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ANNUAL
REPORT

OUR VISION

A HIGHLY RELIABLE AND SECURE NORTH AMERICAN BULK POWER SYSTEM.



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AboutUs

One of six Regional Entities charged with protecting reliability and security of the North American bulk power system.



Midwest Reliability Organization (MRO) operates under the North American Electric Reliability Corporation (NERC) in pursuit of a shared mission to identify, prioritize, and assure effective and efficient mitigation of risks to the reliability and security of the North American bulk power system. As part of the [ERO Enterprise](#) (collectively NERC and six Regional Entities), MRO serves as a vital link between regional grid owners, users, operators, regulators, and other stakeholders who share common reliability interests in the region.

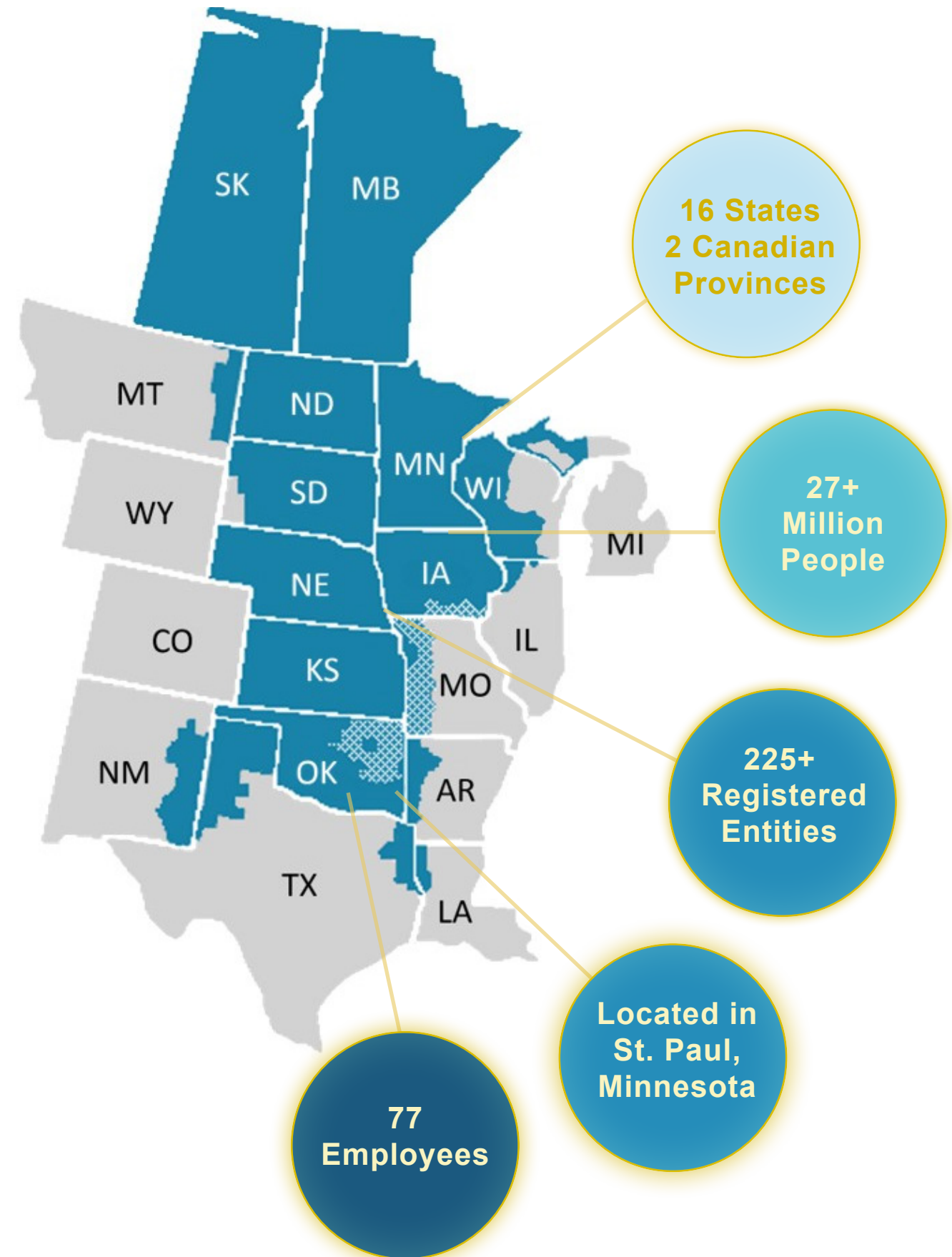
The MRO region includes approximately 225 organizations that are involved in the production and delivery of electric power, including municipal utilities, cooperatives, investor-owned utilities, transmission system operators, federal power marketing agencies, Canadian Crown Corporations,

and independent power producers. We are headquartered in the Infor Commons building in Saint Paul, Minnesota. Our primary responsibilities are:

- Monitoring and enforcing compliance with mandatory reliability standards
- Conducting assessments of the grid's ability to meet electric power demand in the region
- Analyzing regional system events and sharing best practices

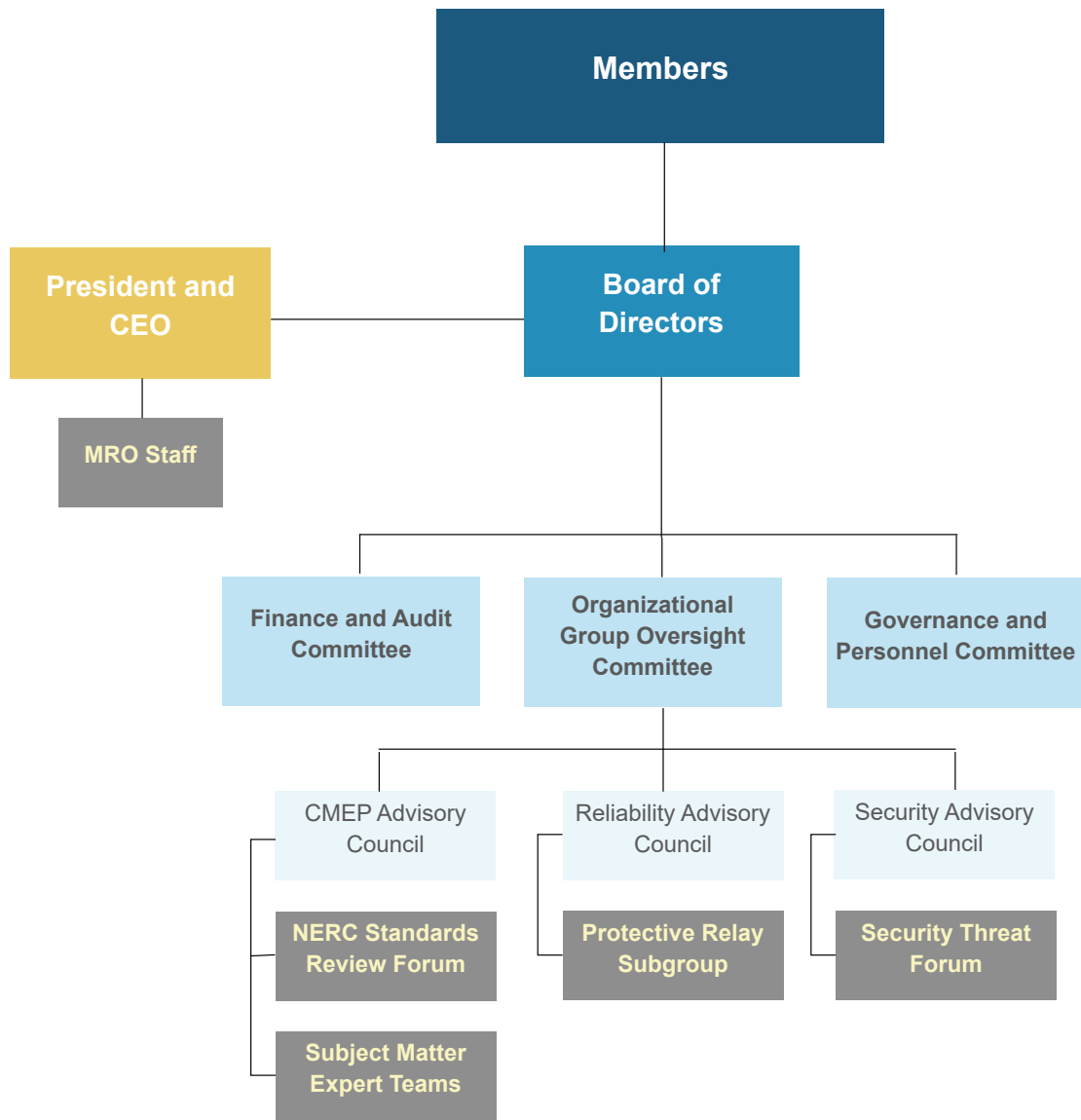
Additionally, MRO creates an open forum for stakeholder experts in the region to discuss important topics related to existing or emerging reliability and security risks and improving reliable operation of the grid.

Regional Territory



OurStructure

MRO's organizational group structure facilitates collaboration with the utility industry in pursuit of a shared vision...reliability and security of the grid.



MRO's advisory councils and subgroups are made up of industry volunteers from member companies that contribute their experience and expertise to help strengthen reliability and security of the regional bulk power system. These organizational groups expand outreach and awareness of risk, develop risk mitigation strategies, promote information-sharing, and publish guidance for other stakeholders in the region.

Member Organizations

- Acciona Wind Energy USA
- AE Power Services LLC
- Algonquin Power & Utilities Corp
- Alliant Energy
- Ameren
- American Electric Power
- American Transmission Company
- Ames Municipal Electric System
- Archer Energy Solutions, LLC
- Arkansas Electric Cooperative Corporation (AECC)
- Badger Power Marketing Authority of Wisconsin
- Basin Electric Power Cooperative
- Birch Infrastructure PBLLC
- BP Wind Energy North America, Inc.
- Capital Power Corporation
- Caprock Wind, LLC
- Cedar Falls Utilities
- Central Iowa Power Cooperative
- Central Power Electric Cooperative, Inc.
- City of Independence Power & Light
- City Utilities of Springfield, Missouri
- Coffeyville Municipal Light & Power
- Corn Belt Power Cooperative
- Dairyland Power Cooperative
- Dogwood Power Management, LLC
- East River Electric Power Cooperative, Inc.
- Energy
- Flat Ridge 2 Wind Energy LLC
- Flat Ridge Wind Energy LLC
- Glencoe Light and Power
- Golden Spread Electric Cooperative, Inc.
- Grand River Dam Authority
- Great River Energy
- Green Country Energy
- Hastings Utilities
- Heartland Consumers Power District
- Hutchinson Utilities Commission
- Iberdrola Renewables (aka PPM Energy, Inc)
- Iowa Association of Municipal Utilities
- Iowa Industrial Energy Group
- ITC Great Plains, LLC
- ITC Midwest LLC
- Kansas City Board of Public Utilities
- Kansas Electric Power Cooperative, Inc.
- Lincoln Electric System
- Madison Gas and Electric Company
- Manitoba Hydro
- Marshfield Utilities
- McKenzie Electric Cooperative
- MidAmerican Energy Company
- Midcontinent Independent System Operator, Inc.
- Midwest Energy Inc
- Minnesota Chamber of Commerce
- Minnesota Power
- Minnkota Power Cooperative, Inc.
- Missouri River Energy Services
- Montana-Dakota Utilities Company
- Moorhead Public Service
- Mountrail-Williams Electric Cooperative
- Muscatine Power & Water
- Nebraska Public Power District
- New Ulm Public Utilities
- NextEra Energy Resources, LLC
- Northwestern Energy
- Oklahoma Gas and Electric
- Oklahoma Municipal Power Authority
- Omaha Public Power District
- Otter Tail Power Company
- Pattern Operators LP
- Proven Compliance Solutions
- Rainbow Energy Center, LLC
- Ramakrishna Gokaraju, University of Saskatchewan
- Rochester Public Utilities
- Saskatchewan Power Corporation
- Sheridan Electric Cooperative, Inc.
- Southern Minnesota Municipal Power Agency
- Southern Power Company
- Southwest Power Pool
- Southwestern Power Administration
- Southwestern Public Service Company
- Sunflower Electric Power Corporation
- Tenaska Power Services Co.
- The Empire District Electric Company
- The Energy Authority
- Upper Missouri Power Cooperative
- Upper Peninsula Power Co.
- Utility Services, Inc.
- Western Area Power Administration
- Western Farmers Electric Cooperative
- Willmar Municipal Utilities
- Wisconsin Industrial Energy Group
- Wisconsin Rapids Water Works and Lighting Commission
- WPPI Energy
- Xcel Energy



Read more about membership with MRO.

2023 Board of Directors



Brad Cox, Chair
Tenaska Power Services
Generator Power Mkttr. Sector



Dr. Dana Born, Vice Chair
Independent Director



Ben Porath
Dairyland Power Coop.,
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Charles Marshall
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Transmission System
Operator Sector



Darcy Neigum
Montana-Dakota Utilities
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Manitoba Hydro
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MidAmerican Energy
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Operator Sector



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Saskatchewan Power
Canadian Sector



James "JP" Brummond
Alliant Energy
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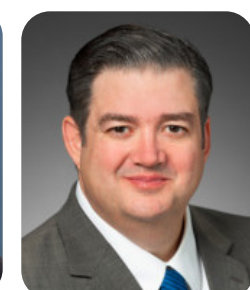
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Marketer Sector



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Municipal Utility Sector



Thomas Graham
Independent Director



Tom Finco
American Transmission Co.
Transmission System
Operator Sector

Leadership Team



From L-R: Lam Chung, VP and Engineer for Strategy, Innovation and Finance; Sara Patrick, President and CEO, Julie Peterson, VP General Counsel and Corporate Secretary, and Richard Burt, Senior VP and COO



Bill Steiner
Director of Compliance
Monitoring



Bryan Clark
Director of Reliability
Analysis



Gina March
Director of Finance and Risk
Management



Jessie Mitchell
Director of
Communications



Karla Schiller
Director of HR



Ken Gartner
Director of IT



Mark Flanary
Director of Risk Assessment
and Mitigation



Steen Fjalstad
Director of Security



Tasha Ward
Director of Enforcement and
External Affairs

Leadership Letter



Brad Cox

2023 Board Chair



Sara Patrick

President and CEO

A Year of Progress

The bulk power system has been undergoing an unprecedented transformation. Rising electricity demand, retirements of dispatchable generation resources, increasing amounts of inverter-based resources, extreme weather events, and heightened cyber and physical security risks are just a few of the factors driving significant reliability concerns for the electric power sector. Both the *Long-Term Reliability Assessment* and the *ERO Reliability Risk Priorities Report* published by NERC in 2023 indicate the growing risk of large-scale outages in parts of North America, including the MRO region.

MRO produced two seasonal assessments and a Regional Risk Assessment (RRA) for the region in 2023 that echoed the same concerns. In fact, MRO's 2024 RRA, which is based partly upon a review of the most prevalent risks from 2023,

elevated the risk of Uncertain Energy Availability from high in 2023 to extreme in 2024. This is the first time a risk has risen to the extreme category in the assessment's history. There are seven other high priority risks identified in the 2024 RRA, which are highlighted in this annual report.

A considerable amount of effort in 2023 was dedicated to producing these important work products and raising awareness of the key findings, helping to advance the ERO Enterprise mission to identify, prioritize and assure effective and efficient mitigation of risk to reliability and security of the bulk power system.

Also in 2023, as part of the Fiscal Responsibility Act signed by President Biden in June, NERC, in consultation with the Regional Entities and transmitting utilities, was directed to conduct an

Interregional Transfer Capability Study (ITCS) to analyze the amount of power that can be reliably moved or transferred between transmission planning regions. Expanding our capabilities to transfer power efficiently is critical to maintaining reliability as the resource mix transforms, especially during periods of extreme weather. This congressional mandate recognizes the independence and expertise unique to the ERO Enterprise to conduct this work.

The ITCS—due to be filed with the Federal Energy Regulatory Commission by December 2, 2024—quickly became, and remains, a high priority for NERC and the Regional Entities. It complements work already underway to reinvent how the bulk power system is planned and operated considering the variability of resources and fuel supplies that now serve the grid.

2023 also marked the twentieth anniversary of the 2003 Northeast blackout, the largest widespread power outage in U.S. history. An estimated fifty-five million people lost power in the U.S. and Canada when what should have been a manageable, local issue quickly cascaded into a widespread system collapse. It was a pivotal point in our industry's history in that it exposed how essential reliable power is to life as we know it. This historic event prompted the U.S. government to act in the form of mandatory reliability standards for the electric power sector and serves as a critical reminder of the importance of our regulatory work.

While much has been done since 2003 to prevent another such event, reliability remains at risk because of the aforementioned challenges. The near collapse of the system during winter storms Uri in 2021 and Elliot in 2022 underscore this point. Work continued in 2023 to raise awareness of and help industry implement recommendations from those winter storms to mitigate extreme weather risk.

Alongside efforts to support industry through a complicated risk landscape, our staff continues to mature MRO's Corporate Risk Program. Many of the same security threats and vulnerabilities that impact industry—insider threats, malware, ransomware, to name a few—are also relevant to

MRO. Considerable progress was made in 2023 to strengthen and enhance internal processes and controls to protect MRO's confidential data and systems.

We are also still adjusting to a post-pandemic novel normal that requires us to rethink how and where we work, connect, and engage with each other. The people-first philosophy we implemented at the onset of the COVID-19 pandemic continues to serve us well today as we navigate an unpredictable future. The resoundingly positive results of our biennial employee engagement survey and other talent management initiatives are described in this report.

“The success we achieved in 2023 despite the headwinds against us is truly remarkable.”

Last year represented the midpoint of MRO's [three-year strategic plan](#). We set ambitious targets at the beginning of the year around MRO's three strategic priorities of People, Processes, and Partnerships. Not only did we meet the milestones set for 2023, we went above and beyond accomplishing all our targets and all but one of our stretch goals. The success we achieved despite the headwinds against us is truly remarkable.

You will find that adaptability, flexibility, and resiliency are themes that resonate throughout this annual report. Our success in 2023 is a testament to the extraordinary talent and commitment of not only our staff, but also the many ERO Enterprise colleagues and industry stakeholders that work to advance our vision and mission.

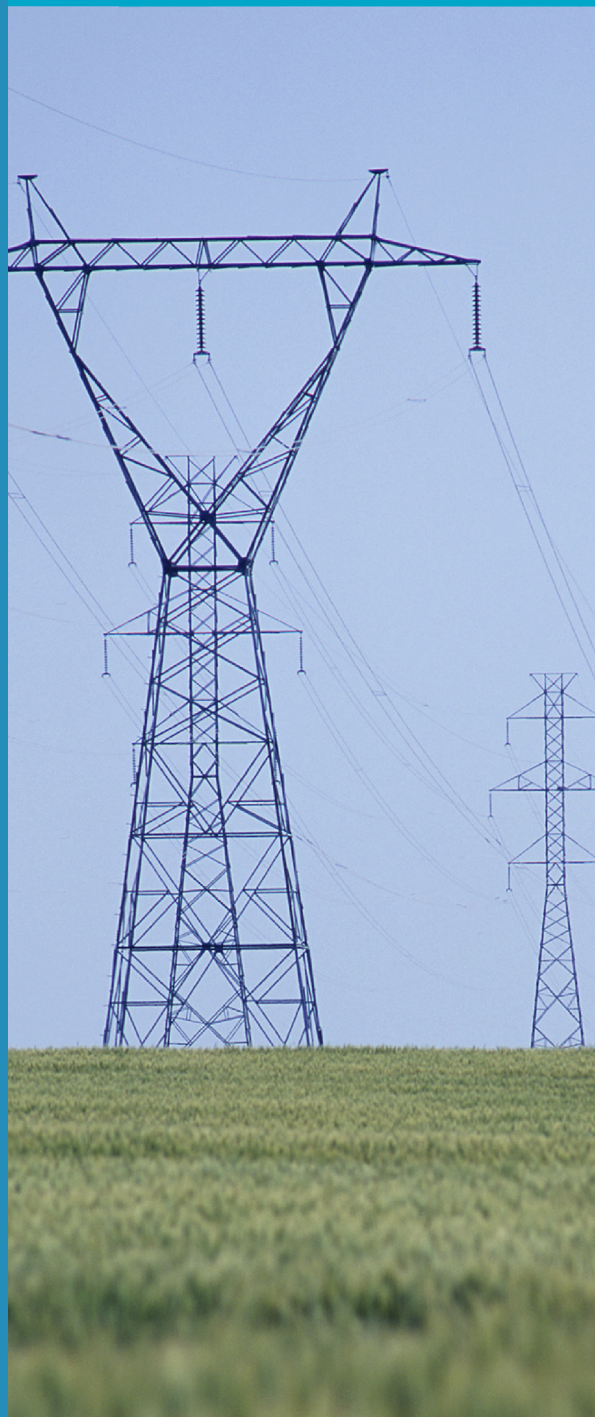
Thank you for your continued support.

Our future is bright!



STRATEGIC PLAN 2022-24

A highly reliable and secure North American bulk power system



PEOPLE

1 Ensure that MRO remains an innovative, resilient, and high-performing organization with an increased emphasis on leadership development and culture.

1. Ensure continuous learning, growth, and career development opportunities.
2. Foster a culture of diversity, equity, inclusion, honesty, and trust through constructive feedback, empowerment, and clarity of roles.
3. Promote opportunities for crossdepartmental and inter-ERO collaboration.
4. Formalize processes to ensure continuity of leadership and a skilled and engaged workforce

2 Drive operational excellence throughout MRO in all processes and procedures, while emphasizing effectiveness and efficiency.

1. Focus on identifying, assessing, and mitigating corporate risks and ensure expenditure of resources are prioritized and appropriately deployed.
2. Foster a culture of continued improvement and innovation through forward thinking and futuristic visioning.
3. Leverage KPIs to measure operational effectiveness.
4. Identify and implement processes to assess and prioritize work.



PARTNERSHIPS

3 Develop a nimble, adaptive, and collaborative culture that allows us to carry out our mission as a trusted and valued member of the ERO Enterprise.

1. Focus on advanced methods for identifying, assessing, and actively mitigating new and emerging risks to the BPS and ensure resources are deployed appropriately.
2. Lead and support ERO transformation efforts.
3. Expand collaborative relationships with federal, state, and provincial regulators, independent system operators, industry leadership, and the broader reliability and security ecosystem.
4. Ensure security and confidentiality of our partners' data and information.
5. Increase capability to support mitigation of increasing frequency and sophistication of cyber risks for corporate and industry (ransomware, phishing, vulnerabilities, etc.).
6. Be a trusted leader in providing premier and cutting-edge outreach to our stakeholders.



PROCESSES

Our People



STRATEGIC PRIORITY ONE: Ensure that MRO remains an innovative, resilient, and high-performing organization with an increased emphasis on leadership development and culture.

Investing in People

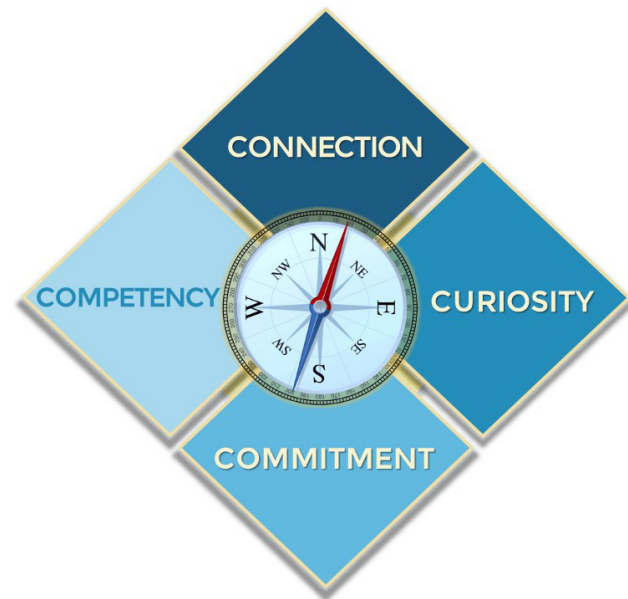
Keys to Sustainable Success

MRO's workplace culture is built upon four critical components: **Connection**, **Curiosity**, **Commitment**, and **Competency**.

Fostering *connections* with the work we do and the people we work with leads to high levels of employee engagement and satisfaction, which are key drivers of performance. We empower staff to be *curious*, to examine the status quo, to ask tough questions, and to seek creative solutions, which are key drivers of innovation.

Belief in, and *commitment* to, our vision of a highly reliable and secure North American bulk power system is a key driver of participation and is led by example.

Competency is a key driver of collaboration. It embodies more than technical expertise; staff at all levels of the organization are provided with opportunities to lead and be part of the solution.



This culture is not only the foundation of our work, it supports the strategic plan priorities of people, processes and partnerships and is key to our sustainable success.

People-First Philosophy

MRO's People First Philosophy envisions a future that relies upon developing the next generation of leaders that will continue to advance the organization's vision and mission. We strive to be an employer of choice by ensuring that pay and benefits remain competitive and that programs are intentionally designed to align with this philosophy – enabling MRO to attract, retain, and engage the top talent necessary to achieve organizational success. MRO experienced a 3.90% turnover rate in 2023.

Talent Management Initiatives

Our success relies upon a talented team of individuals; therefore, a dedicated focus on talent management is one of the highest strategic priorities for the organization.

In addition to providing a supportive and meaningful experience in a mission-driven environment, growth and career development opportunities are available for all staff. Individual Development Plans (IDPs) provide a mechanism for each employee to have frequent one-on-one discussions with their manager on growth goals and objectives, as well as the training, preparation, or coaching needed for future success. These collaborative interactions

lead to all-staff or individual training opportunities, cross-departmental collaboration, knowledge-sharing and mentorship, and team building activities.

In 2023, the executive team participated in 360 performance assessments; participation will be broadened to include directors and managers in 2024. These 360 reviews provide essential, while not always easy, performance feedback to people managers. MRO's leadership teams also worked to mature succession planning in 2023 for critical roles across the organization.

Competitive Compensation

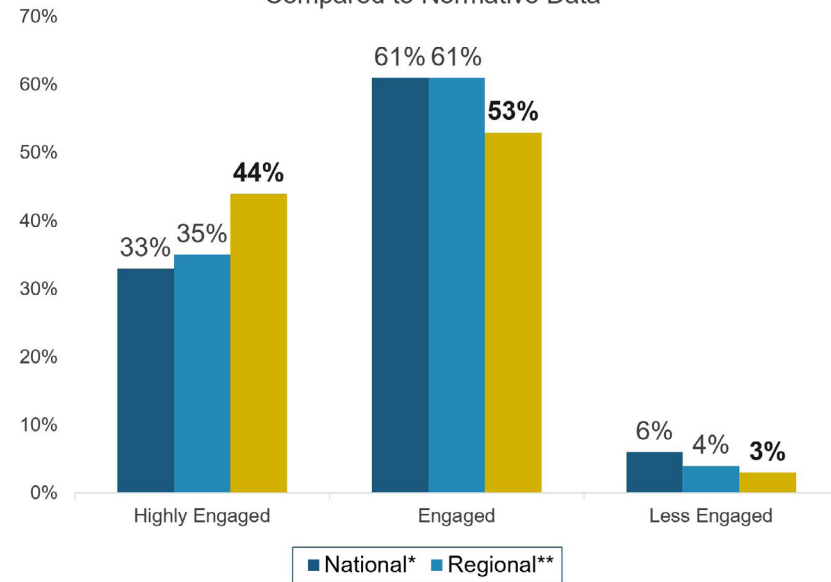
MRO partnered with an outside consulting firm last year to independently evaluate employee pay and compensation compared to industry averages to ensure market competitiveness and equity. This initiative included comprehensive reviews of MRO's compensation philosophy and job descriptions, as well as a market-data comparison of all positions against industry. Continued analysis and implementation of recommended changes from the compensation review is a priority in 2024.

Employee Engagement

MRO engaged an HR services organization to conduct an Employee Engagement survey in 2023 to gain a better understanding of employee morale, satisfaction, and engagement. The survey included specific questions related to diversity, equity, and inclusion, and the results were benchmarked against a similar survey conducted in 2021.

We are happy to report that levels of employee engagement and satisfaction in 2023 remain very high! The results of both the 2021 and 2023 engagement surveys reflect exception levels of engagement and satisfaction during the pandemic and recovery periods when compared to normative data. Recommendations from the 2023 survey are

MRO Employee Engagement Compared to Normative Data



97%
Highly Engaged or Engaged

Overall Satisfaction

Compared to Normative Data – In Order by Variance

Category	Weighted Score	Norm	Variance
Team Curious Effectiveness	4.04	-	-
Diversity Equity & Inclusion	4.34	-	-
Benefits	4.45	3.72	0.73
Pay	3.86	3.34	0.52
Team Connect Effectiveness	4.31	3.84	0.47
Organizational Practices	4.46	4.01	0.45
Communication	4.04	3.64	0.40
Employee Development & Recognition	3.94	3.65	0.29
Work Life Satisfaction	4.25	4.05	0.20
Employee Commitment	4.33	4.14	0.19
Manager Effectiveness	4.25	4.13	0.12
Operational Effectiveness	3.82	3.75	0.07
Overall Satisfaction	4.17	3.83	0.35

83%
Satisfied



From L-R: Richard Burt, Senior VP and COO; Julie Peterson, VP General Counsel and Corporate Secretary; Becky Holien, Accounting Specialist; Sara Patrick, President and CEO; and Lam Chung, VP and Engineer for Strategy, Innovation and Finance

being implemented as part of MRO's continuous improvement efforts.

Employee Recognition

Diamond Award

MRO's Diamond Award was introduced in 2023 as an opportunity for staff to recognize a current colleague who demonstrates leadership, hard work, dedication, and exhibits the four keys to sustainable success in their everyday contributions to the organization – regardless of the work they do or the role they hold. The recipient routinely helps drive and implement positive change and innovation across the organization.

MRO's Accounting Specialist, Becky Holien, was the winner of the inaugural award in 2023. Becky was nominated by several employees for her exceptional attitude, kindness, and willingness to go out of her way to help in times of need.

Spot Awards

Employees are also recognized throughout the year through MRO's Spot Award program. Any member of staff can nominate a colleague for a Spot Award in recognition of contributions and for going above and beyond the requirements of their daily work. Spot Awards range from gift cards to local restaurants and coffee shops up to a one-time \$2,500 bonus disbursement. Seventy-six spot awards were given to staff in 2023.

Community Service

MRO encourages employees to support and improve the communities we live and work in. In addition to paid volunteer hours, the company has five employee-led committees focused on providing opportunities for staff to engage with each other and those doing good work in the community. Through these committees, we meet new friends, learn and grow, expand our culture of belonging, and become our best selves - both at work and at home.



Employee-Led Committees

Sustainability Committee

This committee is focused on reducing waste within the office, identifying practices that help reduce MRO’s carbon footprint, and offering educational activities related to sustainability. In 2023, the Sustainability Committee hosted a Solar Panel Home Install Lunch and Learn, updated office recycling and compost information, and shared monthly sustainability topics via a newly created Sustainability Teams page.

Diversity, Equity and Inclusion Committee

The DEI Committee celebrates the community within MRO by promoting awareness related to diversity and inclusion and enhancing respect for others by acknowledging the importance of equity. In 2023, the committee hosted a neurodiversity celebration week, an ERO-wide DEI discussion group, a Pride documentary watch party on the history of the stonewall riots, and a DEI Days international potluck. We also volunteered at the Twin Cities Pride Parade, held a discussion on generational stereotypes, and hosted periodic DEI book reviews.

Volunteerism Committee

Last year was a busy one for the Volunteerism Committee. We raised money for the food bank Second Harvest Heartland, worked a meal packaging shift with OpenArms, organized two days of volunteering with Habitat for Humanity, made sandwiches for people living with food insecurity, and collected Coats for Kids.

Innovation and Continuous Improvement

MRO’s newest employee-led committee—the Innovation and Continuous Improvement Committee—was established in late 2023 to foster an innovative and continuous improvement mindset at MRO. The committee’s mission is to provide a framework for continuously generating new ideas and opportunities for improvement, test and evaluate those ideas, make decisions based on strategy and budget, and help coordinate the launch and operationalize the end-product. Committee members encourage and foster innovation and continuous improvement through training, education, and cross-departmental collaboration.

Office of Productivity and Happiness

The purpose of the Office of Productivity and Happiness (OPH) is to create regular opportunities for staff to connect, engage, and get to know each other and our families. In 2023, the OPH sponsored 10 employee events, including holiday parties, costume contests, all-staff meetings, bring your child to work day, trivia events, name that tune, employee appreciation days, to name a few. The committee also hosted monthly meetings with the president and CEO.



Our Processes



STRATEGIC PRIORITY TWO: Drive operational excellence throughout MRO in all processes and procedures, while emphasizing effectiveness and efficiency.

Reducing Corporate Risk

Maturing Corporate Risk Programs

Staff continued to enhance and mature MRO's corporate risk posture throughout 2023. The corporate risk management program established in 2021 went through a second cycle of risk review and assessment, resulting in an updated corporate risk register highlighting the most prevalent risks to the organization. The 2023 risk register identified 23 risks varying in possible impact and likelihood for the company to address.

The four highest priority risks in 2023 remained the same as 2022 and were related to system and data security and MRO's ability to attract and retain talent. MRO staff developed and are in the process of implementing additional controls to manage or reduce these risks as a result of the 2023 risk assessment.

From an inherent risk perspective, greater emphasis in 2023 was placed on the severity,

impact and likelihood of certain risks. For example, insider threats were the subject of focused training and improvements in detection controls were introduced to reduce risk exposure. Emerging risks were also identified and assessed in 2023 as part of the annual risk review process. MRO uses the results of the corporate risk review as input into the business plan and budget and the corporate risk team will continue to monitor and review all risks as part of MRO's ongoing corporate risk management program.

Improving Data Security

MRO's corporate security efforts in 2023 were focused on staying abreast of the rapidly increasing and evolving cyber threat landscape. As the complexity and sophistication of cyber threats and risks expand, so must our work to protect the company and the organization's most

sensitive data. Several steps were taken throughout the year to improve MRO's security posture, including helping to develop a common data security framework across the ERO Enterprise, implementing data classification and loss prevention measures, and administering employee security training and periodic phishing tests.

Additionally, MRO's security team expanded collaboration with, and utilization of, intelligence resources like the DHS, E-ISAC, Pacific Northwest National Laboratory (PNNL), and the FBI - meeting new requirements of the E-ISAC's Cybersecurity Risk Information Sharing Program (CRISP) by year end. Enhancements were also made to MRO's third-party risk management and insider threat programs.

Throughout the many different activities and initiatives performed around security, one of MRO's greatest strengths continues to be the ability to pivot quickly, when necessary, to focus on specific risks as they evolve. This strength is a key asset to our security journey.

Preparing for the Unexpected

MRO actively participated in the E-ISAC's grid security exercise (GridEx VII) in 2023, assuming dual roles as both a participant and an observer. GridEx is the largest grid security exercise in

North America and gives organizations a forum to practice how they would respond to and recover from coordinated cyber and physical security threats and incidents.

During GridExVII, MRO security staff observed three registered entities from the region as they responded to simulated cyber and physical attacks, distributed across various scenarios. Additionally, staff closely monitored the executive tabletop exercise conducted by NERC and the E-ISAC after the distributed play.

Leveraging insights gained from the exercise, MRO conducted a table top test of its Emergency Management Plan, incorporating key learnings from the exercise. Moving forward, MRO is committed to refining its Emergency Management Plan and optimizing its involvement in GridEx VIII, which is scheduled to be held next in 2025.

Enhancing Crisis Communications

As part of revisions to MRO's Emergency Management Plan, crisis communications procedures were also revised. Communications staff participated in ERO-wide crisis communications training in 2023 and MRO's key spokespeople were also provided both joint and one-on-one media training, helping prepare the organization to communicate during an emergency.

Our Partnerships



STRATEGIC PRIORITY THREE: Develop a nimble, adaptive, and collaborative culture that allows us to carry out our mission as a trusted and valued member of the ERO Enterprise.

A Collaborative Culture Built on Trusted Relationships

With Industry Stakeholders

MRO's organizational groups comprise industry subject matter experts from member companies who help identify risks to reliability and security of the bulk power system, develop mitigation strategies, and share information and best practices with participants across MRO's regional footprint. The following is a summary of their work in 2023.

Compliance Monitoring and Enforcement Program Advisory Council (CMEPAC)

The CMEPAC achieved all of its 2023 objectives, making considerable progress on new initiatives related to MRO's CMEP implementation. The committee hosted the annual CMEP Conference and a monthly compliance call (Ask CMEPAC) for regional stakeholders. The council also

participated in the development of MRO's Regional Risk Assessment, hosted two webinars, and contributed three articles to MRO's Midwest Reliability Matters news platform.

The NERC Standards Review Forum, which reports to the CMEPAC, held weekly calls throughout the year to discuss and provide regional input on revised or new standards and requirements.

Reliability Advisory Council (RAC)

The RAC had another successful year in 2023. One of many key activities included planning and hosting MRO's annual Reliability Conference, which was the first Reliability Conference held at MRO's offices in Saint Paul since 2019. The conference focused on Facility Ratings best practices, as well as emerging grid technologies like multi-day energy storage and small modular

reactors. The council also held its annual Cold Weather Preparedness Workshop virtually in October and published several newsletter articles on reliability risks.

The Protective Relay Subgroup also met regularly throughout the year to discuss commissioning best practices and lessons learned.

Security Advisory Council (SAC)

The SAC successfully hosted its tenth annual hybrid security conference in Oklahoma City at the end of September. Over the course of three days, attendees benefited from a diverse program featuring expert talks, training sessions and a comprehensive threat briefing delivered by expert speakers spanning industry, government, and the threat intelligence community.

The SAC also played a pivotal role in identifying key regional security risks, which subsequently contributed to the development of MRO's Regional Risk Assessment, enhancing the collective understanding of security challenges in the region.

Another highlight from 2023 is the continued value provided to the region by the Security Advisory Council Threat Forum (SACTF), which facilitated 48 region-wide threat calls. These calls are a valuable platform for regional stakeholders to exchange crucial information concerning cyber, physical, and

operational security risks in a trusted environment, inclusive of the E-ISAC.

With Federal and Local Regulatory Agencies

MRO's External Affairs Department continued to strengthen relationships and become a valued and trusted resource for federal, state, and provincial regulatory agencies throughout 2023. A summary of these activities include:

- Participated in ten dedicated education sessions for state and provincial regulators.
- Connected face-to-face with several state and provincial regulators from within the region at two regulator conferences.
- Collaborated with the other Regional Entities and NERC on five joint presentations to states with shared regional borders.

Information was shared on the ERO Enterprise Long Term Reliability Assessment, NERC/FERC Joint Reports on Winter Storms Uri and Elliott, NERC's State of Reliability Report, ERO Reliability Risk Priorities Report, and MRO's 2023 Regional Risk Assessment and seasonal assessments. To ensure consistent messaging for states that have territory in more than one region, meetings were coordinated with other Regional Entities



From L-R: Lam Chung, VP Strategy, Innovation and Finance; Richard Burt, Senior VP and COO; Sara Patrick, President and CEO; Tasha Ward, Director Enforcement and External Affairs; and Julie Peterson, VP General Counsel and Corporate Secretary

regulators from eight Canadian provinces and Canada’s federal government that was held prior to the CAMPUT annual conference. MRO staff presented at the Saskatchewan Electric Reliability Authority (SERA) meeting on MRO’s Regional Risk Assessment and enforcement processes. MRO staff also presented to Manitoba government agencies on the Regional Risk Assessment.

Efforts to promote and provide educational opportunities to state and provincial regulators throughout the region will continue in 2024.

With the ERO Enterprise

In the same spirit of efforts to share information and best practices across industry, the seven

companies that comprise the ERO Enterprise have a structure in place to collaborate with each other. This structure supports a strong culture of innovation and continuous improvement, while also ensuring consistency in the execution of regulatory programs across North America.

MRO has several staff actively participating in each of the 14 ERO collaboration groups, with a number in leadership positions. These groups oversee efforts related to the energy transition, effectiveness and efficiency of CMEP processes, cyber and physical security, external affairs, outreach, and communications, to name a few.

A great example of the output of these groups is the Align Project - the new tool to track CMEP activities across the enterprise. Align implementation was a significant effort that included data migration for both US and Canadian entities from separate regional systems into a single software solution - improving efficiency of CMEP program implementation. The three-year project was completed in 2023.

The ERO Enterprise collaboration groups allow MRO and the rest of the ERO Enterprise to take advantage of the brilliance of the ERO model, learning from and supporting one another.

through the ERO State and Provincial Outreach collaboration group.

State agencies continued to reach out to MRO in 2023 to request educational sessions on the work of the ERO Enterprise and MRO, which is one of the goals of the department. MRO staff also attended several regional regulatory meetings, including the Mid-American Regulatory Conference annual meeting and the Southwest Power Pool Regional State Committee.

Regulatory outreach efforts also included a meeting with Federal Energy Regulatory Commission (FERC) staff to discuss MRO’s 2023 Regional Risk Assessment and future engagements on which MRO can partner with FERC to educate key stakeholders. FERC staff also provided presentations to the MRO Board and regional stakeholders at various meetings throughout the year on compliance and reliability topics.

As part of ongoing work to foster strong relationships with our Canadian partners, MRO staff attended the 2023 Canada’s Energy and Utility Regulators (CAMPUT) annual conference. President and CEO Sara Patrick joined five members of the NERC Board of Trustees and the Regional Entity CEOs at the annual Canadian regulators’ meeting with more than 20 utility



ERO Enterprise Collaboration Model

The ERO Enterprise encompasses six regional organizations of similar size and complexity. NERC provides industry-wide perspective and oversight, and the Regional Entities have unique features and activities that serve the needs of regional constituents while ensuring that industry follows NERC Reliability Standards.

While NERC and the Regional Entities play different roles in delivering ERO Enterprise programs, these roles are equally important and complementary, allowing the ERO Enterprise to work as one synchronous machine—effectively, efficiently, and collaboratively.

NERC and the Regional Entities are committed to:

- Working together as one team and honoring each member’s role.
- Actively supporting ERO Enterprise activities

while eliminating unnecessary duplication of work.

- Collaborating in developing clear and consistent guidance across the ERO Enterprise.
- Sharing information, knowledge, and resources across the ERO Enterprise.
- Developing and sharing harmonized messages across ERO Enterprise communications.
- Supporting innovation, initiatives, and the sharing of best practices across the ERO Enterprise.

As the reliability and security ecosystem continues to change, the ERO Enterprise is explicitly committed to its collective success in achieving a shared vision of a highly reliable and secure North American bulk power system.

Recognizing HEROs

Advancing the concept and principles of Highly Effective Reliability Organizations® (HEROs) across the region.

Volunteer Recognition Program

MRO's [Volunteer Recognition Program](#) rewards individuals for their dedication, commitment, and contributions to the success of MRO. Part of this program recognizes organizational group members that retire from service for their dedication and commitment. The other part of the program includes an annual HERO Award that recognizes individuals that have shown exemplary initiative and commitment to advancing the concept and principles of Highly Effective Reliability Organizations (HEROs) throughout the MRO region and in support of MRO's vision and mission.

The following individuals were provided recognition in 2023 for their years of service:

3-5 Years of Service

- David Johnson, Oklahoma Gas and Electric
- Matthew Szyda, Manitoba Hydro
- Chad Wasinger, Sunflower Electric Power Cooperative
- Michael Meason, Western Farmers Electric Cooperative

- Jason Nations, Oklahoma Gas and Electric
- Derek Brown, Evergy
- Durgesh Manjure, MISO
- Terry Fett, Central Iowa Power Cooperative
- Greg Sessler, American Transmission Co.
- Fred Meyer, Algonquin Power Co.
- Bryan Sherrow, Board of Public Utilities
- Matthew Harward, Southwest Power Pool
- Marc Gomez, Southwestern Power Administration
- Dwayne Stratford, American Electric Power

6-11 Years of Service

- Derrick Schlangen, Great River Energy
- David Wheeler, Manager, Southwestern Public Service Co.
- Mahmood Safi, Omaha Public Power District

12+ Years of Service

- John Stephens, City Utilities of Springfield, MO
- Ron Gunderson, Nebraska Public Power District



2023 HERO Award Recipient



From L-R: JoAnn Thompson, Board Member and OGOC Chair; Brett Lawler, Xcel Energy; and Sara Patrick, President and CEO

“Lawler has been instrumental in leading regional efforts to mitigate physical and cyber security risks...”

- JoAnn Thompson

Congratulations to Brett Lawler!

Brett Lawler, Senior Threat Intelligence Consultant at Xcel Energy, was selected as the recipient of the 2023 HERO Award for his dedication and commitment to advancing security practices across the region. Lawler has been a member of the Security Advisory Council since 2020 and was integral in forming and helping to lead the weekly SAC Threat Forum, which is a way for security professionals from registered entities across the region to share threat intelligence and raise awareness of security risks to the bulk power system.

During the COVID-19 pandemic, Lawler helped to form a second weekly threat call to share the latest information and lessons learned from pandemic response efforts. He was selected from a pool of very qualified candidates nominated by industry last September by the board's Organizational Group Oversight Committee (OGOC) that oversees the Volunteer Recognition Program.

Lawler was recognized with a certificate and award at MRO's Annual Member and Board Meeting on December 15, 2023.

Other Industry Recognition

Congratulations to Steen Fjalstad!

MRO's Director of Security, Steen Fjalstad, was one of three recipients awarded the 2023 E-ISAC Electricity Security Service Award in honor of Michael J. Assante. The award recognizes individuals or teams that have made significant contributions to support the security of the North American electricity industry. The award was presented at the E-ISAC's 2023 GridSecCon event in Canada.



L-R: Alex Assante, Janet Sena (NERC), Steve McElwee (PJM), Steen Fjalstad (MRO)

Reducing Risk

MRO is committed to its 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).

Adapting to Rapidly Evolving Risk

Assessing and Learning from Extreme Weather Events

During the week of December 19, 2022, Winter Storm Elliott delivered the unwanted gift that kept on giving: extreme cold weather that had detrimental effects on electric and natural gas system reliability. The events during Elliott served as a reminder of the impact extreme cold weather can have on the reliability of our nation's power delivery systems and shed light on the interconnectedness of the electric and natural gas sectors (one cannot fulfill customer obligations without the other). MRO staff joined a large team of industry experts from FERC, NERC, and the Regional Entities to evaluate the level of preparedness of industry ahead of Elliott, as well as how the system performed through this impactful event. This team assessed the largest

amount of data collected from the most entities ever during the FERC-led inquiry. The project team collaborated on the [report](#) that was provided during a FERC open meeting and later published in 2023. The team also worked throughout last year and into 2024 to share best practices and provide lessons learned to industry stakeholders.

The inquiry into Winter Storm Elliott found similarities to the previous inquiry into Winter Storm Uri in 2021, particularly the unplanned loss of significant amounts of generation resources that created supply challenges. The findings and recommendations published in the Elliott report went beyond those identified in the Uri report, calling upon NERC and industry to finalize revisions to cold weather reliability standards. The team also urged NERC and the Regional Entities to verify that generation resources at highest risk

during extreme cold weather are prepared for future events until such standards are effective.

Preparing for Extreme Cold Weather

MRO's Generator Winterization Program (GWP) is in its third year of helping registered entities across the region prepare for extreme cold weather. Part of the program includes site visits for a variety of generation resources throughout the footprint and sharing best practices for winterization. MRO published a general findings report from the program in April 2023 that shared the effectiveness of generation winterization readiness and best practices in seven key areas. We continue to receive positive feedback from entities on the value of generator site visits and plan to continue with the GWP until mandatory standards are effective.

Regional Risk Assessment and Efforts to Reduce Risk

MRO staff and key industry stakeholders partner annually to identify and prioritize risk to the regional bulk power system. Throughout 2023, staff and subject matter experts from MRO's three advisory councils participated in meetings and information sessions to identify and assess the greatest risks to reliability and security as part of the Regional Risk

Assessment (RRA) development process. These efforts culminated in the final [2024 RRA](#) report, which was published in early February.

The 2024 RRA includes one extreme risk to reliability — the highest risk designation and the first extreme risk since MRO developed its risk matrix tool in 2019 to measure risks. Uncertain Energy Unavailability was elevated from high in 2023 to extreme in 2024 because of the accelerated planned retirement of dispatchable generation resources without adequate replacement resources available to serve demand.

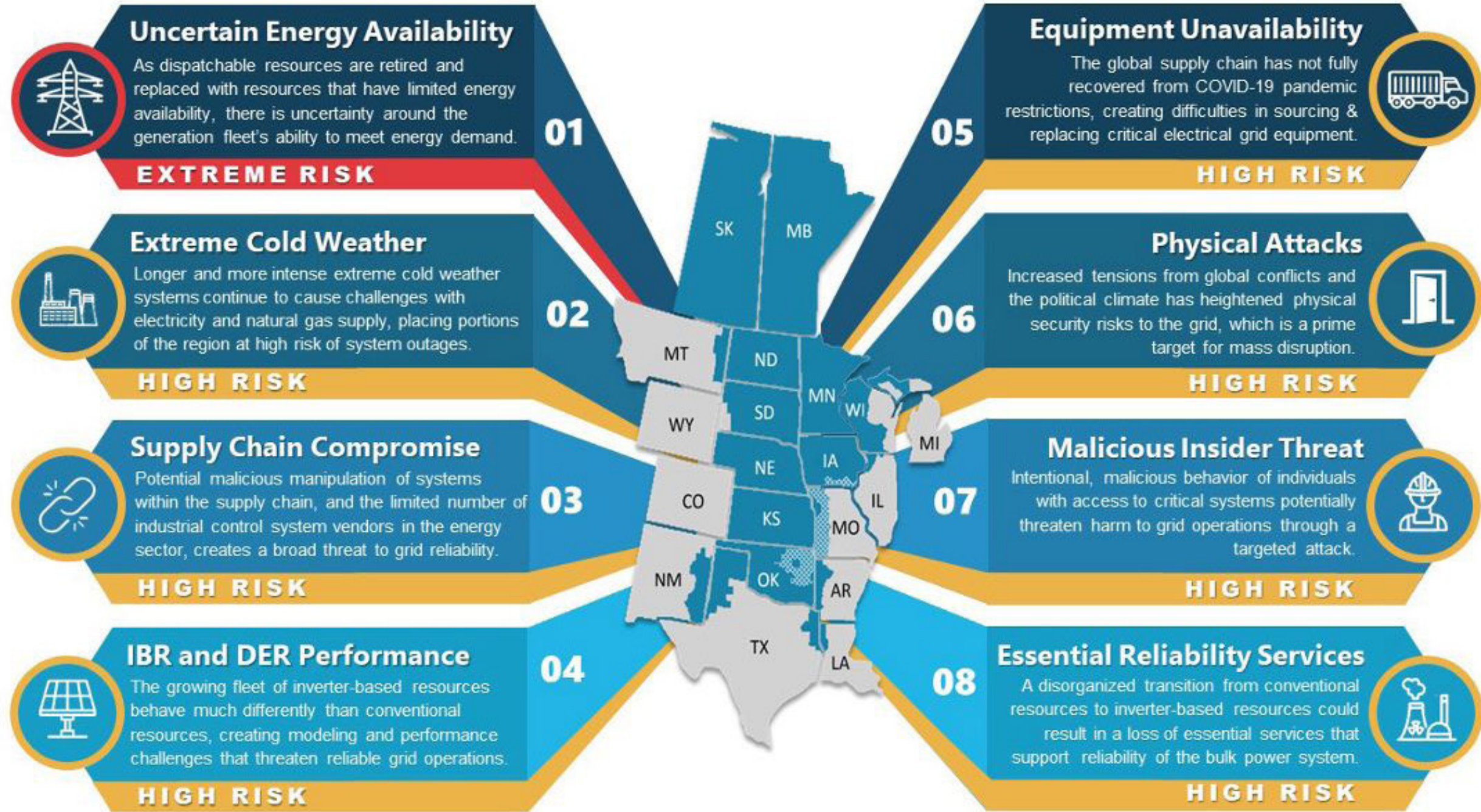
The new replacement resources being built are weather dependent and more energy-constrained, lowering the contribution of these resources to the total generation capacity available to serve demand. This is happening while demand is significantly accelerating, increasing the potential for supply shortfalls. The risk was designated as extreme because emerging trends indicate that the impact of this risk on bulk power system reliability would be continent-wide and is likely, and there are limited standards or requirements to reduce the risk.

The extreme risk leads seven other high priority risks identified in the 2024 RRA and highlighted on the following page.



2024 Regional Risk Assessment

Top risks to the reliable and secure operation of the regional bulk power system.



More information about bulk power system regional risk and mitigating activities can be found at www.mro.net

The risks identified in the 2024 RRA span the following challenges facing grid planners, owners, and operators:

- The rapid transformation of the generation resource fleet.
- Increasing reliance on a new era of resources that behave much differently than the existing fleet.
- More intense and longer duration extreme weather events (especially extreme cold weather).
- Accelerated demand and changes in electricity usage patterns complicate demand forecasting (predictions of when and how energy will be needed and used).
- Domestic terrorism and geopolitical unrest create an environment for attacks on critical infrastructure.

“Urgent and innovative solutions need to be developed...[for] the top risks identified in the 2024 RRA.”

Urgent and innovative solutions need to be developed in collaboration amongst MRO, the ERO Enterprise, industry, and state and provincial agencies to provide efficient and effective mitigation of the top risks identified in the 2024 RRA.

The ERO Enterprise and MRO have several “tools in the toolkit” available to address risk. Each of the options highly value diverse perspectives and collaboration amongst stakeholder partners. MRO is dedicated to working alongside its members to develop the right solution at the right time to maximize value; reducing reliability and security risks to the bulk power system so that energy is delivered to customers when needed across the region.

Seasonal Assessments of Reliability Risk

MRO published two regional seasonal assessments—summer and winter—in 2023. Both reports reiterated warnings from NERC that the bulk power system is operating ever closer to the edge as the grid transformation accelerates. MRO’s assessments focus on regional trends, system performance, and emerging risks and are a useful tool for registered entities within the region. Two separate webinars were held shortly after publication to share the assessments’ key findings and recommendations with industry. Both reports are available on MRO’s [website](#).

Reducing Risk Related to Inverter-Based Resources

Because of the rapid and continued growth of grid-connected, large-scale inverter-based resources (IBR) and behind-the-meter distributed energy resources (DER), the ERO Enterprise developed a three-year workplan to support reliable integration of these resources onto the bulk power system. NERC explained in a February 2023 filing with FERC that IBRs have the potential to pose a significant aggregate impact on bulk power system reliability and therefore should be registered and ordered to comply with reliability standards.

The Inverter-Based Resource (IBR) registration project officially kicked off in May 2023 when the workplan was approved by FERC. The registration project requires a subset of owners and operators of IBRs connected to the bulk power system to register with the appropriate Regional Entity, thereby providing awareness of these resources on the grid and mitigating IBR risk.

The three main phases of the workplan include revising the NERC Rules of Procedure (ROP), identifying candidates for registration, and registering those entities. MRO was a key contributor to both small teams that finalized the workplan and developed the ROP revisions.



Promoting Registration Consistency

The ERO Enterprise successfully collaborated in 2023 to issue an ERO Asset Verification Form. This form promotes registration program consistency across all six regions. All entities registering as a Generator Owner and/or Generator Operator are expected to complete this form, which assists the Regional Entity with validating facility ownership. The form includes both the inventory of assets as well as functional relationships between facilities, owners, operators and planners.

Interregional Transfer Capability Study (ITCS)

The Fiscal Responsibility Act of 2023 that was signed into law by President Biden in June included a directive to the ERO Enterprise to conduct a study of total transfer capability between transmission planning regions. Both seasonal and long-term reliability assessments continue to indicate that as the electricity resource mix

changes, greater access and deliverability of power is needed to maintain reliability. This is especially true during periods of extreme weather that affect localized electricity supply at a time when it is needed most.

The study is being conducted collaboratively between NERC and the six Regional Entities who are collectively uniquely positioned to provide an independent deliverable. The completed study must be filed with the FERC no later than December 2, 2024. Multiple ERO Enterprise project teams have been formed to develop and test scenarios, determine appropriate metrics, run the study, review the results, and draft the final report.

Recognizing the importance of industry coordination and input, the ERO Enterprise established an industry Advisory Group, including six stakeholder volunteers from MRO stakeholder companies, to support a successful outcome.



Sharing Information and Best Practices

Raising Awareness of Risk

MRO achieves its vision of a highly reliable and secure North American bulk power system by sharing information and best practices with a variety of industry stakeholders, including utility companies, independent system operators, regional transmission operators, local utility regulators and policy makers, and multiple federal and provincial agencies.

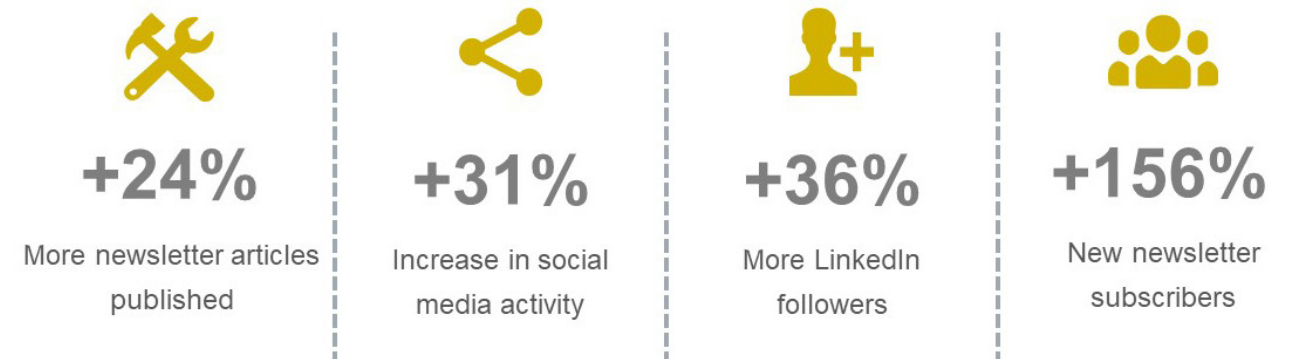
Recognizing the pressure on industry to keep pace with the ever-evolving, hyper complex risk environment, MRO expanded stakeholder outreach efforts in 2023 to provide 173 opportunities through multiple forums for stakeholders to meet, engage, and discuss technical solutions to the very real and complex challenges facing industry. All of MRO's conferences and workshops were held in hybrid format to meet the needs of more than 3,100

individuals attending these events. Overall outreach scores in five survey categories remained above four (out of five).

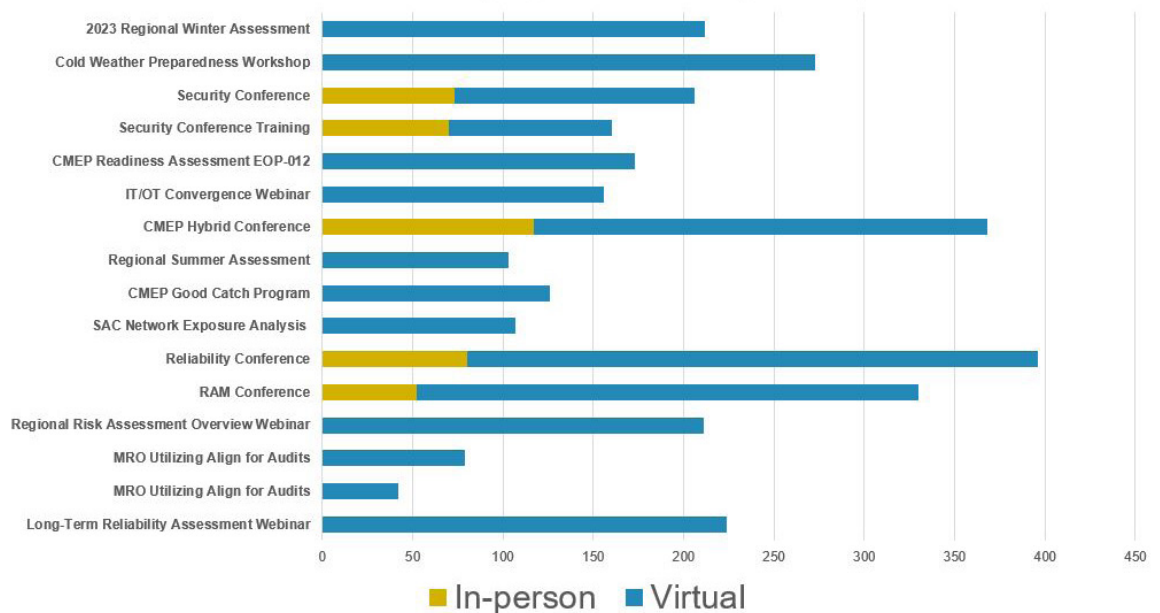
In addition to providing engagement opportunities, MRO also published 60 newsletter articles and announcements and expanded the company's presence on social media. These activities increased the number of individuals following MRO with 717 new newsletter subscribers and 1,398 new LinkedIn followers in 2023.

MRO also joined the planning committee for the Minnesota Power Systems Conference (MIPSYCON), taking part in planning this multi-day event with over 1,000 attendees across the MRO region focused on educating industry on risks to reliability and security, as well as mitigation strategies.

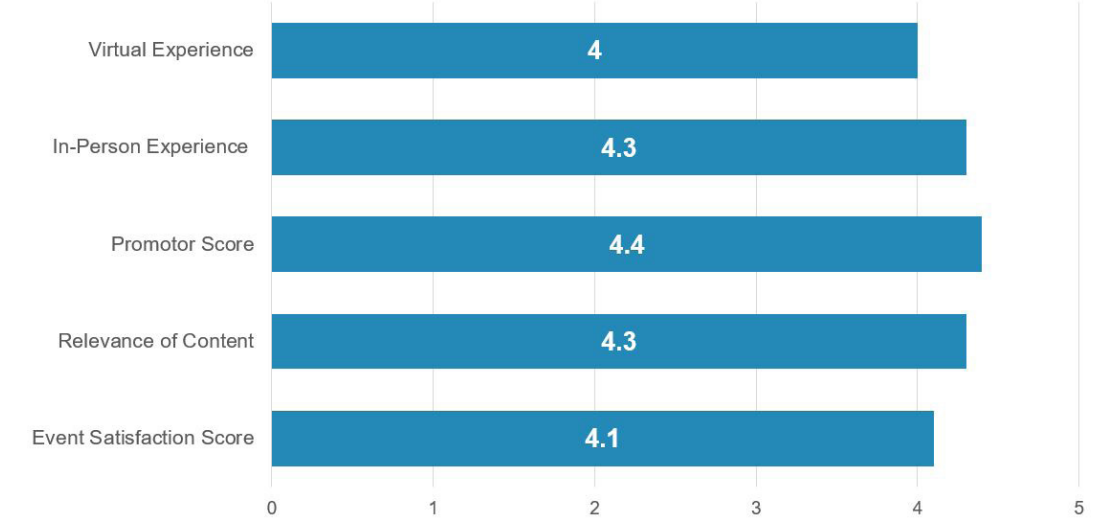
Year over Year Engagement Activity



2023 Outreach Events Total Attendees: 3,166 (392 In-Person and 2,774 Virtual)

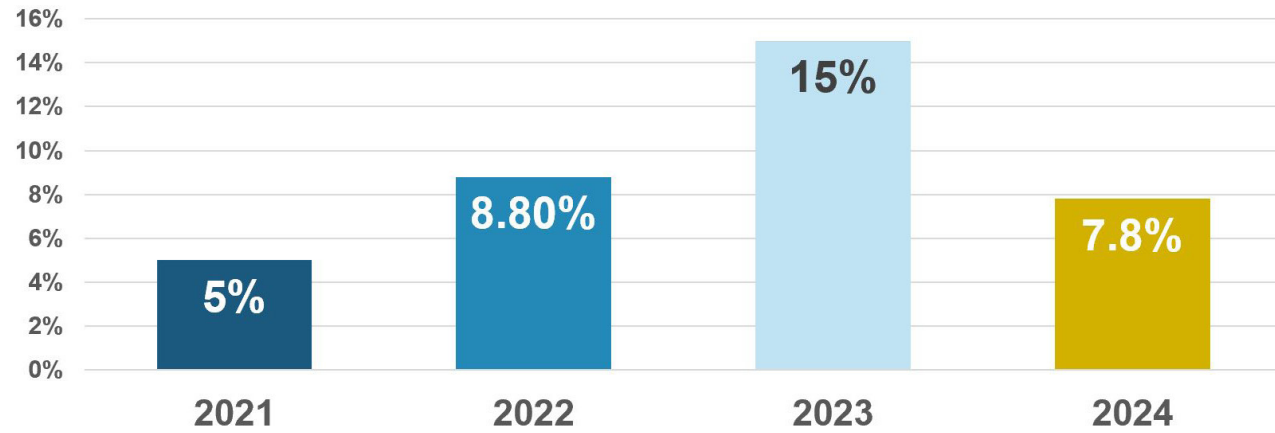


2023 Outreach Survey Results



Financial Results

Yr/Yr Budget Increase



2023 Financial Highlights

The 2023 business plan and budget was approved by the MRO Board in the summer of 2022. The budget considered the ERO Enterprise Long-Term Strategy, key objectives and metrics, along with MRO's Strategic Plan. The annual budgeting process is a coordinated effort with NERC and the Regional Entities and subject to review and comment by industry stakeholders before approval by the NERC Board of Trustees and then FERC. Funding was primarily provided through assessments to load-serving entities—those owners, operators, and users of the bulk power system responsible for delivering electricity to retail customers—based on how much net energy they need to meet their users' energy requirements.

The 2023 budget was 15 percent higher than the 2022 budget. Key drivers of the increase were mainly personnel costs due to seven additional full-time equivalents (FTEs). Travel costs were reduced based on cost trends. Capital purchases were increased in order to avoid supply chain delays. Associated assessments increased 15 percent. MRO used assessment stabilization reserves to keep the assessment increase aligned with the increase in budget.

2023 Financial Results

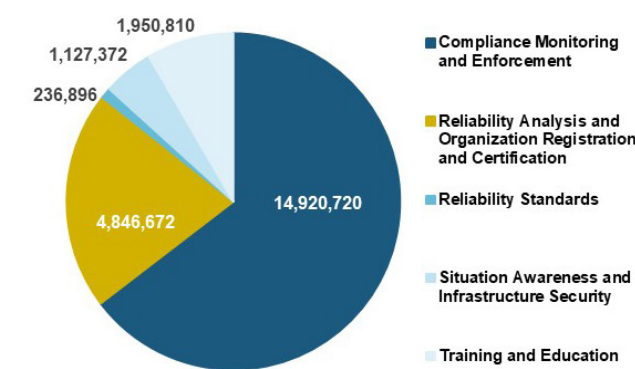
MRO undergoes an external, independent financial audit each year. MRO's audited 2023 financial results were 10.4 percent under the approved budget, due to unmet personnel, meeting, travel, and operating costs. MRO targeted seven new hires in the year but remained challenged with filling prior year vacancies and unexpected turnover. Although MRO successfully onboarded a net of ten staff, one budgeted position remained vacant in 2023. Uncertainty related to meeting and travel costs—which have not yet returned to pre-pandemic levels—also continues to impact the budget. Consultant and contract costs were lower than budgeted because of a shift in priorities. The underage was slightly offset by advancement of capital costs from the 2024 budget in anticipation of increased 2024 expenses related to the required Interregional Transfer Capability Study.

2024 Budget Outlook

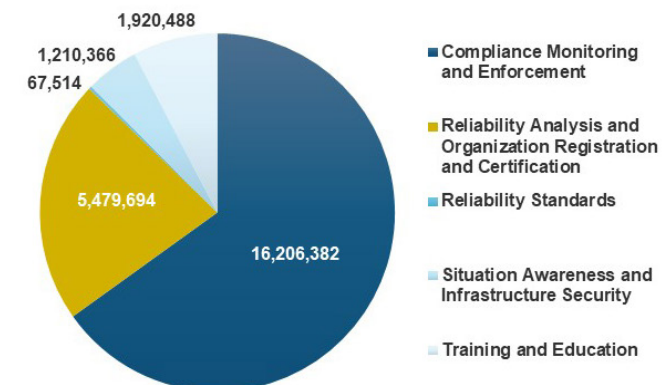
The 2024 approved budget is 7.8 percent higher than the 2023 budget. The increase is largely driven by new one-time capital purchases and additional FTEs needed to support strategic initiatives that address industry and corporate risks. The associated total assessments also increased over 2023 amounts.

Program	2023 Budget	2024 Budget	Variance 2024 Budget v 2023 Budget	% of Change
Compliance Monitoring and Enforcement	\$14,920,720	\$16,206,382	\$ 1,285,662.49	65%
Reliability Analysis and Organization Registration and Certification	\$4,846,672	\$5,479,694	\$633,021.98	22%
Reliability Standards	\$236,896	\$67,514	\$(169,381.49)	0%
Situation Awareness and Infrastructure Security	\$1,127,372	\$1,210,366	\$82,994.21	5%
Training and Education	\$1,950,810	\$1,920,488	\$(30,321.25)	8%
TOTAL BUDGET	\$23,082,469	\$24,884,445	\$1,801,976	7.81%

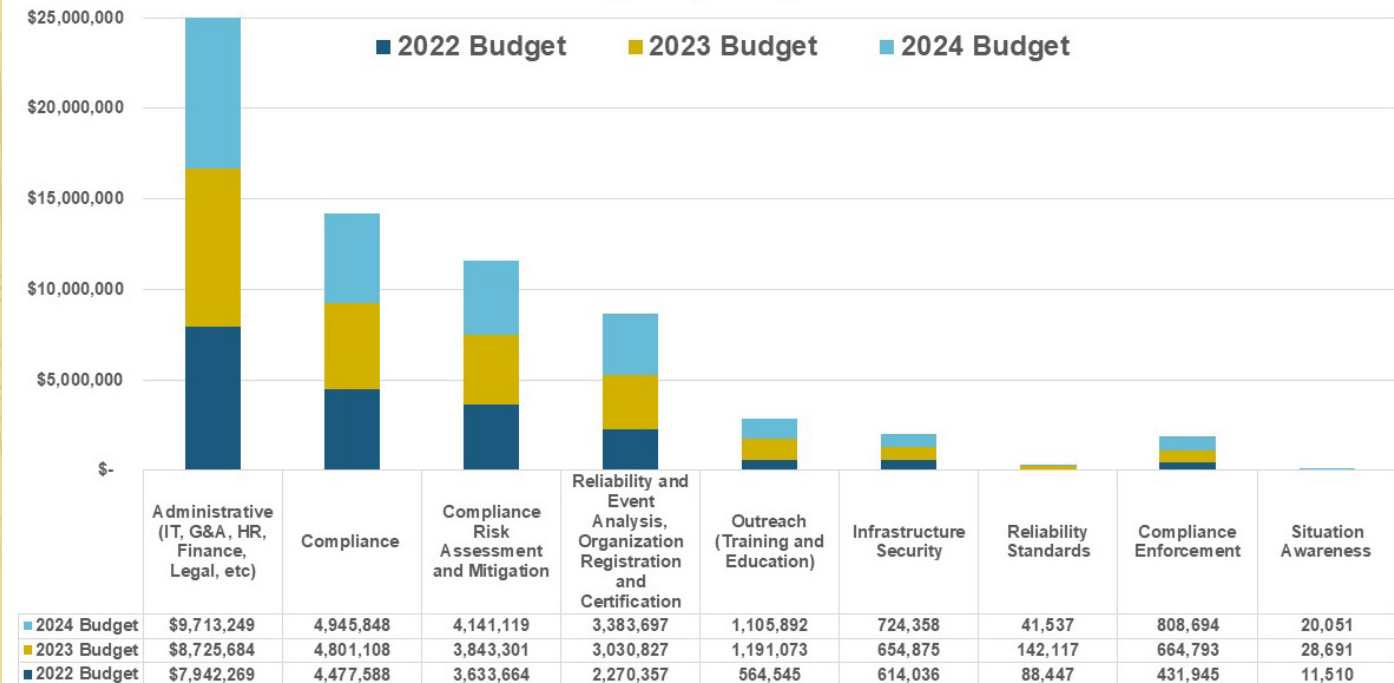
2023 Budget



2024 Budget



Yr/Yr Budget by Program Area



Closing Letter



Sara Patrick
President and CEO

“The challenges we face as an industry are bigger than any one company, coalition, regulatory agency, or industry can address on its own.”

The Path Forward

As I contemplate the challenges that lie ahead for MRO and the industry we support, one word comes to mind. **Coddiwomple**. It means “to travel in a purposeful manner towards an uncertain destination.” On one hand, it seems like we sometimes are doing the opposite—traveling toward a certain destination (carbon free by 2030/35/40) without purposeful action to get us there. For example, early retirements of relied-upon resources before there are new and adequate substitutes available to serve load.

The more I think about it though, there are purposeful decisions being made today without

any certainty of what the ultimate destination will look like. Decarbonization is again a great example. Deliberate action is being taken without a clear vision of what the end state will look like. While there is a lot of disagreement around how best to get there, the one thing we all can agree on is that a single solution does not exist to this very complex challenge...with no crystal ball to tell us what the future grid will look like.

The risk environment in our sector is evolving at lightning speed, with primary drivers being the energy transition, increasingly frequent extreme weather events, and escalating cyber and physical

risks – all of which we are navigating on the heels of a global pandemic and amidst a complex geopolitical and economic backdrop.

Exercising prudence over pace was one of the key takeaways from FERC’s 2023 Annual Reliability Technical Conference. For the energy transition to be successful, we must ensure sustainability and decarbonization initiatives are purposefully in step with reliability and resiliency objectives as we coddiwomple ahead.

While there is nothing to tell us definitively what the future holds, I have identified three focus areas for MRO in 2024 that support the final phase of MRO’s Strategic Plan and the priorities of people, processes, and partnerships.

People

Continue the incredible work we’ve done to maintain a connected, curious, committed and competent workforce.

Processes

Successfully complete the congressionally mandated Interregional Transfer Capability Study (or ITCS) and the associated transition to Energy Reliability Planning.

Partnerships

Continue to support industry and policy makers through the energy transition by developing and sharing mitigation strategies to reduce risks to reliability and security of the bulk power system.

The challenges we face as an industry are bigger than any one company, coalition, regulatory agency, or industry, can address on its own. We are committed to embracing opportunities for collaborative solutions to the very real problems described in this report.

I look forward to another successful year in 2024 and want to thank each of you again for your continued participation and support.

Our future is indeed, very bright!



PEOPLE



PROCESSES



PARTNERSHIPS



MIDWEST RELIABILITY
ORGANIZATION

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