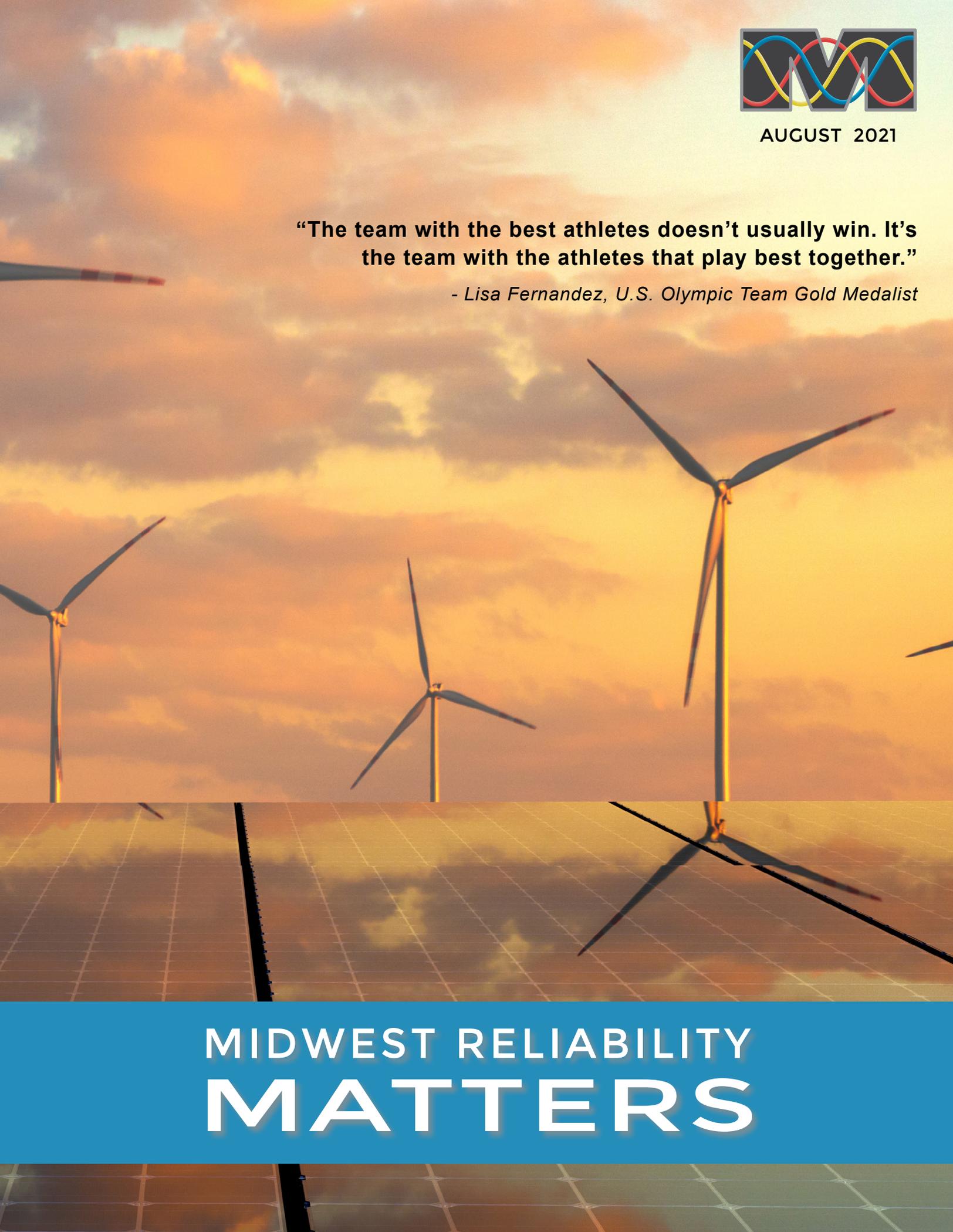


AUGUST 2021

“The team with the best athletes doesn’t usually win. It’s the team with the athletes that play best together.”

- Lisa Fernandez, U.S. Olympic Team Gold Medalist

A photograph of several wind turbines in a field, silhouetted against a bright, orange, and cloudy sky at sunset. The turbines are reflected in a grid pattern overlaid on the bottom half of the image.

MIDWEST RELIABILITY MATTERS

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DISCLAIMER

MRO is committed to providing non-binding guidance to industry stakeholders on important industry topics. Subject matter experts from MRO's organizational groups have authored some of the articles in this publication, and the opinion and views expressed in these articles are those of the author(s) and do not necessarily represent the opinions and views of MRO.

CEO MESSAGE



Stakeholder Outreach and Engagement

The power of information sharing and collaboration

The electricity sector is undergoing a significant and unprecedented transformation. The addition of variable energy resources, primarily wind and solar, and the retirement of conventional generation is fundamentally changing how the bulk power system is planned and operated. Such an extraordinary evolution presents new challenges—and opportunities—for reliability, resiliency, and security.

The primary role of the ERO Enterprise, as captured in our mission statement, is to identify, prioritize and assure effective and efficient mitigation of risks to the reliability and security of the North American bulk power system. The grid's transformation and changing resource mix is just one of the top risks identified in NERC's draft 2021 Reliability Risk Priorities Report. Others include cyber and physical security vulnerabilities, resource adequacy and performance, critical infrastructure interdependencies (like gas and electric), bulk power system planning and modeling, and extreme natural events...to name a few. This year has already shown us that extreme weather events, increased cyber threats, and reliance on other critical infrastructures are real and significant threats.

Given the interconnectedness of the system, it's often said we are only as strong as our weakest link. It makes sense then, that addressing risk will require a significant amount of coordination across all industry stakeholders.

Although we may not have our hands on the controls, the ERO Enterprise's role as a regulator is essential and more important now than ever before. Regulation exists to mitigate risk, and where we have discretion, we focus our efforts on the greatest risks to reliability and security. That said, it is an impossibility for regulation to respond to all risk. While mandatory standards provide a baseline of protection against risk, our work must go beyond the rules and requirements to effectively respond to rapidly evolving and emerging threats.

One of the ways we do this is through outreach and engagement with industry. At MRO, we support the ERO Enterprise mission by promoting Highly Effective Reliability Organizations, or HEROs. (Using the theory and principles of [High Reliability Organizations](#), HEROs are those entities that perform reliably in situations where the potential for error is overwhelming). We have seen HEROs in action over the course of the last 18 months in response to the global pandemic, increased cyber threats and vulnerabilities, and severe weather events. Sharing information and best practices helps to prepare entities (our HEROs) for the challenges that lie ahead, and is one of the best tools we have as a regulator for mitigating risk.

NERC and the Regional Entities host a number of outreach events each year designed to inform industry and share best practices on the greatest risks to reliability and security. In 2020, MRO alone hosted 22 virtual outreach events with over 3900 participants. These events were planned in coordination with our advisory council members to ensure the topics presented were relevant and valuable to industry stakeholders. The ERO Enterprise also collaborates on joint outreach events. For example, this past June Texas Reliability Entity hosted a joint Critical Infrastructure Protection Workshop with all six Regional Entities and NERC that attracted more than 1,000 attendees.

There are several opportunities for you to attend ERO Enterprise outreach events yet this year covering important topics like cold weather preparedness, human performance, cyber and physical security, bulk power system assessments, to name a few. And let us not forget about the Electricity-Information Sharing and Analysis Center's biannual grid security exercise (GridEx) that takes place in November, and provides entities a way to test individual preparedness and response plans during simulated crisis events. To find out more about these learning opportunities, consider [subscribing](#) to MRO's bimonthly newsletter or go to NERC's or any of the Regional Entities' websites.

You can also provide your insight and expertise by serving on a NERC or Regional Entity organizational group or committee. Participating on one of MRO's organizational groups is an excellent way to stay abreast of current reliability and security topics, connect with and learn from your peers across the region, and provide input on the educational events offered to industry. More information on how to apply for open MRO positions is included later in this publication, and I encourage you to consider this unique opportunity.

Although the challenges we face today are formidable, I am confident that we can achieve our shared vision of a reliable and secure North American bulk power system through information sharing and collaboration.

Together, our future is bright!

-Sara Patrick, MRO President and CEO

“While mandatory standards provide a baseline of protection against risk, our work must go beyond the rules and requirements to effectively respond to rapidly evolving and emerging threats.”

COMPLIANCE MONITORING AND ENFORCEMENT PROGRAM

ERO Enterprise Align and SEL Update

MRO is excited to announce Release 2 of Align has gone live as of July 19, 2021. Align is designed to process and track all compliance monitoring and enforcement activities with the goal of improving security and standardizing processes across the ERO Enterprise.

Release 2 includes Technical Feasibility Exceptions (TFE), Periodic Data Submittals (PDS), Attestations, and Self-Certifications functionality in Align, as well as the use of the ERO Secure Evidence Locker (SEL) to collect registered entity-provided evidence to support these activities. Release 2 builds upon Release 1, which included self-reporting/self-logging, enforcement processing, and mitigation functionality in Align. Subsequent releases will introduce new functionalities to the platform throughout 2021 and 2022.

Please note that while Release 2 functionality is now available in Align, go-live dates will vary by Region and functionality, as listed in the table below. Reach out to Desirée Sawyer and Marissa Falco, your regional Align Change Agents, with any questions related to your Lead Regional Entity's rollout schedule.

Release 2 Go-Live Dates by Region and Functionality			
Regional Entity	TFE	PDS	Self-Certifications
MRO	07/19/2021	10/01/21	10/01/21
NPCC	07/19/2021	10/01/21	10/01/21
RF	07/19/2021	10/01/21	10/01/21
SERC	07/19/2021	10/01/21	10/01/21
Texas RE	07/19/2021	07/19/2021	07/19/2021
WECC	07/19/2021	08/02/21	09/01/2021

MRO is hosting Align Release 2 Training for all US registered entity staff on September 8, 2021. All PCC's and Align users are encouraged to attend. To register, please click [here](#). A recording will be made available shortly after for those who are unable to attend.

Please visit the [NERC Training Site](#) for access to all Align and ERO SEL training materials, including training videos and user guides. Reach out to your MRO Regional Training Leads, Jeremy Mattke, Desirée Sawyer, and Rob Quinlan at align@mro.net, with any Release 2 Align and ERO SEL-related access or training questions.

All registered entity staff seeking to access Align must register for an [ERO Portal](#) account. Each registered entity's Primary Compliance Contact (PCC) is responsible for approving access requests for their respective entity via the ERO Portal. All users who have previously been granted access, as well as those granted access in the future, to the Align Submitter Role will have access to the ERO SEL. If you have questions or problems concerning your ERO Portal account, or experience any technical issues, please submit a support ticket [here](#).

- Desirée Sawyer and Marissa Falco, MRO Align Change Agents

COMPLIANCE MONITORING AND ENFORCEMENT PROGRAM

CMEP Update

This document was prepared to provide a quarterly summary of areas addressing key issues, trends, and significant events in the MRO region related to its delegated authorities set forth in the Compliance Monitoring and Enforcement Program (CMEP).

Key Issues in Compliance, Risk Assessment and Mitigation, and Enforcement

Compliance Oversight Plans (COPs)

A COP is an oversight strategy for a registered entity that provides comparative assessments to shape oversight planning and resource allocation for Electric Reliability Organization (ERO) Enterprise staff and places emphasis on understanding internal controls and other performance considerations of a registered entity. MRO's process for developing COPs requires input from the Reliability Analysis (which includes Registration), Risk Assessment and Mitigation, Compliance, and Enforcement Departments. The resulting COP from this process documents MRO's holistic assessment of the registered entity's inherent risk and the performance considerations assessing the entity's management of its risk. The resulting COP guides MRO's monitoring activities for that individual entity. MRO currently has completed 62 percent of the COP's for Transmission Operators, Balancing Authorities, and Reliability Coordinators where MRO is the Compliance Enforcement Authority (CEA) or the Lead Regional Entity. MRO has implemented a schedule to complete the remaining 38 percent by year's end. MRO continues to innovate the COP process and is working on a streamlined COP process for low-inherent risk entities. MRO is also developing tools for analyzing COPs across multiple organizations to identify trends, and develop outreach opportunities, which will be utilized annually.

2021 Compliance Audit Status

MRO completes periodic Compliance Audits to assess registered entities' compliance with NERC Reliability Standards. MRO staff has completed eight scheduled Compliance Audits for 2021. MRO will provide resources and participate in coordinated oversight audits led by other Regional Entities. MRO has observed one coordinated oversight audit led by another region thus far. Coordinated oversight is a joint engagement with other regions for ERO approved multi-regional registered entities. Coordinated oversight audits allow for more efficient monitoring activities for the affected registered entities. MRO also leverages these engagements to identify and share best practices with the other Regional Entities. Please visit MRO's [website](#) to view MRO's 2021 audit schedule.

MRO continues to perform all audits remotely and plans to do so through at least the fourth quarter of 2021. When necessary, due to COVID-19, an exception to the Rules of Procedure three-year onsite requirement has been filed with NERC. MRO is working with the ERO Enterprise to develop strategies for resuming on-site audits in a safe, effective, and efficient manner.

2021 Self-Certifications

In between scheduled Compliance Audits, registered entities complete Self-Certifications of NERC Reliability Standards. MRO has revised the Self-Certification scoping process and implemented a guided Self-Certification process. The risks identified in MRO's Regional Risk Assessment and the ERO Enterprise CMEP Implementation Plan are the two primary considerations for guided Self-Certification scoping. The advantage of using Self-

Certifications is that it allows MRO to address continent-wide risks and region-wide risks throughout MRO's footprint through a single process at a faster interval than audits. MRO's Self-Certification schedule is available on its [website](#).

Highly Effective Reliability Organizations® (HEROs) Update

The MRO Risk Assessment and Mitigation (RAM) department continues to monitor and respond to questions submitted to Heros@mro.net. This feedback tool is widely used by MRO registered entities and serves as a great mechanism for responding to compliance related questions. To date, more than 375 questions have been received at this address since November of 2016. Over the last quarter, MRO has received 25 HEROs questions with an average response time of 10 days. This average greatly exceeds the 30-day response goal.

Expanded COVID-19 Reporting Guidance

The ERO Enterprise has expanded regulatory discretion to include any potential noncompliance between March 1, 2020, and December 31, 2021, where COVID-19 contributes materially or completely to the root cause. The ERO Enterprise recognizes the fluidity of this emergency and will reassess the timeline if needed. In the event that a potential noncompliance was caused by COVID-19, MRO registered entities should report the issue through MRO's enhanced file transfer server using the NERC-provided [COVID-19 reporting template](#). Because COVID-19-related noncompliance is eligible for regulatory discretion, the established processes for self-logging /self-reporting noncompliance are not necessary for these issues. This additional level of monitoring, provided by MRO, assists registered entities in prioritizing compliance activities during the pandemic. For more guidance on this process, please refer to the information provided in [MRO's Hot Topic](#).

Risk Determinations Associated with Self-Logged Noncompliances (Figure 1 and Figure 2)

Figure 1: Total Registered Entities Self-Logging by Regional Entity, shows that as of June 30, 2021, there are 31 MRO entities participating in the Self-Logging program which accounts for 35 percent of all ERO Self-Logging participants. Self-Logged instances of noncompliance submitted by these participants are monitored separately as the program is designed to quickly resolve minimal risk issues that are self-identified by entities. These issues are presumed minimal risk Compliance Exceptions (CE), however, the final disposition is based on the RAM risk determination analysis. MRO is continually evaluating its process and outreach to improve processing efficiencies and validation of minimal risk noncompliance.

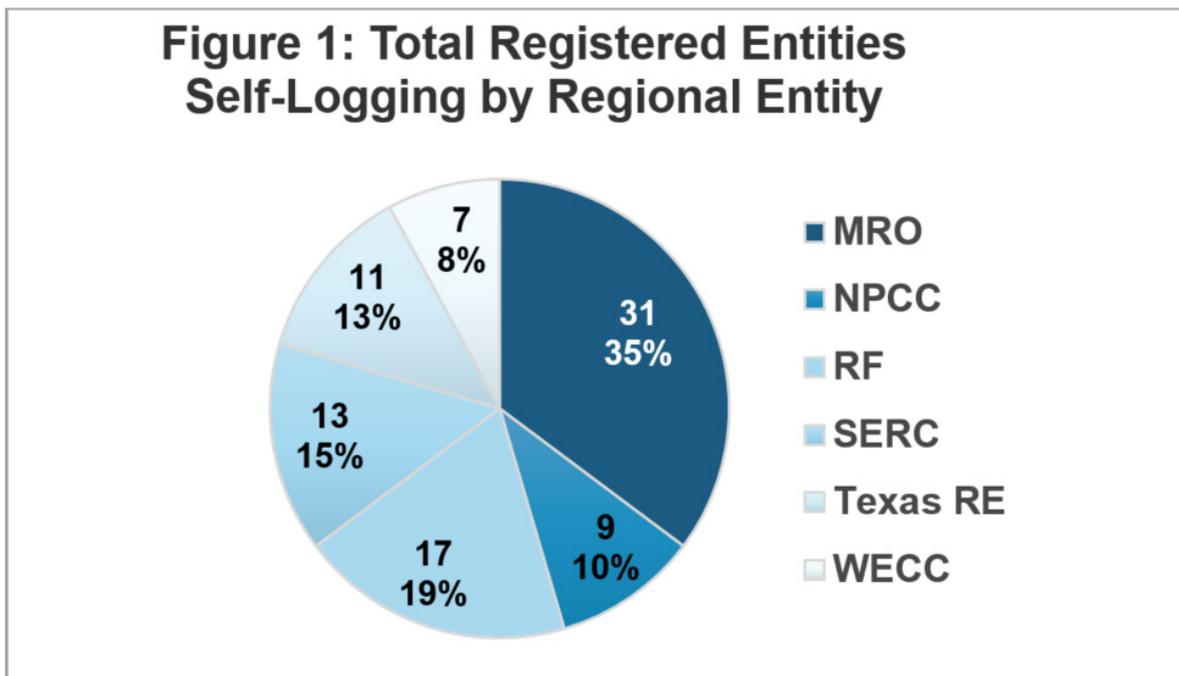
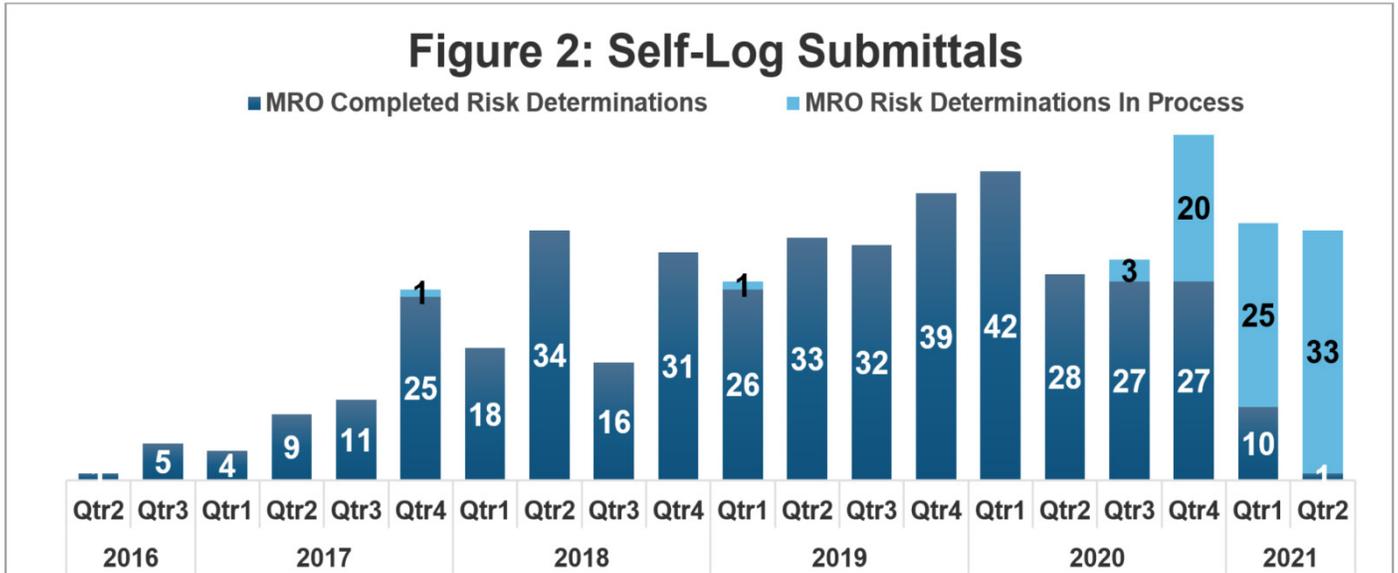


Figure 2: Self-Log Submittals, illustrates Self-Logged instances of noncompliance by submittal dates. The two self-logs prior to 2020 have complicated mitigating activities and are approaching completion. Please note submittal dates are not the start of potential noncompliance or when MRO completed its risk determination analysis. The RAM department completion on Risk Determinations has been impacted this quarter by the rollout and the entity training on the new ALIGN tool.

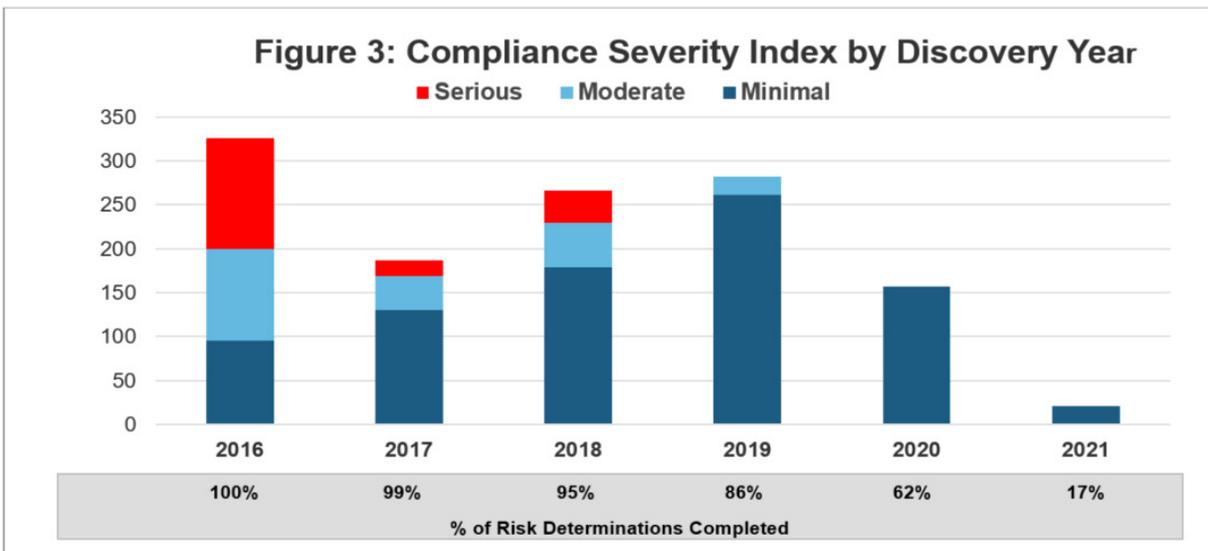


Risk Assessment and Mitigation Trends

In the following Risk Assessment and Mitigation Trend charts and statistics, the numbers reflect all historic issues of noncompliance in the expanded MRO region.

Compliance Severity Index (Figure 3)

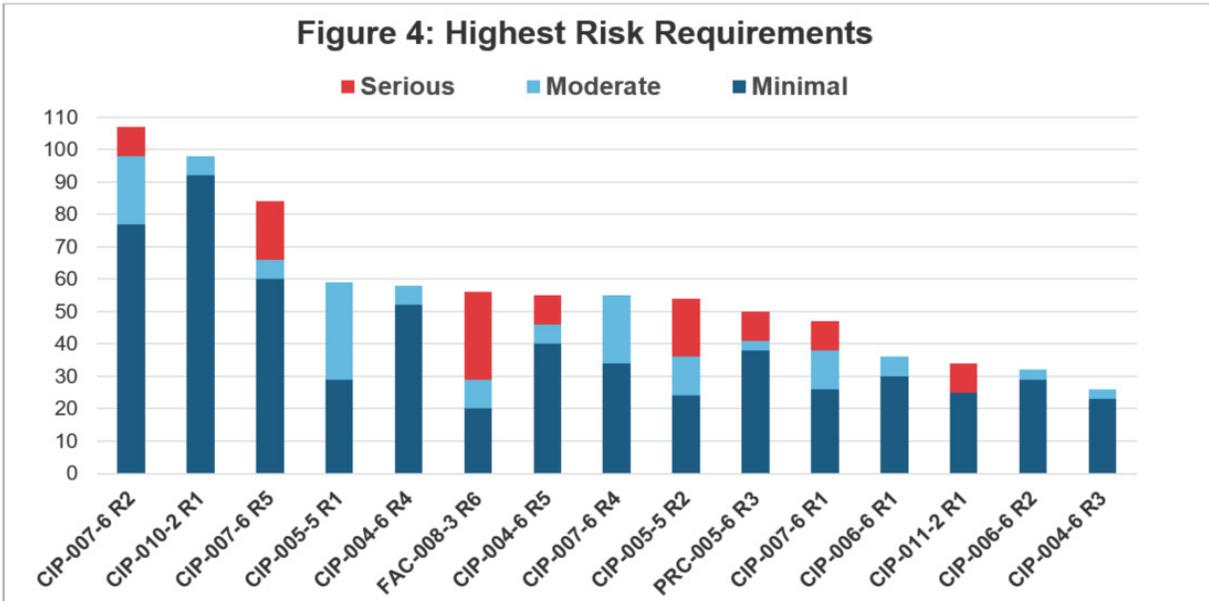
MRO staff use the Compliance Severity Index (CSI), shown in Figure 3, to evaluate progress toward a key reliability goal of less severe violations. The CSI represents the total risk that instances of noncompliance bring to the reliability or security of the bulk power system in the MRO Region. The CSI is calculated using the Risk Determination and Discovery Method for each noncompliance. For more information on how this process was developed and implemented, please see the article on [“The Benefits of Risk-Based Regulation.”](#) MRO has seen a



notable decrease in the risk of noncompliances over the past decade due to an overall improvement in the culture of compliance. Registered entities are self-identifying issues of noncompliance in a timely manner prior to issues presenting a greater risk to reliability.

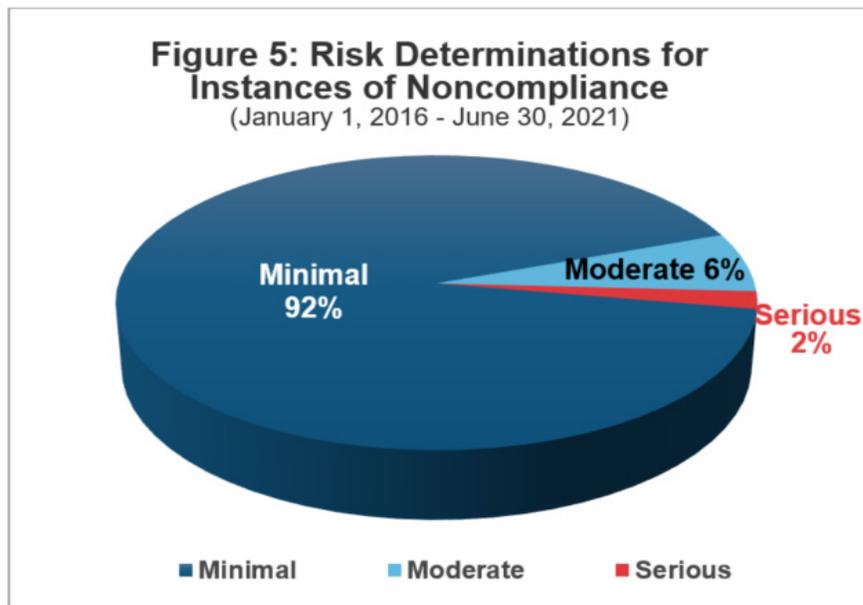
Highest Risk Issues of Noncompliance (Figure 4)

Figure 4 provides the 15 highest risk requirements, from January 1, 2016, to June 30, 2021, that have a history of issues of noncompliance, based on the CSI. Higher risk violations are associated with cyber and physical security standards, accurate facility ratings, and timely maintenance of protection systems.



Risk Determinations for Issues of Noncompliance (Figure 5)

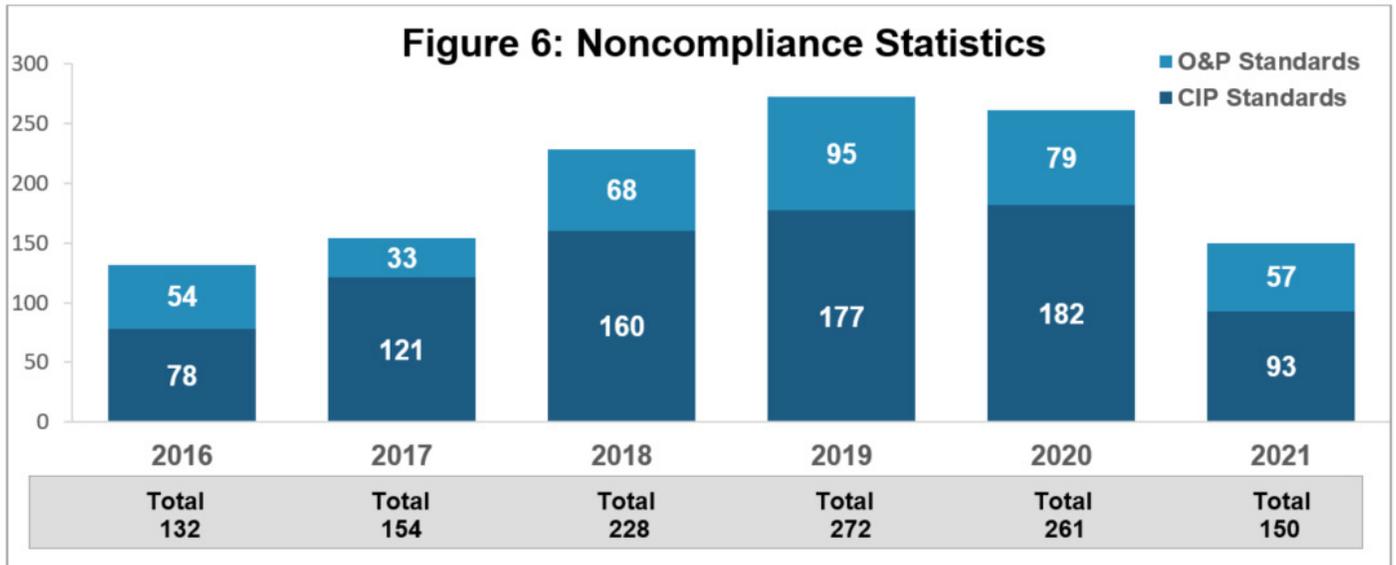
Ninety-two percent of all instances of noncompliance from January 1, 2016, to June 30, 2021, were minimal risk. There is a correlation between the increasing percentage of issues of noncompliance being minimal risk (Figure 5) and the increasing percentage of self-reported issues of noncompliance (Figure 7). Entities are identifying noncompliance earlier before the issues become more impactful to the reliability and security of the Bulk Electric System.



Noncompliance Trends and Statistics

Breakdown of Critical Infrastructure Protection (CIP) vs. Non-CIP Possible Issues of Noncompliance (Figure 6)

The noncompliance statistics and trends in Figure 6 were annually discovered and reported to NERC from January 1, 2016, through June 30, 2021.



Registered Entity Responsibility (Figures 7 and 8)

MRO staff analyzes how often registered entities self-identify and accept responsibility for noncompliance. These trends are indicators of the commitment among registered entities in the region to perform self-assessments of their compliance with the reliability standards. The high percentages, reflected in Figure 7 and Figure 8, demonstrate a strong governance and compliance culture of registered entities in the MRO region, as well as registered entities' willingness to accept, and learn from, discovered issues of noncompliance in order to prevent future noncompliance with NERC Reliability Standards.

Figure 7 reflects issues of noncompliance that MRO processed from January 1, 2016, to June 30, 2021.

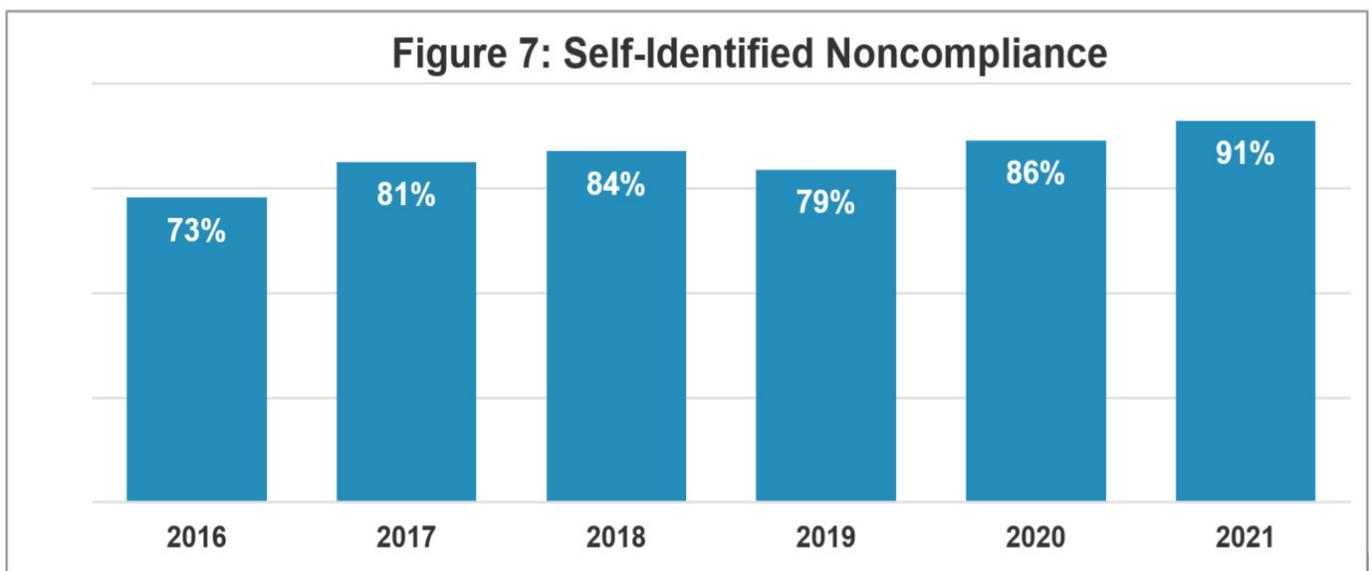
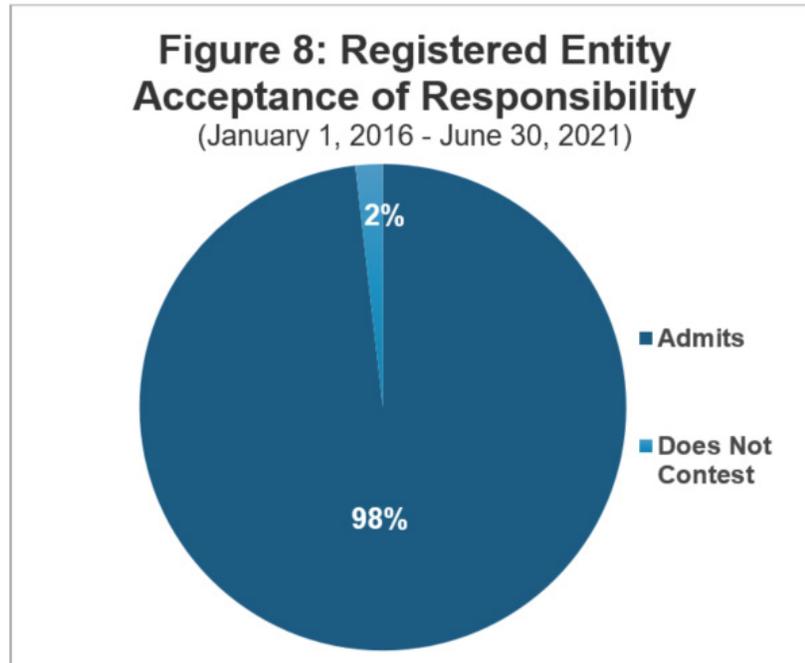


Figure 8 shows the percentage of time that registered entities have accepted responsibility for noncompliance submitted to NERC or another applicable Regulatory Authority from January 1, 2016, through June 30, 2021.



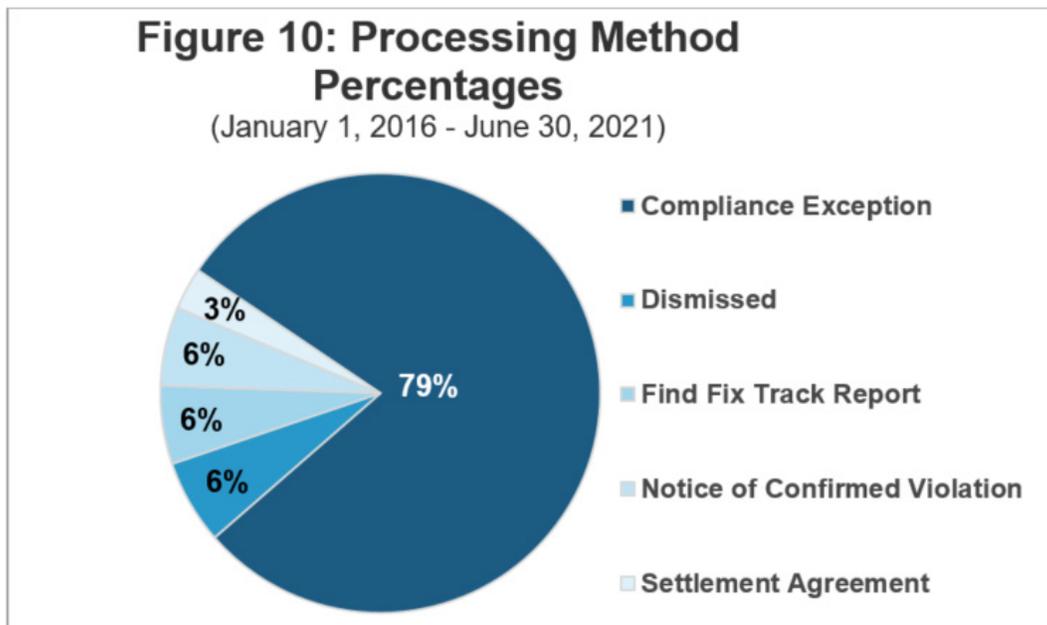
Discovery Method Detail (January 1, 2016 through June 30, 2021) (Figure 9)

In Figure 9, the numbers reflect all noncompliances in the MRO region that were reported to NERC.

Figure 9: Discovery Method									
Discovery Method Detail	2016	2017	2018	2019	2020	2021	Sub Total	(-less) Dismissed	Total
Compliance Audit	25	26	33	47	40	2	173	18	155
Compliance Investigation	0	0	0	0	0	0	0	0	0
Data Submittal	0	0	0	0	0	0	0	0	0
Self- Certification	11	2	23	9	1	10	56	11	45
Self-Log	6	50	99	132	147	69	503	8	495
Self-Report	90	74	73	84	73	69	463	23	440
Spot Check	0	2	0	0	0	0	2	0	2
Totals	132	154	228	272	261	150	1197	60	1137

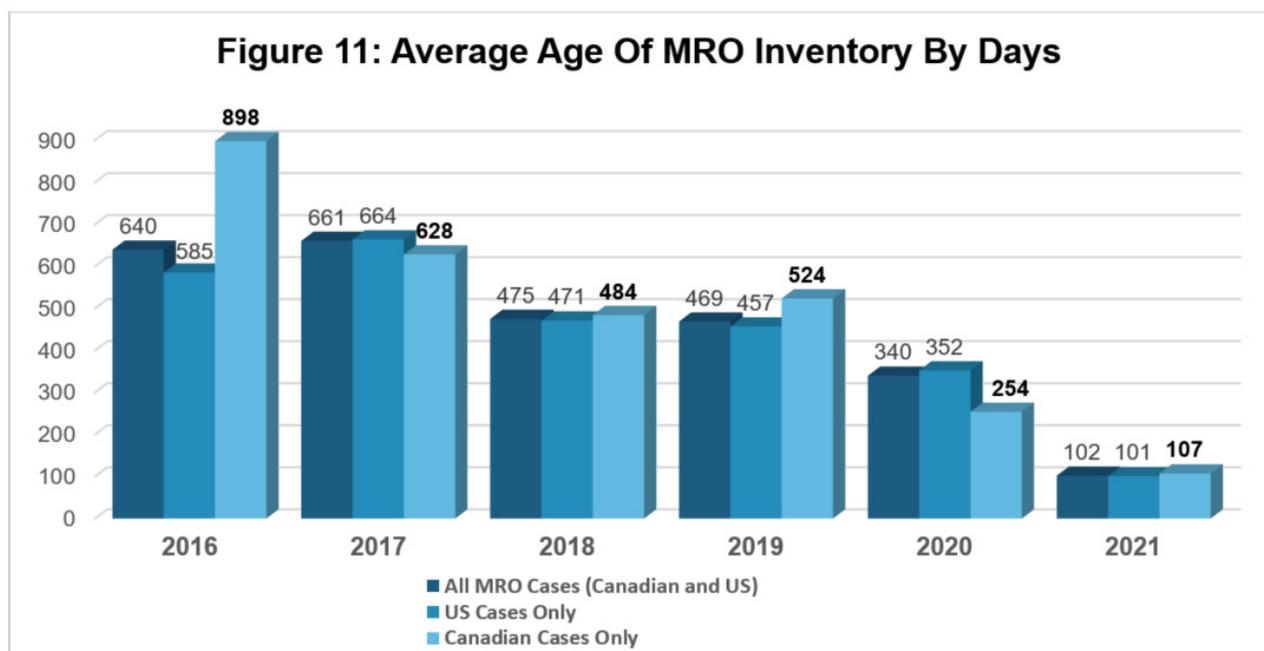
Noncompliance Processing (Figure 10)

MRO staff analyzes trends in the status of noncompliance processing by compiling all available processing methods, the average age of open noncompliances, and the closure percentage of noncompliances for each year. This analysis indicates progress towards simpler, more expedited processing due to the increased use of Compliance Exceptions to process noncompliance. Figure 10 includes issues of noncompliance for entities that were registered in the MRO region during the specified time periods.



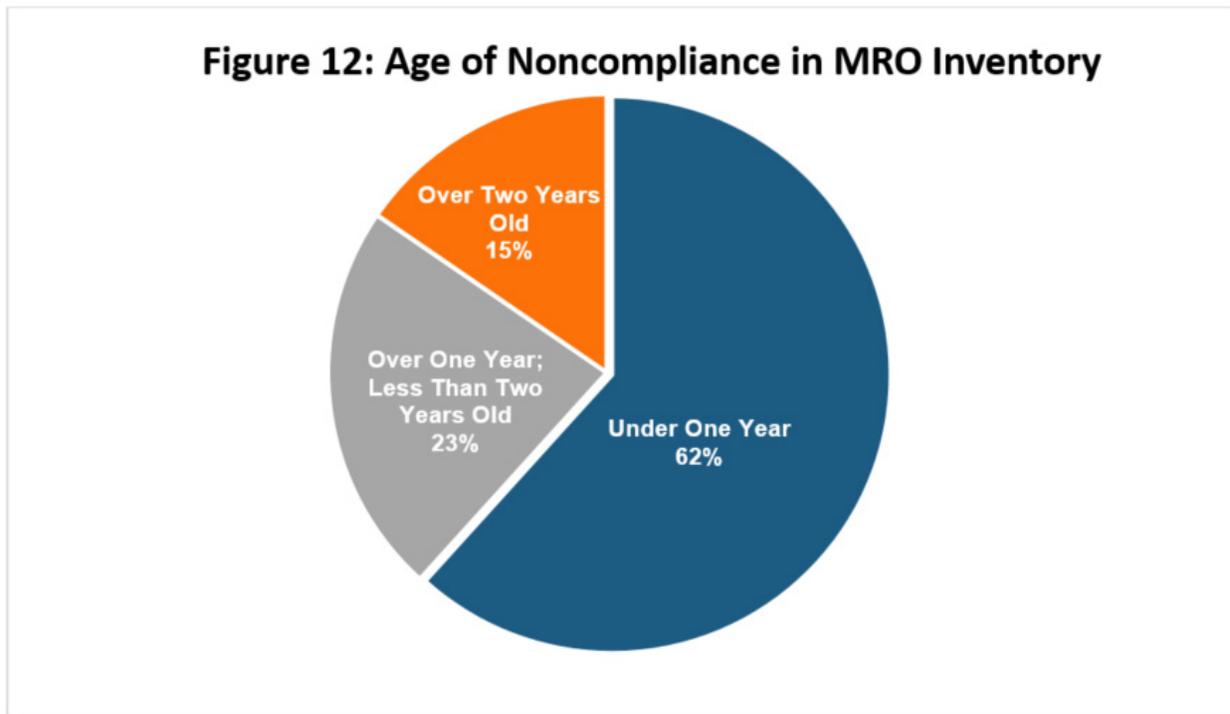
Noncompliance Processing Time (Figures 11 and 12)

Figure 11 illustrates the trend of the average processing time for open instances of noncompliance reported to MRO until closed. MRO calculates the time based on the initial date MRO notifies NERC of the issue of noncompliance until the date the issue is closed by NERC for U.S. cases and/or the Canadian provincial regulatory authority for



Canadian entities. The average age in 2016 was elevated due to the transfer of a number of aged noncompliances to MRO from another member of the ERO Enterprise. Additionally, averages were also impacted with the increase of registered entities reporting to MRO starting in July 2018.

Figure 12 illustrates the trend of the average processing time for all open instances of noncompliance reported to MRO until they are fully closed and no further action is requested by the applicable government authority.



For questions on this report, please contact the following individuals:

- Compliance Monitoring: Jeff Norman at 651-855-1703 or jeff.norman@mro.net
- Risk Assessment and Mitigation: William Steiner at 651-855-1718 or william.steiner@mro.net
- Enforcement: Tasha Ward at 651-256-5188 or tasha.ward@mro.net

The most recent NERC Standards, Compliance and Enforcement Bulletin can be found [here](#).

EXTERNAL AND REGULATORY AFFAIRS

State Regulatory Outreach Initiative

The interconnectedness of the North American bulk power system, coupled with shared challenges that impact the reliable and secure delivery of power to consumers, provides many opportunities for information sharing and coordination across government and industry partners. In 2020, the ERO Enterprise launched a State Regulatory Outreach Initiative to share information with state regulatory agencies on the important work NERC and the Regional Entities are doing to protect the reliability and security of the bulk power system.

As this State Regulatory Outreach Initiative progresses, MRO continues to reach out to state commission staff within its regional footprint to schedule introductions and provide information on MRO and the ERO Enterprise. Most recently, MRO's Director of Reliability Analysis Bryan Clark and I, along with SERC's Legal Counsel Courtney Ballard, met with Oklahoma Corporation Commission staff to bring awareness to the mission of the ERO Enterprise and provide publically available information on [NERC's Summer Reliability Assessment](#), MRO's [Security Advisory Council webinars](#), and the [GridEx Public Report](#) that informs Commission staff of ERO work.

On June 25, 2021, MRO's President and CEO Sara Patrick, Bryan Clark and I, along with other ERO Enterprise executives and staff, attended the National Association of Regulatory Utility Commissioners (NARUC's) Electricity Committee meeting where NERC CEO Jim Robb and NERC staff presented NERC's Summer Reliability Assessment. I will continue to coordinate MRO's state outreach efforts with external affairs staff across the ERO enterprise and will periodically inform MRO's members and board of directors on the status of this initiative.

Federal Regulatory Update

At the [June 17, 2021, FERC Commission Meeting](#), FERC issued an order that announced the intent of FERC, along with NARUC, to establish a [Federal-State Task Force on Electricity Transmission](#). This task force was created to "explore transmission-related issues to identify and realize the benefits that transmission can provide, while ensuring that the costs are allocated efficiently and fairly." The task force is comprised of FERC Commissioners and 10 state commissioners (two from each region of the country). On July 20, 2021, [NARUC appointed the 10 state commissioners](#) as follows: Chair Gladys Brown Dutrieuille, Pennsylvania Public Utility Commission; Chair Jason Stanek, Maryland Public Service Commission; Chair Andrew French, Kansas Corporation Commission; Chair Dan Scripps, Michigan Public Service Commission; Commissioner Riley Allen, Vermont Public Utility Commission; Chair Matthew Nelson, Massachusetts Department of Public Utilities; Commissioner Kimberly Duffley, North Carolina Utilities Commission; Chair Ted Thomas, Arkansas Public Service Commission; Commissioner Kristine Raper, Idaho Public Utilities Commission; and Commissioner Clifford Rechtschaffen, California Public Utilities Commission. In addition, the task force will help to provide information about the [new reform process](#) to build the transmission system of the future that FERC announced at its [July 15, 2021, Commission Meeting](#).

Looking ahead, on September 30, 2021, FERC will virtually host its Annual Commissioner-led Reliability Technical Conference. Information about this webcast can be found [here](#).

If you have any questions about these reports, do not hesitate to reach out to me at tasha.ward@mro.net.

- Tasha Ward, Director of Enforcement and External Affairs



MRO SEEKS NOMINATIONS FOR ANNUAL HERO AWARD

MRO relies on the expertise and dedication of industry volunteers to advance our shared vision of a highly reliable and secure North American bulk power system. These individuals often go above and beyond expectations in advancing high standards of operational excellence throughout the MRO region. As part of MRO's Volunteer Recognition Program, MRO's annual HERO Award provides MRO the opportunity to recognize an individual annually for their exemplary initiative and commitment to advancing the concept and principles of Highly Effective Reliability Organizations (HEROs) in support of MRO's vision and mission.

The qualifications for HERO Award nominees are the following [high reliability organization](#) behaviors:

1. **Preoccupation with Failure and Risk.**
2. **Reluctance to Simplify Interpretation.**
3. **Sensitivity to Operations.**
4. **Commitment to Resilience.**
5. **Deference to Expertise.**

Additional information on these behaviors is on [MRO's website](#). Please consider nominating someone that demonstrates any of the above qualifications, or has made other contributions or significant achievements in promoting HERO concepts across the MRO region. **Nominations can be submitted online [here](#), and will be accepted through August 20, 2021.**

The board's Organizational Group Oversight Committee will review candidates and make a final selection at its meeting on September 29, 2021. The award winner will be honored during MRO's Annual Member and Board Meeting on December 2, 2021.

Past HERO Award winners are posted on the [Volunteer Recognition Page](#) of MRO's website.

Questions regarding MRO's HERO Award should be submitted to [Jessie Mitchell](#), Director of Communications.

BULK POWER SYSTEM RELIABILITY



Managing Periods of BPS Instability

Why manual load shedding is sometimes necessary

How would you describe the electric grid to a non-technical friend? Of course, you would talk about different types of generators, load delivery points, and the wires that connect everything together. But, would you include your house, or every appliance inside your house that is plugged into an outlet? The reality is that every device injecting (or withdrawing) electric power from the power system is a part of the grid and must interact and be balanced to maintain stable, reliable operation. The North American power grid has been referred to as the “world’s largest and most complicated machine.” This description is very useful in understanding the importance of balance between input and output, and the interaction between producers (i.e., generators) and consumers.

Imagine a giant merry-go-round with enough horsepower for 1,000 people to ride. With only 500 people on board, the ride is half-loaded and should have plenty of power to spin at a constant speed. As more and more people get on to ride, it will take more power to keep turning at the same speed. If more than 1,000 people attempt to ride, or if the ride’s motor cannot produce enough power, then the ride will slow down, and may eventually stop. Maintaining this balance between the number of riders and the capability of the machine is analogous to the function of a NERC

registered Balancing Authority (BA). Each BA is responsible for maintaining demand and resource balance within their respective balancing area—power supply must meet power demand on a continual basis.

Besides maintaining the balance between supply and demand, every piece of equipment or facility on the power system (generator, transmission line, transformer, etc.) has a physical operating limit that must be respected. These facility ratings are essential in the reliable planning and operation of the Bulk Electric System (BES). If any component exceeds its limit, it can fail and possibly create a cascading failure of other equipment. System operators are responsible for operating or directing operation of the BES in real-time at individual control centers. Under normal conditions, system operators monitor conditions and regulate the power supply and its path to load (transmission and distribution) to meet demand and maintain system operating limits. However, like on the merry-go-round, emergency conditions can occur. If demand is too high and more generation is not available, there is a need to reduce customer demand to maintain the integrity of the electric system and to prevent a much larger impact (the entire merry-go round stops). When all other options have been exhausted regarding interruptible and non-firm loads, and the system is still stressed, shedding of load is required before the system deteriorates into a widespread condition that can no longer reliably operate.

Load shedding is the unplanned, but controlled, interruption of firm demand that may be taken to address an emergency on the BES. Firm demand is any load or demand that the power supplier is obligated to provide, except when system reliability is threatened or during emergency conditions. Load shedding may occur automatically for pre-programmed conditions, or it may be manually implemented by a system operator. Load shedding is a common part of system operator training and vocabulary, but is viewed as a last resort to protect the BES from instability.

Many NERC Reliability Standards make it clear that system operators must have emergency plans that include timely load shedding to respond to emergencies and avert a more widespread, cascading system event. Emergency plans for load shedding must identify and address those areas that have been selected for automatic load shedding, manual load shedding, and areas with critical functions (e.g., public safety) that should be excluded. Every registered BA, Transmission Operator, and Reliability Coordinator is required to maintain emergency load shedding plans and to train personnel on how and when to implement these plans on a regular basis. In addition, strict regulatory reporting is required when any type of load shedding plan is executed.

Load shedding is not an action that any organization or system operator takes lightly. It is a last resort and only used to protect the overall power system by maintaining stability and preventing a large scale cascading outage.

MRO's Reliability Advisory Council (RAC) is responsible for increasing outreach and awareness on important reliability topics, such as this one. This is the first in a three-part series published by the RAC on manual load shedding because of how critical it is to the preservation of reliability for the North American bulk power system during times of duress. The remainder of this series will be published in subsequent editions of *Midwest Reliability Matters*."

- Dick Pursley, Reliability Advisory Council Chair, CJ Brown, Reliability Advisory Council Member, and John Stephens, Reliability Advisory Council Member

About the Authors:



Dick Pursley is the Director, Operations and Transmission Services, at Great River Energy, a position he has held since 2019. In this position he has oversight of control center operations and support, along with substation and transmission line construction and maintenance activities. He has worked in the electric utility business for 31 years, the last 21 of which have been with Great River Energy in the utility operations area. He was a member of the MRO Operating Committee and is the current chair of the MRO Reliability Advisory Council. He was the MRO representative on the NERC Operating Committee prior to this committee reorganizing and becoming part of the NERC Reliability and Security Technical Committee (RSTC) in 2020, and has been an active participant and a member of the NERC Event Analysis Subcommittee since 2015.

Pursley has extensive knowledge in a variety of operational areas, including cyber and physical security, real-time operations, operational planning analysis, system protection, and resource adequacy. He has a BS in electrical engineering and a MS in agricultural engineering from the University of Minnesota.



C.J. Brown received his bachelor of science in applied mathematics/economics from the University of Central Arkansas in 2000 and was certified as a NERC Reliability Coordinator in 2007. He has been with Southwest Power Pool (SPP) since 2006 and is currently the director of system operations at SPP. His responsibilities include oversight of the SPP real-time operations for tariff administration, markets, balancing authority and reliability coordination functions in the Eastern and Western interconnections.

Brown has over 20 years of experience in the electric utility industry with roles in generation, power marketing, market monitoring and system operations.



John Stephens has been the Director—Power System Control at City Utilities of Springfield for 24 years. He is responsible for real-time Transmission Operations and has experience in wholesale power market transactions, open access transmission policy, and NERC compliance. He has been an active participant in SPP throughout his career serving on many groups within SPP, and also serves on NERC and MRO working groups and committees, including the NERC Reliability Issues Steering Committee, NERC Reliability and Security Technical Committee, and MRO Reliability Advisory Council.

Stephens is a registered Professional Engineer in the state of Missouri and holds a BSEE from Rose-Hulman Institute of Technology, and an MSEE from Clemson University.

2021 Regional Summer Assessment

MRO recently published its first ever independent [Regional Summer Assessment](#) (RSA) on June 10, 2021, which was followed by a [webinar](#) in July highlighting the focus areas and key outcomes from the assessment. Input into the assessment included an analysis of system events and general performance of the Bulk Electric System (BES) in MRO's regional footprint, along with any NERC Energy Emergency Alerts (EEA) from the summer of 2020. The RSA provides readers with insight on reliability considerations for the summer of 2021.

One key finding from the RSA was that three of the four Planning Coordinators (PC) in the MRO region are at high risk for issuing EEAs during extreme low generation and extreme high demand scenarios. EEAs are used by Balancing Authorities (BAs) to mitigate energy shortages by calling on additional resources, reducing exported energy, and, if needed, shedding firm load as a final step. Shedding firm load is an action that is rare, but can be necessary at times to ensure the reliability of the BES is preserved. Another key finding is that conventional generation resource performance and availability is needed for meeting projected summer demand.

The uncertainty of planning reserve margins for the assessment areas in the MRO region continue to be a high risk. This was identified in the [2021 Regional Risk Assessment](#) due to three of the four PCs experiencing a shortage of generation that resulted in either EEAs or BA resource alerts. These alerts occurred during conditions below the forecasted peak levels. As of mid-July, MRO has already seen two EEAs issued, one level 2 alert in June, and one level 3 alert in July. Both of these events were resolved in a reasonable amount of time and did not result in any firm load shed.

Changes in the resource mix will continue to be a challenge as system operators adjust to less conventional generation and increased levels of renewable energy resources that are more weather dependent. Accurate forecasting for these resources can be difficult, particularly during peak loading conditions. The MRO region is particularly heavy in wind, with approximately 44,000 MW of current nameplate capacity and much more scheduled in the generation interconnection queue. The challenge with this renewable resource is the uncertainty of availability during peak load hours. The table below shows the four assessment areas within MRO and the reserve margin compared to the anticipated reserve margin. The reserve margin is a measure of the amount of generation capacity available above projected load to reliably meet expected demand.

MRO's RSA serves to identify potential reliability risks to the regional BES during the summer season. This assessment is intended to inform industry leaders, planners, operators and regulatory bodies so they are better prepared to take necessary actions to ensure reliability. Please submit any questions or feedback regarding the MRO Regional Summer Assessment to reliabilityanalysis@mro.net.

Normal Summer Resource and Peak Demand based on 50/50 Forecast				
Assessment Area	Anticipated Resources	Net Internal Demand	Anticipated Reserve Margin	Reserve Margin Requirements
MH	3,763	2,965	27%	12.0%
MISO	141,443	116,360	22%	18.3%
SPC	4,002	3,340	20%	11.0%
SPP	67,086	51,643	30%	16.0%

- Bryan Clark, Director of Reliability Analysis



Are You Ready for Extreme Weather?

If you follow the events of the utility industry, then you are likely aware of the focus being placed on ERCOT and Texas-based utilities related to the February 2021 snowstorm event that caused days of power outages, billions of dollars in damage, and monumental regulatory scrutiny.

This headline news has caused many utilities to become more focused on being ready for similar types of cold weather events. Unfortunately, many are overlooking the broader question, “Are you ready for an extreme weather event?” Extreme weather events can happen year-round. Examples of other extreme weather events that you may want to consider include flash flooding, severe winds, extreme heat, extreme drought, etc. Each of these extreme weather conditions may pose different risks to your organization’s operations and the ability to provide reliable service.

The NERC Reliability Standards were designed to support the reliable operation of the Bulk Electric System. The NERC standards support reliability during normal and certain emergency situations. For example, the NERC Standards include EOP (Emergency Operations) standards which require an Emergency Operations Plan and a backup Control Center; CIP (Critical Infrastructure Protection) standards that stipulate the requirements for recovery plans; COM (Communication) standards that require Alternative Interpersonal Communications; FAC (Facilities) that include minimum clearance distances associated with vegetation and requirements regarding derivations of system limits and ratings; just to name a few. However, it is important for utilities to stretch the concepts included in NERC standards beyond meeting specific compliance requirements to a more global application in order to prepare for extreme weather.

What used to be known as the 50-year floods in some areas of the country have now happened multiple times within a 3-to-5-year period; and record-breaking extreme temperatures have become the “new norm” across certain regions. Regardless of the reason, these extreme weather events are becoming more commonplace. Accordingly, the importance of the question, “Are you ready for an extreme weather event?” has become increasingly important and likely deserves a higher priority and more global consideration on your entity’s risk assessment than in the past.

Many of today’s utilities were founded in the late 1800’s and early 1900’s and it is inherent for organizations to develop processes and procedures and place them on “auto pilot.” Because these processes are placed on “auto pilot,” previous assumptions used in building and maintaining facilities can be outdated. For example, utilizing a 10-year or 20-year straight-line average for various trend data is a typical practice in the industry. Straight-line averaging became a standard because it smoothed out anomalies over the trend period. However, it also assumes that the future will be similar to the past. It may be prudent to consider utilizing weighted averages, giving more weight to recent years. A change of this nature would provide an “adjustment factor” to identify trends during the more recent years (e.g., last 5 to 10 years).

Some questions to consider when performing an extreme weather assessment may include:

Facilities

- Where are our facilities located?
- Can we timely reach them during an extreme weather event?
- How long can we continue to reliably operate without reaching them?
- Are we dependent on certain technology or resources that are environmentally sensitive (e.g., phones, internet, fuel, etc.) in order to operate our facilities reliably?
- Are we dependent on a single source of technology or resources?
- Are our facilities at a high enough elevation to withstand “new norm” flooding?
- Can our poles and lines withstand “new norm” winds?
- Can our facilities tolerate “new norm” temperatures (hot or cold)?

Procedure/Process Assumptions

- When did we last review/change our assumptions?
- Are there any new factors that should be considered in our assumptions?
- Has there been a change in technology or resource availability that should be considered in our assumptions?

Operations

- Do we have personnel with the appropriate skills to address “new norm” extreme events?
- Have we updated training processes and procedures to include training on extreme weather events?
- Have we performed extreme weather operational drills to test processes and procedures?
- Do we have personnel in the right places to address extreme weather events?
- Have we implemented and updated technology/resources to maintain reliable service throughout extreme weather events?
- Do we have Mutual Aid and Emergency Assistance Support Agreements with other utilities?
- Are our Mutual Aid and Emergency Assistance Support Agreements with the right utilities (i.e., utilities that will not be affected by the same extreme event)?
- Will our Mutual Aid and Emergency Assistance Support Agreements provide the appropriate level of support during extreme weather events?

Regardless of where your organization may be located, it is critical that you perform an extreme weather assessment. Performing this assessment and implementing measures to mitigate unfavorable findings now can increase your ability to provide reliable service to your customers, save you from being the headline story in the news, mitigate liabilities and negative press, and possibly eliminate you from being the focus of numerous regulatory investigations.

- Article written by Brian L. Pauling - [originally published on June 4, 2021](#), by Archer Energy Solutions, LLC, a critical infrastructure protection services firm. Reprinted here with permission.

MRO's Generator Winterization Program

In the August 2020 issue of [Midwest Reliability Matters](#), MRO introduced the Generator Cold Weather Preparation pilot program. The pilot program focused on existing generators over 500 MW and new generating facilities. During the program review in 2021, MRO revised the name of the program to Generator Winterization Program in order to capture the purpose of the program and expanded the scope to include all generators in the region. The inclusion of all generators will increase awareness across industry and also reduce the number of weather-related incidents.

All forms of generation, regardless of location, are susceptible to the impacts of cold weather. While units in the northern portions of the MRO regional footprint may have been designed for sub-zero temperatures, there are still critical components that can be affected by climate. The units in the south were not always designed for exposure to colder temperatures, so processes and procedures need to be in place to minimize the impact of cold weather on performance.

The purpose of the program is to identify best practices or areas for improvement and share this information with regional stakeholders. The program also helps to establish relationships between MRO and generator owners/operators outside of the compliance space. This program is in no way a method to certify units for winter operations, but rather a way to observe and provide recommendations to improve reliability.

MRO sent out surveys to eleven generating facilities and plans to conduct up to four generator site visits yet this year, pending CDC guidance related to the ongoing pandemic. Although the surveys were sent to the Primary Compliance Contacts, MRO is requesting that the surveys be completed by the generator facility identified on the survey form. Generators that did not receive a survey in 2021 can download a copy of the survey from the [MRO website](#) and perform a self-assessment.

Questions related to generator winterization should be submitted to GWP@mro.net.

The following resources related to winterization are available:

NERC Lessons Learned

- [Plant Fuel Switching and Cold Weather](#)
- [Plant Instrument and Sensing Equipment Freezing Due to Heat Trace and Insulation Failures](#)
- [Generating Unit Temperature Design Parameters and Extreme Winter Conditions](#)
- [Adequate Maintenance and Inspection of Generator Freeze Protection](#)
- [Unanticipated Wind Generation Cutoffs during a Cold Weather Event](#)

NERC Reliability Guideline

- [Generating Unit Winter Weather Readiness – Current Industry Practices – Version 3](#)

- Russ Mountjoy, Principal Reliability Specialist



MRO TO HOST 2021 VIRTUAL RELIABILITY CONFERENCE

August 24, 2021 | 9:00 a.m. to 3:30 p.m. Central | Webex

Conference Details

Midwest Reliability Organization's Reliability Advisory Council is pleased to announce it will host the 2021 Reliability Conference via Webex. This one-day conference will focus on Bulk Electric System (BES) reliability topics across the industry and specific to the MRO region.

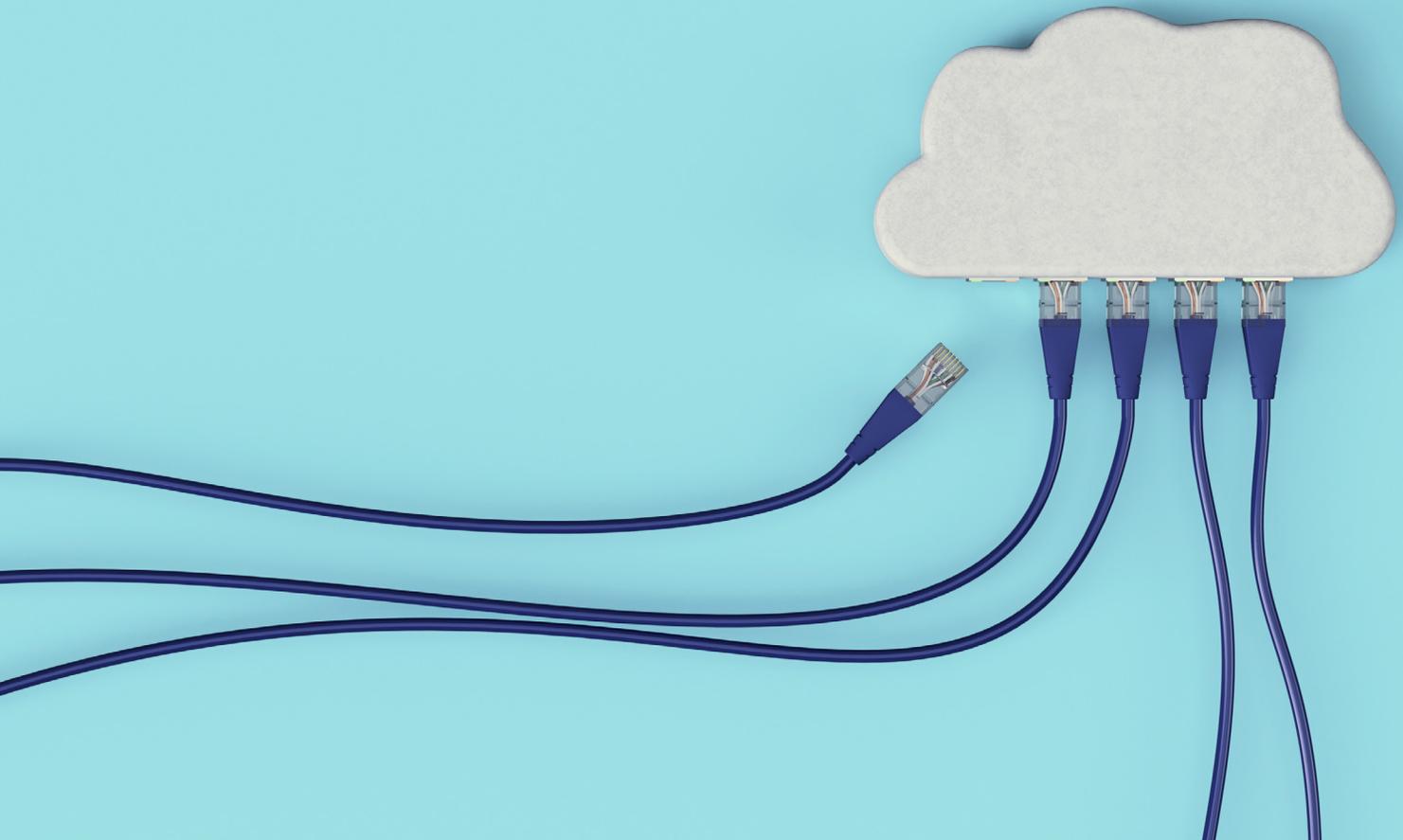
Technical staff, subject matter experts, and power system engineers from registered entities are encouraged to attend this free conference.

Planned Agenda Topics

- Reliability and Resiliency in the Future
- Challenges Associated with Electric Grid Dependence on Natural Gas System
- Changing Resource Mix Impact on Coal Plant Operations
- NATF Facility Ratings Practices Initiative
- 2021 Cold Weather Event
- Canadian Provincial Grid Code Review

Registration

To register to attend this event [click here](#). Registration closes on **August 23, 2021**. Webex information will be provided once you have completed registration



Are you Cloud Ready?

The clouds are coming!

Virtualization and Cloud discussions are gaining momentum in the electric utility industry. In response to FERC's order to NERC "to begin a formal process to assess the feasibility of voluntarily conducting BES operations in the cloud in a secure manner," NERC assigned the Security Integration and Technology Enablement Subcommittee (SITES) to undertake a white paper discussing BES Operations in the Cloud, due by EOY2021. Additionally, NERC Project 2016-02 is focused on recommending changes to all the applicable NERC Standards to allow for virtualization, containerization and Cloud technology adoption. NERC Project 2019-02 BES Cyber System Information Access Management, which also impacts CIP-004 and CIP-011, addresses key changes in the language, intent and standard definitions.

This increased focus has created a lot of conversations not only around the virtual water cooler, standards drafting teams, and regional compliance teams, but also within business units. Additionally, some Cloud Service Providers (CSPs) have started to develop and design innovative approaches to (hopefully) intersect with the revised standards to catch the wave of new-to-Cloud customers.

With all of this activity, what are you doing to get yourself and your teams ready for Cloud adoption? One of the biggest concerns, beyond security and compliance elements, is the shortage of talent that can properly implement Cloud products and services. We believe the time is now to start looking at the skillsets of your teams and identifying gaps in training, awareness, and abilities to meet the demand of the business teams eager to embrace the elasticity, scalability, and robust platforms, applications, and services CSPs have to offer.

In order to prepare for this inevitable and seismic shift in our industry, we believe that reasonable and prudent decision-makers should inventory and review both IT and OT systems for those that would be good candidates for migration to the Cloud.

Developing a roadmap of key business workloads will set the stage for prioritization. It may not always be the wisest choice to begin with the most critical workloads to migrate. Rather, we believe starting with lower priority projects will help develop the skills and confidence your employees and executives need to tackle larger, more complicated migrations or integrations efficiently and securely.

Some noncompliance workloads that could make sense for initial forays into Cloud adoption may include: outage management systems, video (drone, security, etc.) storage, historian data, grid analytics, simulation and modeling data, training environments, disaster recovery, and system backups. Teams that do well with a \$1,000 a month Cloud budget, will appreciate the ease of adoption versus the high pressure to perform under a \$50,000 a month burn rate. Teams may be better off taking incremental wins that maintain executive confidence than biting off more than they can handle.

Starting with a less critical environment will set the groundwork for further secure Cloud adoption. There are many lessons to be learned throughout the Cloud adoption process that your employees may not have encountered previously using traditional, on-premises solutions. From the initial drafting of cloud requirements, service level agreements, and Cloud contracts prior to use; key management, user management, data locality and replication, and data encryption during use; to termination of services, data disposition or migration to alternate solutions at the end of Cloud use. Familiarizing your organization to these new challenges, terminologies, and technologies with low impact migrations first will give your employees the tools, knowledge, and confidence they need to migrate more critical environments successfully in the future.

One of the essential tasks that successful Cloud migrations or integrations always include is a gap analysis. What does your current environment look like and require versus a Cloud environment? AS-IS and TO-BE modeling is necessary to ensure the proper functional and security considerations are identified early. Key security considerations include: identity access management, role based access controls, multi-factor authentication, secure coding practices, security logging, monitoring and alerting.

In conclusion, there is a lot of work happening at the federal and regional levels, but what about the local level? As you think about this dynamic, elastic, and scalable infrastructure or platform capabilities, what could be a roadmap for implementation or integration of Cloud for OT environments? Will you be considering BES (Bulk Electric System) Cyber System Information (BCSI) in the Cloud? What about BES or BES Reliability Operating Services (BROS) operations in the Cloud?

We recommend connecting with your peers and thought-leaders regarding the areas that are important to you so you can start forging a roadmap to adoption. Your teams will be looking to you for guidance, wisdom and courage to tackle these new-to-industry technologies. Your executives will be expecting both you and your teams are up to the task when they turn the corner and give you the green light.

Are you Cloud ready?

The following are references related to virtualization and Cloud computing, if you are interested in learning more:

- SITES: NERC BCS Operations in the Cloud – Q3'2021
- NERC Standards Project 2016-02: Virtualization ([here](#))
 - CIP V5 Transition Advisory Group (V5 TAG) White Paper ([here](#))
- NERC Standards Project 2019-02: BCSI Access Management ([here](#)):
- NERC Compliance Monitoring and Enforcement Program (CMEP) Practice Guide: BES Cyber System Information ([here](#))
- NERC Security Guideline: Supply Chain Risks Related to Cloud Service Providers ([here](#))
- FERC NOI on Virtualization and Cloud Computing Services ([here](#))
 - Comments on FERC NOI on Virtualization and Cloud Computing Services ([here](#))

For more information please contact the authors Thomas Peterson, PCS (tpeterson@provencompliance.com) or Clayton Whitacre, GRE (CWhitacre@GREnergy.com)

About the Authors:



Thomas Peterson, CCSP, CISSP, CISM, CISA, CEH
Senior Cloud Security Architect and CIP SME, Proven Compliance Solutions

Thomas Peterson is a 25-year veteran of Information Security and holds an MBA in Technology Management. Over the last 10 years, he has focused on ICS, SCADA and Critical Infrastructure Protection. He is keen to support the utility and power industry with emerging challenges such as Supply Chain Risk Management and Cloud Adoption. Recently, Peterson worked with IBM to showcase the only FIPS-140-2 Level 4 encrypted Cloud for Regulated Workloads architecture for the power industry.



Clayton Whitacre is a Senior Systems Analyst at Great River Energy (GRE). He specializes in utility application software design, implementation, security, and operation. Prior to his role at GRE, Whitacre was a software engineer at Siemens where he deployed and supported energy management systems around the world. He has a Bachelor of Science in Computer Science from the University of Minnesota – Twin Cities.

MRO Security Threat Forum Outreach

MRO's Security Advisory Council Threat Forum (SACTF) is an organizational group that addresses regional risks by facilitating the sharing of threat information pertaining to cyber, physical, and operational security, arising from government or industry sources. The SACTF started a weekly Threat Call in 2018 as a pilot program with about 108 registered participants, an average of 23 attendees, and calls lasting about 12 minutes. Today, the MRO SACTF Threat Call has about 236 registered participants, an average of 65 attendees, and calls lasting about 29 minutes. Overall, this call has been extremely successful!

In 2020, the COVID-19 pandemic was in full effect. The SACTF saw the need for a separate weekly call to discuss pandemic best practices and lessons learned. The COVID-19 Call was hosted on Thursday mornings at 8:15 a.m. Central beginning on March 26, 2020. These calls continued until deemed no longer necessary by the SACTF and pandemic-related conversations could be combined with the regularly scheduled Wednesday SACTF Threat Calls. The last COVID-19 Call was held on June 17, 2021. From its onset, the call averaged a total of 51 participants, about 236 registrants, and lasted approximately 36 minutes. The longest COVID-19 Call held was 72 minutes and the largest participant call included 85 individuals. The SACTF received positive feedback from many call participants, including:

"This has been the longest-running pandemic information call that I've participated in. It has been a great resource to get advice and insights throughout the evolving situation. A big thank-you to all who have made it happen!" – Anonymous

"Thank you all for this weekly call. I think it has been extremely beneficial to everyone." - Anonymous

"Thank you for including us, we really appreciate the opportunity to talk with everyone on a weekly basis." - Anonymous

Using lessons learned from the pandemic, the SACTF created a standard for setting up emergency calls in the future.

Finally, the normal MRO SACTF Threat Call will continue on Wednesdays. Between the two calls the SACTF has hosted 193 calls to date, with about 236 approved registrants, and within those approved registrants there are 64 unique companies. These unique companies are made up of MRO registered entities and members, Electricity-Information Sharing and Analysis Center (E-ISAC) staff, and invited guests.

If you would like to attend the MRO SACTF Threat Calls, please contact Estee Nauer, MRO Security Administrator (estee.nauer@mro.net) for the registration link.

The SACTF would like to thank all participants that attend these calls and provide input.

- Estee Nauer, Security Administrator

SECURITY AWARENESS



MRO TO HOST 2021 VIRTUAL SECURITY TRAINING AND CONFERENCE

October 4-6, 2021 | Webex

Conference Details

Midwest Reliability Organization's Security Advisory Council (MRO SAC) is pleased to announce it is hosting its eighth annual Security Training and Conference via Webex October 4-6, 2021. This training and conference is designed to expand security awareness and strengthen cyber, operational and physical security through information shared by experts within the security industry, as well as analysis of real world security lessons learned and best practices. All security professionals, subject matter experts, and power system engineers from entities across all regions are encouraged to attend this free conference and training.

Planned Conference Agenda Topics

- Executive & Security Leadership Perspectives
- Physical Security
- Cyber Security
- ICS/SCADA Security
- Energy Sector Government Initiatives
- Intelligence and Information Areas of Interest

Registration

More information on the agenda and training topics will be available soon on [MRO's website](#). To register for these events, please click the links below (you will need to register for each event separately):

Security Training on October 4, 2021 from 12:30 p.m. – 4:30 p.m. Central, click [here](#).

Security Training on October 5, 2021 from 12:30 p.m. – 4:30 p.m. Central, click [here](#).

Security Conference on October 6, 2021 from 9:00 a.m. – 4:30 p.m. Central, click [here](#).

OUTREACH AND ENGAGEMENT



MRO Expands Sponsored Representatives on NERC Committees

As a result of NERC's successful efforts to redesign its organizational groups with a focus on key risk areas, MRO is increasing the number of committees to which it will sponsor representatives from 6 to 13.

MRO has a long and successful history of supporting the work of NERC organizational groups by sponsoring stakeholder representatives to attend NERC committee meetings on MRO's behalf. These representatives report to one of MRO's three advisory councils and provide valuable input to the work of MRO's organizational groups and help reduce duplication of efforts. As part of its sponsorship, MRO reimburses expenses incurred by the selected representatives attending the NERC committee meetings (for three-year terms). MRO is the only member of the ERO Enterprise that sponsors representatives on NERC committees.

Expectations for MRO-sponsored NERC representatives are outlined in [Policy and Procedure 3: Establishment, Responsibilities, and Procedures of Organizational Groups and MRO Representation on NERC Organizational Groups](#). MRO has proposed updates to this policy that will no longer require representatives to represent MRO's position at NERC committee meetings. The Organizational Group Oversight Committee (OGOC) has approved these proposed changes. Approval of MRO's Governance and Personnel Committee and then board of directors will be sought in the third and fourth quarter respectively. If approved, the changes will be effective for MRO-sponsored NERC representatives beginning in 2022.

These sponsorships allow MRO to stay abreast of key activities of NERC committees, subcommittees, and task forces, and encourage member entity participation. The selected nominees will be instrumental in providing MRO and the associated advisory council timely updates on the focus areas and concerns addressed by NERC organizational groups, and have an opportunity to better understand MRO's perspective.

OUTREACH AND ENGAGEMENT

All MRO members should look for a Hot Topic communication in mid-September with information on how to nominate (or self-nominate) for these open positions, each of which has a three-year term. MRO's three advisory councils – RAC, SAC, and CMEPAC – will review the nominations and make recommendations to the OGOC for final selections in the fourth quarter of 2021. More information on the timing and process for MRO's nomination and selection period is provided later in this newsletter.

MRO will sponsor representatives on the following NERC committees:

- Compliance and Certification Committee (CCC)
- Electric Gas Working Group (EGWG)
- Inverter-Based Resource Performance Working Group (IRPWG)
- System Protection and Control Working Group (SPCWG)
- System Planning Impacts from DER Working Group (SPIDERWG)
- Energy Reliability Assessment Task Force (ERATF)
- Facilities Ratings Task Force (FRTF)
- Project Management and Oversight Subcommittee (PMOS)
- Standards Committee (SC)
- Supply Chain Task Force (SCTF)
- Supply Chain Working Group (SCWG)
- Security Integration and Technology Enablement Subcommittee (SITES)
- Security Working Group (SWG)

More information is available on the specific purpose and work plan of each of these committees at www.NERC.com.

MRO's Organizational Group Structure and Nomination Process Explained

About Organizational Group Membership

MRO has a long history of relying on the expertise and dedication of the many members and stakeholder volunteers that support MRO's mission "to identify, prioritize and assure effective and efficient mitigation of risks to the reliability and security of the North American bulk power system by promoting Highly Effective Reliability Organizations® (HEROs)." We do this through our stakeholder-led organizational group structure, which is comprised of three advisory councils (the CMEPAC, RAC and SAC) and subgroups that report to each of the advisory councils. MRO's Organizational Group Oversight Committee (OGOC)—a sector-based board committee—establishes and oversees the work of MRO's organizational groups pursuant to [Policy and Procedure 3](#).

MRO's organizational group structure enables subject matter experts from MRO member companies to contribute their input and technical skills to help identify risks to reliability and security of the regional bulk power system, develop mitigation strategies, and share information and best practices with participants across MRO's regional footprint. A list of organizational groups, along with more information on what each group does, is available on MRO's [website](#).

As non-voting bodies, membership on MRO's organizational groups is primarily based on experience and expertise, and to the extent practicable, geographic diversity and sector balance. One group – the NERC Standards Review Forum (NSRF) – is sector balanced to facilitate group collaboration on the development of voting recommendations on NERC Reliability Standard ballots. Additionally, MRO sponsors representatives on NERC's organizational groups to increase awareness and to share feedback between the two organizations.



Membership Nomination and Selection Process

In the third or fourth quarter each year, MRO staff solicits nominations from MRO members for expiring or vacant seats on all MRO organizational groups, as well as for available MRO-sponsored positions on NERC organizational groups. Following the nomination period, candidates are reviewed by the relevant MRO organizational group. In the review process, existing organizational group members seek to ensure nominees are qualified for the positions, that geographic diversity and requisite sector balance is maintained, and that MRO's diversity, equity and inclusion initiatives are considered in final candidate selections.

Following this review, the subgroup provides its recommendations to the appropriate advisory council. The advisory councils make final membership recommendations to the OGOC for subgroup membership, advisory council membership, and MRO sponsored NERC representatives. The OGOC approves all organizational group membership and MRO-sponsored NERC representation. The terms for MRO organizational group membership begin on January 1 the following year. Because the NSRF is a sector-based organizational group, nominees for open positions on the NSRF are elected by the applicable membership sector and provided to the OGOC for approval.

2021 Nomination Timeframe

All members will be notified when the nomination period opens on September 13, 2021. The notice will also be posted on MRO's main website and LinkedIn pages. The nomination period will run through September 26, 2021. The candidate review process will take place at the regularly scheduled organizational group meetings in October and November, with final candidate approval occurring at the OGOC's November 19 meeting.

To be eligible to serve on an MRO committee or working group, you must be employed by an MRO member company. A list of [MRO members](#), along with information on membership, is available on our website. MRO values diverse industry perspectives in pursuit of its mission. On behalf of the OGOC, and all of the organizational groups, we encourage your participation!

If you have questions on organizational group membership or the nomination and selection process, please contact [Julie Peterson](#), Assistant Corporate Secretary and Senior Counsel.

STRATEGIC UPDATE



Viewing Complicated Challenges as Opportunities

In the [June issue](#) of Midwest Reliability Matters, I wrote about the extremely complicated problem of energy assurance, which I currently consider to be the biggest challenge to the future of power system reliability. In fact, it has recently supplanted operational technology (OT) cybersecurity as my answer to the question, “what keeps you up at night”? This problem is complicated, not just due to the engineering challenges that I discussed in my June article, but because it also has jurisdictional, economic, societal, political, and even philosophical components. It’s also something we’ve been talking about for a while now, and, as the recent NERC Summer Reliability Assessment has shown us, it is time to begin shifting our focus to implementing mitigating actions.

As a member of the Institute of Electrical and Electronics Engineers (IEEE), the world’s largest technical professional organization, I have been utilizing and consuming a number of IEEE resources recently as I research this multi-faceted problem in more detail. This past week, the Power and Engineering Society (PES)

of the IEEE held its annual general meeting, the largest annual power conference in the world. I always look forward to this meeting and utilize it as a primary source of my personal training. The event includes thousands of attendees from across the globe presenting on technical, strategic, and policy topics related to reliability in hundreds of parallel sessions over the course of a week. The conference sessions last 14 hours each day (beginning at 5am and ending at 8pm Central), with so many concurrent tracks that attendees can only attend a small percentage of them.

Considering the transformational changes to our industry, I took a different approach to attending the conference this year. I prioritized sessions led by international technical experts discussing challenges to power grids outside of North America in an attempt to gain different perspectives as I continue to contemplate energy assurance and the top reliability risks our now-dynamic industry is facing. Historically, I've avoided those sessions considering them as not applicable to MRO or the North American bulk power system given the significant differences in their composition and complexity. However, the more I contemplate energy assurance for North America, the more I realize that it's going to take creative solutions and different perspectives. I myself need to change my mindset in how I approach this complex problem.

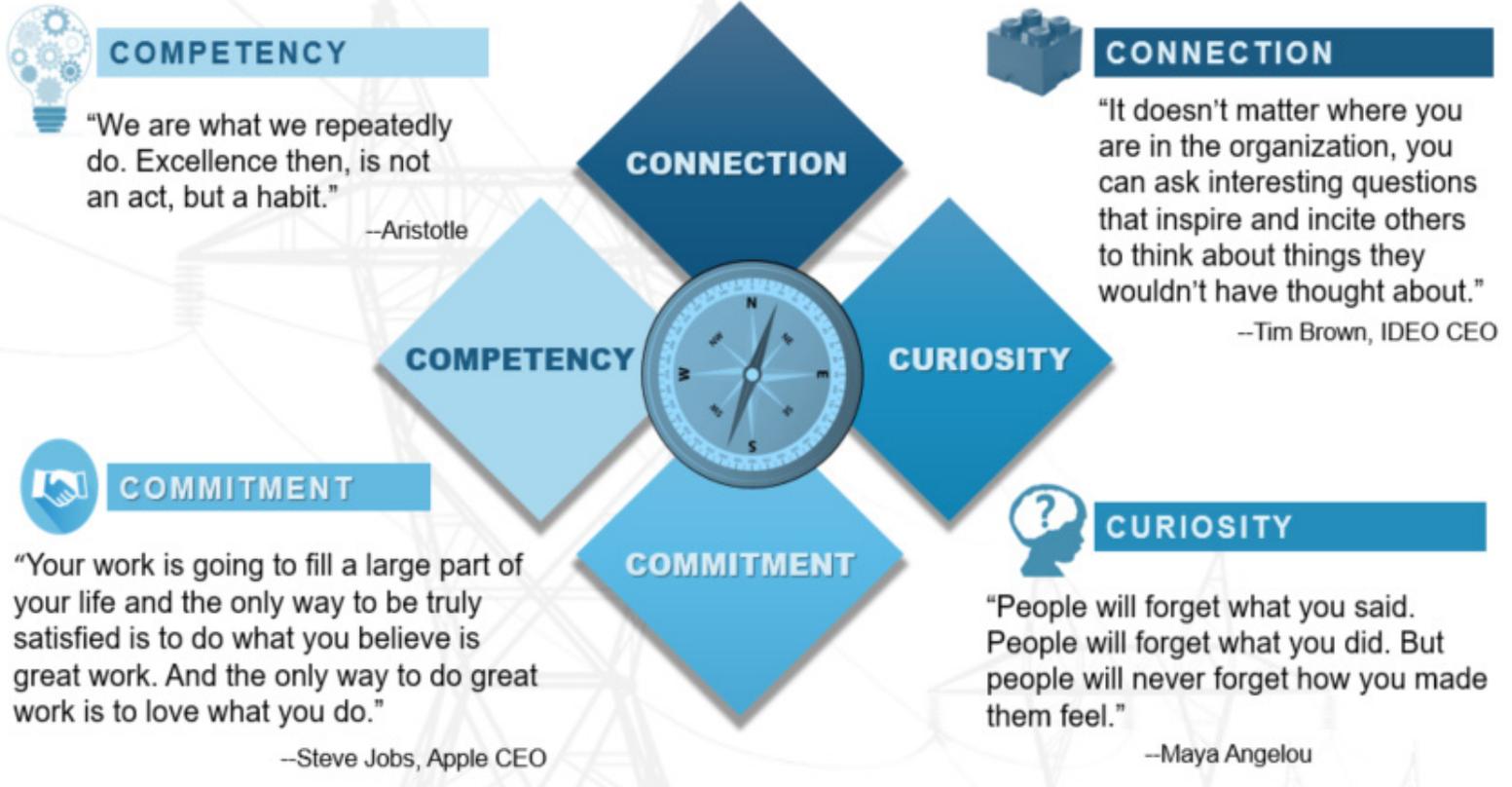
Is energy assurance that much more complicated than problems we have solved in that past? The North American bulk power system is the largest and most complex machine ever created -- synchronous, with instantaneous creation, delivery, and consumption of product. In producing this machine, we imagined how countless small individual utility networks could be connected to create the grid, with three synchronous interconnections joined through High Voltage Direct Current (HVDC) - the engineering and operation of which is, in my opinion, creatively ingenious itself. In my office at MRO in St. Paul, I have a copy of Nikola Tesla's patent for the electrical transformer hanging above my desk to serve as a reminder of some of the engineering feats that have created this reliable grid that society now depends on.

As I listened to international experts discuss the engineering and operations of their power systems during the IEEE meeting, rather than telling myself "that will never work here," I paid close attention to how professionals from Ireland, Scotland, Norway, and multiple other countries have incorporated new technologies, including a large percentage of variable resources, into grid operations. These experts went into detail on how modeling and planning approaches changed, different real-time operational tools were engineered, and innovative reliability metrics were developed to help inform real-time operational decisions. They also shared ideas for the future and experiments underway to further improve reliability and test new technologies on their networks. I experienced a bit of an epiphany while listening with an open mind to these sessions, which further invigorates me to creatively contribute to our problem solving efforts at MRO and across the ERO Enterprise and industry. Viewing the energy assurance challenge as an opportunity has changed my perspective of how we can move forward.

The risks to reliability are increasing and dynamic, and I'm confident that together we can seize the opportunity to mitigate these risks and continue to provide a highly reliable and secure North American bulk power system.

- Richard Burt, Senior Vice President and Chief Operating Officer

DIVERSITY, EQUITY AND INCLUSION AT MRO



Growing to C.A.R.E

The conversations that allow us to move forward together

The Diversity, Equity, and Inclusion (DEI) committee’s mission at MRO is to **celebrate** the community within MRO by promoting **awareness** related to diversity and inclusion, and enhancing **respect** for others by acknowledging the importance of **equity** (C.A.R.E.).

Recently, the DEI introduced the Growing to C.A.R.E. Book Club within the organization as an opportunity to gain new perspectives from other employees, learn about other cultures, how to effectively focus on diversity, and move forward together. Unity begins by having experiences together. This is an opportunity to look beyond natural divisions and focus on what bonds us.

Employees that wish to participate will begin meeting in August during lunch for an hour (virtually for now) once every three weeks to discuss assigned chapters from the book, [What If I Say The Wrong Thing? 25 Habits for Culturally Effective People](#) by Vernā A. Myers. The book club has a dedicated schedule of chapters to read during each session with pre-developed discussion questions. However, participants are also encouraged to bring discussion questions of their own to encourage dialogue and open conversation.

MRO’s DEI committee feels this is an optimal time to continue to blend the goals of both the DEI Committee mission

and the keys to sustainable success for MRO, which are: Connection, Curiosity, Commitment and Competency. This effort provides employees with an opportunity to connect on a deeper level with their colleagues. As Maya Angelou said, “People will forget what you said. People will forget what you did. But people will never forget how you made them feel.” Because we are connected, we motivate and inspire each other to contribute new and bold ideas that lead to better results.

It allows us to be curious...to think more deeply about who we are as employees, as departments, and as an organization. Tim Brown, IDEO CEO said, “It doesn’t matter where you are in the organization, you can ask interesting questions that inspire and incite others to think about things they wouldn’t have thought about.” Curiosity compels us to keep an open mind and consider the thoughts and viewpoints of others.

It inspires a commitment to the organization and to doing great work. Steve Jobs, former Apple CEO said, “Your work is going to fill a large part of your life and the only way to be truly satisfied is to do what you believe is great work. And the only way to do great work is to love what you do.” Committed team members feel like they fit in and are aligned with MRO’s vision, mission and keys to sustainable success.

Finally, this effort encourages us to appreciate the knowledge and experience we each bring to the table. Along those lines, knowing where to find the answer is often more important than having the answer. Learning to leverage the skillsets of others improves our competency as a whole. Aristotle said, “We are what we repeatedly do. Excellence then, is not an act, but a habit.”

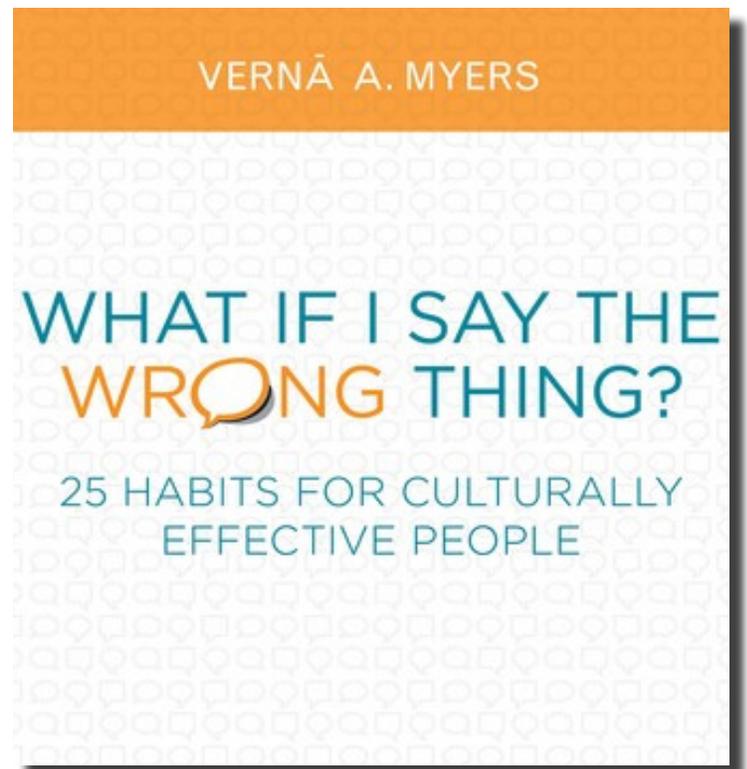
The Growing to C.A.R.E. Book Club will include discussions on biases, inclusion and exclusion, microaggressions and microaffirmations, cultural competence, privilege and unearned advantage, communication, and accountability.

The Growing to C.A.R.E Book Club is optional to all employees and will begin on August 4, 2021, and continue through the end of the year so that employees have an opportunity to participate as their schedule allows.

Abigail Adams said, “Learning is not attained by chance, it is sought for with ardor and diligence.” The DEI Committee is looking forward to enlightening discussions, celebrating our differences, and developing additional measures that promote MRO’s Keys to Sustainable success now and in the future.

Our future is bright!

- Holly Haynes, Sr. CIP Compliance Auditor, on behalf of MRO’s Diversity and Inclusion Committee



INDUSTRY NEWS AND EVENTS

LATEST NEWS:

FERC Chairman Glick Names Salerno to Leadership Role

The Federal Energy Regulatory Commission (FERC) Chairman Richard Glick named Elizabeth Salerno as Lead on Transmission and Technology Initiatives. Salerno has more than 15 years of public, private and non-profit sector experience in energy market policy and analysis. Read the [full announcement](#).

EPRI and NERC Collaborate to Enhance Electric Grid Resilience and Reliability as U.S. Transitions to Cleaner Energy

NERC and the Electric Power Research Institute (EPRI) announced a new agreement to collaboratively enable improved resilience and reliability of the North American electric grid. As the U.S. takes critical steps to reduce carbon emissions across the economy, the two organizations will leverage their collective knowledge to more efficiently and effectively respond to power sector challenges. Read the [full announcement](#).

INDUSTRY EVENTS:

NERC Webinar on Distributed Energy Resource Modeling Capabilities in Simulation Tools

October 28, 2021 | 2:00 to 4:00 p.m. EST

The NERC System Planning Impacts from Distributed Energy Resources Working Group (SPIDER-WG) is holding an informational webinar to share capabilities and best practices related to modeling distributed energy resources (DERs) in powerflow and dynamic simulations performed by Transmission Planners and Planning Coordinators. This webinar is being held to help ensure industry is aware of DER modeling and study capabilities available to grid planners. The NERC SPIDERWG is working on a white paper highlighting DER modeling capabilities that all software tools should have to allow sufficient flexibility to represent DERs in planning assessments. Register [here](#).

NERC Human Performance in Electric Power -

Virtual Session #3

October 21, 2021 1:00 to 5:00 p.m. EST

Please join NERC for the Human Performance in Electric Power virtual sessions. This collaboration between the Electric Reliability Organization Enterprise, the Human Performance Community of Practice (KnowledgeVine and ResilientGrid) and their mutual partners brings together industry representatives and subject matter experts from across the country to share ideas and transfer knowledge about human performance topics/principles and their application in electric power organizations. Register [here](#).

Registration Now Open for NERC GridSecCon 2021

October 19-20, 2021 | 11 a.m. to 3:45 p.m. EST

NERC and Texas RE are co-hosting the 10th annual GridSecCon virtually on October 19-20, with training opportunities available on October 18.

At GridSecCon 2021, you can participate in:

- World-class training sessions, including a four-hour Sneak Peek at SANS ICS 418 - ICS for Managers Course
- SANS and Dragos Industrial Control Systems Capture the Flag Challenge!
- Cutting-edge discussions, breakout sessions, and keynotes
- In-depth presentations on emerging cyber and physical threats
- Policy updates, lessons learned, and best practices

Register [here](#).

SAVE THE DATE: 2021 Probabilistic Analysis Forum (PAF)

October 5-7, 2021 | Virtual

Following the success of the NERC Probabilistic Analysis Forum (PAF) in 2019, the NERC Probabilistic Assessment Working Group (PAWG) is planning to host its second, biennial forum on probabilistic assessments, approaches, and experiences, October 5 - 7, 2021. The forum will feature presentations, panel sessions, and discussions by industry subject matter

experts on probabilistic applications in the electric industry. Additional details will be available soon on [NERC's website](#).

NERC Winter Preparation for Severe Cold Weather Webinar

September 2, 2021 | 2:00 to 3:00 p.m. EST

Read more and register [here](#).

REGIONAL AND MRO EVENTS:

MRO Annual Security Conference

October 6, 2021 | 8:00 a.m. to 3:00 p.m. Central

The MRO SAC is hosting the eighth annual Security Conference via Webex on October 6, 2021. Read more and register [here](#).

MRO Q3 Board of Directors Meeting

September 30, 2021 | 1:00 to 3:30 p.m. Central

The MRO Board of Directors will meet next by Webex on September 30. View the draft agenda and register [here](#).

MRO Q3 OGOC and CMEPAC Meetings

September 29, 2021 | Webex

Both the CMEP Advisory Council and the board's Organizational Group Oversight Committee are meeting virtually on September 29 and will meet jointly that same day. Find out more on MRO's [website calendar](#).

MRO Q3 RAC Meeting

September 25, 2021 | 8:00 a.m. to 3:00 p.m. Central

This is an open meeting of MRO's Reliability Advisory Council (RAC). Agenda materials and registration information is [here](#).

Registered Entity Align Release 2 Training

September 8, 2021 | 1:00 to 3:00 p.m. Central

Read more and register for this virtual training on MRO's website [here](#).

WECC Internal Controls Practices Group

August 31, 2021 | 2:00 to 4:00 p.m. Mountain

Read more and register [here](#).

MRO Annual Reliability Conference

August 24, 2021 | 9:00 a.m. to 3:30 p.m. Central

MRO's Annual Reliability Conference will be held virtually on September 24. Agenda materials and registration information is [here](#).

MRO PRC-004-5(i) Self-Certification Preparation and Q&A Session Webinar

August 26, 2021 | 11:00 a.m. to Noon Central

MRO's Compliance Department will host a webinar designed to walk registered entities through the PRC-004-5(i) Self-Certification that was issued to select MRO registered entities on July 1, 2021. Read more and register [here](#).

ReliabilityFirst Internal Controls Webinar

August 25, 2021 | 1:00 to 3:30 p.m. Central

Read more and register [here](#).

WECC Grid Fundamentals Webinar

August 24-25, 2021 | 1:00 to 5:00 p.m. Mountain

Read more and register [here](#).

Joint SERC and ReliabilityFirst Cold Weather Preparedness Webinar

August 24, 2021 | 9:00 to 12:30 a.m. Eastern

Read more and register [here](#).

ReliabilityFirst Fourth Annual Human Performance Workshop

August 12, 2021 | 8:00 to 11:30 a.m. Central

Read more and register [here](#).

ReliabilityFirst 7th Annual Protection System Workshop for Technical Personnel

August 11, 2021 | 8:00 to 11:30 a.m. Central

Read more and register [here](#).

In addition to the above events, MRO's NERC Standards Review Forum and Security Advisory Council Threat Forum continue to meet weekly. To see more MRO meetings and events, visit our [website calendar](#).



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