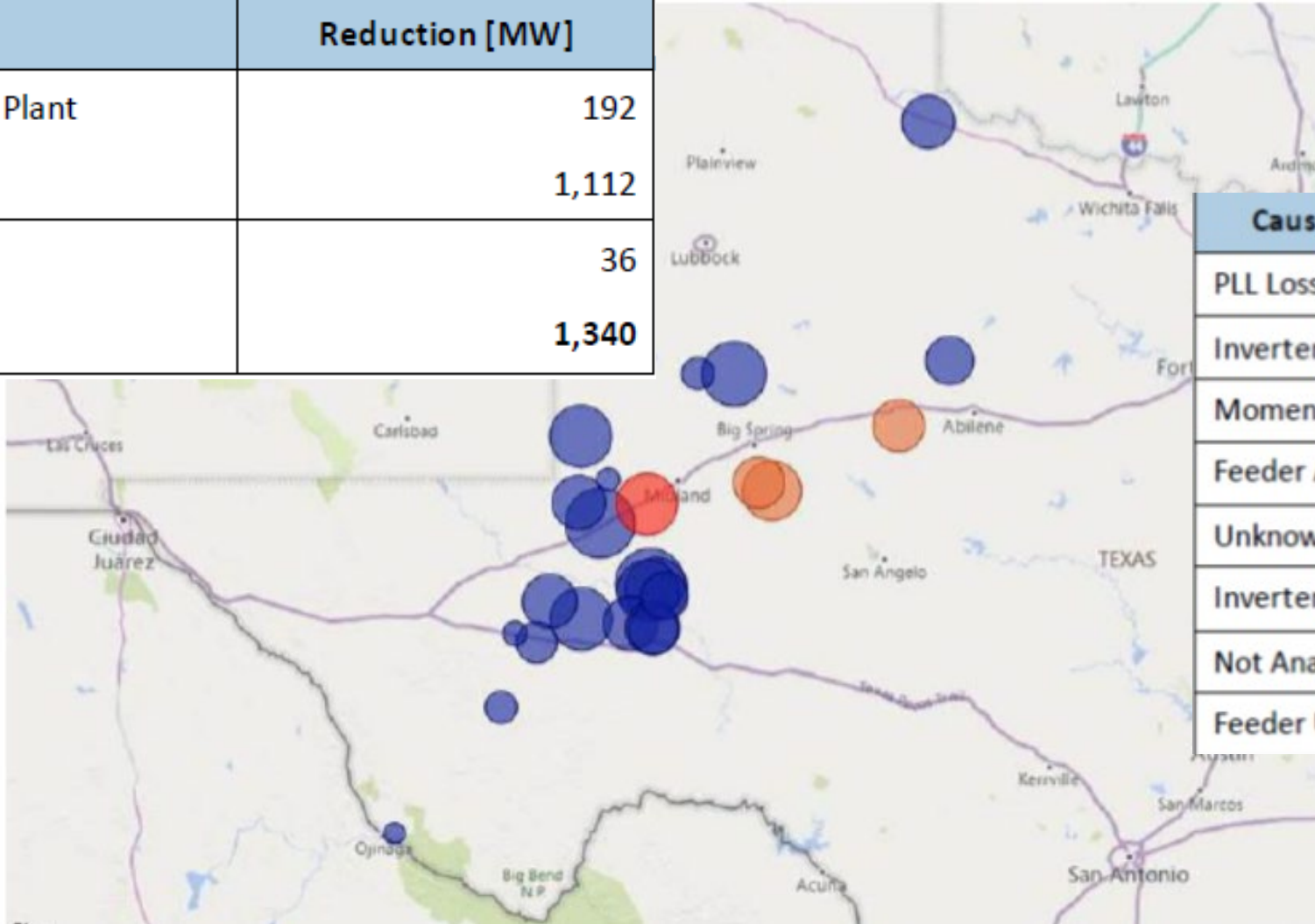


345kV substation fault
1,340 MW generation loss

- 1,112 MW solar
- 14 solar facilities

May 9th Disturbance

Plant Type	Reduction [MW]
Combined Cycle Plant	192
Solar PV Plants	1,112
Wind Plants	36
Total	1,340



Cause of Reduction	Reduction [MW]
PLL Loss of Synchronism	389
Inverter AC Overvoltage	269
Momentary Cessation	153
Feeder AC Overvoltage	147
Unknown	51
Inverter Underfrequency	48
Not Analyzed	34
Feeder Underfrequency	21

Industry Recommendations

Improved Requirements and Processes – Implementing Actions from Guidelines and Improving Generator Interconnection Agreements

NERC Standards Updates

- Performance Gaps in Inverter-based Resources – GOs
 - Performance Validations against Models and Interconnection Requirements
 - Ride-Through Performance Standard
 - Analysis and reporting for Abnormal Inverter Operations
 - Data for Event Monitoring
 - Inverter-specific Performance Requirements (return to service example)
- Modeling and Studies for Inverter-Based Resources – TP and PC
 - Accurate Electro Magnetic Transient (EMT) Models at Interconnection Requested
 - Clarify Requirement for EMT models
 - Model quality checks and GO feedback loop

ERCOT Recommendations

- **Adoption of Reliability Guideline Content**
- **Follow-up with all Solar PV Resources**
- **Detailed Model Quality Review**
- **System Model Validation**
- **Gap Analysis of Interconnection Study Process**

Rapid Growth in ERCOT's Inverter-Based Resources:

- **Time of Event:** 7,200 MW solar PV resources in ERCOT
 - Additional 790 MW in commissioning process
- **End of August:** 8,900 MW solar PV resources in the ERCOT
 - Additional 1,000 MW in commissioning process
- **Near Future:** 25,000 MW solar PV resources with signed interconnection agreements in ERCOT generation interconnection queue between now and 2023

The background of the slide features a blurred Texas state flag on the left and a target with several darts on the right. The darts are clustered in the center of the target, suggesting a focus on a specific point.

Questions?



TEXAS RE

Ensuring electric reliability for Texans

Facility Ratings Focus

**Member Representatives Committee Meeting
December 8, 2021**

The “Why” We Are Here

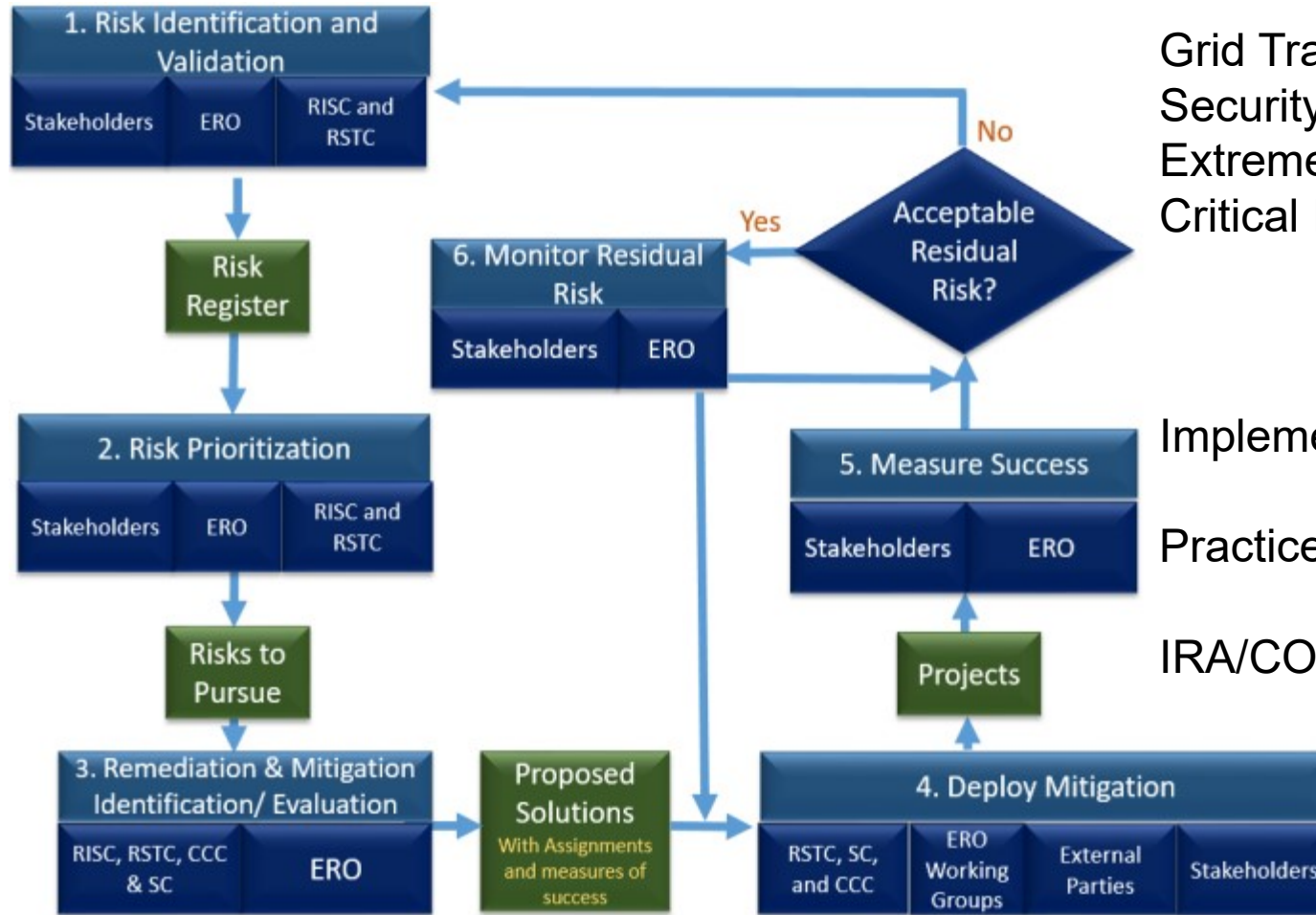


NERC

NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION



Risk Management



Grid Transformation
 Security Risks
 Extreme Natural Events
 Critical Infrastructure Interdependencies

Implementation Plan

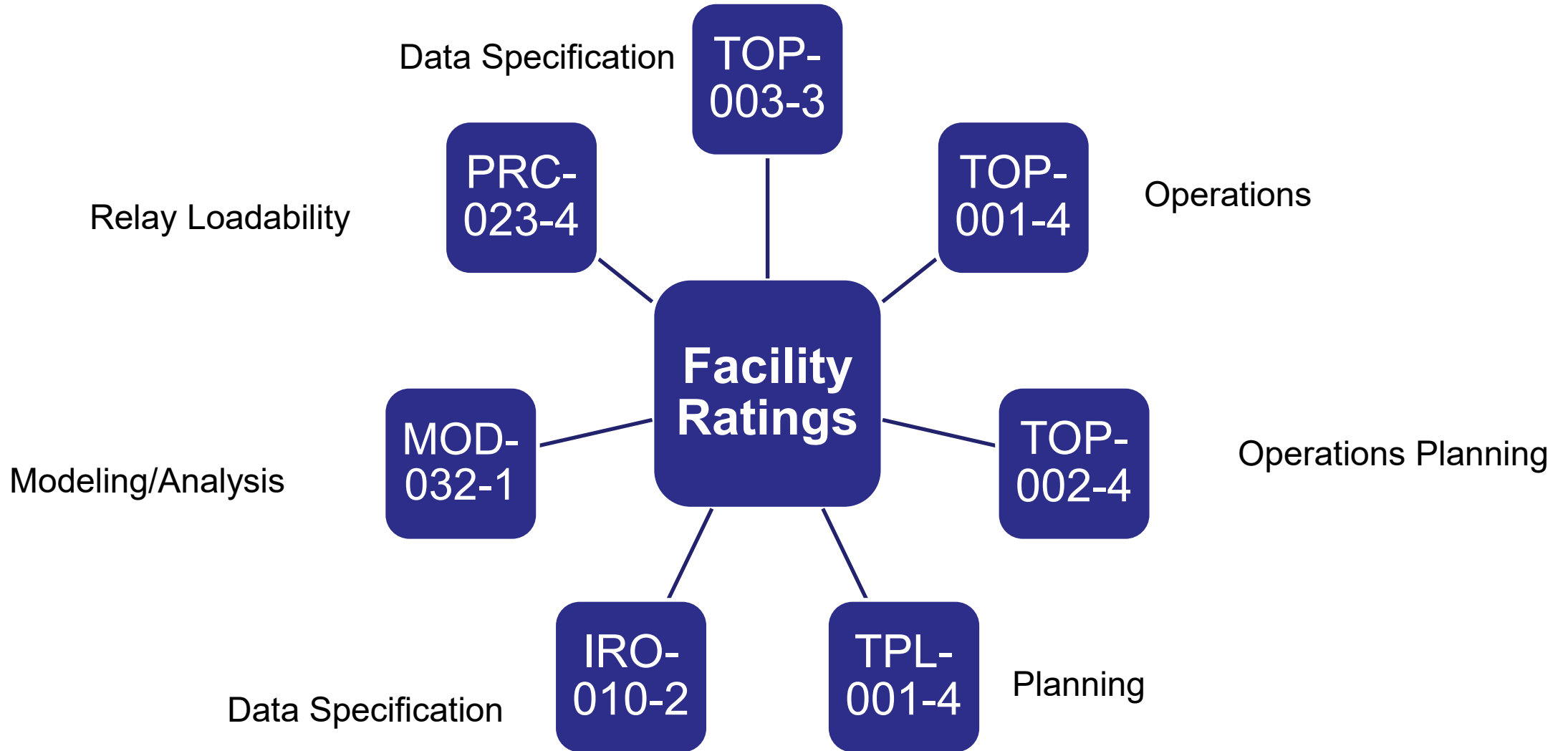
Practice Guide

IRA/COPs



PHOTO: MIKE ELIASON/SANTA BARBARA COUNTY FIRE DEPARTMENT/AP

Risk



Outreach Coverage

2015, 2016,
2017, 2018,
2020
Workshops,
NSRF, Talk
with Texas
RE, etc.

Oct 2021
Focused
TO/TOP
only
Workshop

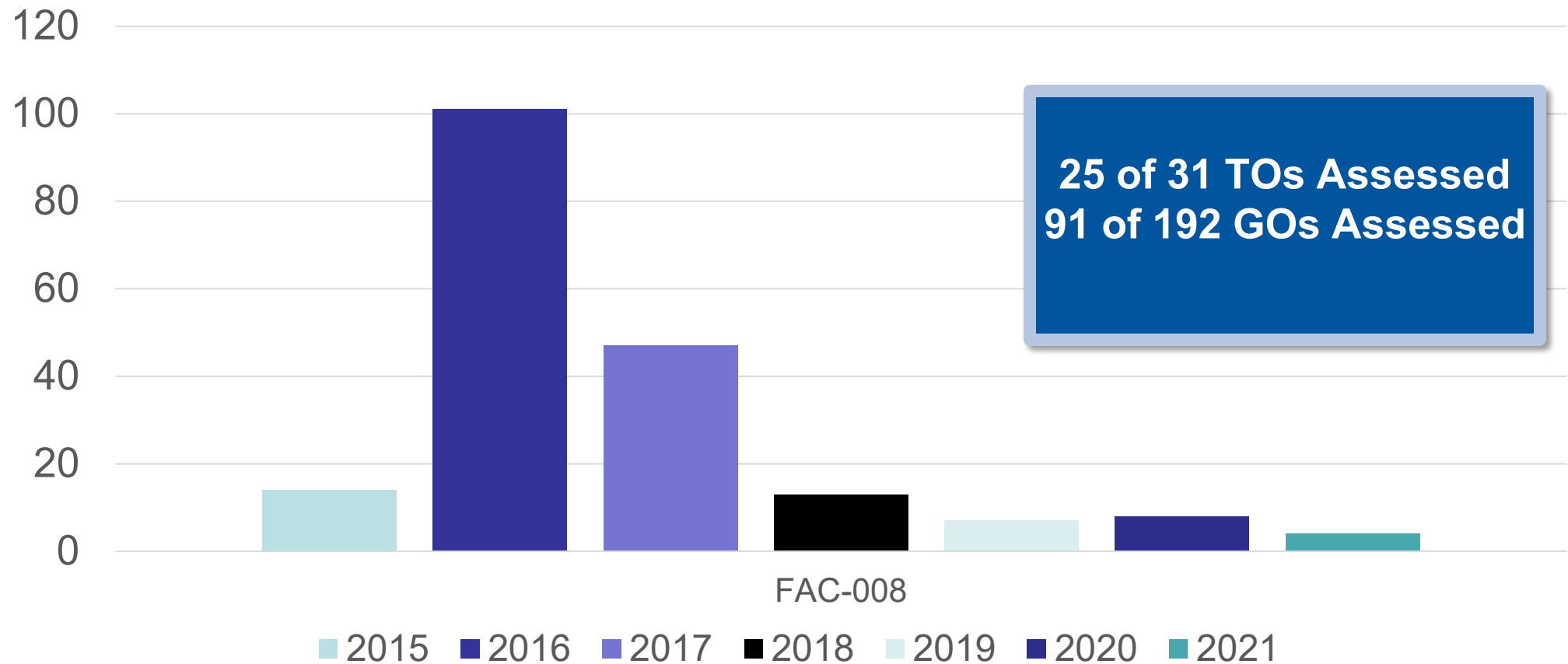
One-on-One
Meetings

CCC Task
Force (now
joint with
NATF)

Practice
Guide,
Common
Questions

ERO
Enterprise
Task Force

FAC-008 Requirements



Registered Entity Best Practices

- **Robust documented change management processes for equipment changes that include:**
 - SME evaluation of changes
 - Required pre-implementation approvals/notifications
 - Inventory verification/updates
 - Checklist to verify appropriate follow-up action(s) taken
 - Periodic reviews/comparisons with internal and external models
 - Periodic reviews with others (e.g., construction/maintenance crews, relay and control, EMS support, RC support, etc.)
 - As needed review if major event has occurred (e.g., Uri, Harvey, 1989 Derecho, Bastrop Fire, Jerrell F-5, etc.)

Registered Entity Best Practices (cont.)

- **Strong annually reviewed methodology – clear instructions, roles and responsibilities, coordination expectations**
- **Inventory tools- write access dictated by FRM roles with automated notifications to affected groups**
- **Periodic field verification -percentage and risk based on legacy, post-event review, and new installations**
- **Checklist for changes that includes data provision (internally and externally), review of SOLs, relay impacts, and EMS/GMS/application alarming impacts**
- **Facility Rating/MLSE database with robust controls, MLSE and secondary MLSE identified, jointly owned Facilities identified**

Since 2016 47 Facility Rating Violations in Texas RE Footprint

- 31 Moderate Risk, 16 Minimal Risk, **ZERO (0) Serious Risk**
- \$497,000 in penalties

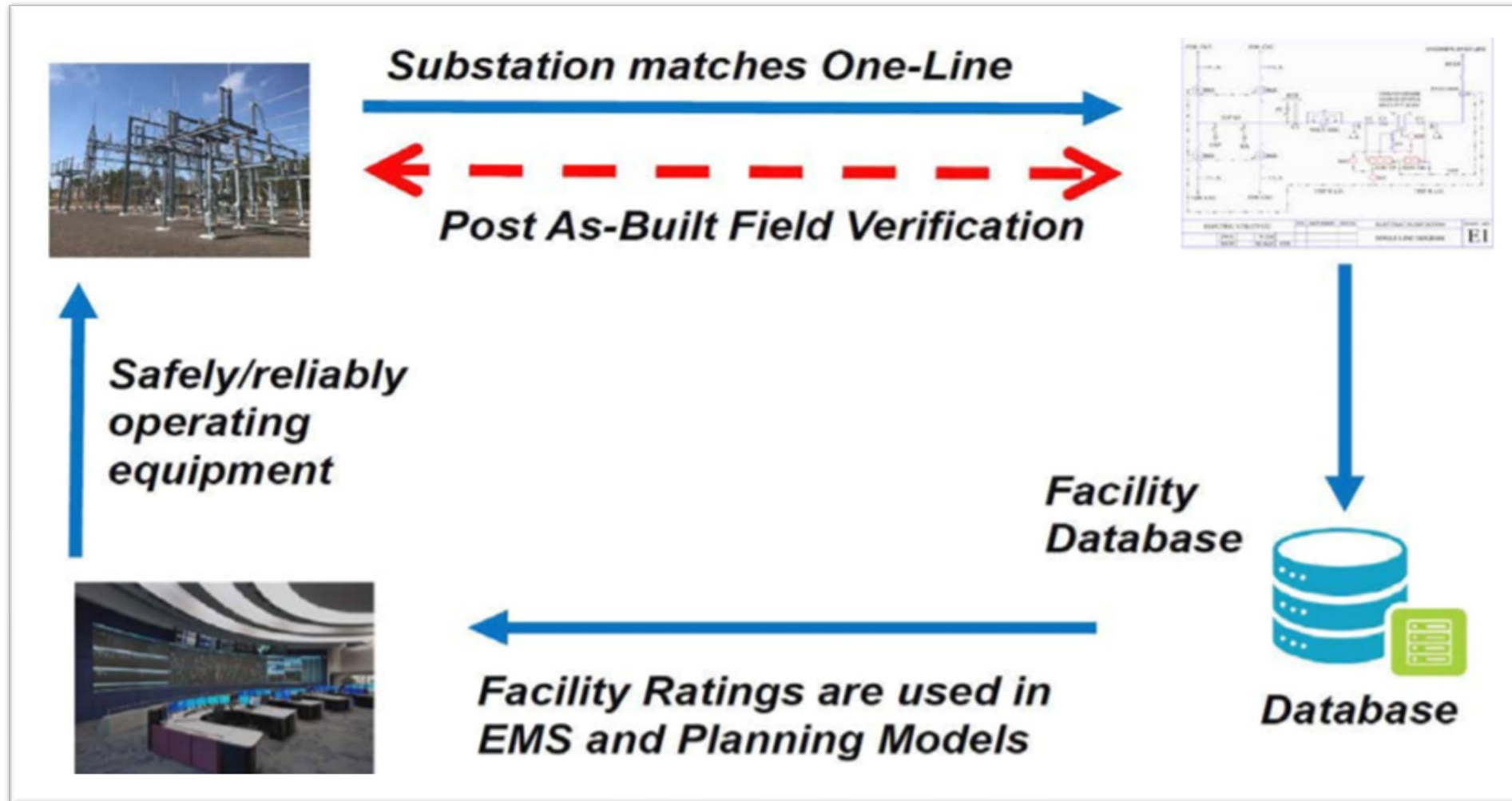
Closed All Facility Rating Violations Discovered Prior to 2020

- Not seeing broad systemic issues
- Remaining issues-smaller TOs, smaller/newer GOs, limited Facilities

Mitigation

- Dependent upon risk not a “one size fits all” approach
- Extent of Condition reviews
- Change management improvements (e.g., periodic field reviews, inventory/tracking tools, notification tools, internal checks, etc.)

Simplified Facility Ratings Flow Diagram



Moving Forward

Support Strong Sustainable Facility Ratings Programs (“Why”)

- Outreach
- Engagement with industry

Determine Status of Facility Ratings Assessments

- Timeliness
- Risk/Address gaps

Enhanced Approach Regarding Facility Ratings Programs

- Use current tools with emphasis on mitigation efforts
- Encourage self-assessment and risk-based prioritization

Support Facility Ratings Task Forces (CCC/NATF/ERO)

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Questions?



TEXAS RE

Ensuring electric reliability for Texans



NERC Standards Review Forum Update

For the Texas RE - Member Representatives Committee

December 8, 2021

Eric Shaw, Oncor
Chair

Matt Stout, ERCOT
Vice-Chair

NSRF Meetings

- 08/18/2021 - Video conference meeting
- 09/30/2021 – Canceled
- 10/28/2021 - Video conference meeting
- 11/18/2021 – Video Conference meeting

Note: Open sessions - WebEx / Closed sessions - Zoom

Texas RE Standards Report

- Effective Dates for Reliability Standards
 - 1/1/2022
 - PRC-012-2 Remedial Action Schemes (R9)
 - TPL-007-4 Transmission System Planned Performance for Geomagnetic Disturbance Events (R6, 6.1-6.4, R10, 10.1-10.4)
 - 7/1/2022
 - PRC-002-2 Disturbance Monitoring and Reporting Requirements (100% compliance for R2-R4, R6-R11)
 - 10/1/2022
 - PRC-024-3 Frequency and Voltage Protection Settings for Generating Resources

NERC Projects

- Project Updates
 - 2017-01b Modifications to BAL-003-1.1
 - 2019-04 Modifications to PRC-005-6
 - 2020-02 Transmission Connected Resources
 - 2020-05 Modifications to FAC-001-3 and FAC-002-2
 - 2020-06 Verification of Models and Data for Generators MOD-026-1 & MOD-027-1
 - 2021-01 Modifications to MOD-025-2 and PRC-019-2
 - 2021-02 Modifications to VAR-002-4.1

(Continued on next slide)

NERC Projects

- Project Updates *(Continued)*
 - 2021-04 Modifications to PRC-002-2
 - 2021-05 Modifications to PRC-023-4
 - 2021-06 Modifications to IRO-010-2 & TOP-003-3

Other Items of Interest

- FERC / NERC 2021 Cold Weather Report
- FERC, NERC & REs Protection System Commissioning Report
- SAR-012 - Texas RE Regional Standards Development Process
- IRO-010 – TOP-003
- Align / CFR Tool
- Texas RE Updates
 - 270 day letter of intent to audit
 - Sampling – PRC-005-6
 - Use of Self-Certification



Upcoming NSRF Meetings

- January 27, 2022
- February 24, 2022
- March 24, 2022

2022 Leadership

- Chair – Matt Stout, ERCOT
- Vice Chair - TBD



Questions or Comments?

Thank you!

ERCOT CIP Working Group Update

For the Texas RE – Member Representatives Committee (MRC)
December 8, 2021

Christine Hasha, ERCOT
CIPWG Chair

Trevor Tidwell, PNM Resources
CIPWG Vice Chair

CIPWG Open – August 2021

- ▶ Texas Department of Public Safety update on DHS National Critical Infrastructure Prioritization Program (NCIPP) Data Call and Critical Infrastructure Prioritization Pilot Study.
- ▶ Federal Bureau of Investigation (FBI) introduction of cyber team members.
- ▶ Overview from Tom Alrich on [Software bills of material \(SBOMs\) and hardware bills of material \(HBOMs\)](#).
- ▶ Electricity Information Sharing & Analysis Center (E-ISAC) updates on cyber and physical vulnerabilities and trends.
- ▶ RSTC call for nominations for terms beginning January 2022.
- ▶ [TSA directive affecting gas pipeline owners](#).
- ▶ Ask Texas RE
 - ▶ CIP-013: What is a vendor (compliance considerations)?.

CIPWG Open – October 2021

- ▶ Public Utility Commission of Texas update on Cyber Reporting Act.
- ▶ Texas Department of Public Safety update on DHS National Critical Infrastructure Prioritization Program (NCIPP) Data Call, Texas interconnect submitted as critical infrastructure.
- ▶ Energy Information Sharing & Analysis Center (E-ISAC) updates on cyber and physical vulnerabilities and trends.
- ▶ Market notice sent about security awareness month.
- ▶ RSTC update from September meeting.
- ▶ Request for participants in CIP-002, Attachment 1 Criteria 2.12 for Transmission Owner Control Center field trial.
- ▶ Ask Texas RE
 - ▶ • BCSI in the cloud audit and control expectations.

CIPWG Open – November 2021

- ▶ E-ISAC updates on physical vulnerabilities and trends.
- ▶ RSTC update:
 - ▶ Working group and task force sunset review.
 - ▶ Aligning the RSTC work plan to the [2021 ERO Reliability Risk Priorities Report](#).
 - ▶ Aligning the RSTC work plan to the [February 2021 Cold Weather Grid Operations: Preliminary Findings and Recommendations](#).
- ▶ Ask Texas RE
 - ▶ CIP-004 reassignments and transfers – when does the clock start?

CIPWG – Closed Meetings

- ▶ Closed meetings have been reinstated with rules.
 - ▶ The start time will be announced in the open session.
 - ▶ Meeting will begin after a short break following the shutdown of the open session. During the break, attendees should begin entering the closed session for verification of confidentiality agreement that matches the current employer.
 - ▶ Those without a confidentiality agreement will be exited from the meeting.
 - ▶ Only the individuals with the confidentiality agreement are allowed to enter the meeting. No conferencing in others or sharing screens with others.
 - ▶ The meeting will be turned to a closed session at the announced start time. No others will be permitted after the meeting is closed.

CIPWG Closed – August 2021

▶ **Security Topics:**

- ▶ ERCOT Threat Operations update.
- ▶ SBOM follow up.
- ▶ Medium and high impact PACS in the cloud.

▶ **Compliance Topics:**

- ▶ Secure Evidence Locker demo.

CIPWG Closed – October 2021

- ▶ Security Topics:

- ▶ ERCOT Threat Operations update.

- ▶ Compliance Topics:

- ▶ CIP-013 Resellers.
- ▶ Transient Cyber Assets contractors and other third parties.

CIPWG Closed – November 2021

- ▶ Security Topics:
 - ▶ ERCOT Threat Operations update.
- ▶ Compliance Topics:
 - ▶ Peer sharing on CIP-004 reassignment and transfer discussion.
 - ▶ Peer sharing on CIP-013 for product support contract renewal.
- ▶ Administrative:
 - ▶ December selection of chair and vice chair.

Upcoming CIP Standard Effective Dates

- ▶ **July 1, 2022 (Protecting operations data)**

- ▶ CIP-012-1 – Cyber Security – Communications between Control Centers.

- ▶ **October 1, 2022 (Supply chain modifications)**

- ▶ CIP-005-7 – Cyber Security – Electronic Security Perimeter(s).
- ▶ CIP-010-4 – Cyber Security – Configuration Change Management and Vulnerability Assessment.
- ▶ CIP-013-2 – Cyber Security – Supply Chain Risk Management.

Standards Pending Regulatory Approval

- ▶ **2019-02 BES Cyber System Information Access Management**
 - ▶ Filed with FERC; 24-month implementation.

NERC CIP Standards Under Development

▶ 2020-04 Modifications to CIP-012-1

- ▶ No postings.
- ▶ No meetings on NERC calendar.

▶ 2020-03 Supply Chain Low Impact Revisions

- ▶ Ballot result from 10/11/2021; 29% approval.
- ▶ Meeting held on 11/3/2021. Next scheduled for 11/15/2021 and 11/18/2021.

▶ 2021-03 CIP-002 Transmission Owner Control Centers

- ▶ Field trial being prepared.
- ▶ No postings.
- ▶ No meetings scheduled.

NERC CIP Standards Under Development

▶ 2016-02 Modifications to CIP Standards

- ▶ No postings.
- ▶ No meetings scheduled.
- ▶ Ballot and comment closed September 1.

CIP-002-7	36.22%
CIP-003-9	41.55%
CIP-004-7	38.09%
CIP-005-8	20.25%
CIP-006-7	42.19%
CIP-007-7	29.40%
CIP-008-7	49.48%
CIP-009-7	49.73%
CIP-010-5	33.22%
CIP-011-3	40.16%
CIP-013-3	41.43%

NERC Compliance Guidance

- ▶ **Endorsed:**

- ▶ None listed.

- ▶ **Proposed:**

- ▶ None listed.

- ▶ **Not endorsed:**

- ▶ None listed.

- ▶ **CMEP Practice Guides:**

- ▶ None listed.

Upcoming Events

- ▶ **Workshops and Conferences**

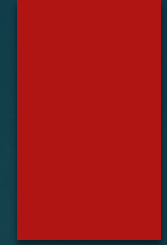
- ▶ None.


- ▶ **2020 NERC Meetings**

- ▶ 2021 Reliability & Security Technical Committee; December 14-15.

Upcoming 2021 CIPWG Meetings

- ▶ August 6
- ▶ September 10
- ▶ October 1
- ▶ November 5
- ▶ December 3





NERC Reliability and Security Technical Committee Update

For the Texas RE – Member Representatives Committee (MRC)

December 8, 2021

Venona Greaff, Oxy

Sector 8

Christine Hasha, ERCOT

Sector 10

ExComm

September 8-9 2021 Meeting

- Approved new Nominating Subcommittee Member
- Approved 1 White Paper
- Approved posting for comment of 1 Reliability Guideline
- Approved 1 Scope Document

September 8-9 2021 Meeting

- A member of the Nominating Subcommittee retired leaving a position open. The RSTC Chair, in consultation with the Executive Committee, nominated Edison Elizeh from Sector 4. The full committee voted to approve.
- Nominating Subcommittee provided a report on the timelines and activities associated with the Sector elects and At-Large nominations to fill seats terming out in 2022.
- NERC CCC Chair Jennifer Flandermeyer shared information on the impacts of proposed wifi operations on microwave links at 6Ghz.
 - Seeking volunteers to participate on a new task force

September 8-9 2021 Meeting

- Approved For Posting and Comment
 - DER Forecasting Reliability Guideline
- Approved Scope Document
 - The Synchronized Measurements Working Group (SMWG)
- Approved White Papers
 - DER Modeling Practices (SPIDERWG)

September 8-9 2021 Meeting

- Call for Volunteers
 - NERC SPIDERWG DER integration Simulation Improvements Whitepaper needs reviewers.
 - New Task Force focused on 6GHz communications bands needs technical experts with 6 GHz wireless radio communication band or electrical operations communication components. Nomination period closed October 1.

September 8-9 2021 Meeting

- Informational
 - Review of RSTC Policy Input highlights
 - Review Proposed RSTC Charter Amendments
 - Review ERO Reliability Risk Priorities Report
 - RSTC risk prioritization and risk mitigation planning
 - Update on NERC's Risk Registry
 - Failure Modes and Mechanism Task Force update
 - Security Working Group update
 - New analysis in 2021 State of Reliability Report
 - DOE Cybersecurity for Operational Technology Environments
 - CyOTE
 - Supply Chain Standard Effectiveness Survey review

September 8-9 2021 Meeting

- Informational
 - Nomination Subcommittee (NS) Update
 - RSTC subordinate group review process
 - Reliability Assessments Subcommittee (RAS) update
 - Energy Reliability Assessments Task Force (ERATF) update
 - Standing Committee Coordination Group (SCCG) update
 - NERC Event Analysis Subcommittee (EAS) Lessons Learned
 - NAGF and NATF Updates

Participation Opportunity

- Sector Elections
 - 11 Sectors
 - Sector 8 and Sector 10 – Texas RE Representation
 - Incumbents return
 - 2 Seats are empty
 - Sector 2 – State/Municipal Utility
 - Sector 9 – Small End-use Electricity Customer
- 5 At-Large Seats Expiring
 - Nominations open December 10
 - Currently no Texas RE representation



Future Meetings

2021

December 14-15, 2021 (Virtual)

2022

March 8-9, 2022 (TBD)

June 7-8, 2022 (TBD)

September 13-14, 2022 (TBD)

December 14-15, 2022 (TBD)



Compliance and Certification Committee

*Update to Texas RE Member Representatives Committee
December 2021*

➤ **September and November 2021 CCC Voting Items**

- CCC 2022 [Work Plan](#)
- CCCPP-009 Revision – Confidentiality Protocol
- CCCPP-012 Revision – CCC Participation in NERC CMEP Audits (Appendix 4A)
- Subcommittee Scope Revisions (ORCS, EROMS, Alignment moving to CCC Exec Committee)
- 2022-2023 Leadership
 - Scott Tomashefsky, N. CA Power Agency (Chair) / Silvia Parada Mitchell, NextEra (Vice Chair)

➤ **Committee Focused Discussions**

- Enforcement (closed session) and Self Logging (joint with Standards Committee)
 - [ERO Self-Logging Presentation](#) (SC+CCC Sept Meeting Package, Agenda Item 5, p28)
- Align and Secure Evidence Locker Implementation Experience

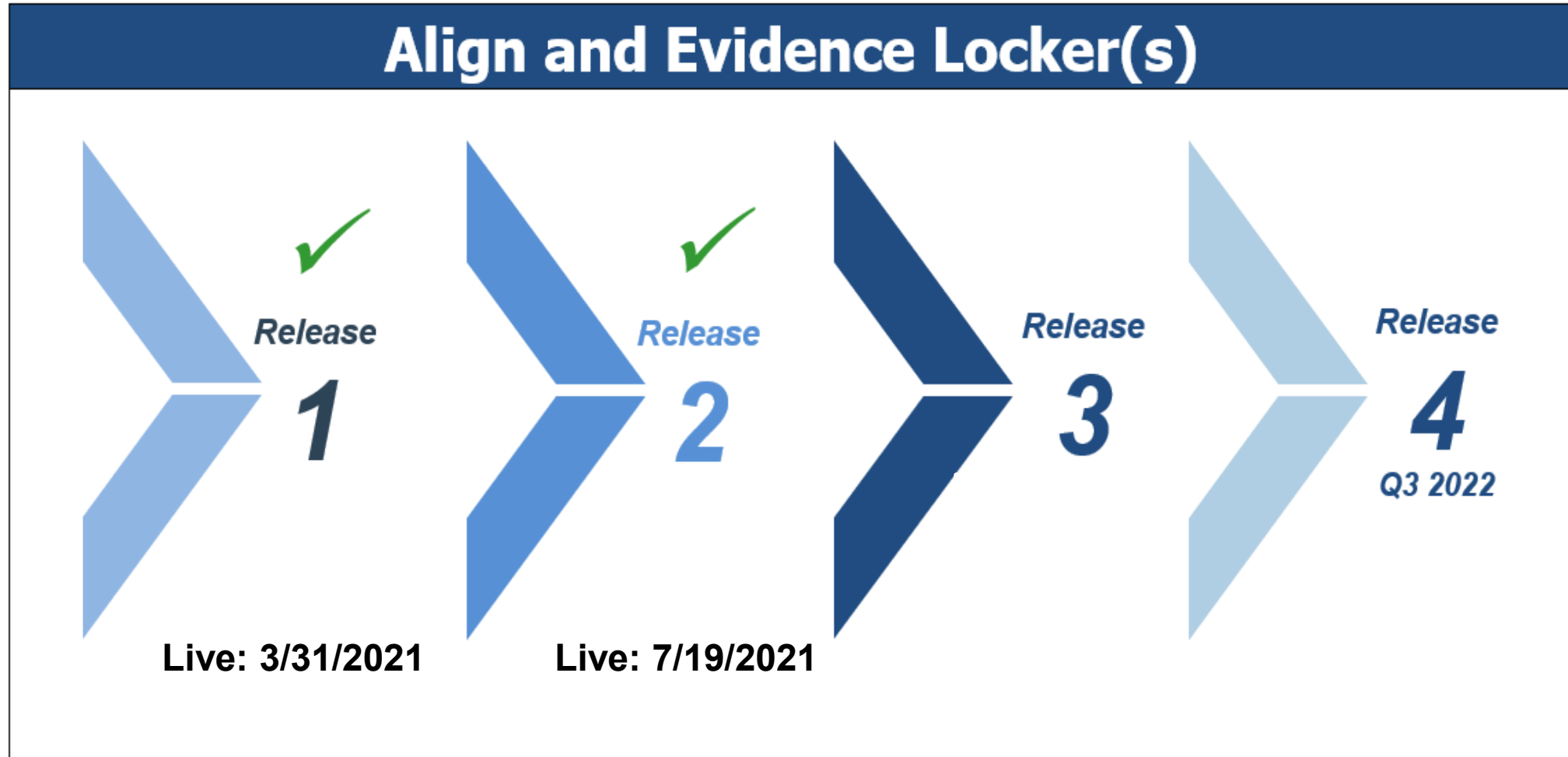
➤ **Task Force Activities**

- Facility Ratings – [BOTCC/CCC Presentation](#) (Agenda Item 3, p5)
- Supply Chain – [August 27 Webinar](#); [FAQs](#)

Align Project Update

Member Representatives Committee Meeting
December 8, 2021

Align Release Overview



ERO Enterprise Outreach: Align and SEL Lessons Learned

ERO Enterprise Webinar Held September 28, 2021

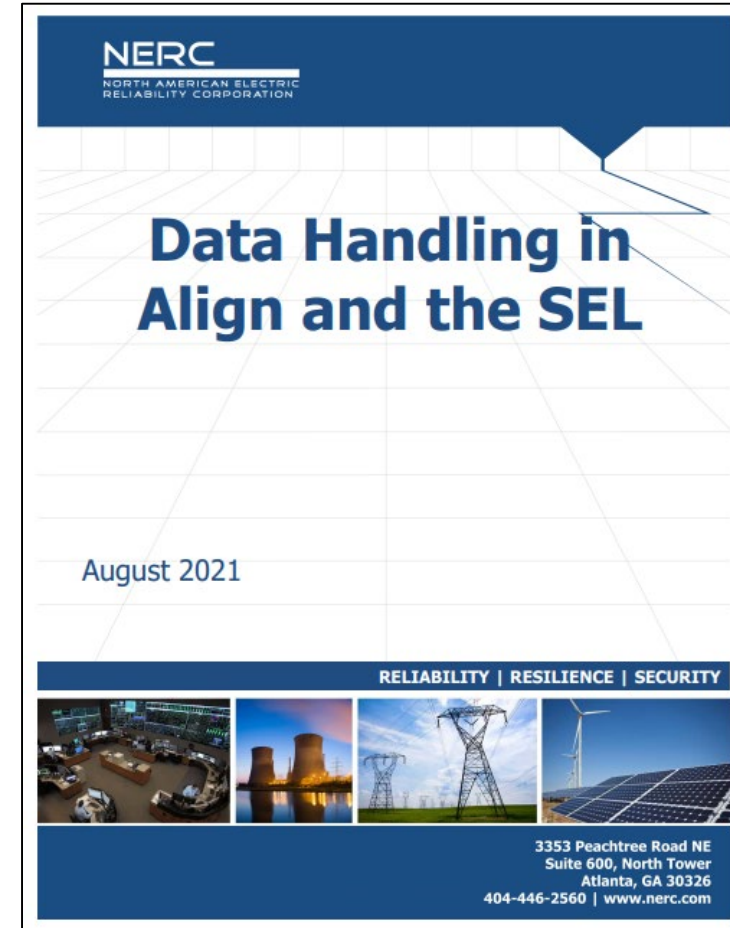
- ERO Transformational effort involving each Region's Change Agents
- 437 Attendees
- Survey conducted, positive feedback
 - Responses from all Regions
 - 97% found it effective and informative
 - 100% are interested in future joint ERO Enterprise Align/SEL webinars
- Top three topics of interest
 - Data Handling in Align and the SEL
 - Align Functionality
 - SEL Submission Portal Functionality

Other Items

NERC Published Data Handling in Align and the SEL Guide

Data Migration - Closed PNCs Underway

Align User Group Has Met Twice



Closed PNCs Across all Regions

- Information for Enforcement Actions closed within the past five years will be migrated into Align
 - First migration batch underway
 - Additional migration batches to occur during 2022

Technical Feasibility Exceptions Across all Regions

Migration Supports Metrics, ERO Internal Reports, and Compliance History Tracking

Governance Model

- **September 27: Align User Group (AUG) Kick-off**
- **November 3: 2nd meeting**
- **Topics**
 - Release 1 and 2 Defects and Enhancements
- **Align User Group**
 - Three representatives from the CCC
 - Two representatives from each Region and NERC
 - One NERC Align Functional Administrator
 - One Align Business Engagement Analysts



Resources and Stay Informed

Training Resources

Registered Entity Training Materials

Registered entity videos/User Guides available:

- Release 1
- Release 2
- Access Provisioning and MFA
- Submitting Evidence to the ERO SEL
- Post Support Process

Stay Informed

- Texas RE website: [Align page](#)
- Texas REview, Align Newsletters, announcements, and social media
- Visit NERC's [Align page](#)
- Join Talk with Texas RE meetings for Align updates

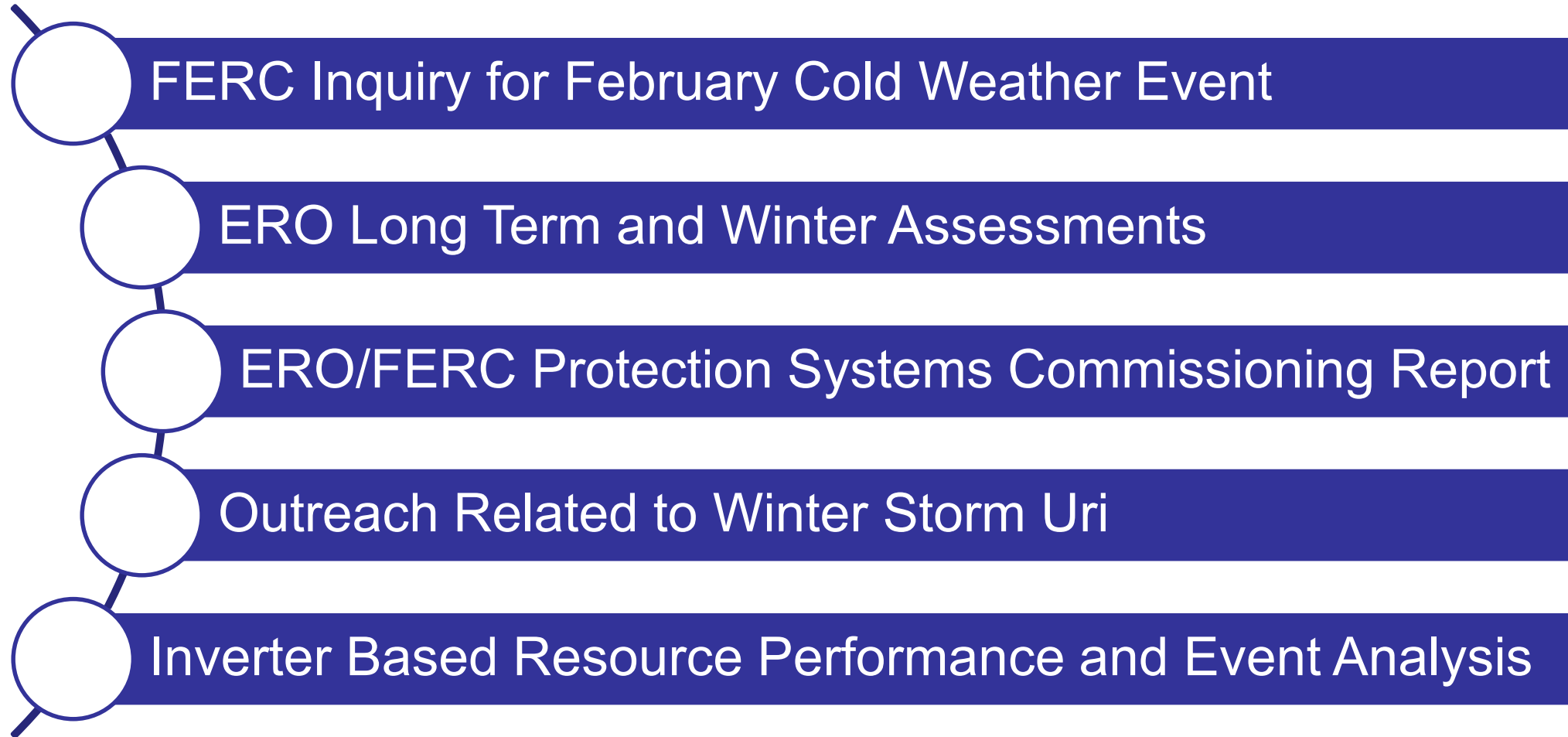
Reliability Services and Registration Report

**MRC Meeting
December 8, 2021**

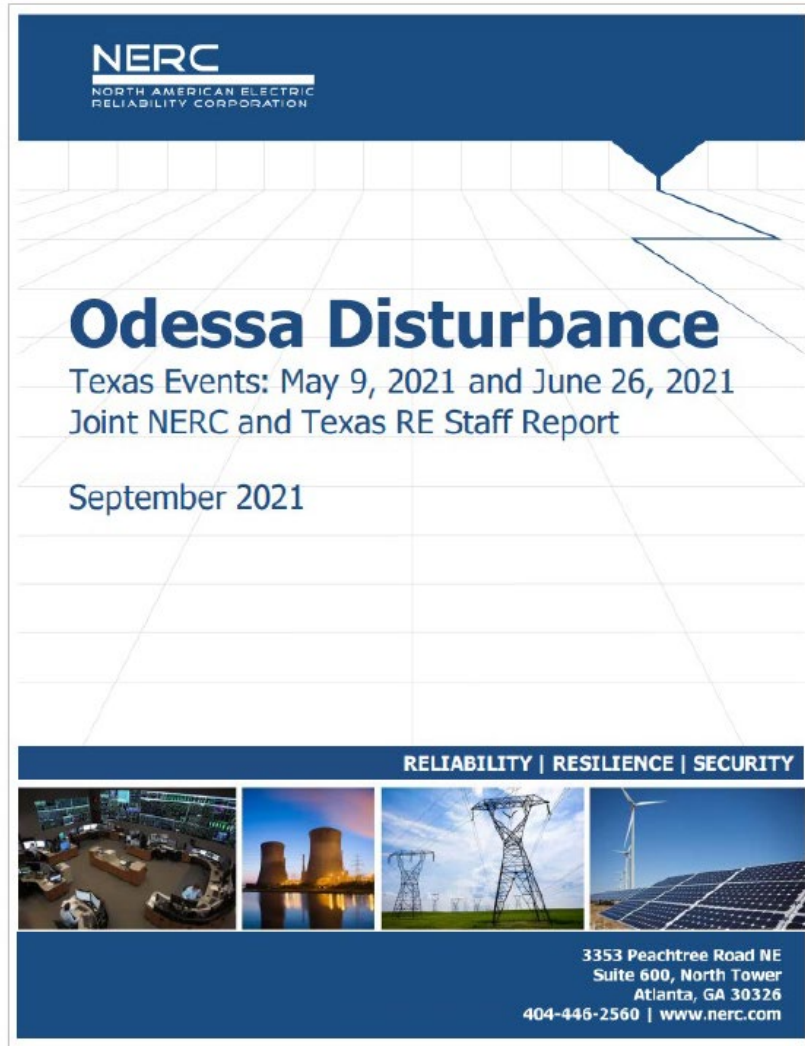
Reliability and Performance Indicators

MRC Meeting
December 8, 2021

Key Activities



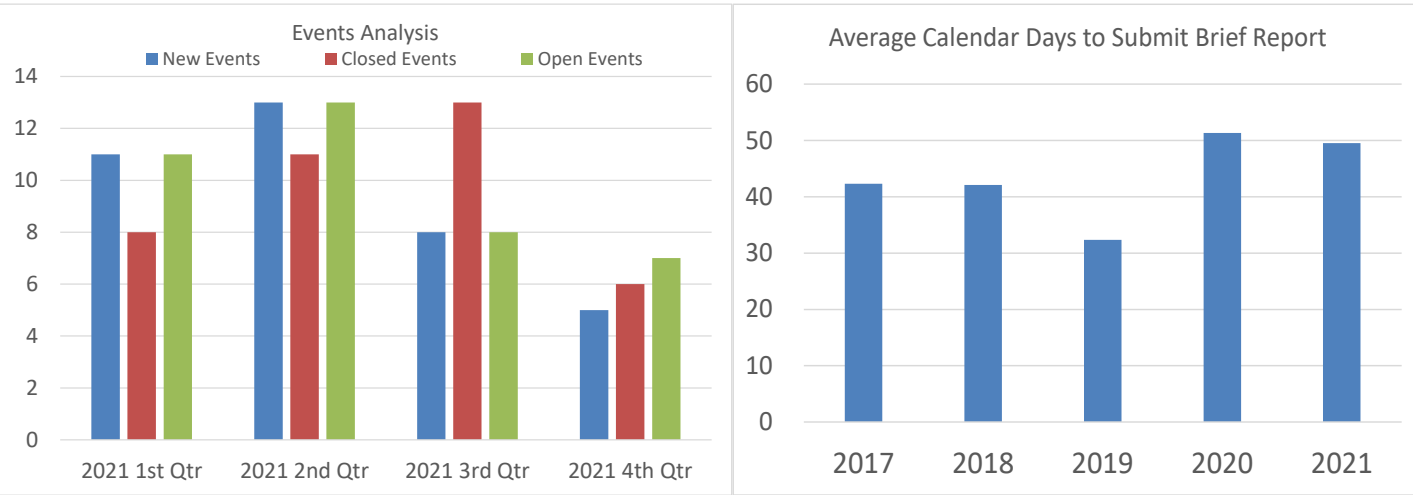
NERC Odessa Disturbance Report – May 9, 2021



- Report published Sept 2021
- Recurring issues with solar PV plants resulting in failure to ride-through disturbances, most noted in California events since 2016
- Combined effort of SMEs from NERC, ERCOT, and Texas RE
- Extensive follow-up planned by the NERC Inverter-based Resource Performance Working Group

Reliability Services Functional Dashboard – As of Nov 15, 2021

EVENTS ANALYSIS



SITUATIONAL AWARENESS

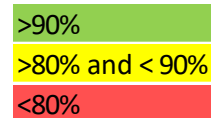
Through 10/31/2021

Category	OE-417 Submission	EOP-004 Submission
Physical Threat	7	2
System Separation or Islanding	2	
Loss of Firm Load		
Public Appeals	6	
Loss of Monitoring	6	3
Control Center Evacuation	1	1
Loss of > 50k Customers	9	
Fuel Supply Emergency	3	
Damage/Destruction of Facility		3
Generation Loss		
Transmission Loss	2	

PERFORMANCE ANALYSIS

On-Time Section 1600 Reporting Status as of 15 Nov 2021

	2021 Q1	2021 Q2	2021 Q3	2021 Q4
TADS	100%	96%	82%	
GADS	100%	100%	100%	
MIDAS	99%	98%	40%	
Wind GADS	82%	81%	67%	



** Q3 data due 11/15 for GADS, TADS, and Wind GADS

*** Q3 data due 11/30 for MIDAS

- FERC Report on Protection System Commissioning released 11/4

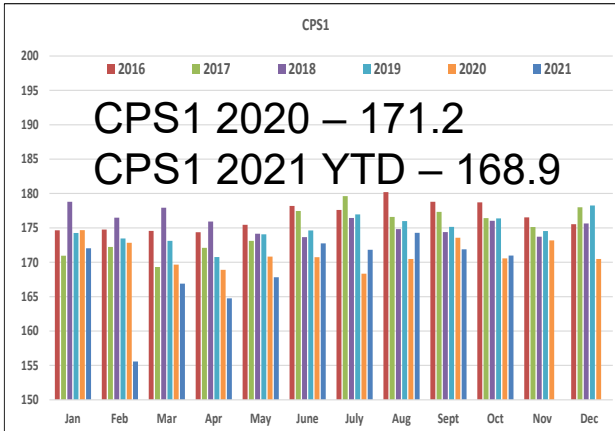
ASSESSMENTS

October 2021 ERCOT Interconnection Model Assessment

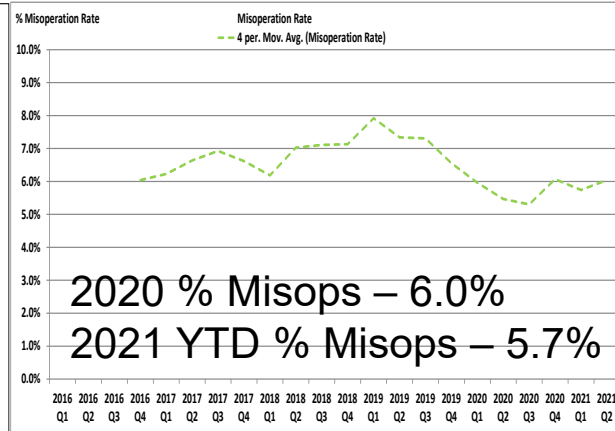
Powerflow	Most metrics below 5% 1 metric consistent worsening or improving 1 metric worsening 1 metric consistent high score or improving
Dynamics	Most metrics below 5% 2 metrics consistent high score 3 metrics worsening 1 metric improving

Reliability Dashboard as of November 15, 2021

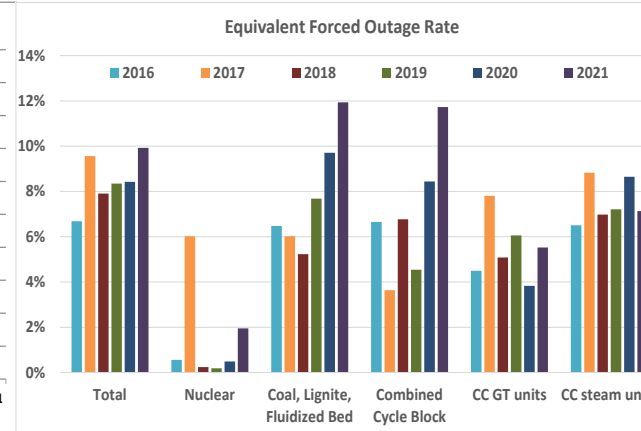
Frequency Control



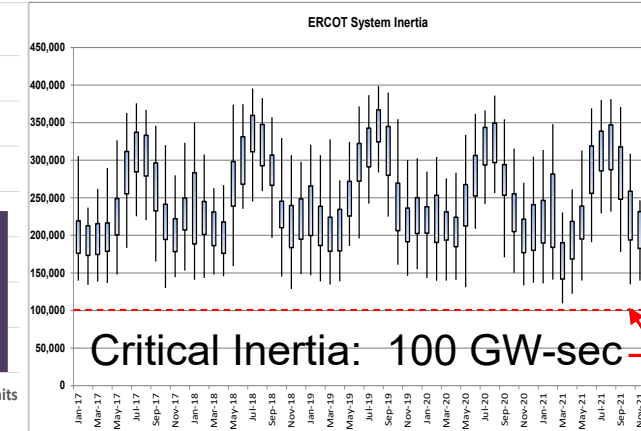
Misoperations



Forced Outage Rates



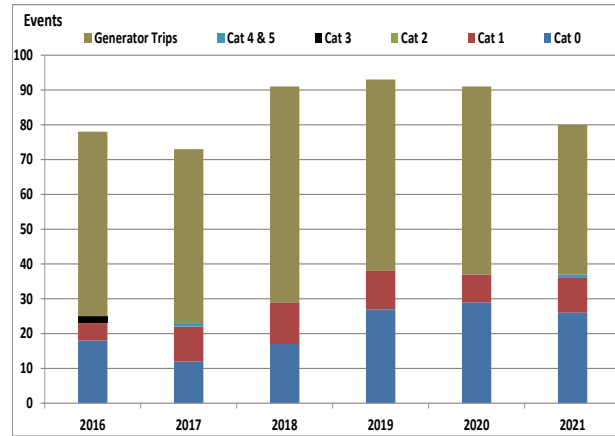
Inertia



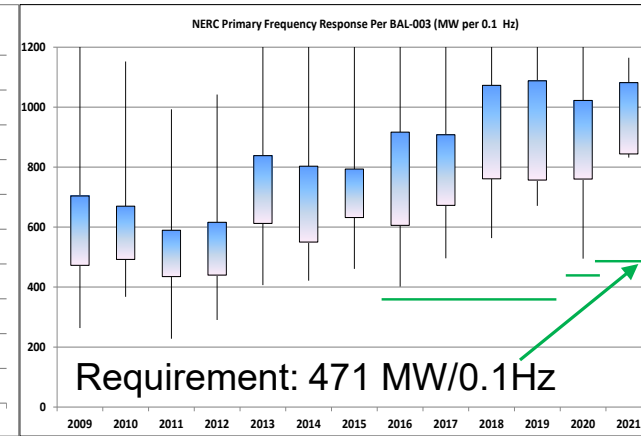
2021 Resource Adequacy

Projected Peak: 77,244 MW
Actual Hourly Peak: 73,476 MW
Wind/Solar % at Peak: 13.6%
Max Hourly Wind: 23,368 MW
Max Hourly Solar: 6,988 MW
Max Hourly Renew %: 65.8%
Advisories (PRC<3,000) – 7
Watches (PRC<2,500) – 4

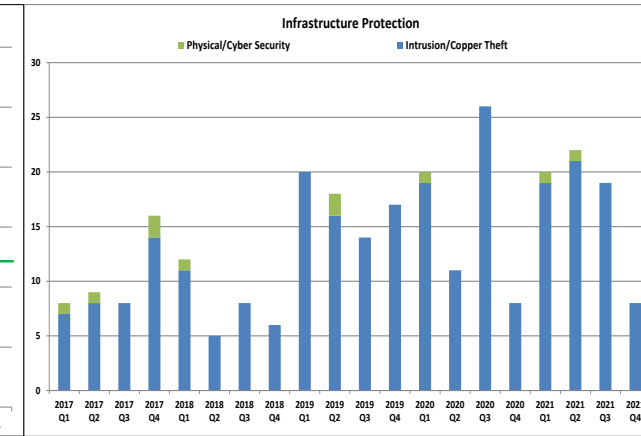
Events



Frequency Response



Infrastructure Protection



APPENDIX: RELIABILITY AND PERFORMANCE INDICATORS UPDATE

System Events

Events

Total Events

Cat 4 & 5

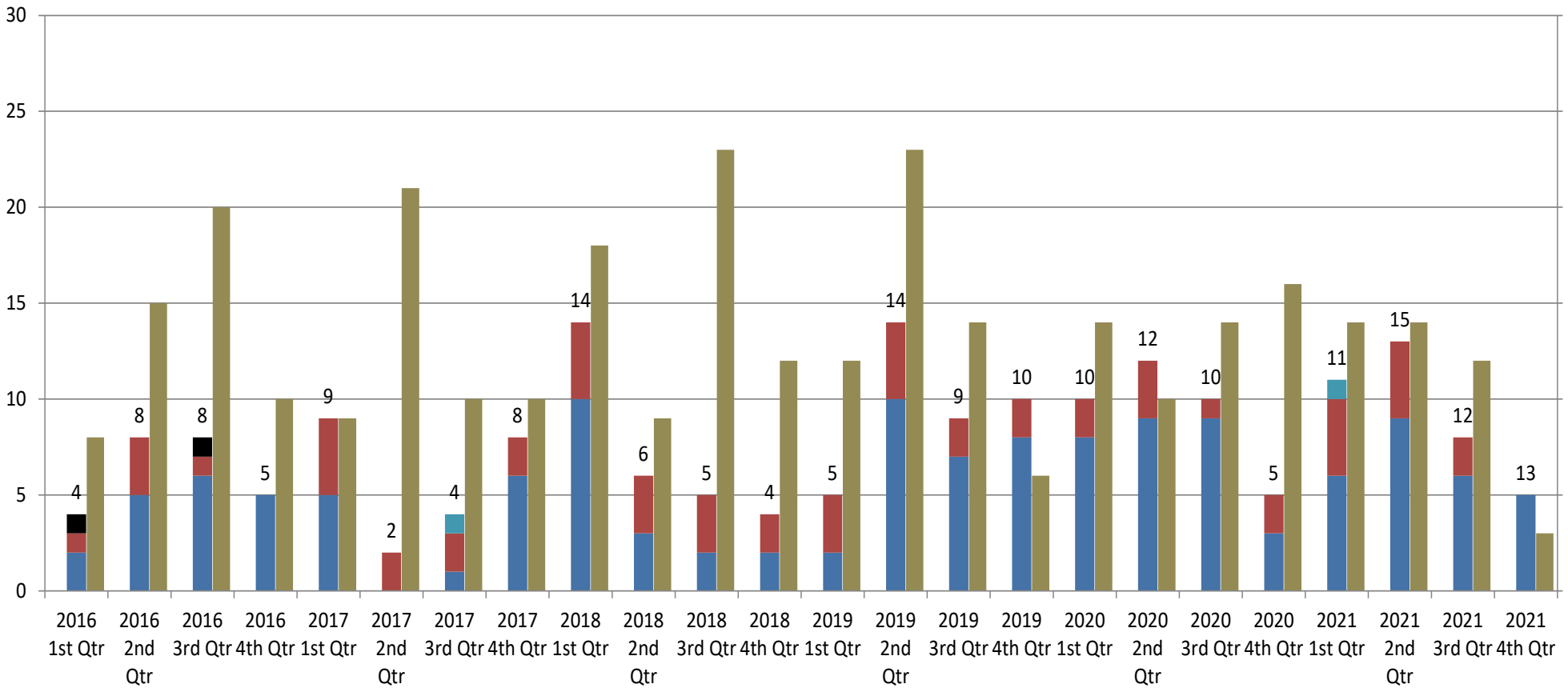
Cat 3

Cat 2

Cat 1

Cat 0

Generator Trips



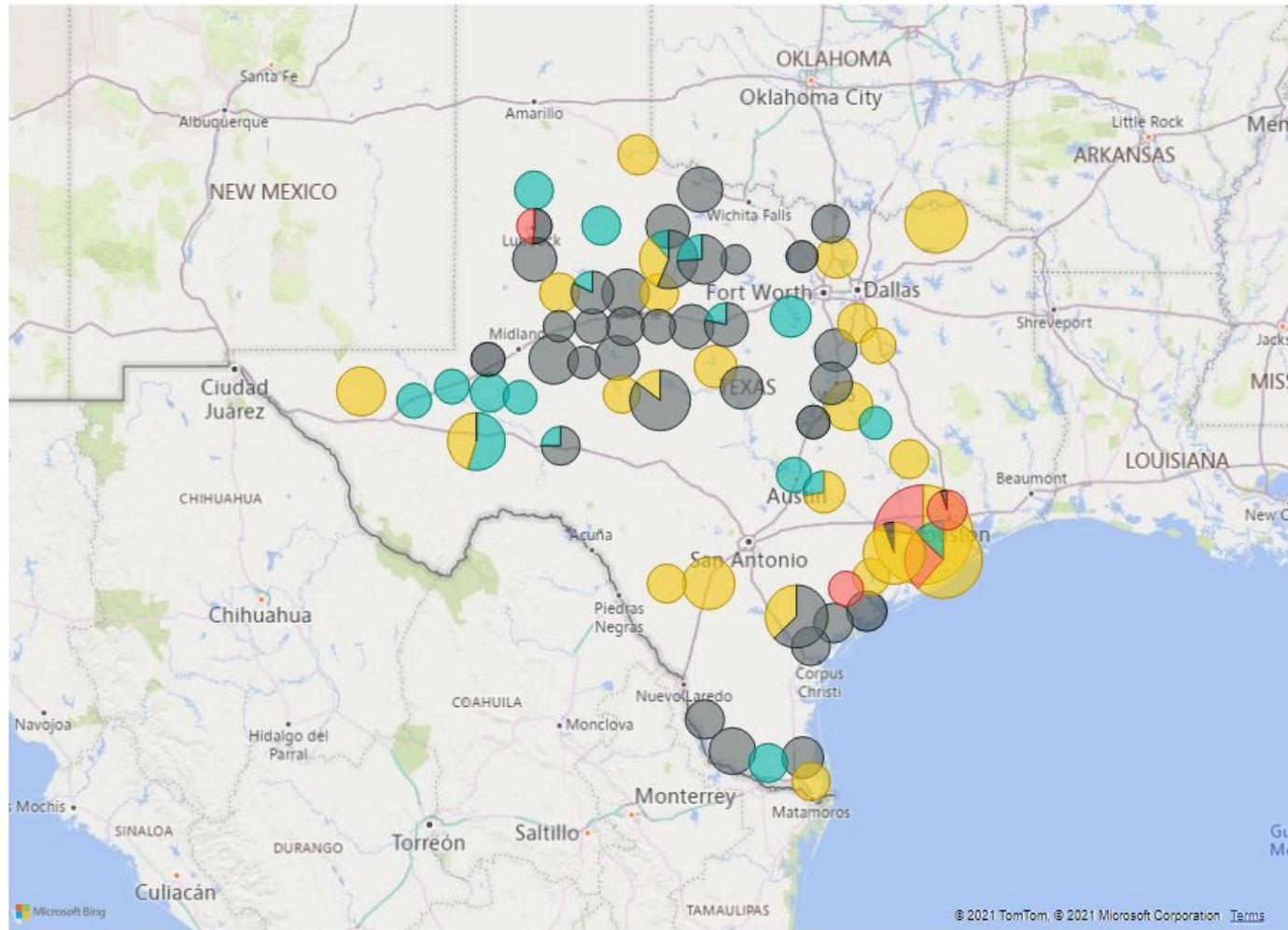
Key 2021 System Events

- **2/15/2021**
Winter storm
- **Five loss of SCADA or EMS events**
- **5/9/2021**
Loss of solar
- **6/26/2021**
Loss of solar

New Generation Interconnections with Signed IA as of 11/01/2021

New Generation with Signed IA and meets all Planning Guide requirements

Technology ● BA ● CC ● GT ● PV ● WT



Technology	Year	Count of Capacity (MW)	Capacity (MW)
BA	2021	7	579.90
BA	2022	16	1,913.04
CC	2021	5	447.00
CC	2022	2	79.00
GT	2021	4	256.00
GT	2022	4	825.00
PV	2021	10	1,803.15
PV	2022	28	6,205.88
PV	2023	5	724.29
WT	2019	1	44.00
WT	2020	2	756.90
WT	2021	35	4,746.66
WT	2022	8	2,310.39
WT	2023	1	100.00
Total		128	20,791.21

NERC Steady-State and Dynamic Model Metrics – Oct 2021

October 2021 ERCOT Interconnection Model Assessment

Powerflow	Most metrics below 5% 1 metric consistent worsening or improving 1 metric worsening 1 metric consistent high score or improving
Dynamics	Most metrics below 5% 2 metrics consistent high score 3 metrics worsening 1 metric improving

NERC reviews a composite of 40 metrics between the steady-state and dynamic models. Summer peak, Winter peak, and light load cases are reviewed.

Goal is to have metrics to close to zero.
 ERCOT model metrics > 5% are shown below.

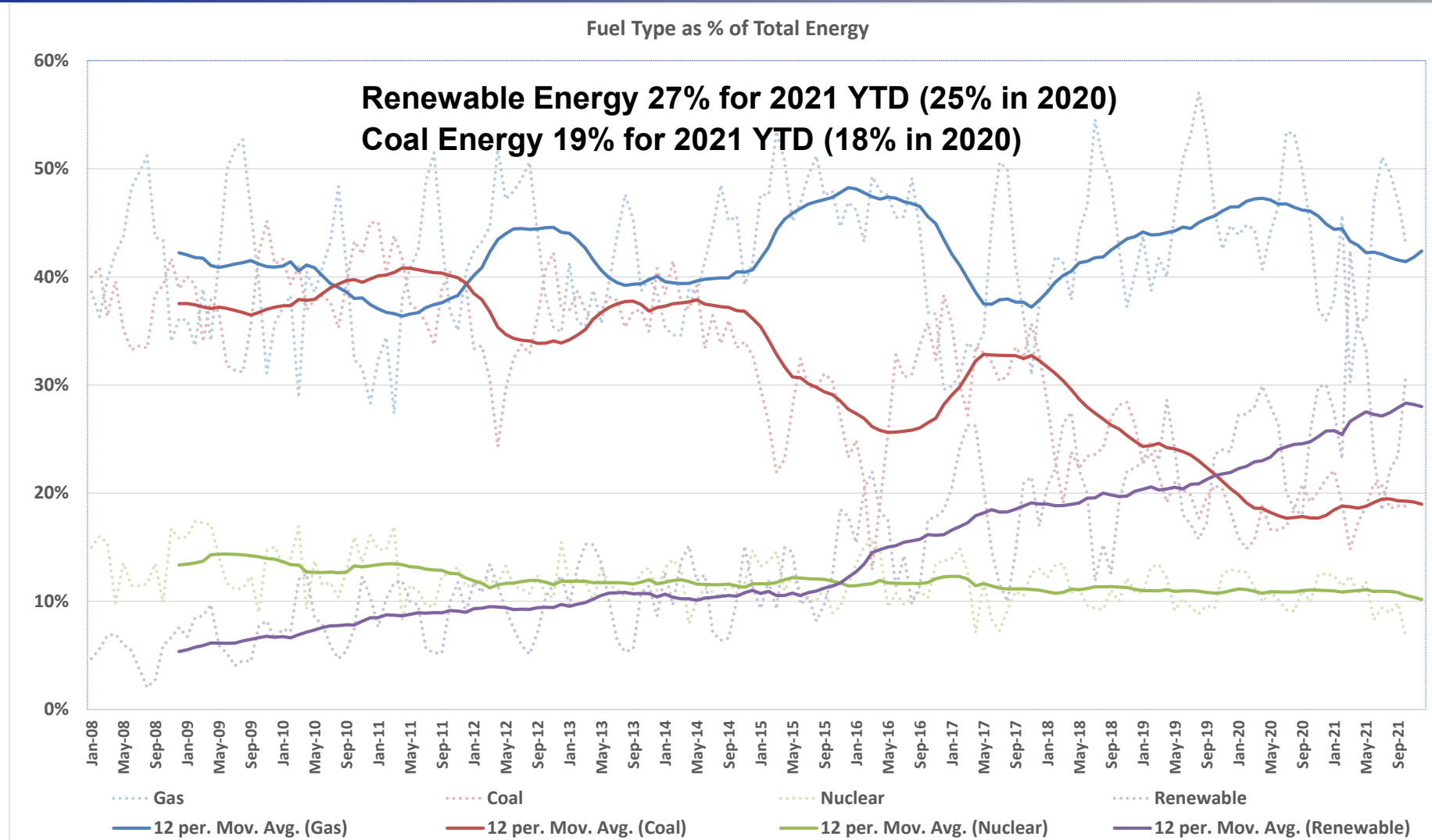
Steady-State Model Metrics

Metric	2017 Score %	2018 Score %	2019 Score %	2020 Score %	2021 Score %	Performance
Generator Reactive at Limits	20.24	14.11	6.37	6.78	8.52	
Generator Reactive Limit Power Factor	11.33	11.11	13.73	31.83	9.36	

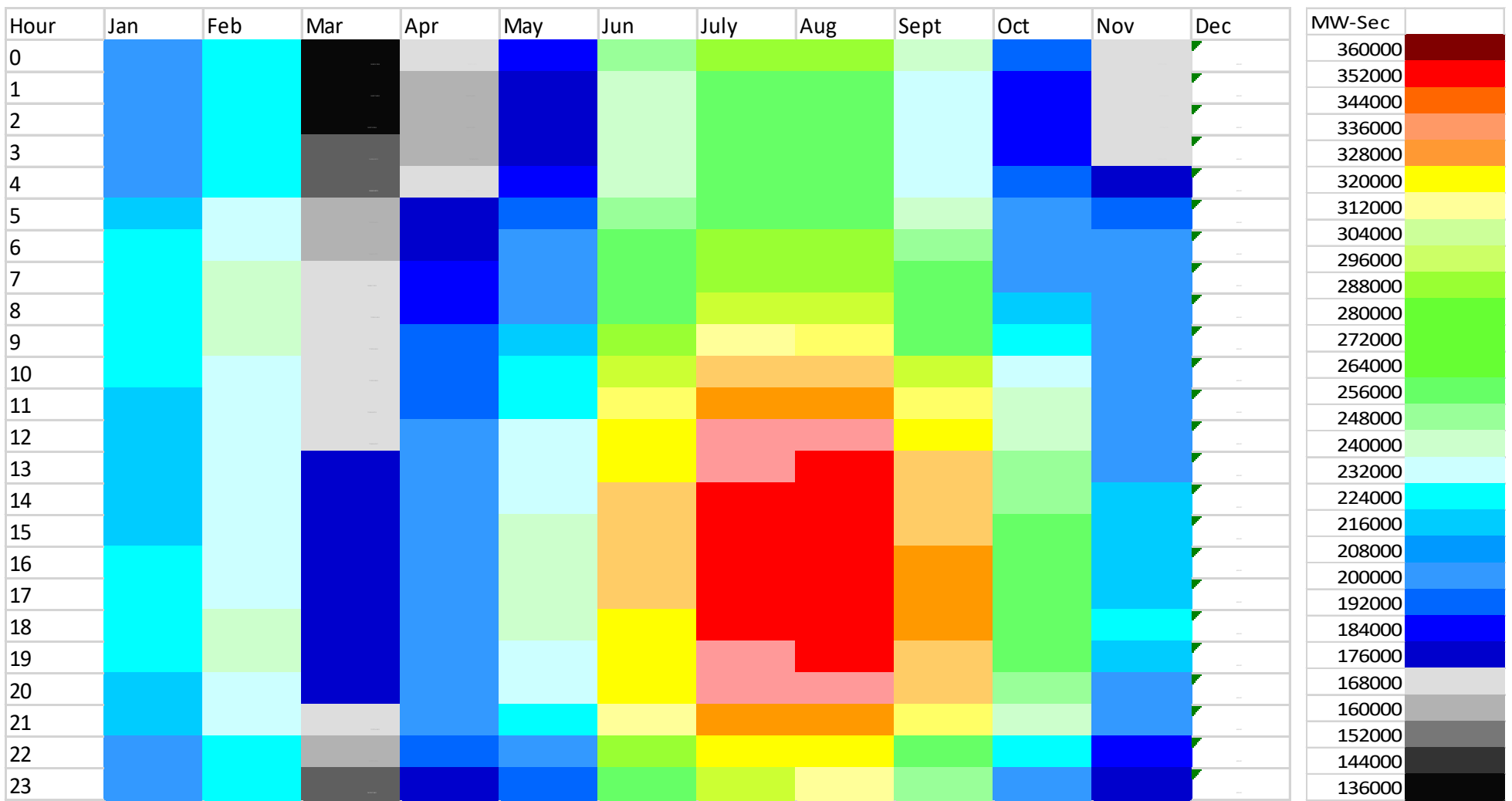
Dynamic Model Metrics

Metric	2017 Score %	2018 Score %	2019 Score %	2020 Score %	2021 Score %	Performance
Not Recommended Models	-	-	24.37	21.77	20.09	
Unreasonable Inertia Constants	15.33	11.3	14.01	15.31	16.4	
Unreasonable Saturation Factors	20.08	20.12	13.17	12.82	13.55	
DC Exciter Self-Excitation Errors	9.86	11.67	12.5	13.46	11.31	
Suspect PSS2A/2B parameters	-	12.5	16.92	14.07	16.21	

Energy by Fuel Type since 2008



System Inertia

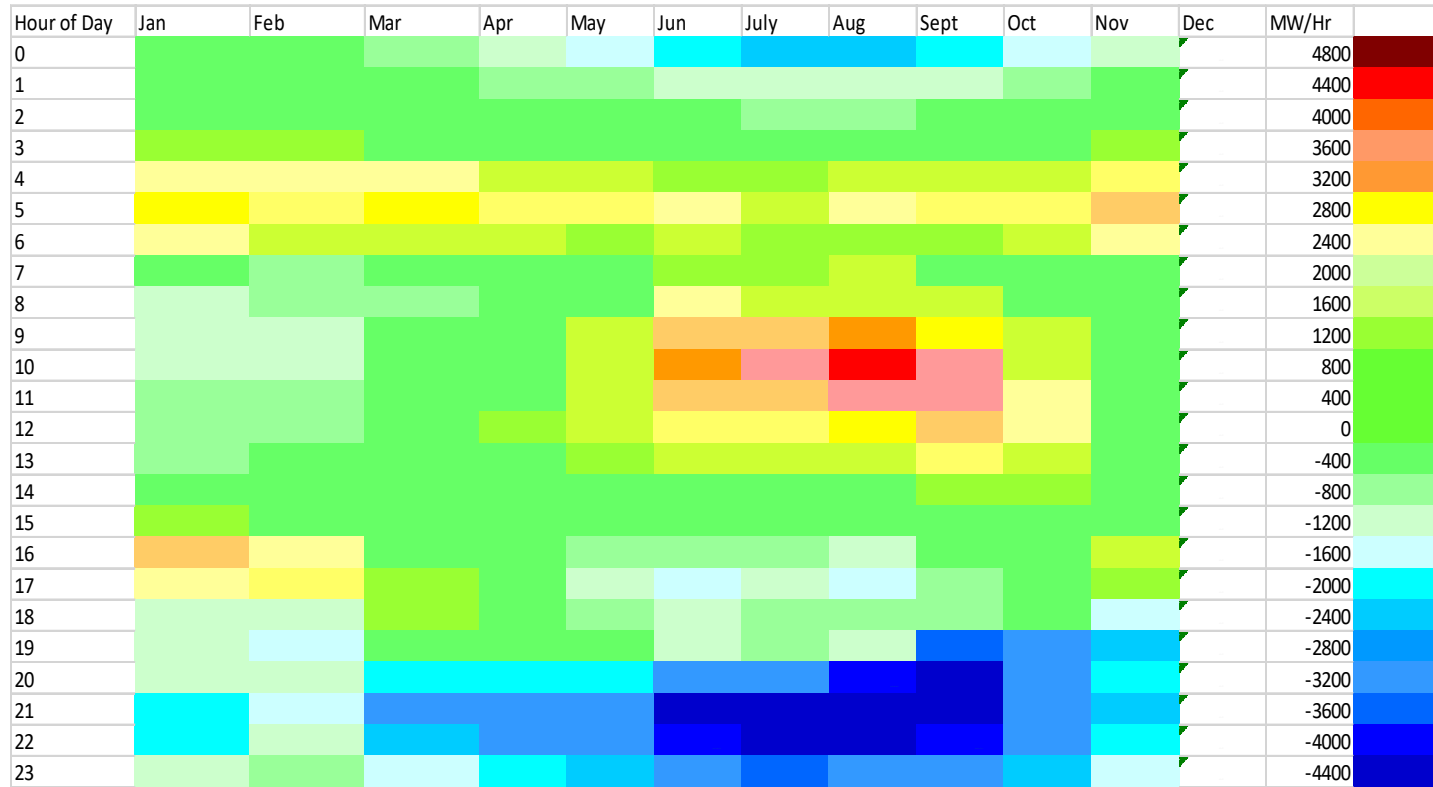


2021 heat map of inertia by month and hour

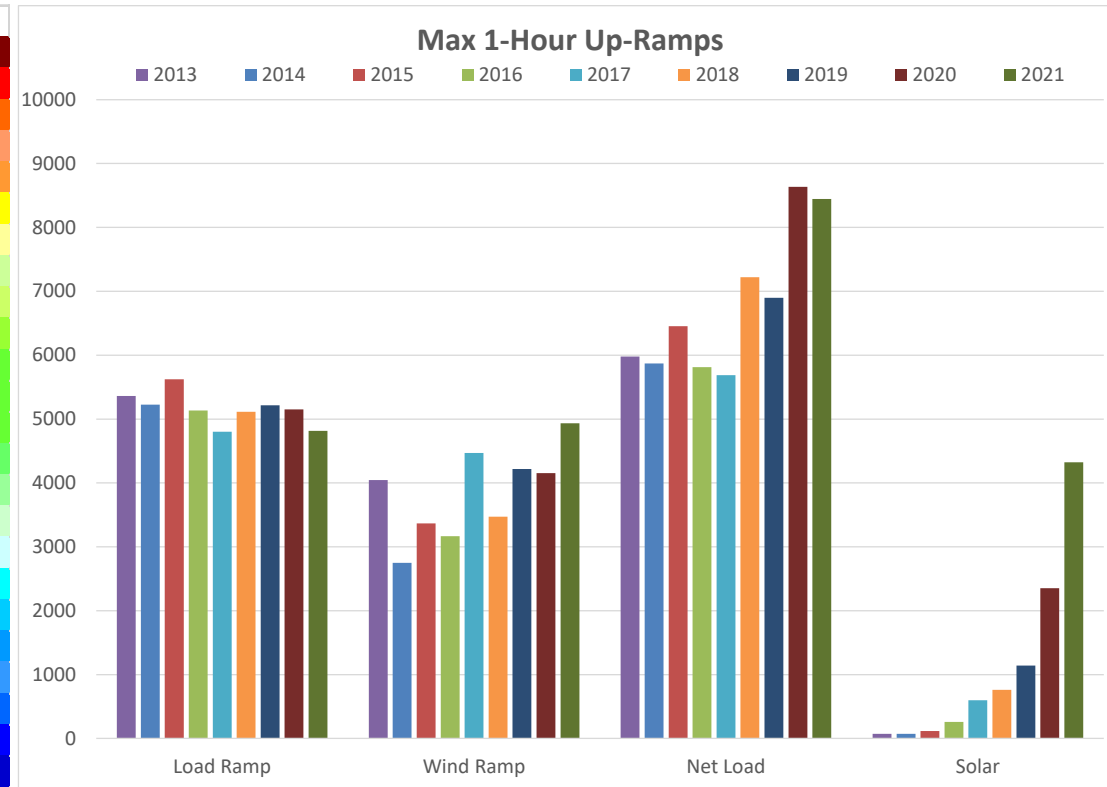
Lowest inertia level of 109 GW-sec on 3/22/2021

Low inertia risk is limited to less than 50 hours per year

Ramping

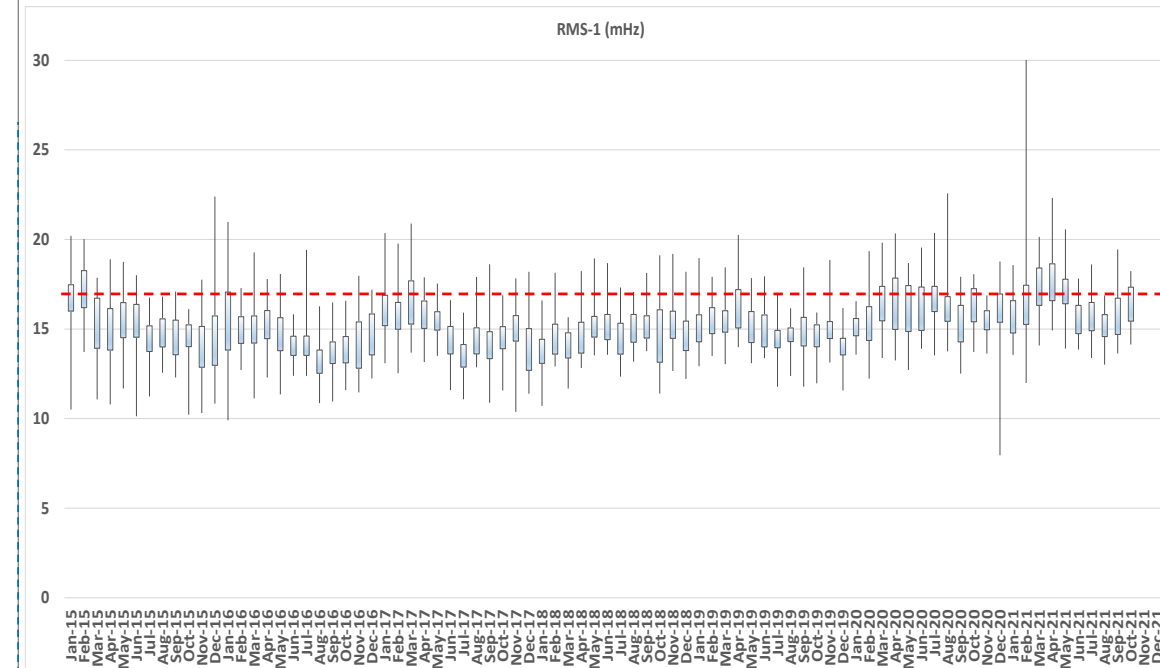
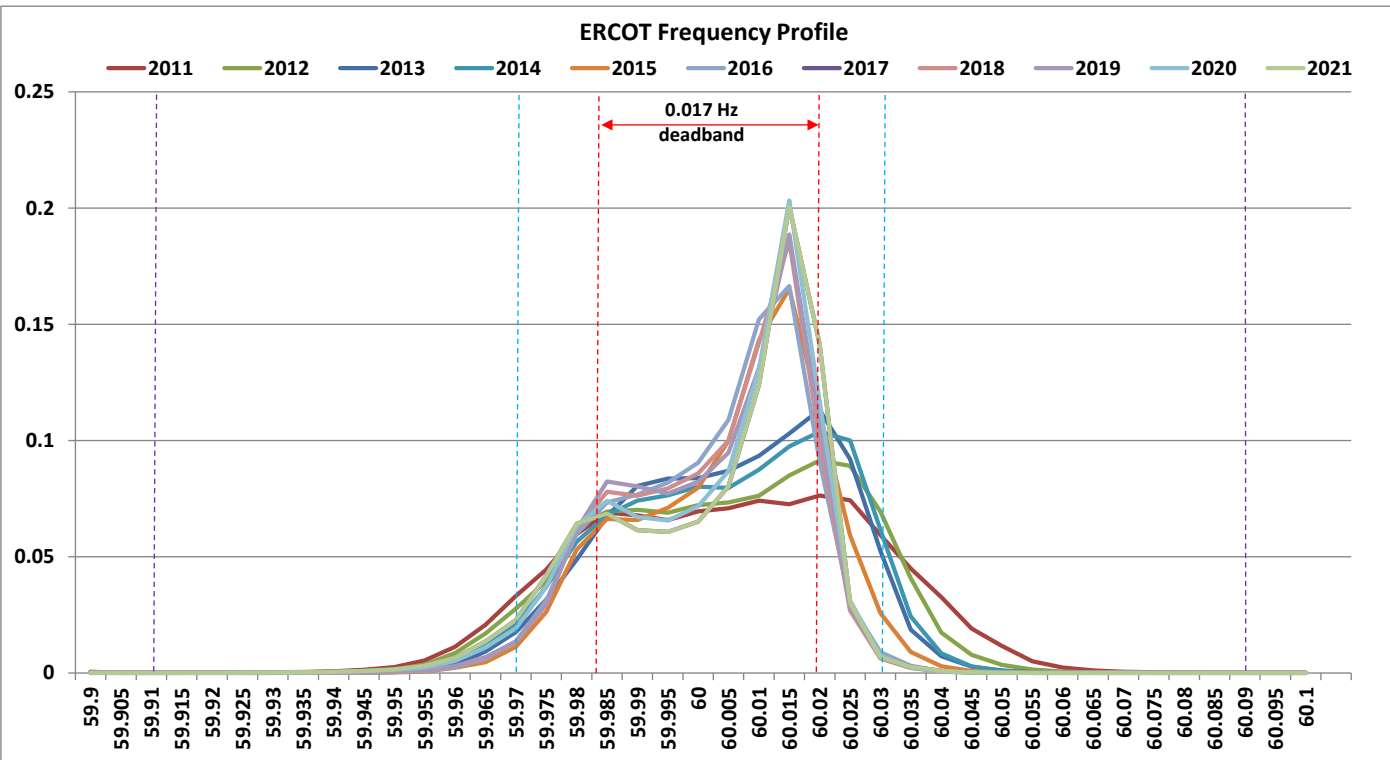


2021 heat map of net load ramp by month and hour



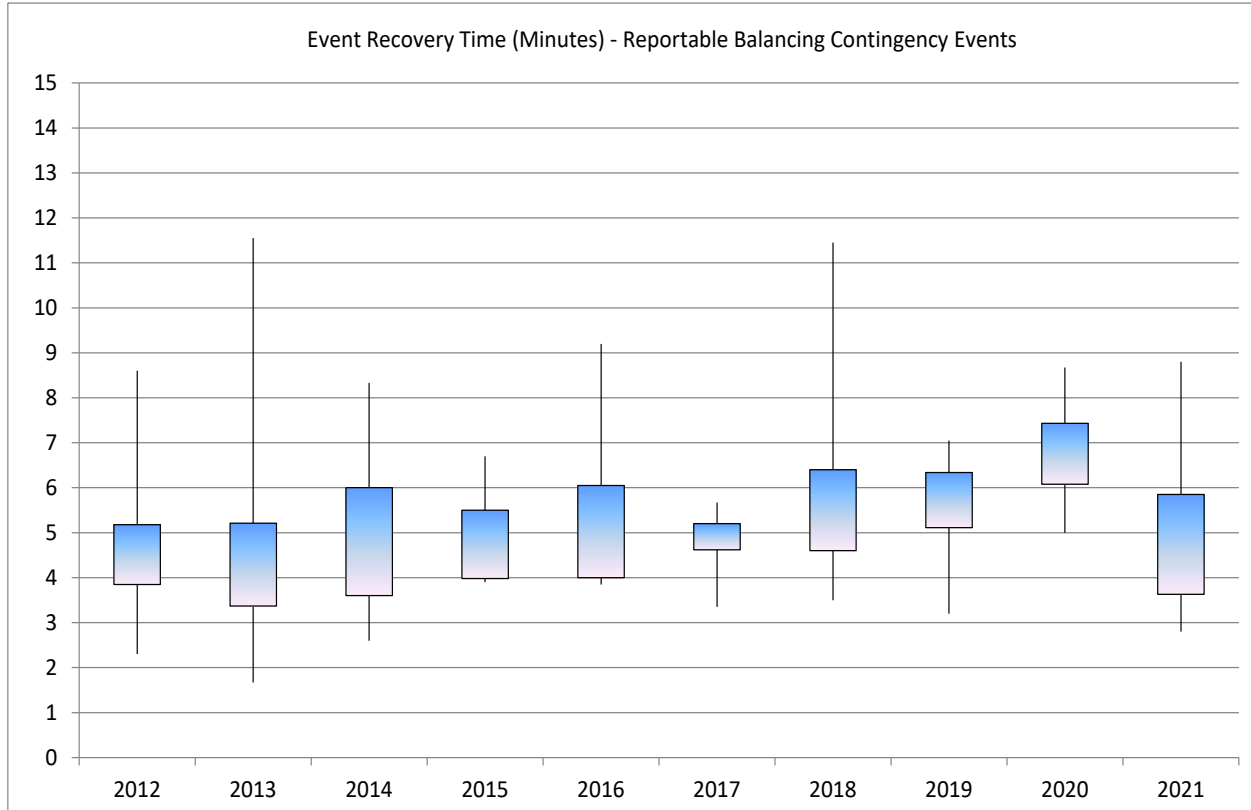
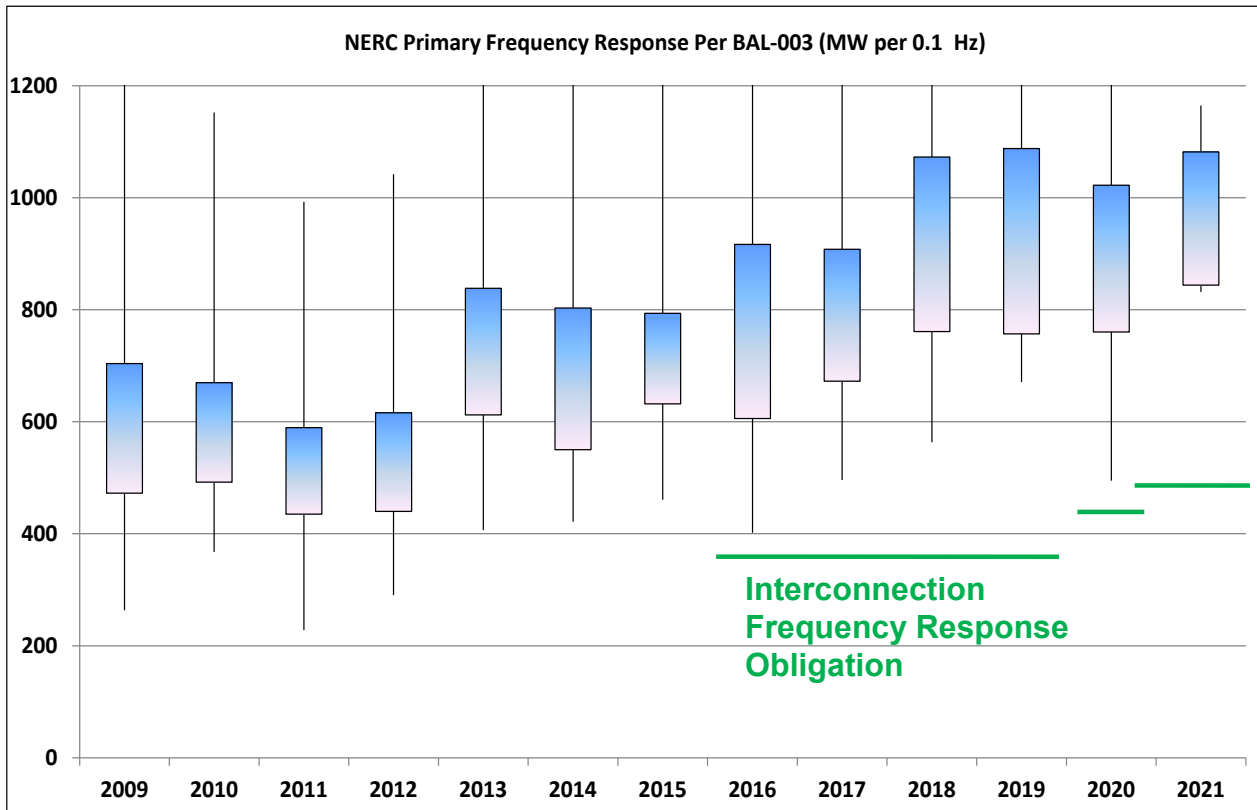
Historical max 1-hour up-ramps for load, wind and net load

Frequency Control



29 clock-minutes of BAAL Exceedances in 2020
69 clock-minutes of BAAL Exceedances in 2021

Primary Frequency Response – BAL-003

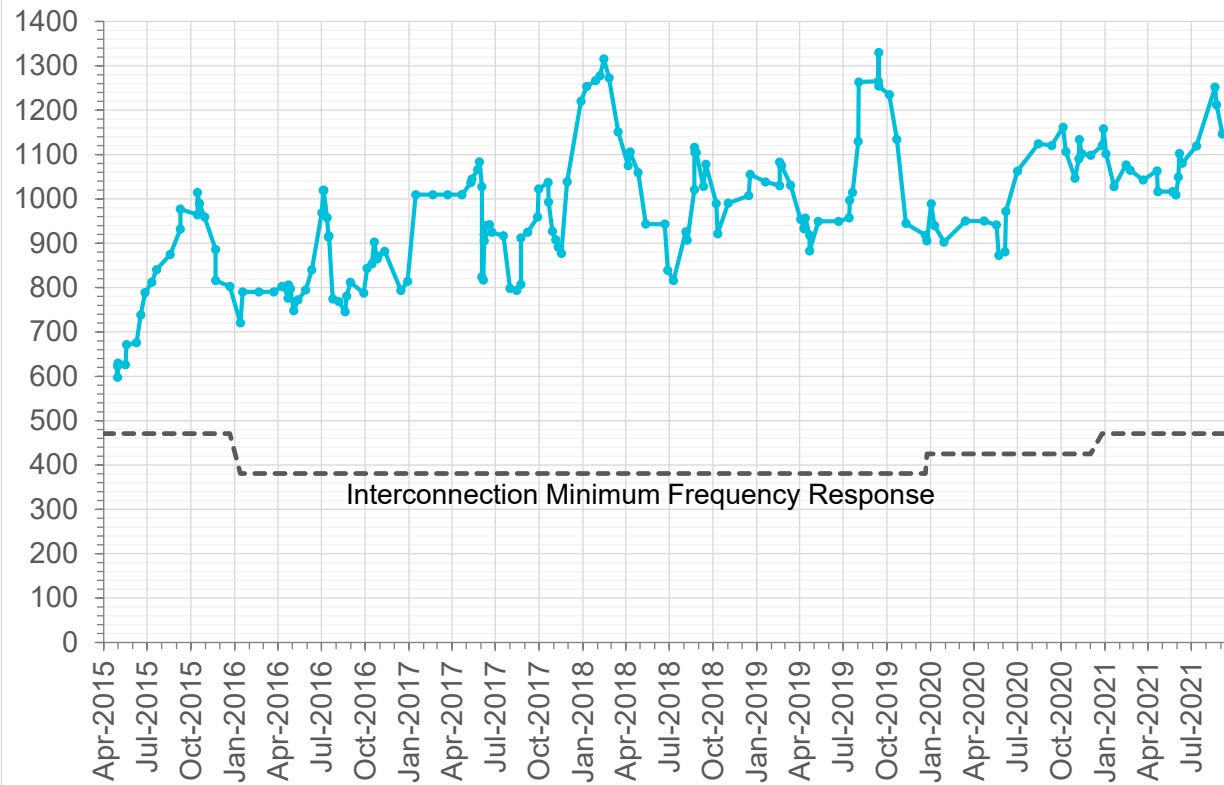


2021 YTD Median Recovery time from a reportable generation loss event is 5.3 minutes

Primary Frequency Response – BAL-001-TRE

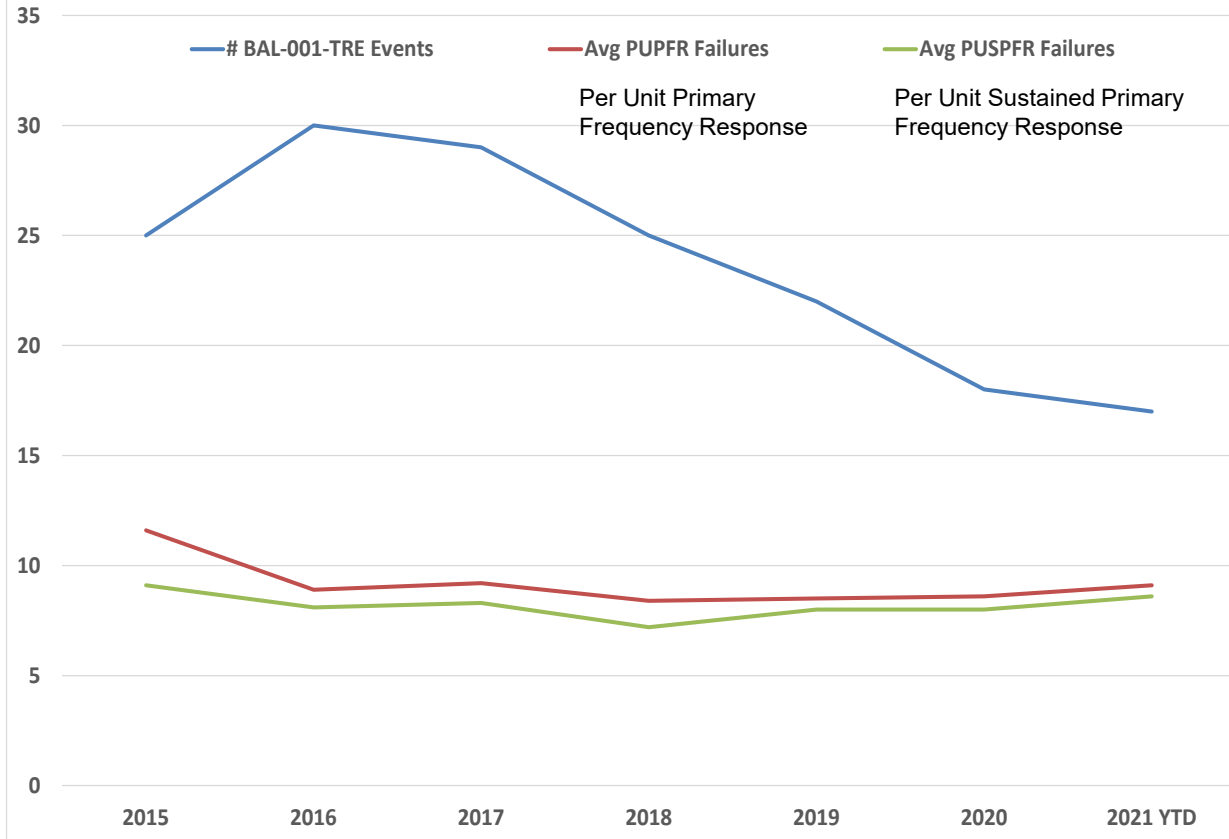
Interconnection Median Frequency Response Rolling Average

—●— ERCOT's Measured Frequency Response - - - IMFR

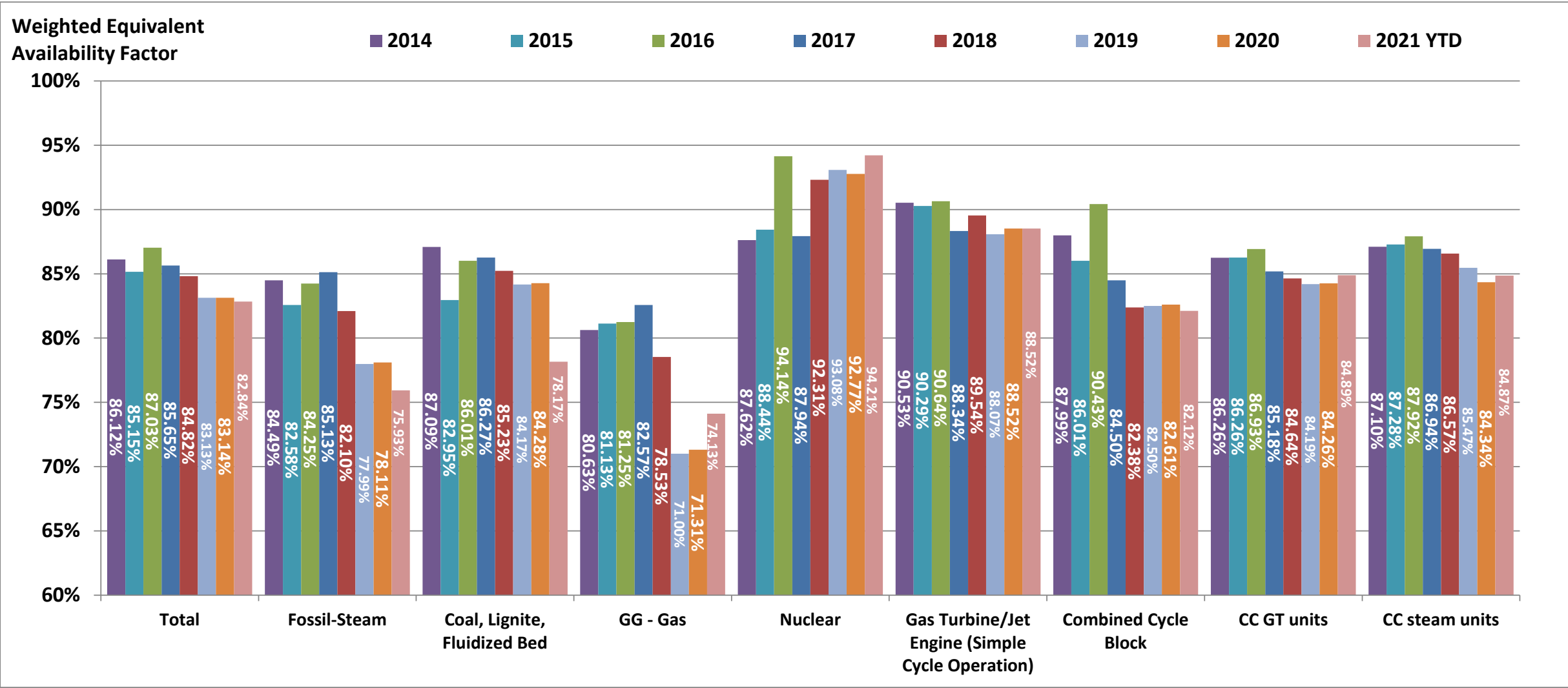


BAL-001-TRE

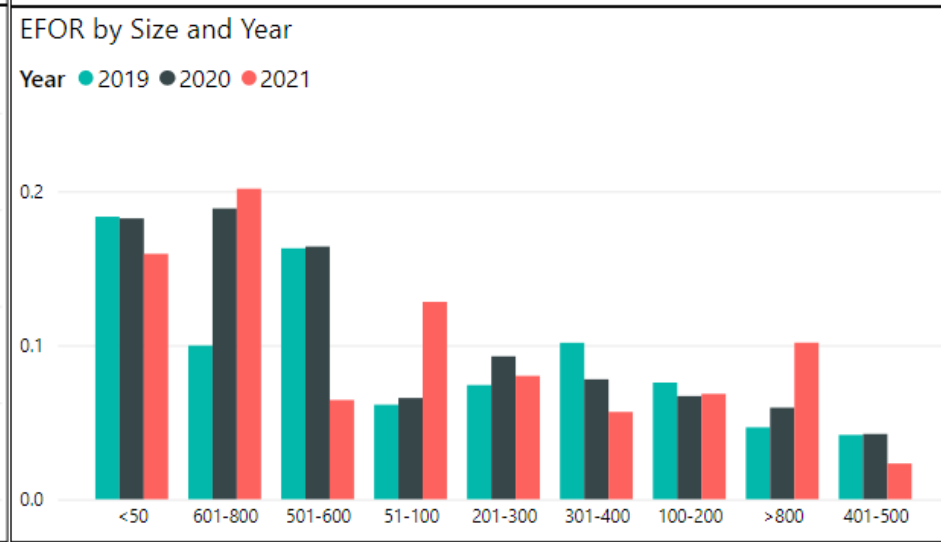
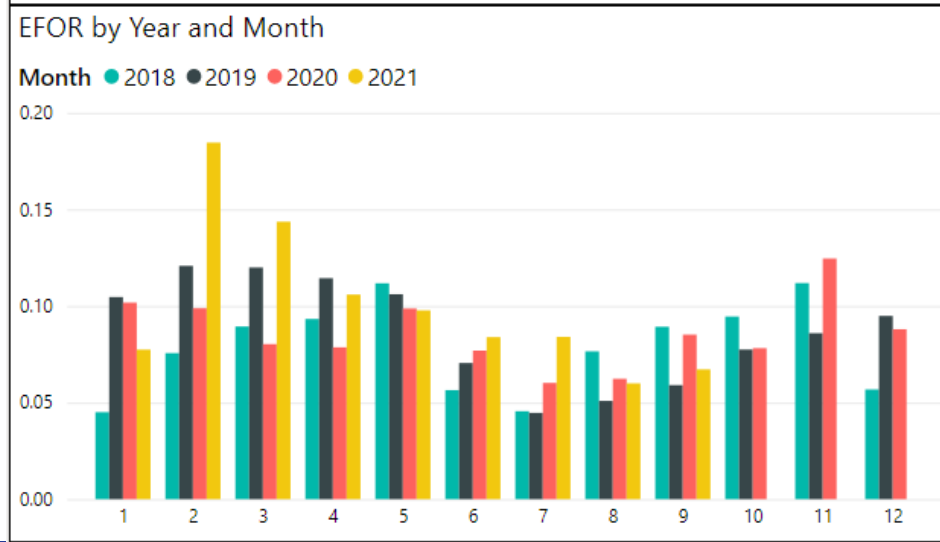
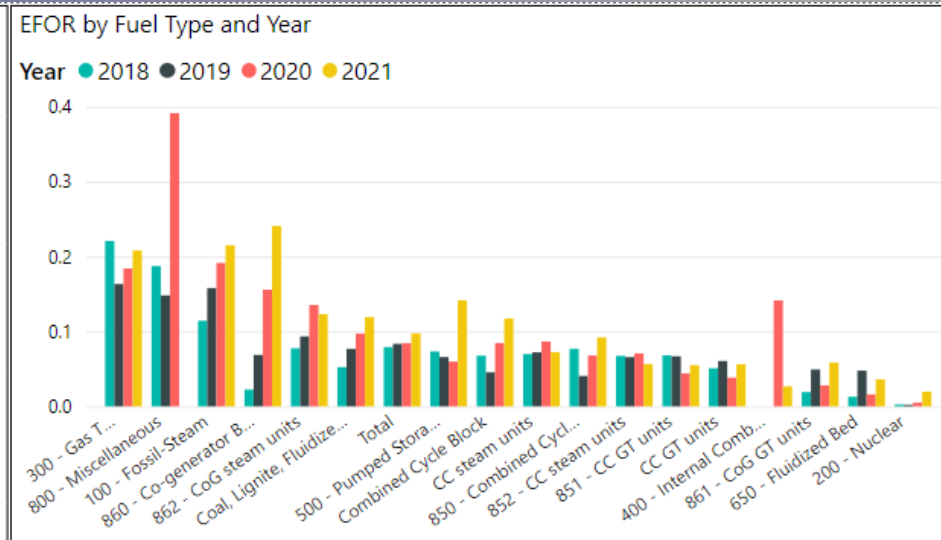
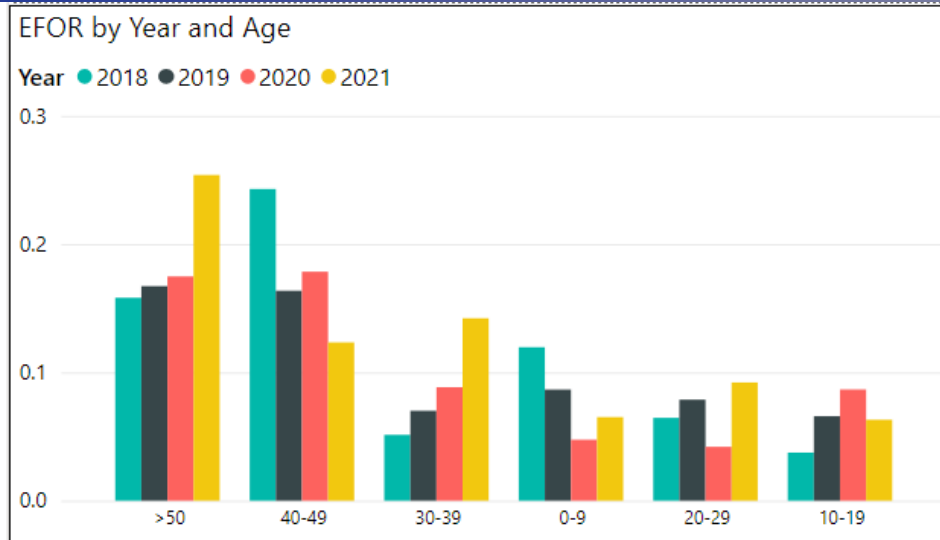
— # BAL-001-TRE Events — Avg PUPFR Failures — Avg PUSPFR Failures
 Per Unit Primary Frequency Response Per Unit Sustained Primary Frequency Response



Generation Availability (Conventional)



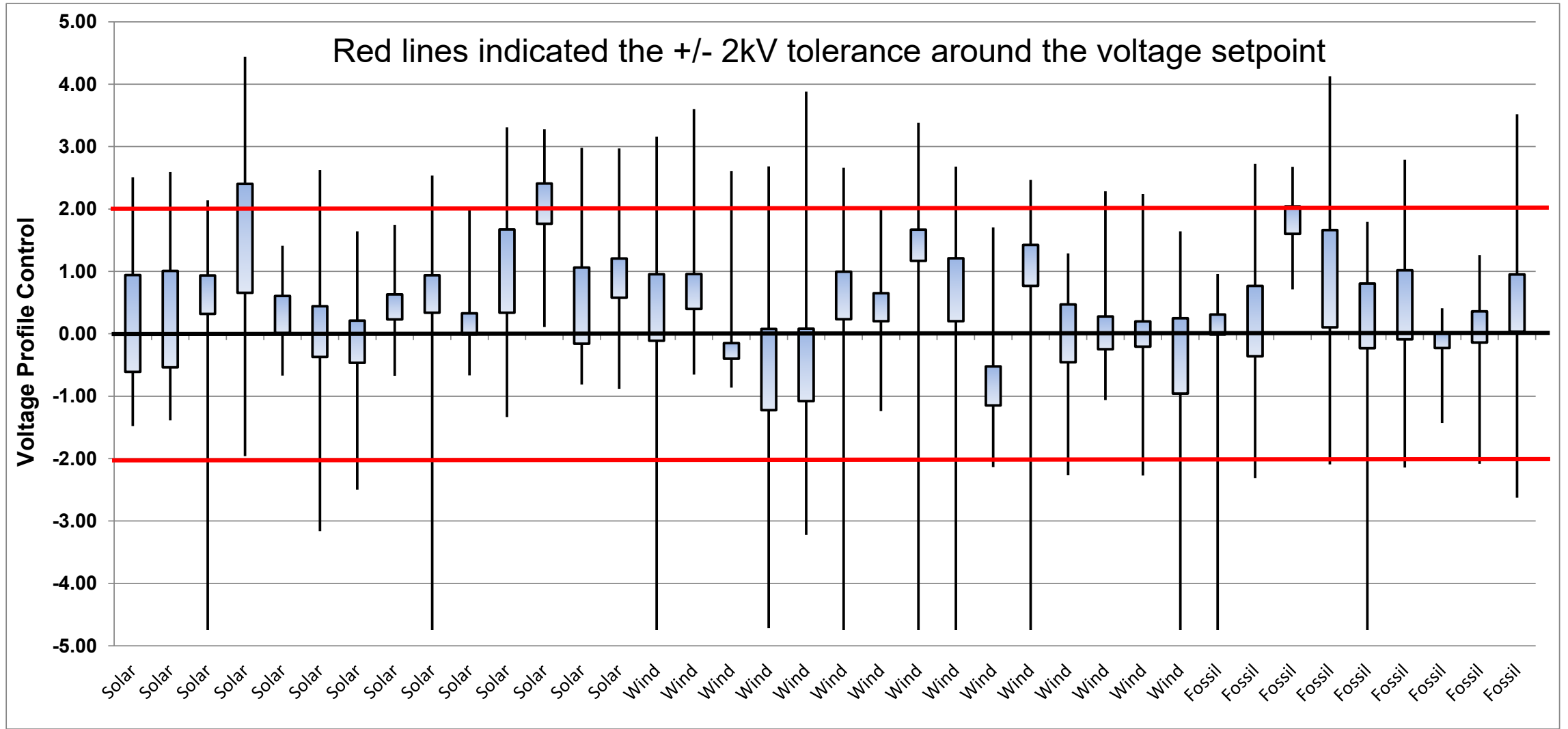
Generation Equivalent Forced Outage Rates (Conventional)



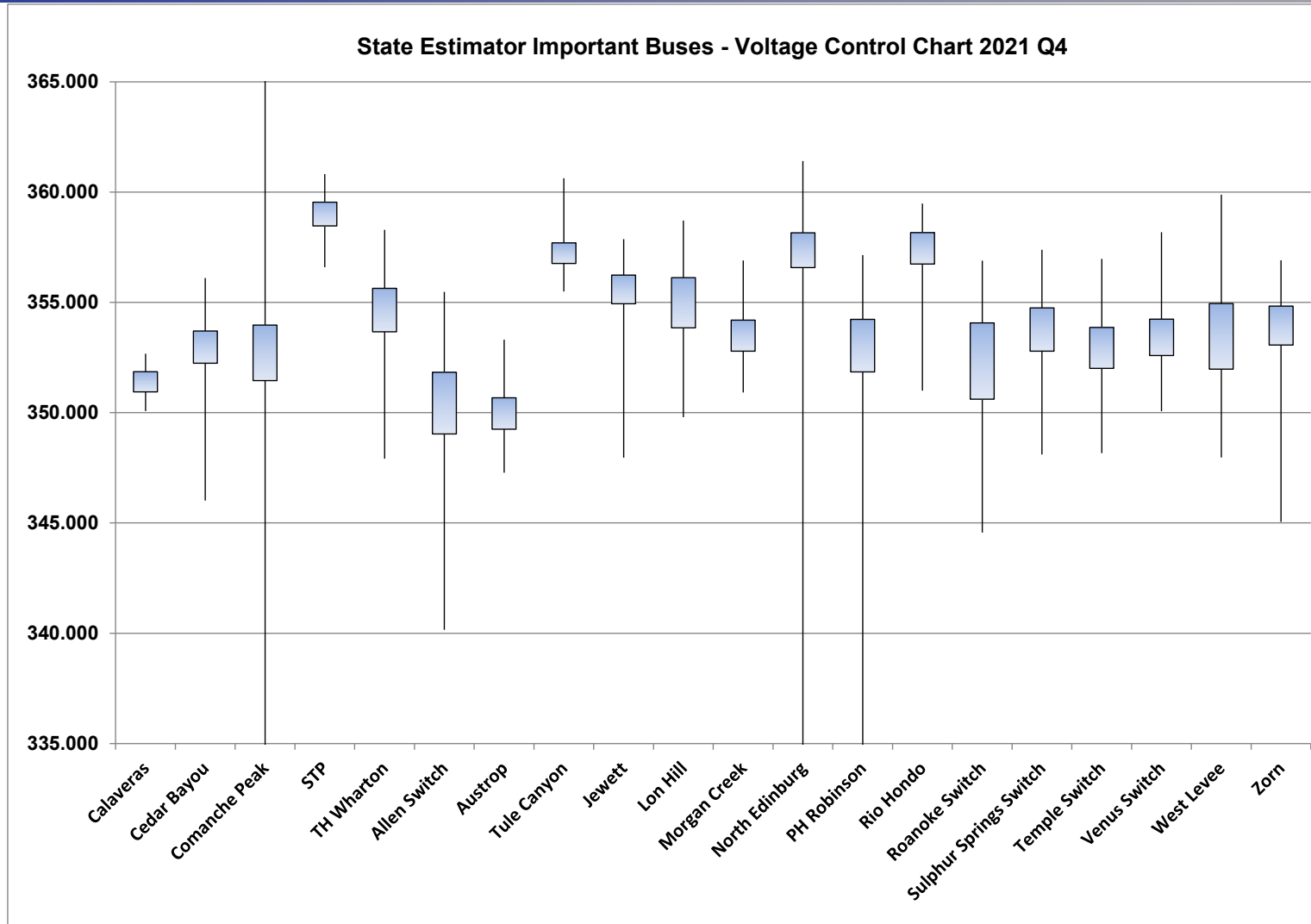
Wind GADS Metrics by Month



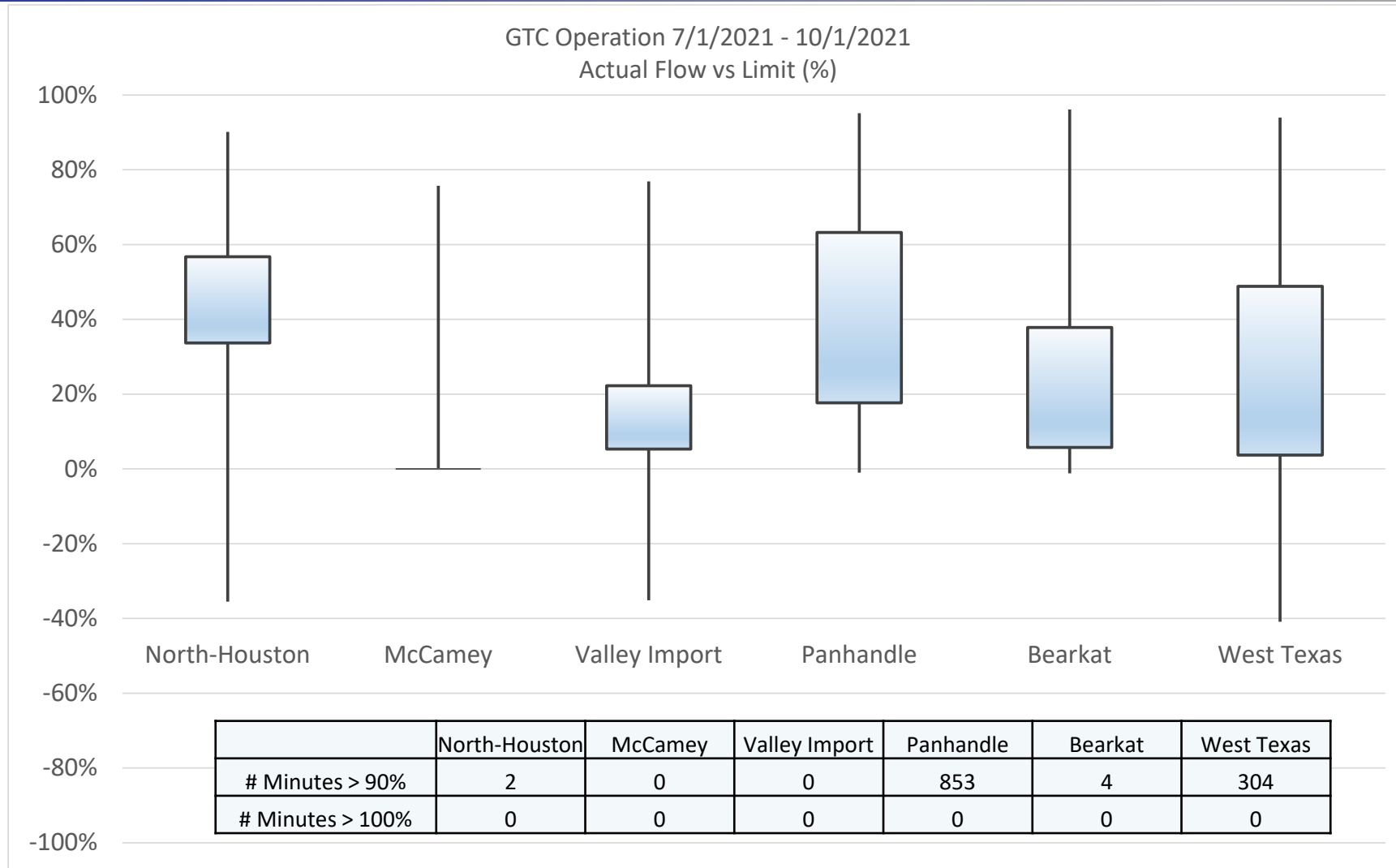
Voltage Control Metrics – 138kV Units for Fall 2021



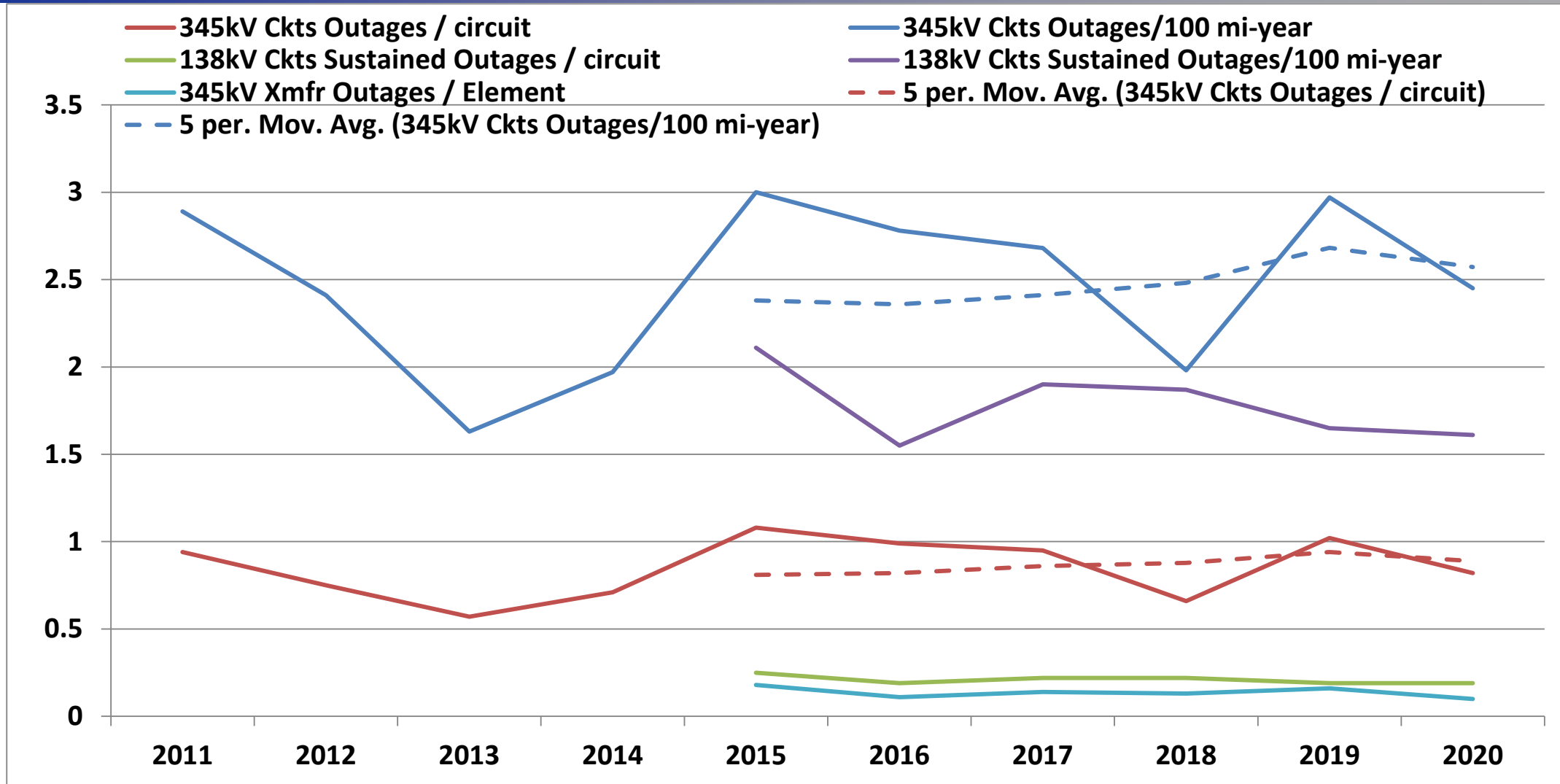
Voltage Control Metrics – State Estimator Important Buses



Generic Transmission Constraints

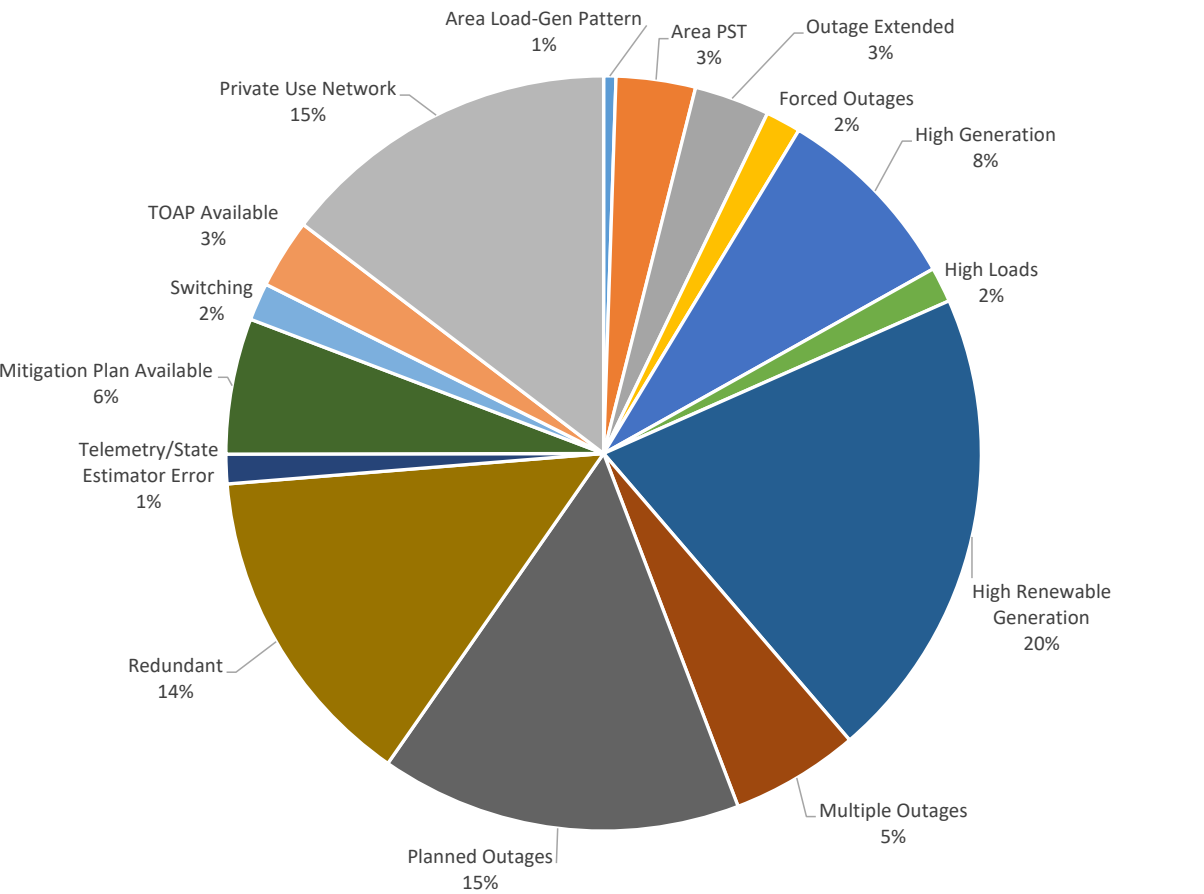


Transmission Outage Rate Trends – Available Data

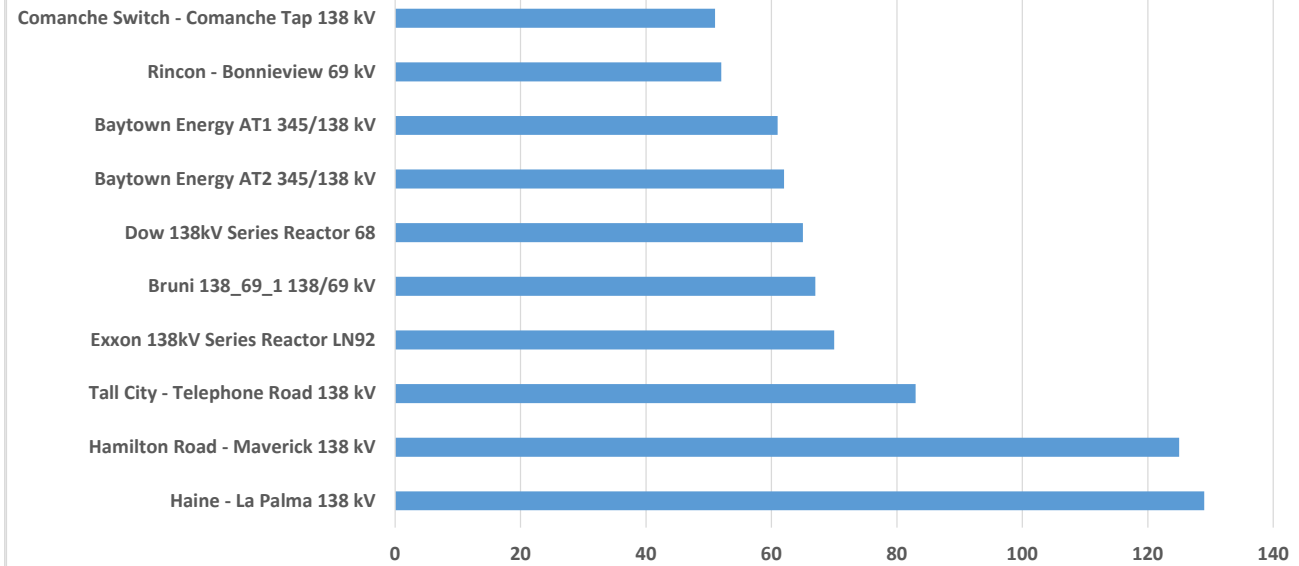


Transmission Congestion – 2021

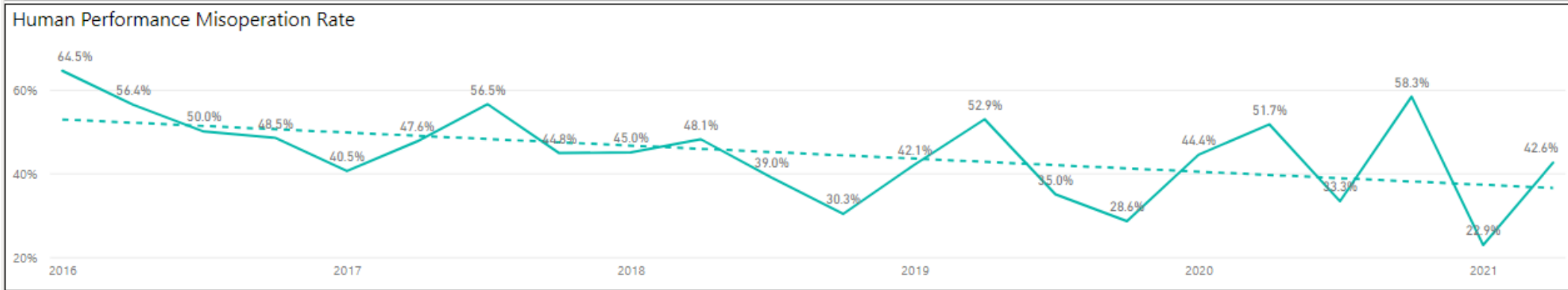
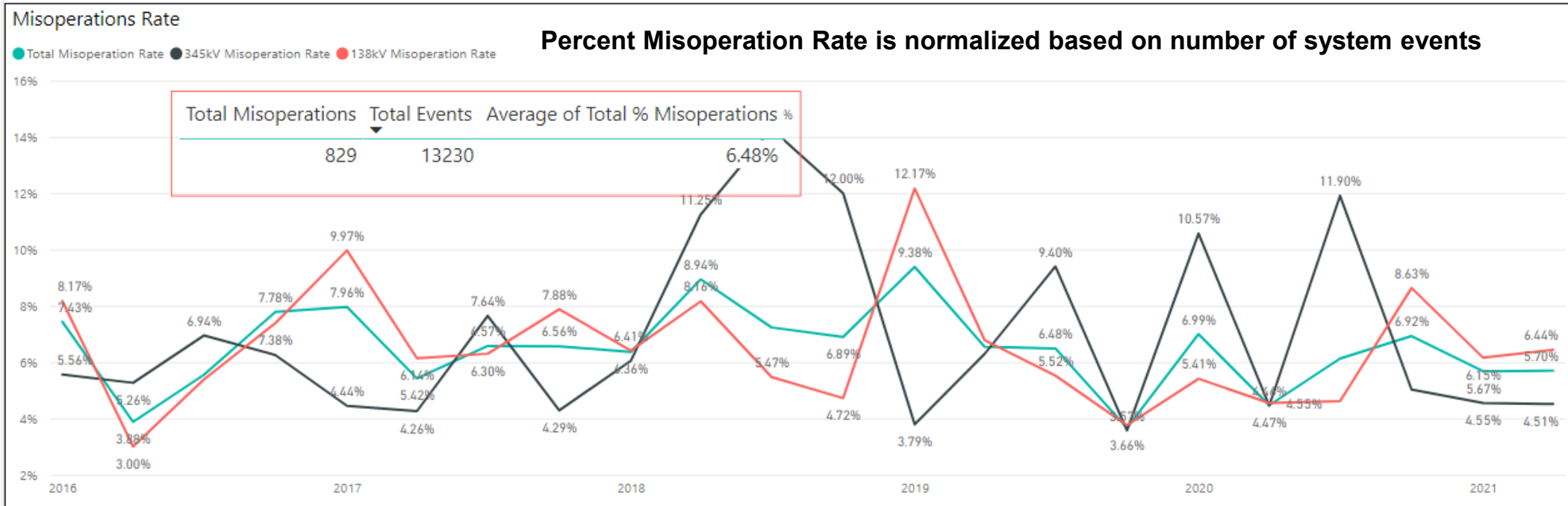
Congestion by Duration and Cause - 2021



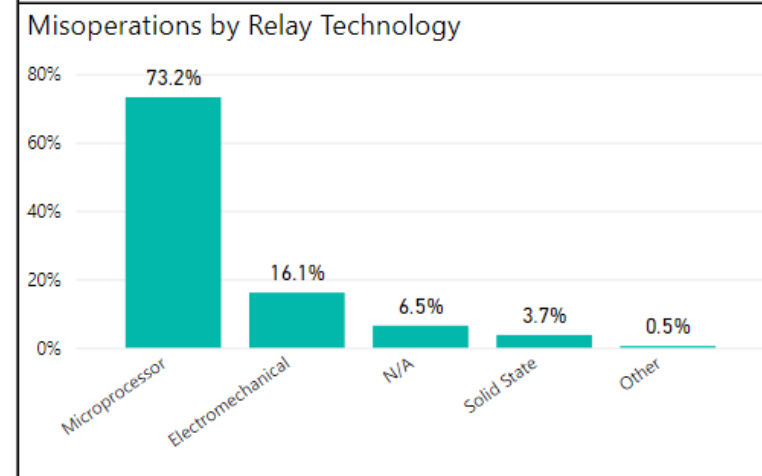
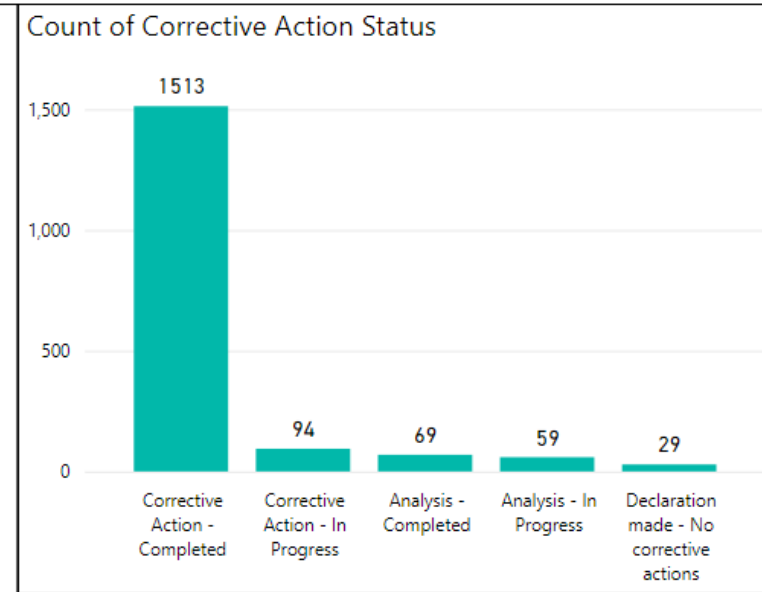
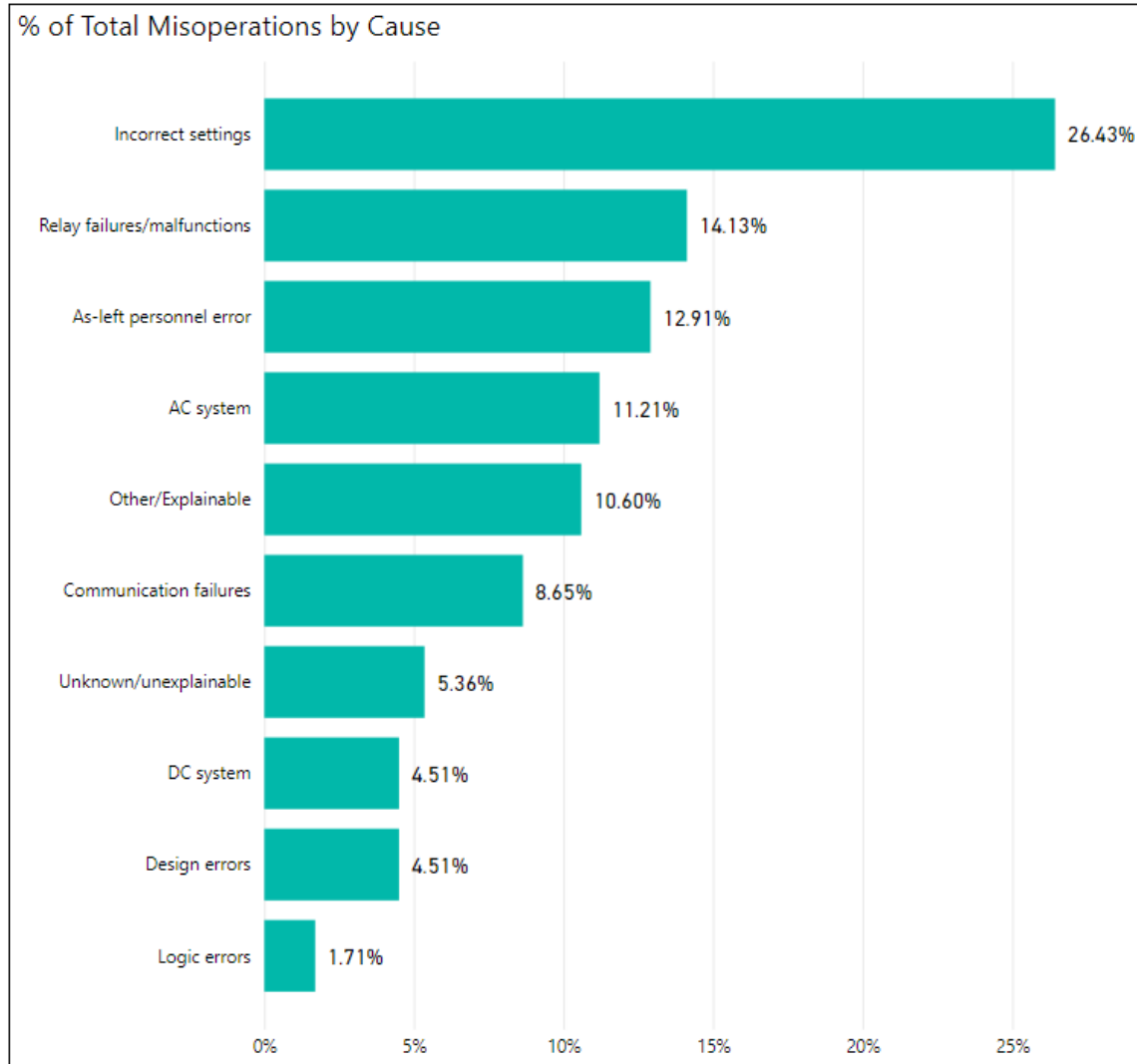
Top 10 Monitored Elements by 30 min Intervals > 100%



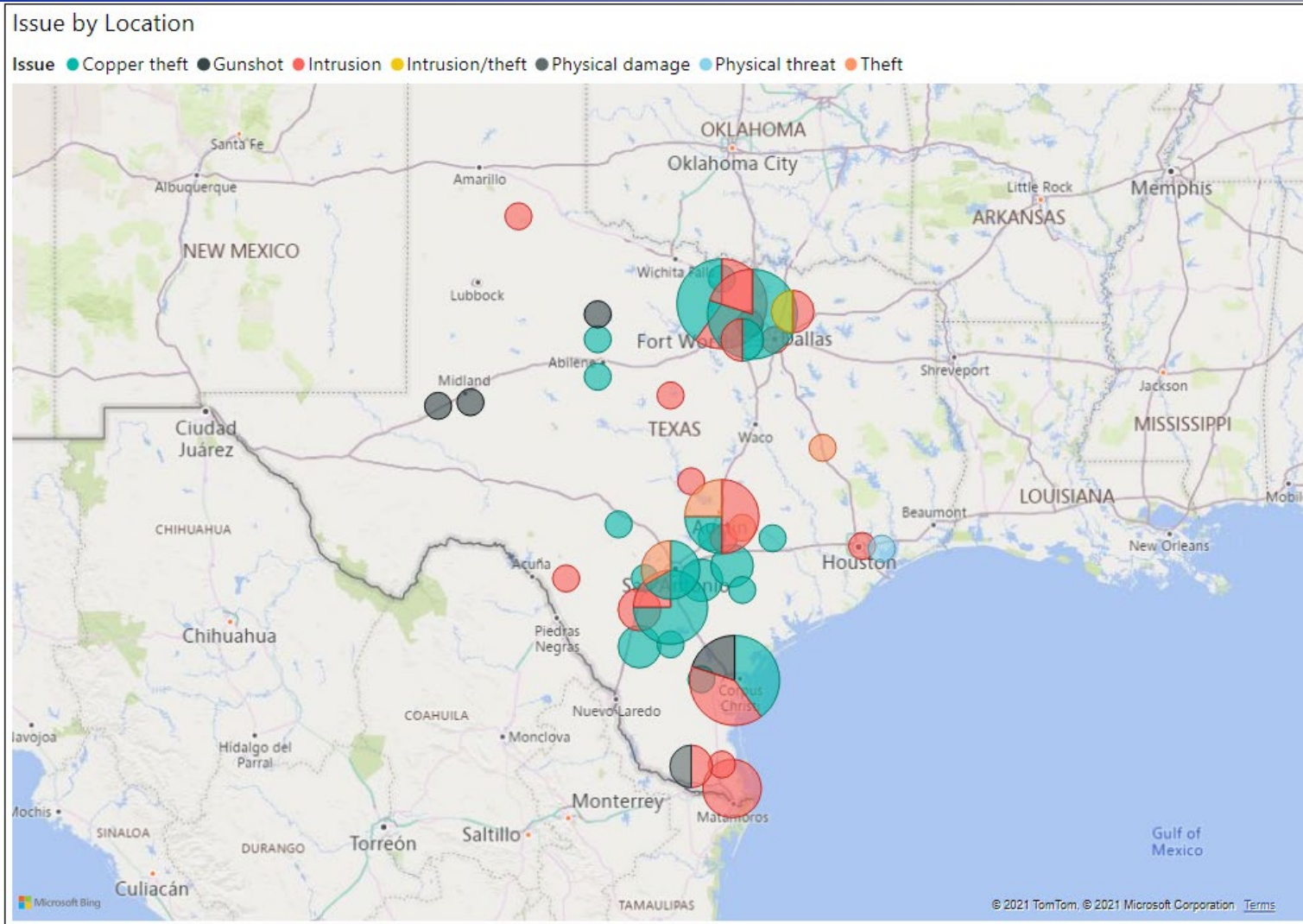
Protection System Misoperations



Protection System Misoperations



Infrastructure Protection – 2021 YTD



Incidents reported to System Security Response Group (SSRG)

Registration Report

Member Representatives Committee Meeting
December 8, 2021

Number of Registered Entities by Function – Texas RE Region

In 2020, there were 251 registered entities accounting for 464 registered functions:

Reliability Function	Number of Entities
Balancing Authority (BA)	1
Distribution Provider (DP)	29
Distribution Provider UFLS (DPUF)	8
Generator Operator (GOP)	160
Generator Owner (GO)	186
Planning Coordinator (PC)/Planning Authority (PA)	1
Reliability Coordinator (RC)	1
Resource Planner (RP)	1
Transmission Operator (TOP)	19
Transmission Owner (TO)	30
Transmission Planner (TP)	27
Transmission Service Provider (TSP)	1

As of Mid-November 2021, there are 279 registered entities accounting for 500 registered functions:

Reliability Function	Number of Entities
Balancing Authority (BA)	1
Distribution Provider (DP)	21
Distribution Provider UFLS (DPUF)	15
Generator Operator (GOP)	170
Generator Owner (GO)	211
Planning Coordinator (PC)/Planning Authority (PA)	1
Reliability Coordinator (RC)	1
Resource Planner (RP)	1
Transmission Operator (TOP)	20
Transmission Owner (TO)	31
Transmission Planner (TP)	27
Transmission Service Provider (TSP)	1

Over 20% of all Texas RE registered entities participate in the Coordinated Oversight Program

Registration by Fuel Type - 2021

7,429 MW Registered in 2021 (as of Mid-Nov. 2021)

- 2 Storage facilities = 204 MW
- 2 Solar facilities (575 MW) with Storage (92 MW) = 667 MW
- 12 Solar facilities = 2,458 MW
- 12 Wind facilities = 3,128 MW
- 3 Gas facilities = 972 MW

Note: This includes new facilities added to existing registrations

New and Updated Documents

New ERO Enterprise 101 Informational Package

- Guidance on becoming a NERC registered entity and steps to complete as a newly registered entity

Revised ERO Registration Procedure

- Some changes include new or revised information pertaining to:
 - Centralized Organization Registration ERO System
 - Transfer of Assets
 - Third Party Agreements
 - Consolidating Registrations
 - Registration Effective Date Policy for Generation and Transmission

Look for the documents on the NERC and Regional Entity Registration websites

Overview of the ERO Enterprise 101 Informational Package

Becoming a NERC Registered Entity

- 1) Contact Region(s)
- 2) Review the following materials:
 - NERC Rules of Procedure
 - ERO Registration Procedure
 - NERC Reliability Standards
- 3) Prepare for Compliance with NERC Reliability Standards
- 4) Evaluate if Certification Process Applies*
- 5) Submit Registration Application in CORES within the ERO Portal

Newly Registered Entity

- 1) Receive NERC Notification Letter Advising of Listing on the NERC Compliance Registry
- 2) Comply with NERC Reliability Standards Upon Registration
- 3) Register for Appropriate Applications and Submit Mandatory Reporting
- 4) Join Committees, Working Groups, Mailing Lists, etc.
- 5) Participate in Education and Training Opportunities

* Future Balancing Authorities, Reliability Coordinators, and Transmission Operators need to complete the certification process prior to registering for these specific functions.

Enforcement & Reliability Standards Report

MRC Meeting
December 8, 2021

Enforcement Activity

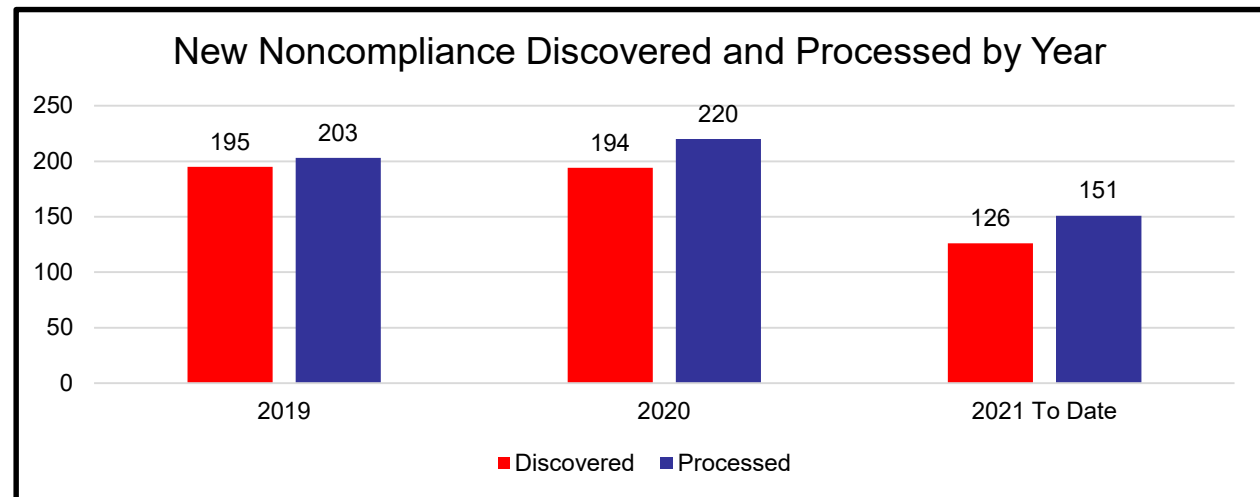
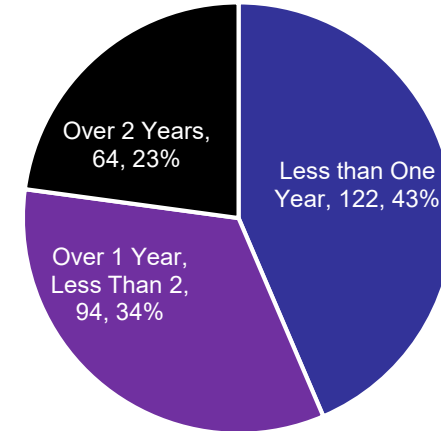
MRC Meeting
December 8, 2021

Enforcement Discovery Dashboard

Top Standards Discovered 2021 To Date	
Standard	Number Discovered
CIP-007	14
CIP-004	13
CIP-003	10
CIP-010	9
VAR-002	8
BAL-001-TRE	7
CIP-002	7
MOD-025	7
PRC-024	6
PRC-025	4

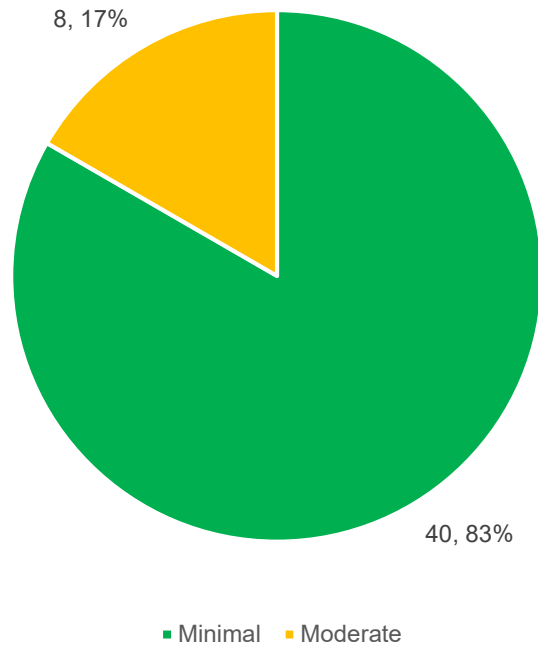
Inventory End
of Q3 2021:
280

Aging of Noncompliance in Inventory

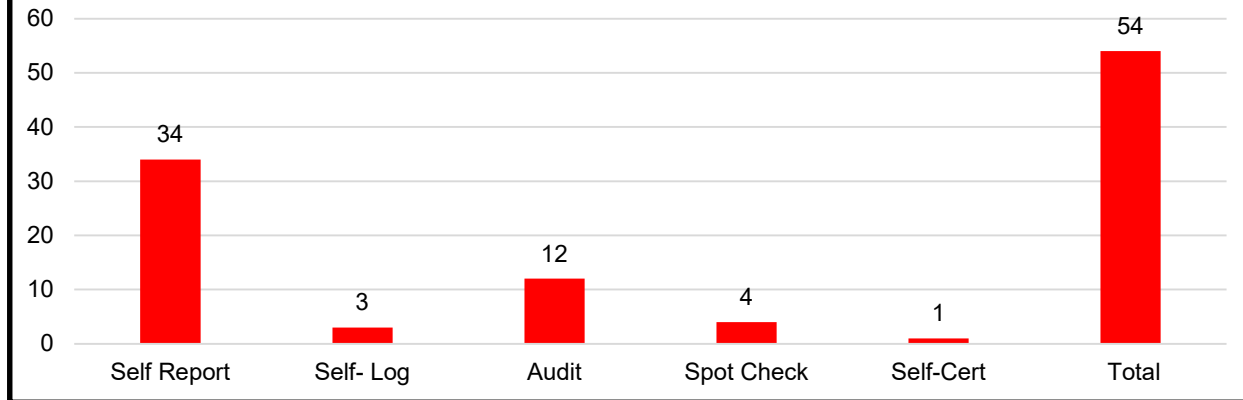


Enforcement Quarterly Dashboard

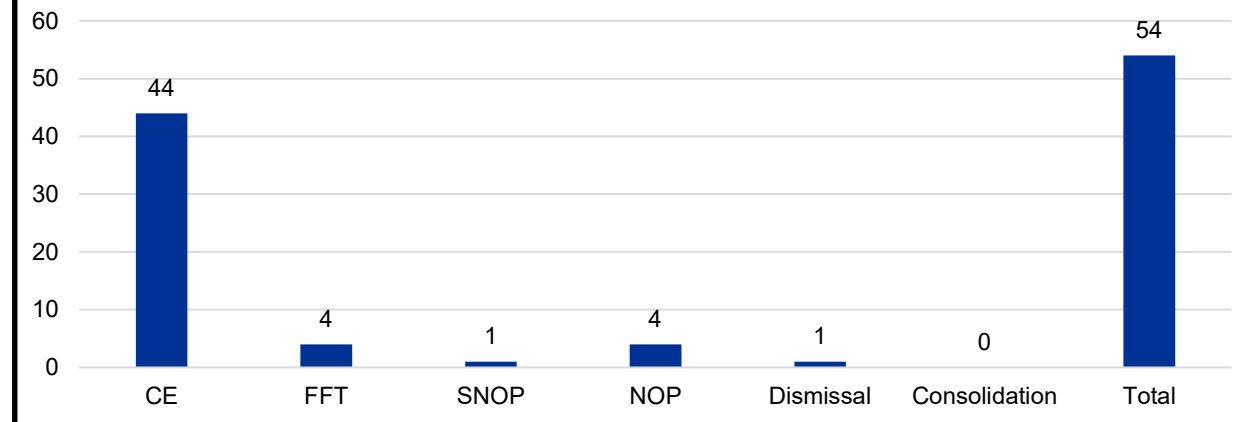
Q3 2021 Processed by Risk



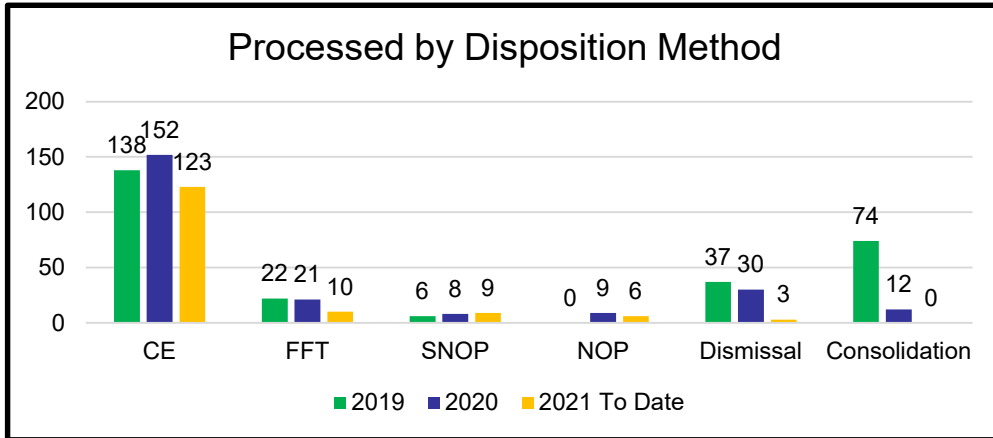
Q3 2021 Noncompliance Discovered by Type



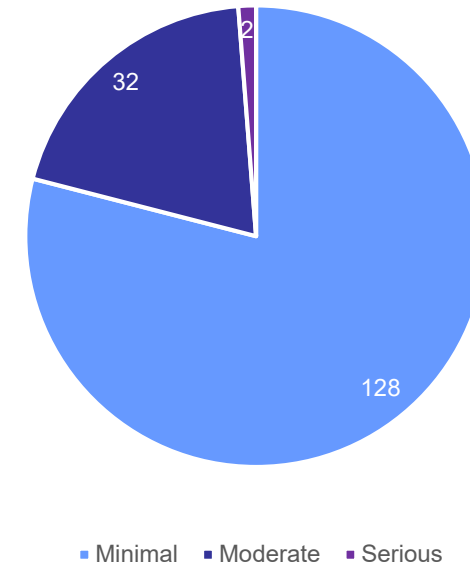
Q3 2021 Processed by Disposition Type



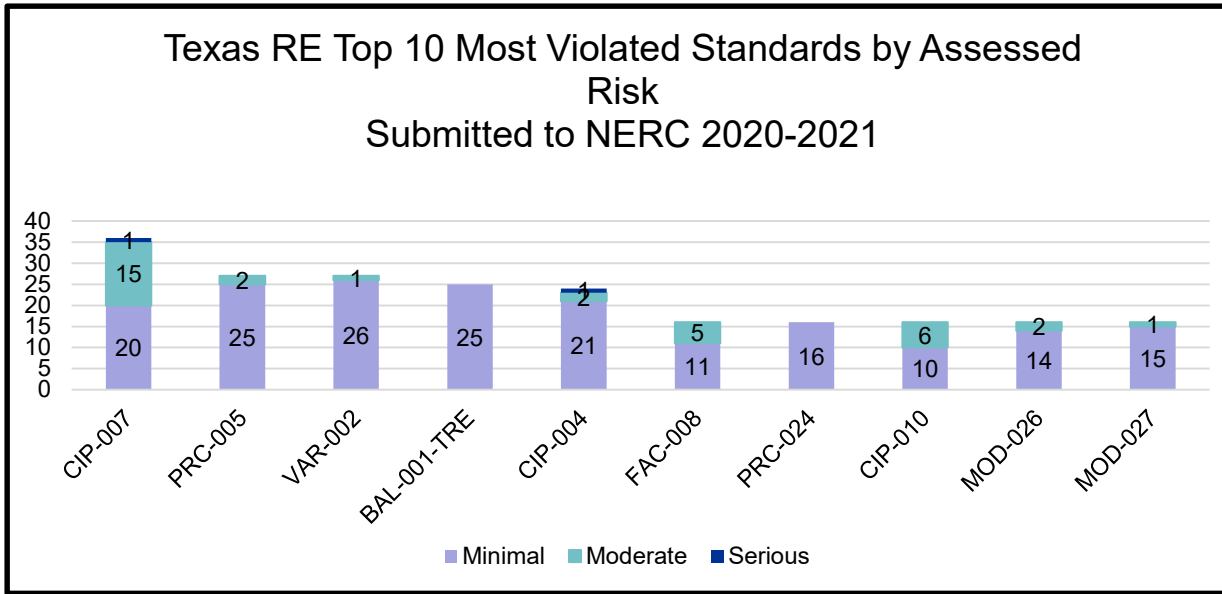
Enforcement Year to Date Dashboard



2021 Processed by Risk



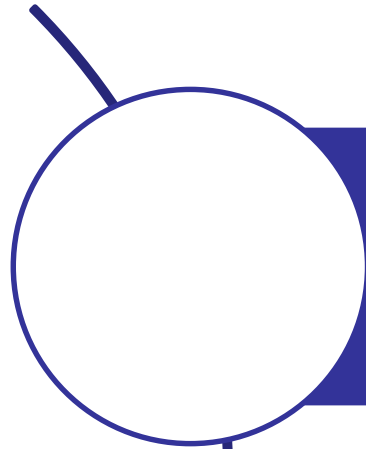
Texas RE Top 10 Most Violated Standards by Assessed Risk Submitted to NERC 2020-2021



Reliability Standards

MRC Meeting
December 8, 2021

Executive Summary



Texas RE took action on four NERC Reliability Standards projects, covering five project phases



Ten Reliability Standards are pending regulatory approval

Recent Action on NERC Reliability Standards Projects

Project Name – Standard	Action
2016-02 Modifications to CIP Standards Virtualization	Additional Ballots and Comment Period
2019-04 Modifications to PRC-005-6	SAR Comment Period
2020-03 Supply Chain Low Impact Revisions	Initial Ballot and Comment Period
2021-06 Modifications to IRO-010 and TOP-003	SAR Comment Period

Recent NERC Filings to FERC

FERC Docket Number	Filing	FERC Submittal Date
RD20-2-000	CIP SDT Schedule September Update Informational Filing	9/15/2021
RD21-6-000	Petition for BCSI Standards	9/15/2021
AD21-13-000	Comments in response to Notice Inviting Post-Technical Comments on Climate Change, Extreme Weather, and Electric System Reliability technical conference proceeding	9/24/2021
RR10-1-000, RR13-3-000	Annual Report on Wide-Area Analysis of Technical Feasibility Exceptions	9/28/2021
RR21-10-000	Petition for Revisions to the ROP	9/29/2021
RM21-17-000	Comments on Transmission Planning Advance Notice of Proposed Rulemaking	10/12/2021

Filed and Pending Regulatory Approval

BCSI Access Management

- CIP-004-7
- CIP-011-3

System Operating Limits

- FAC-003-5
- FAC-011-4
- FAC-014-3
- IRO-008-3
- PRC-002-3
- PRC-023-5
- PRC-026-2
- TOP-001-6

FERC Approves Cold Weather Standards

FERC approved changes to account for cold weather on August 24, 2021

Approved Reliability Standards EOP-011-2, IRO-010-4, and TOP-003-5

Effective: 4/1/2023

Projects in Active Formal Development

Project
2016-02 Virtualization
2017-01 Modifications to BAL-003
2019-04 Modifications to PRC-005-6
2020-03 Supply Chain Low Impact Revisions*
2020-04 Modifications to CIP-012*
2020-05 Modifications to FAC-001-3, FAC-002-2
2020-06 Verifications of Models and Data for Generators

Project
2021-01 Modifications to MOD-025 and PRC-019
2021-02 Modifications to VAR-002
2021-03 CIP-002 TO Control Centers
2021-04 Modifications to PRC-002-2
2021-05 Modifications to PRC-023
2021-06 Modifications to IRO-010 and TOP-003

* Designated high priority project in 2021-2023 Reliability Standards Development Plan

Compliance Monitoring Report

Member Representatives Committee Meeting
December 8, 2021

Outreach Activities

- **July/August: Reliability 101**
 - Risk-Based Approach to Reliability
 - Initial Engagement Submissions
 - Compliance Assessments
 - Foundations of CIP/O&P
- **August:**
 - Joint CCC and ERO Enterprise Supply Chain webinar
 - NAES: Risk Based Compliance
 - LCRA Storm: Facility Ratings Internal Controls
- **September:**
 - ReliabilityFirst Fall Workshop: Building a Sustainable Compliance Program (Supply Chain Panel)
 - NERC Quarterly Compliance Podcast: CIP-008-6
 - ERO Enterprise Align and ERO SEL Lessons Learned

Texas REview:

- **July:**
 - NERC CIP Reliability Standards Paradigm Shift for Cloud & Virtualization
- **August:**
 - What is a Vendor in CIP-013-1?
- **September:**
 - CIP-012 and Associated Data Centers

Q3 ERO Transformation Efforts

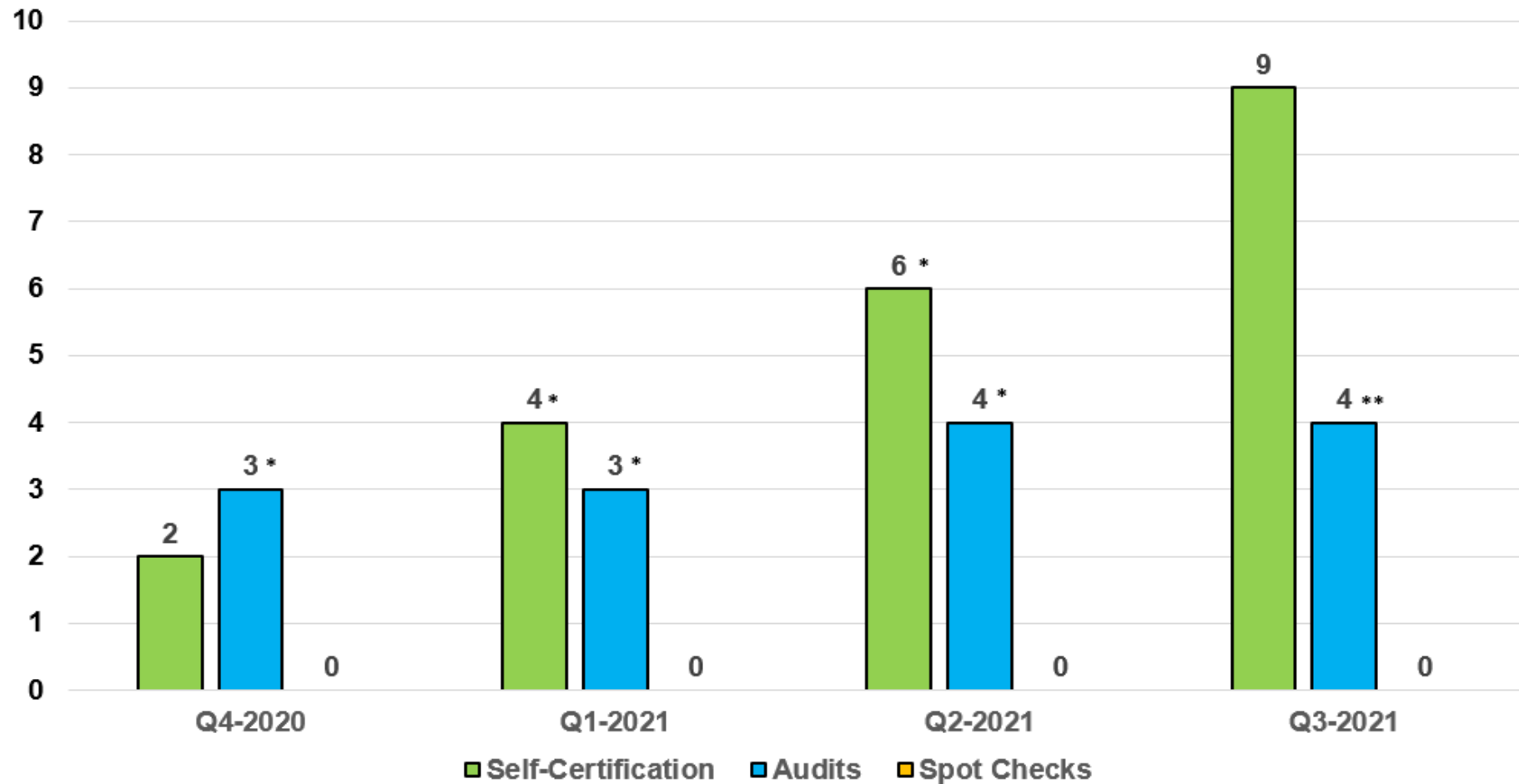
ERO
Enterprise
COP/Self-
Certification
outreach for
FERC

Joint CCC
ERO
Enterprise
Supply Chain
webinar

Regional
staff
members
invited to
department
meetings to
listen and
share

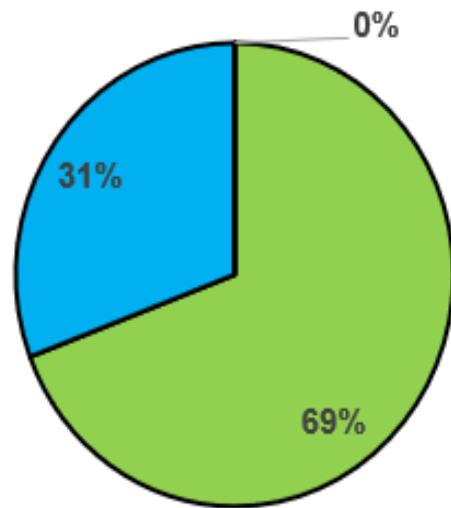
Significant
support for
ERO
Enterprise
Align and
ERO SEL
Lessons
Learned

Quarterly Compliance Monitoring Activities



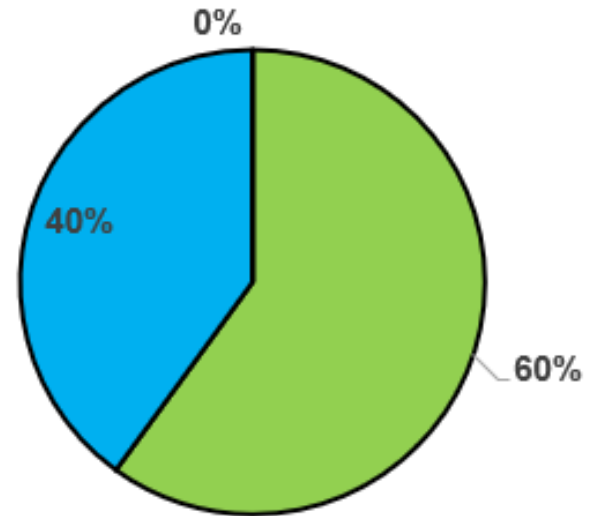
* Eleven Coordinated Oversight entity engagements occurred in Q4 2020, Q1 2021, and Q2 2021. **FERC led Spot Check occurred in Q3 2021.

Compliance Monitoring Activities



Q3 - 2021

- Self-Certification: 9
- Audits: 4
- Spot Checks: 0



Rolling 12 Months

- Self-Certification: 21
- Audits: 14
- Spot Checks: 0

Note: Audits are based on the number performed during the time period represented