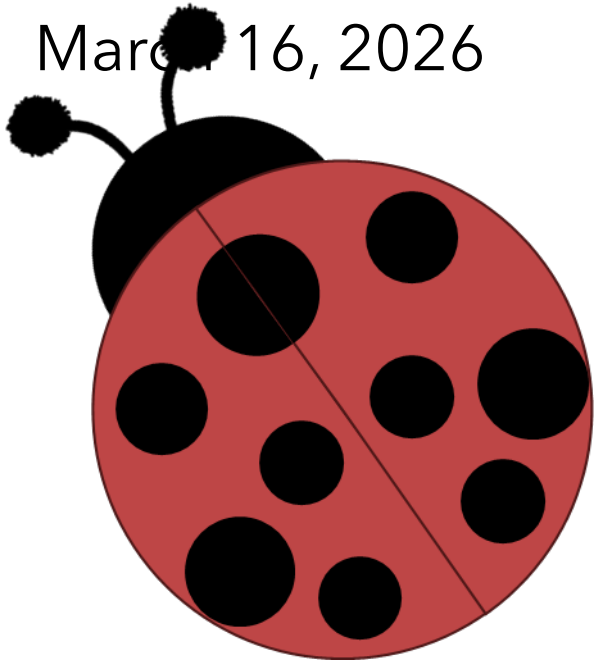
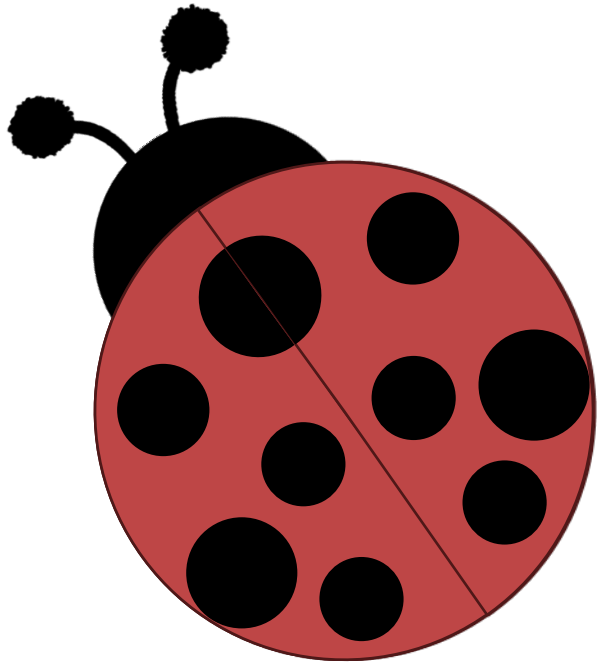
WELCOME TO TECHNICAL TALK WITH RF

March 16, 2026





TECHNICAL TALK WITH RF

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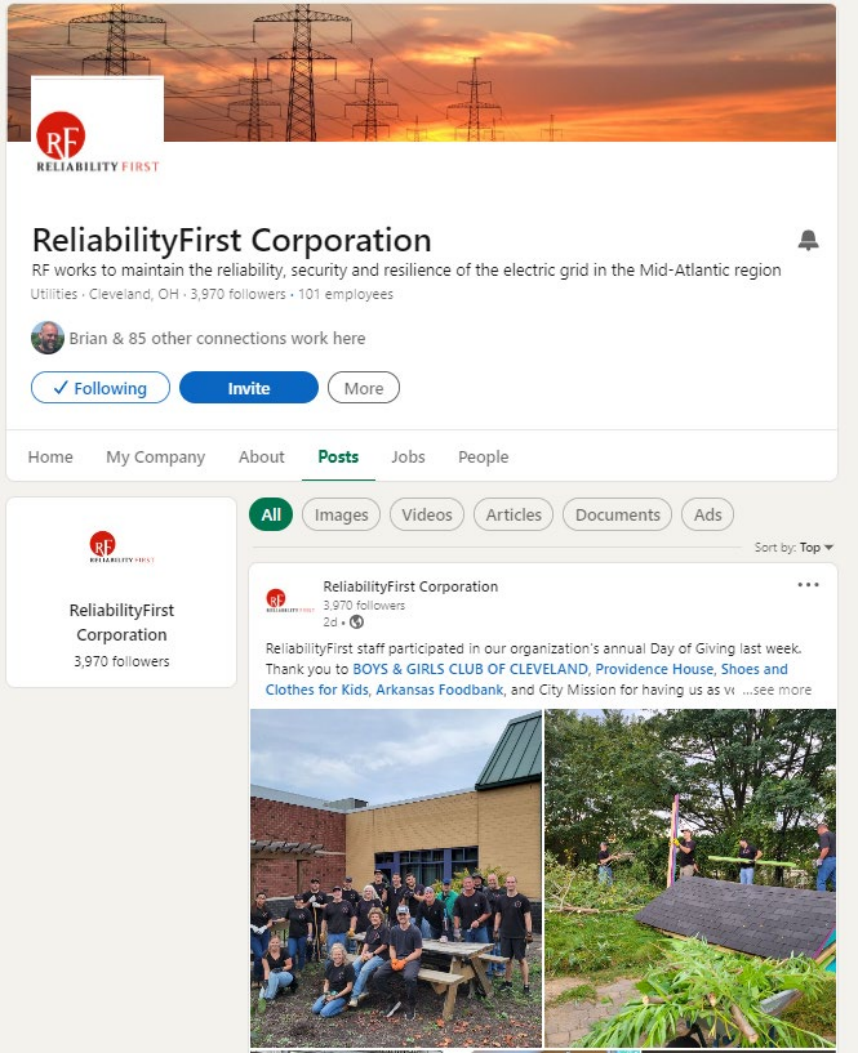


TECH TALK REMINDERS

Please keep your information up-to-date
- CORES and Generation Verification Forms

Following an event, send EOP-004 or OE-417 forms to disturbance@rfirst.org

CIP-008-6 incident reports are sent to the E-ISAC and the DHS CISA

Check our monthly CMEP update and newsletter:
- 2026 ERO Periodic Data Submittal schedule
- Timing of Standard effectiveness

BES Cyber System Categorization (CIP-002-5.1a)
- Assess categorization (low, medium, or high) regularly and notify us of changes

CIP Evidence Request Tool V10 was released and is on NERC's website

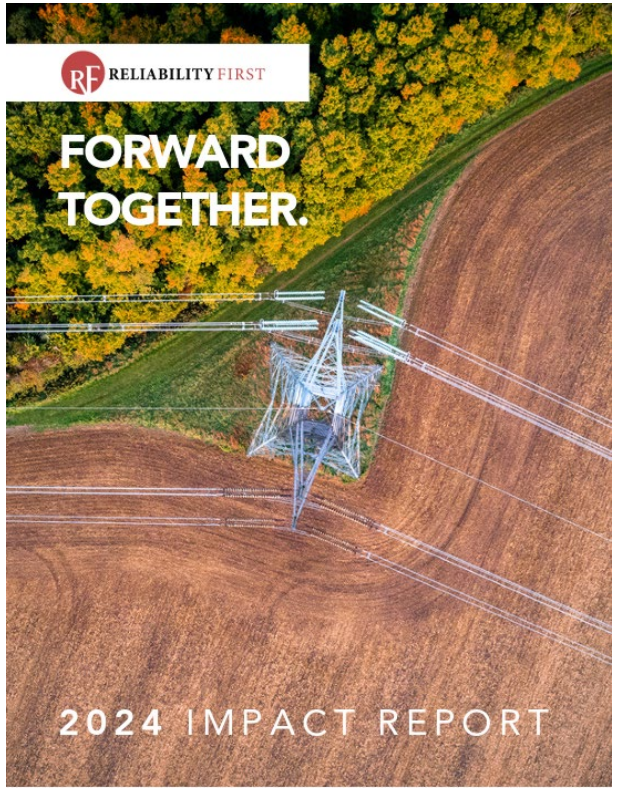
TECH TALK REMINDER

Are you getting our newsletter ***First Things RFirst?***

- Sign up today **here**

Make sure to check out our

2024 Impact Report and **video**



First Things RFirst

Expert analysis for a more reliable, secure and resilient electric grid, plus news and updates for RF stakeholders.

June 2024

Insights & Analysis

ReliabilityFirst 2024 Summer Reliability Assessment

RF's Summer Reliability Assessment projects the PJM and MISO areas to have adequate resources under normal demand, but if demand or resource outages are experienced beyond those projections, there is an increased likelihood that corrective actions would be needed. This risk is low in the PJM area, but it is elevated in the MISO area.

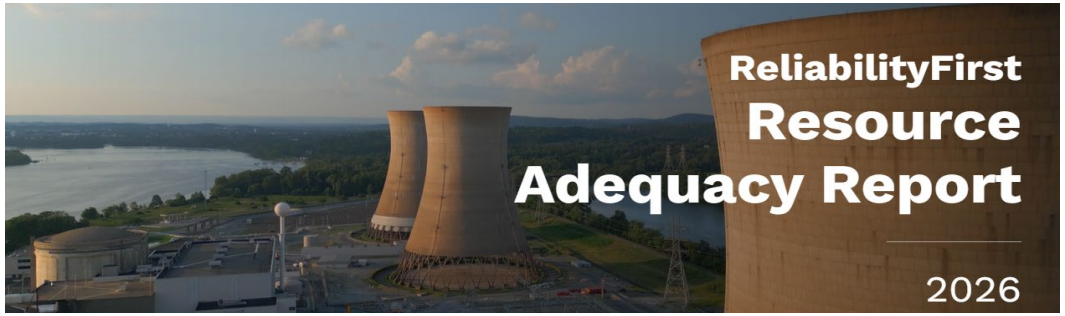
Click here to read more

The Lighthouse: The challenges of Operational Technology cyber security

Our modern civilization relies on Operational Technology (OT) to keep essential services working. The electric grid, pipelines, water treatment plants, transportation systems, and many more all depend on OT to deliver reliable services. Operating these systems securely comes with a host of cyber security challenges.

Visit our website to read RF's

2026 Resource Adequacy Report



WELCOME TO TECHNICAL TALK WITH RF

March 16, 2026

TECH TALK ANNOUNCEMENT

RELIABILITYFIRST

Upcoming In-Person Event:

CIP WORKSHOP

MAY 4-7, 2026

CLEVELAND

Be sure to register today via Eventbrite
or link on ReliabilityFirst website

Day 1, Monday, May 4, 1 to 5 p.m. ET *(Optional)*
This session provides an introductory overview of both cyber security/CIP and O&P/Operations.

Day 2, Tuesday, May 5, 8 a.m. to 5 p.m. ET
Select from multiple training tracks covering physical security, low impact, INSM, and other CIP topics.
A reception will follow from 5-6:30 p.m.

Day 3, Wednesday, May 6, 8 a.m. to 5 p.m. ET
A single session with presentations and panels on various CIP topics.

Day 4, Thursday, May 7, 8 a.m. to 12 p.m. ET *(Optional)*
RF CIPC Meeting is limited to regular employees of entities registered in the RF footprint.

TECH TALK ANNOUNCEMENT

NERC

NERC Releases GridEx VIII Lessons Learned Report

Full Announcement | Report

The GridEx VIII Lessons Learned Report, published March 2, 2026, is a detailed post-exercise review and analysis of NERC and the Electricity Information Sharing and Analysis Center's (E-ISAC) GridEx VIII, that took place in November 2025. The report provides recommendations that are intended to inform electric industry participants, critical infrastructure sector partners, and government partners of measures that they can take to improve the collective resilience and response to cyber and physical security events that may affect the North American electric grid.

The report contains a summary of the recommendations and observations identified through Distributed Play and the Executive Tabletop.

In addition to summarizing recommendations and observations identified through Distributed Play and the Executive Tabletop, the report provides information on the scenario, participation metrics, and improvements targeted for GridEx IX in 2027.

TECH TALK ANNOUNCEMENT

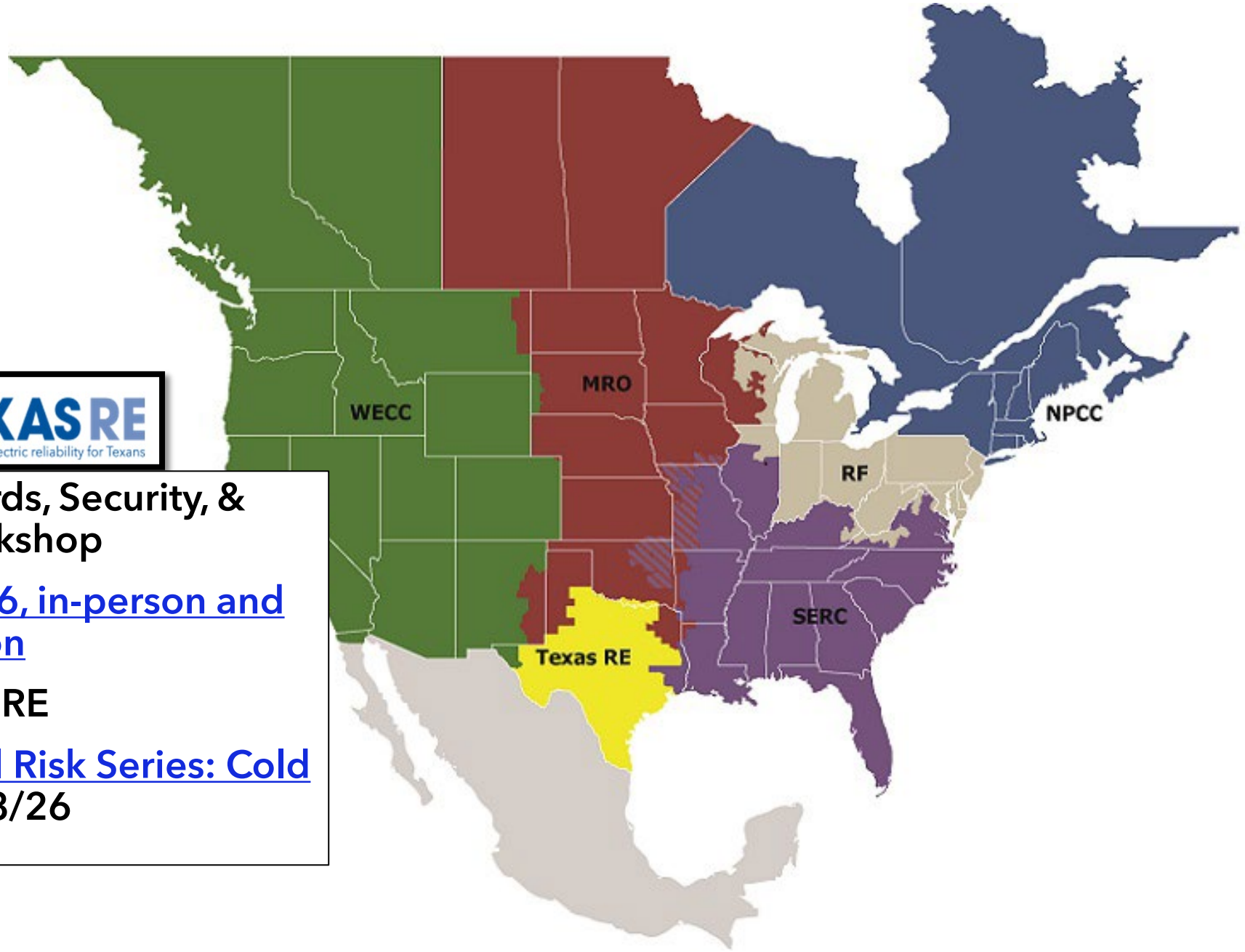
NERC E-ISAC

NERC Three-Year Review Video & E-ISAC End-of-the-Year Report

NERC Video | E-ISAC Report

NERC recently published its 2023–2025 Three-Year Review video, which focuses on achievements in grid reliability and security. Featuring insights from NERC President and CEO Jim Robb, the video reflects key outcomes from NERC's strategic plan and emphasizes collaboration with stakeholders. The video also highlights our shared commitment to reducing risk, supporting resilience, and strengthening operational readiness across the bulk power system.

In addition, the 2025 Electricity Information Sharing and Analysis Center (E-ISAC) End-of-Year Report reflects on a year of rapidly evolving security threats and the importance of collective readiness across the electric industry, featuring new E-ISAC CEO Michael Ball. In 2025, the E-ISAC played a critical role in strengthening resilience by providing more than 1,900 members and partners with timely and comprehensive cyber security analysis and proactive defense measures to enhance preparedness across the bulk power system.



TEXAS RE
Ensuring electric reliability for Texans

Spring Standards, Security, & Reliability Workshop

- April 1, 2026, in-person and virtual option

Talk with Texas RE

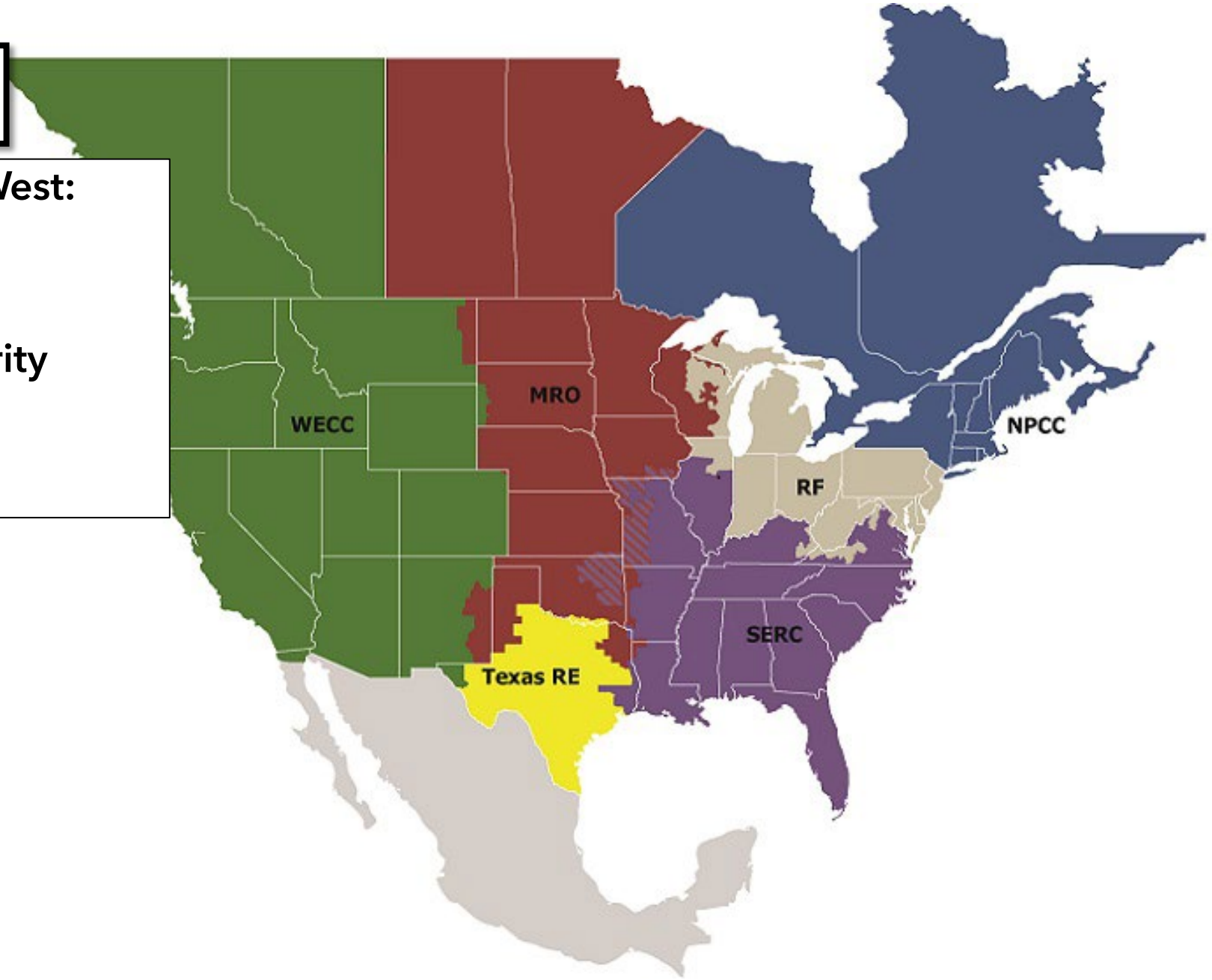
- RE Regional Risk Series: Cold Weather 4/8/26

Reliability in the West: Discussion Series

- April 1

Reliability & Security Oversight Update

- April 16



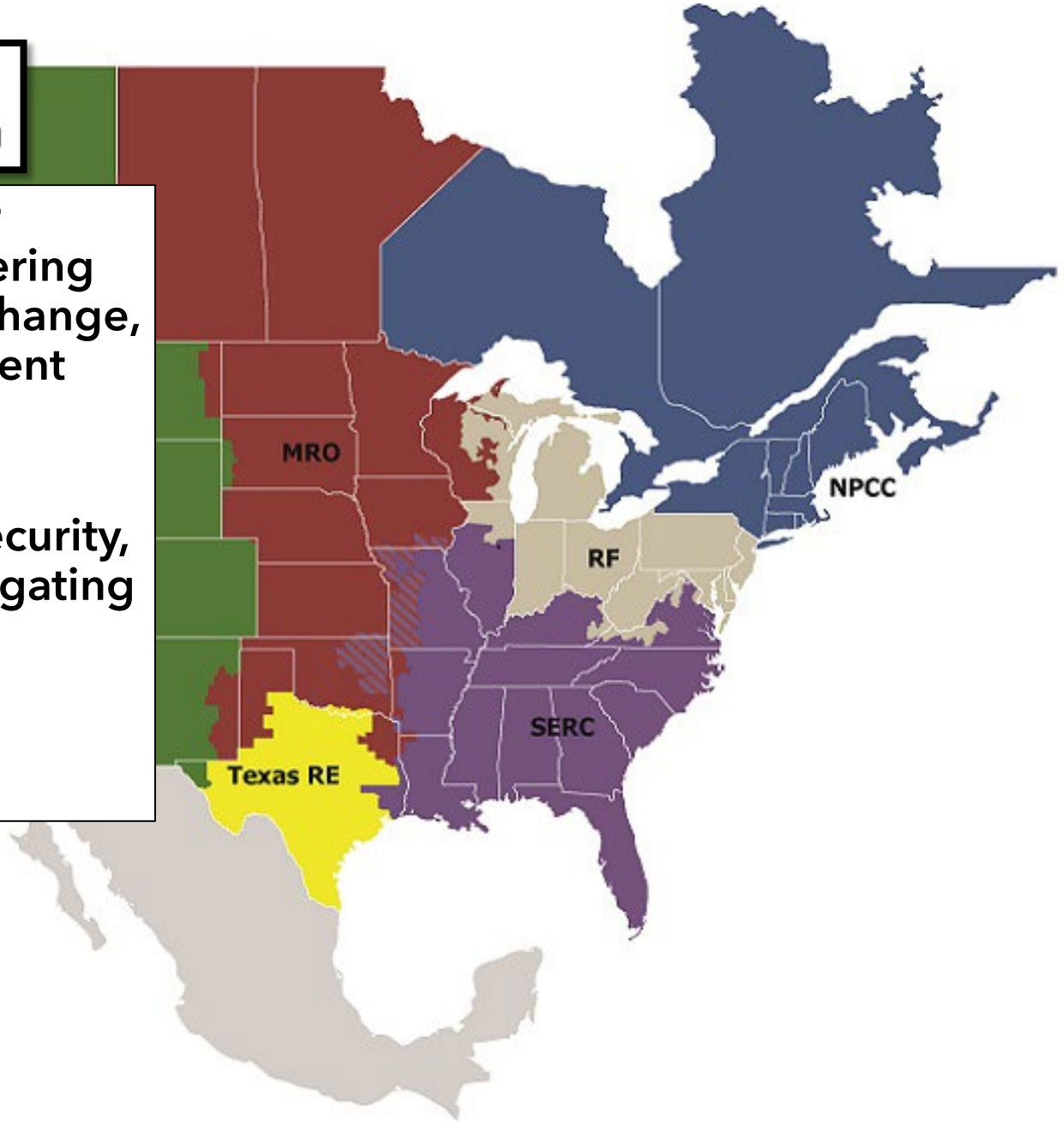
MIDWEST RELIABILITY ORGANIZATION

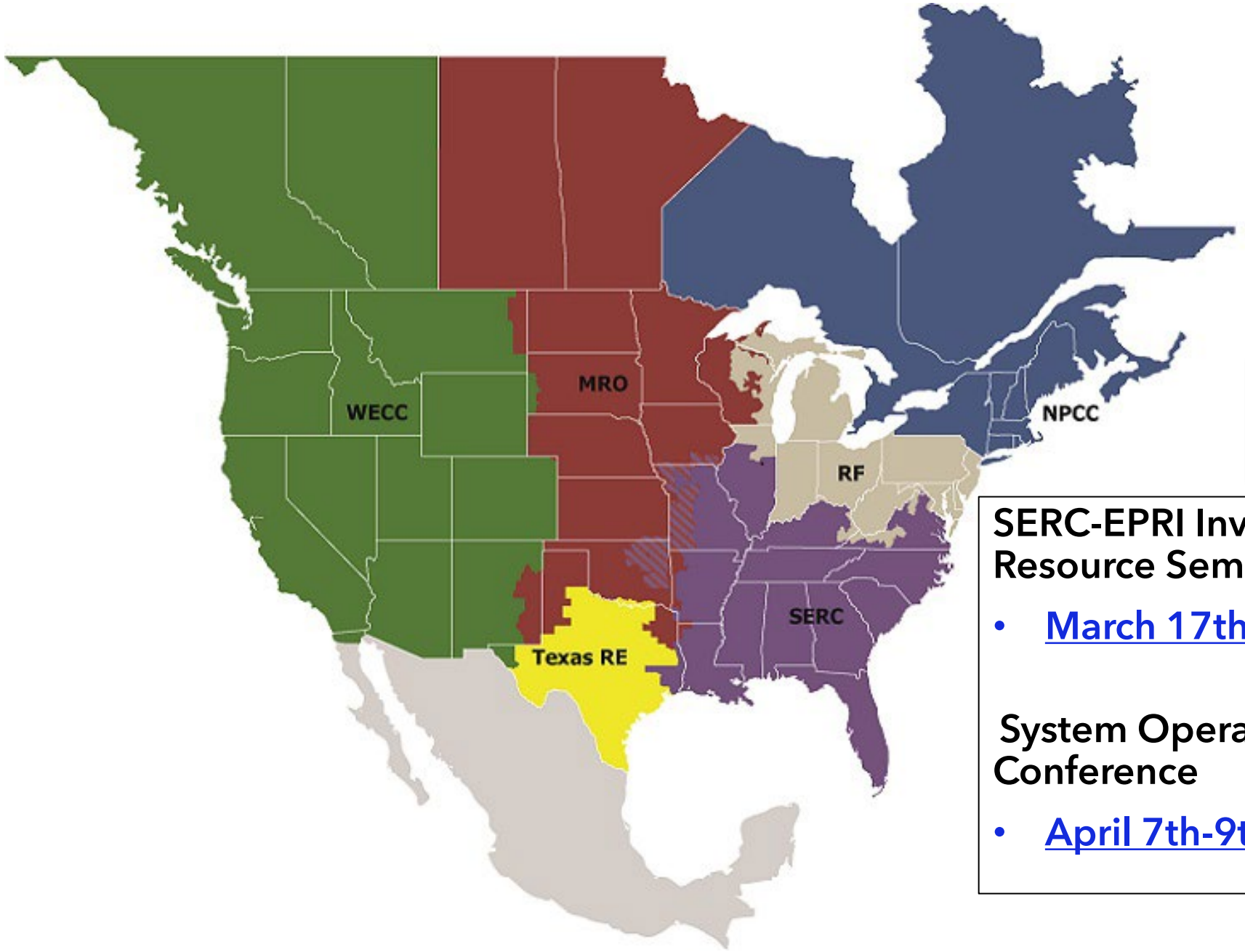
MRO Case Files Webinar Series: TOP STORY: Powering MRO Success Through Change, Efficiency, and Engagement

- March 30

2026 MRO Reliability, Security, and CMEP Summit: Navigating the Evolving Power Grid

- May 12-13



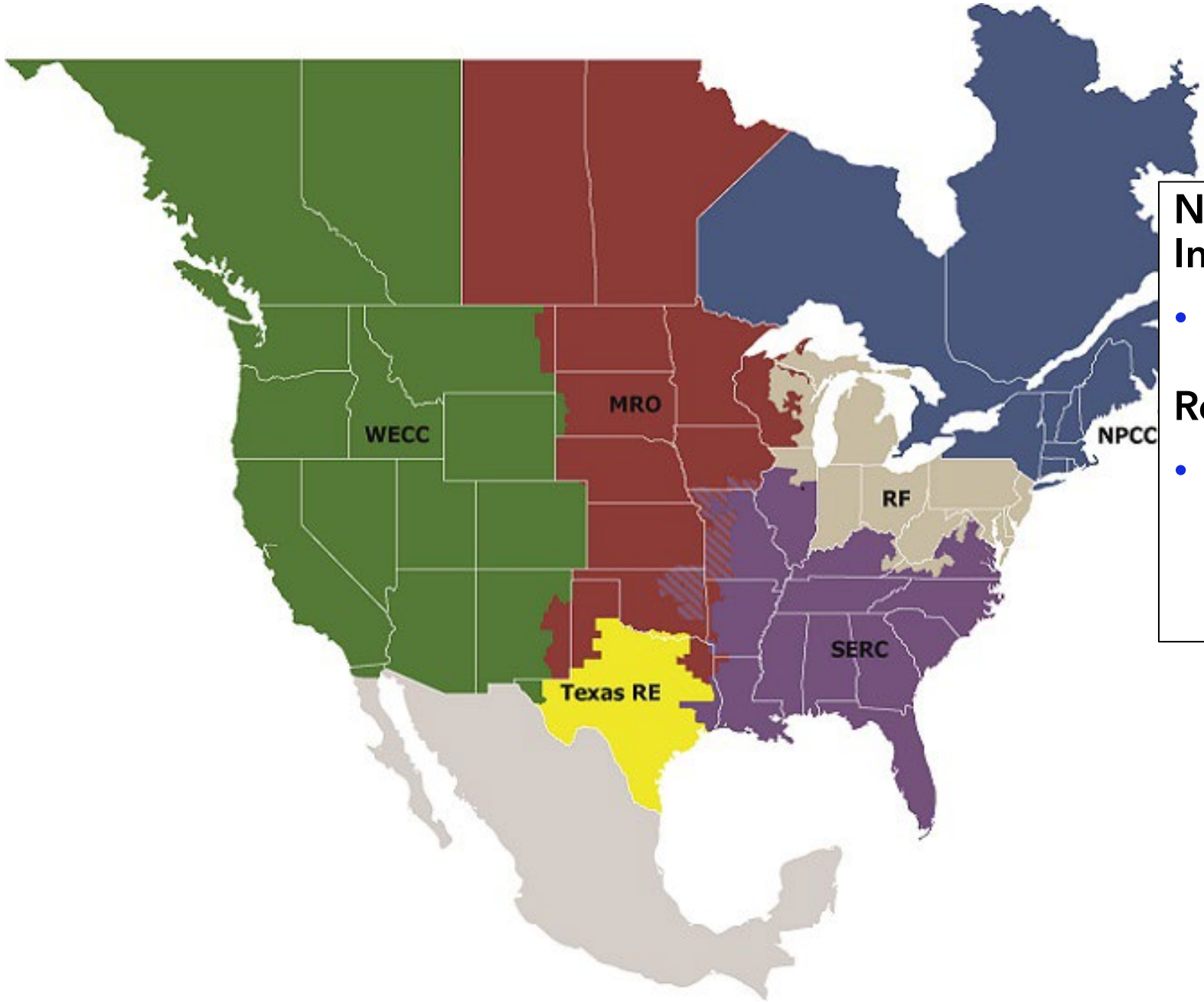


SERC-EPRI Inverter-Based Resource Seminar

- March 17th

System Operator Conference

- April 7th-9th

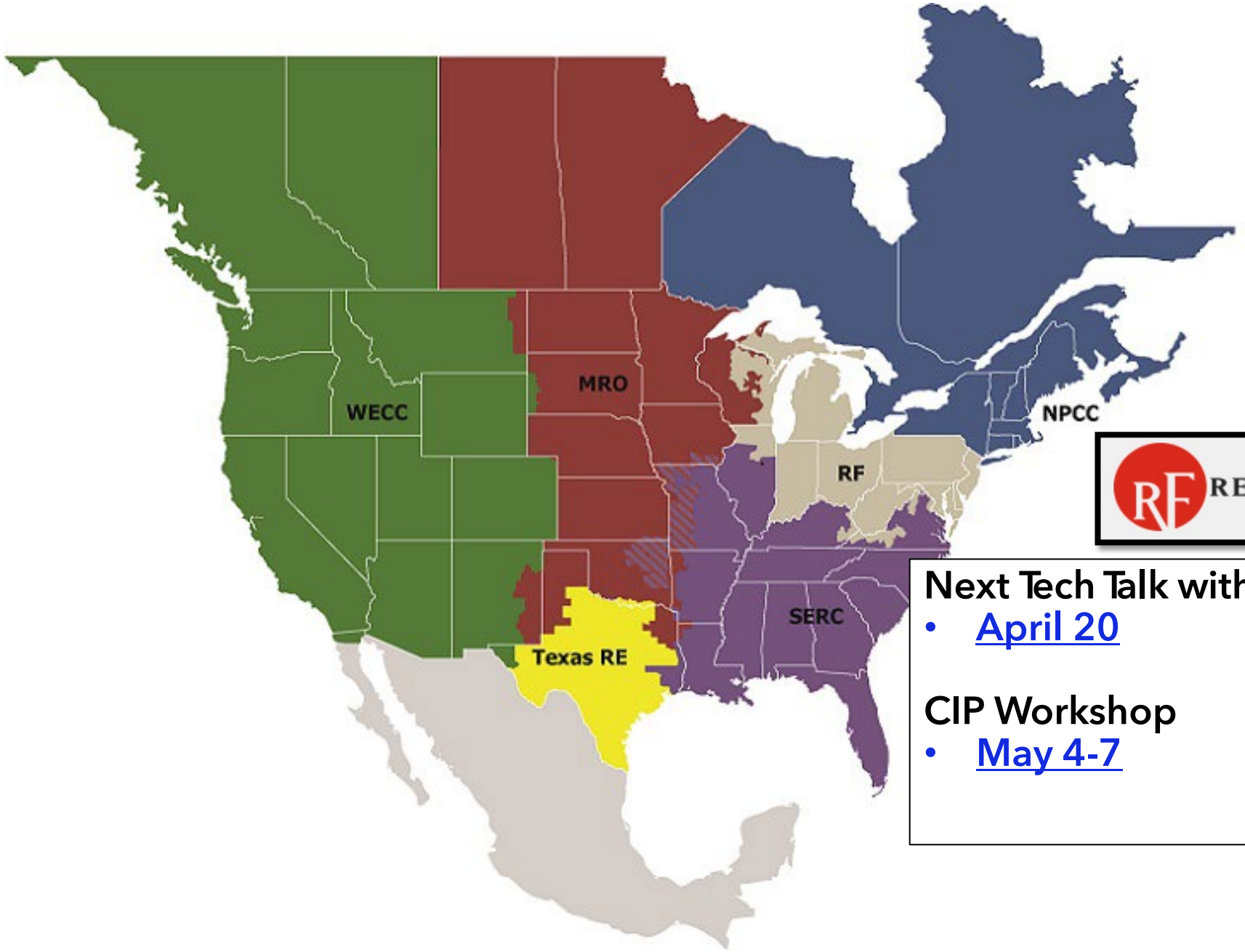


NPCC Standards Industry Webinar

- March 24th

Reliability Forum

- March 26th



RELIABILITY FIRST

Next Tech Talk with RF

- April 20

CIP Workshop

- May 4-7

TECH TALK REMINDER

FORWARD TOGETHER RELIABILITYFIRST

Tech Talk with RF announcements are posted on our calendar on www.rfirst.org under Calendar

CLICK HERE

March 2026

MON
16

March 16, 2026 @ 10:00 am - 11:30 am

Technical Talk with RF

Virtual (Webex)

Technical Talk with RF is a monthly webinar ReliabilityFirst hosts to discuss key reliability, resilience and security topics with our stakeholders.

TECHNICAL TALK WITH RF

FORWARD TOGETHER RELIABILITYFIRST

Join the conversation at

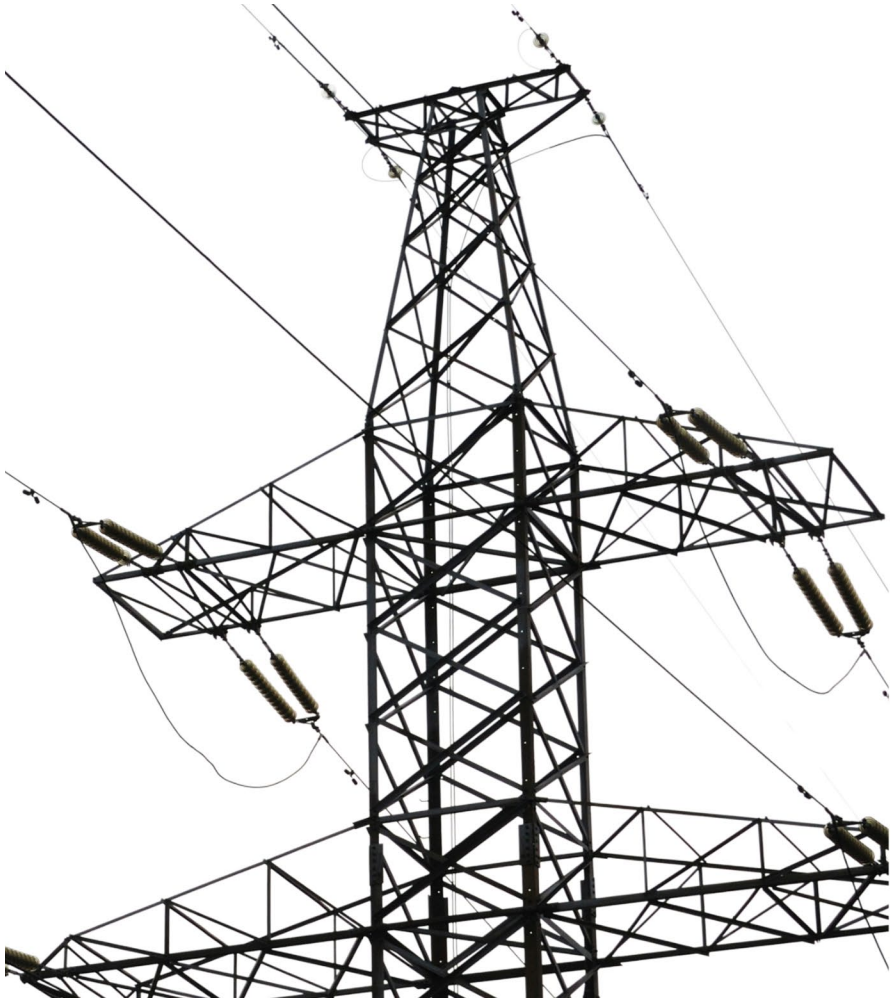
SLIDO.com

#TechTalkRF

Anti-Trust Statement

It is ReliabilityFirst's policy and practice to obey the antitrust laws and to avoid all conduct that unreasonably restrains competition. This policy requires the avoidance of any conduct which violates, or which might appear to violate, the antitrust laws. Among other things, the antitrust laws forbid any agreement between or among competitors regarding prices, availability of service, product design, terms of sale, division of markets, allocation of customers or any other activity that unreasonably restrains competition.

It is the responsibility of every ReliabilityFirst participant and employee who may in any way affect ReliabilityFirst's compliance with the antitrust laws to carry out this policy.



FORWARD TOGETHER RELIABILITYFIRST

AGENDA

NERC'S 2025 LONG-TERM RELIABILITY ASSESSMENT & RF'S 2026 RESOURCE ADEQUACY REPORT

- **TIM FRYFOGLE,** PRINCIPAL ENGINEER IN ENGINEERING & SYSTEM PERFORMANCE, RELIABILITYFIRST

SUSTAINABILITY EFFORTS IN DATA CENTERS FOR AI

- **DR. BENJAMIN LEE,** PROFESSOR OF ELECTRICAL AND SYSTEMS ENGINEERING AND COMPUTER & INFORMATION SCIENCE, UNIVERSITY OF PENNSYLVANIA

NERC'S 2025 LONG-TERM RELIABILITY ASSESSMENT

RF'S 2026 RESOURCE ADEQUACY REPORT

Tim Fryfogle, Principle Engineer,

Engineering and System Performance

March 16, 2026

The sole purpose of this presentation is to provide technical reliability-related information based on ReliabilityFirst's expertise. This communication is not intended to be and should not be interpreted as advocating for a specific position or outcome.

RELIABILITY FIRST

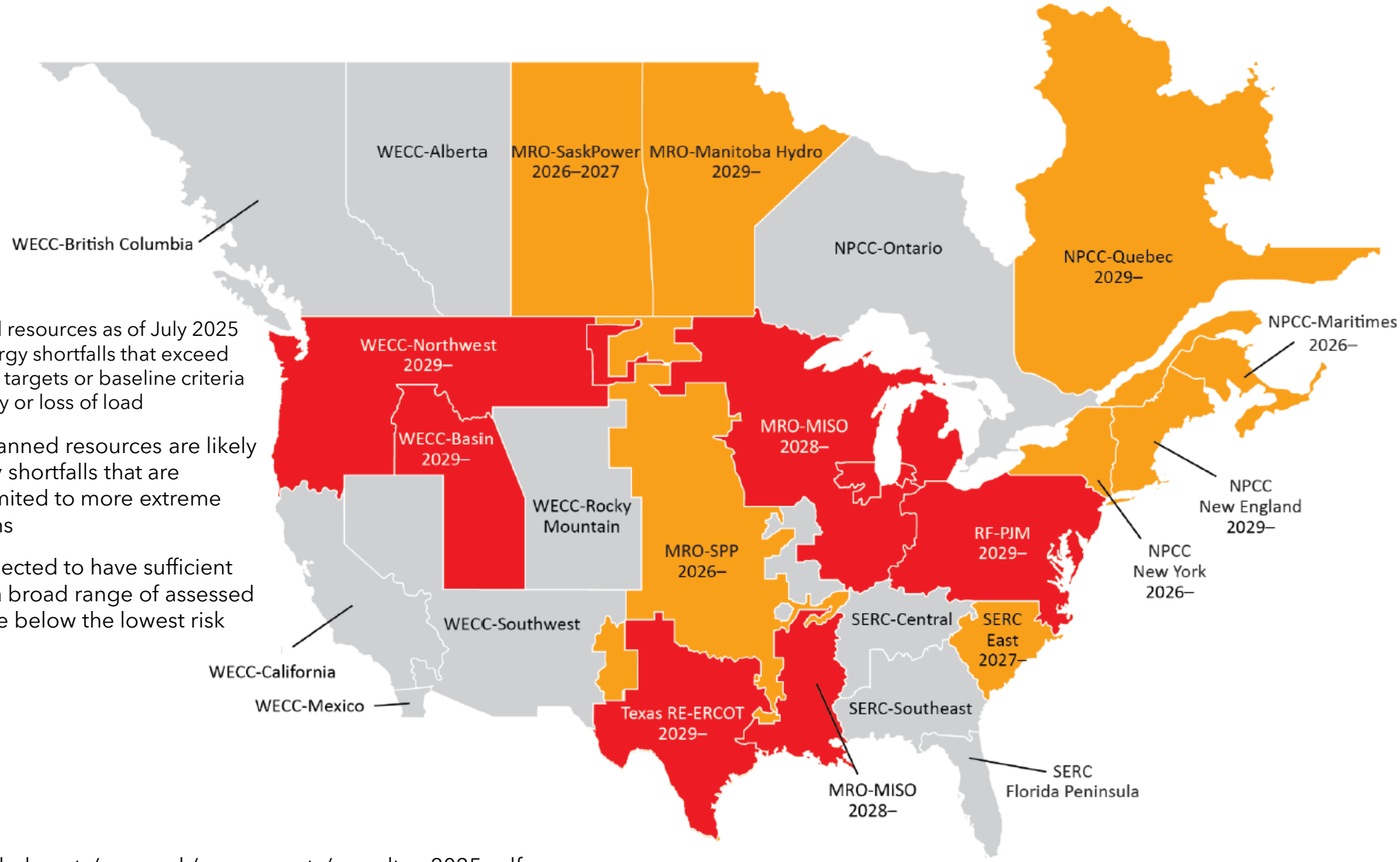
RESOURCE ADEQUACY: NERC 2025 LTRA

Increasing Risk

High Risk: Planned resources as of July 2025 would result in energy shortfalls that exceed resource adequacy targets or baseline criteria for unserved energy or loss of load

Elevated Risk: Planned resources are likely to result in energy shortfalls that are expected to be limited to more extreme weather conditions

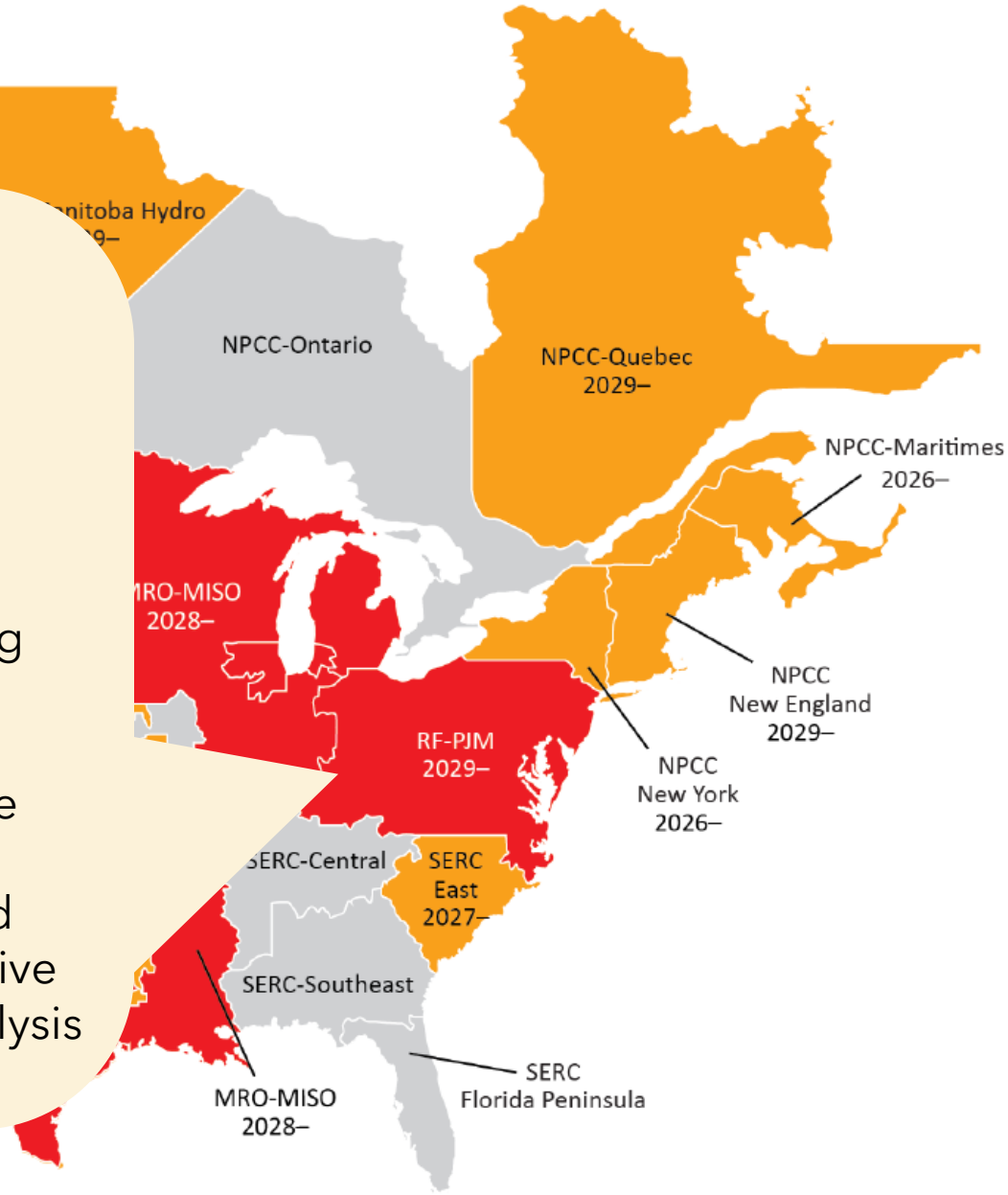
Normal Risk: Expected to have sufficient resources under a broad range of assessed conditions and are below the lowest risk criteria level



https://www.nerc.com/globalassets/our-work/assessments/nerc_ltra_2025.pdf

PJM RESOURCE ADEQUACY: NERC 2025 LTRA

- Current projections for resource additions are not keeping pace with escalating demand forecasts and expected generator retirements
- The anticipated resource margin falls below the Reference Margin Level starting in 2029
- Recently approved new generation projects for expedited interconnection under the PJM Reliability Resource Initiative were not far enough along to include in the LTRA risk analysis

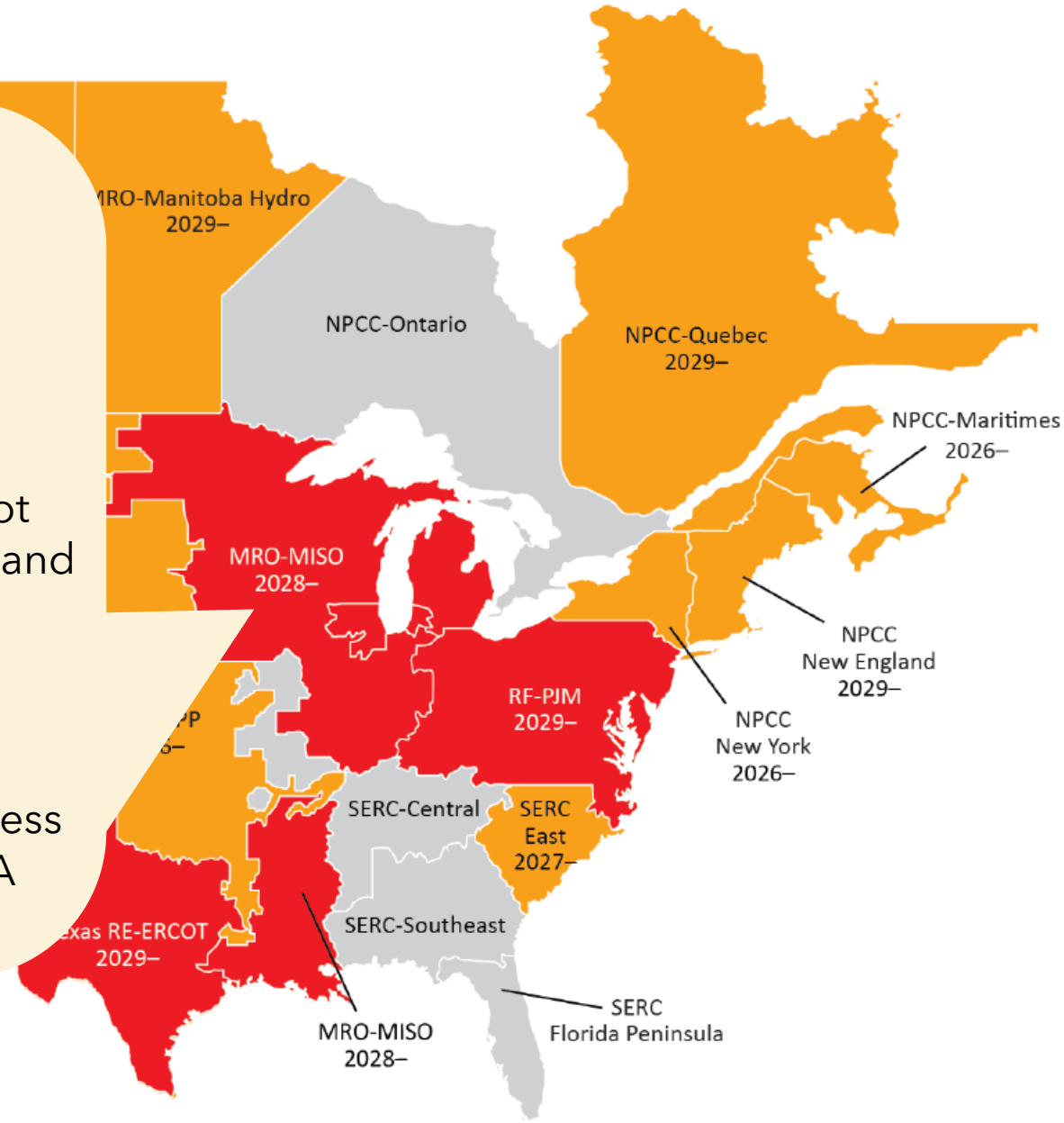


https://www.nerc.com/globalassets/our-work/assessments/nerc_ltra_2025.pdf

MISO RESOURCE ADEQUACY: NERC 2025 LTRA

Risk Level
(**High**, **Elevated**, or **Normal**)

- Current projections for resource additions are not keeping pace with escalating demand forecasts and expected generator retirements
- The anticipated resource margin falls below the Reference Margin Level starting in 2028
- Recently approved new generation projects for Expedited Resource Addition Study (ERAS) process were not far enough along to include in the LTRA risk analysis



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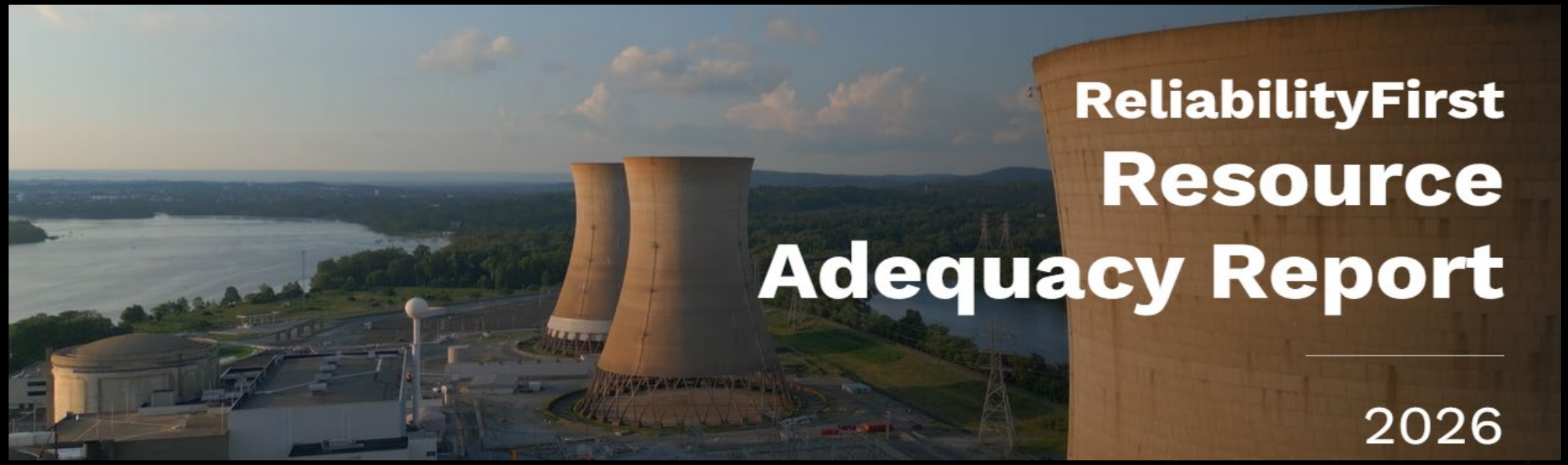


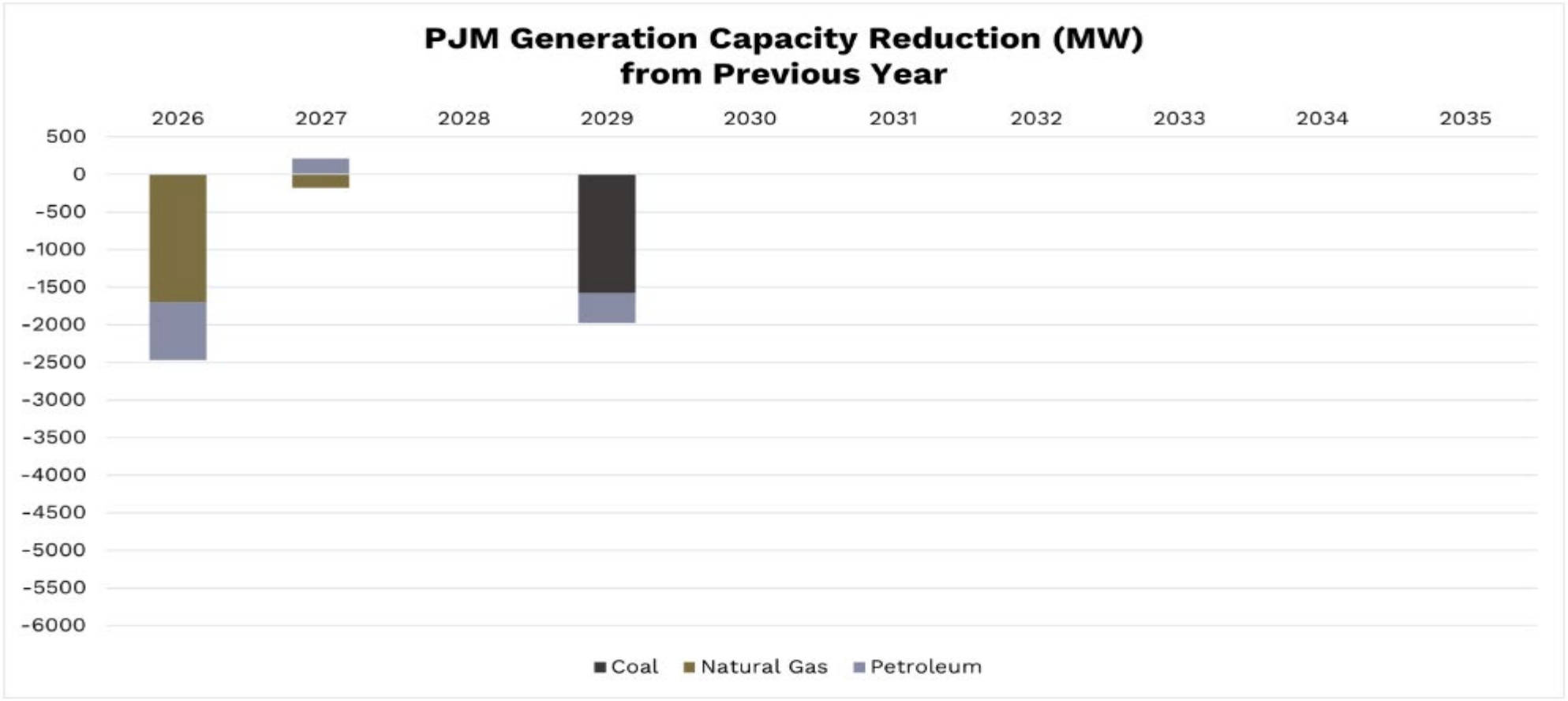
Rfirst.org

Executive Summary

- The RF region is at high risk for shortfalls as we approach end of the decade (PJM and MISO areas)
- Key drivers impacting our current and future resource mix are policy decisions, supply chain disruptions, economic conditions, and availability of skilled labor
- Our challenges are compounded by additional risks such as environmental factors (extreme weather), volatile (but rapidly increasing) load forecasts, along with grid security challenges
- Key findings underscore the need for proactive, coordinated action among policy makers, utilities, and stakeholders to ensure infrastructure development keeps pace with reliability requirements

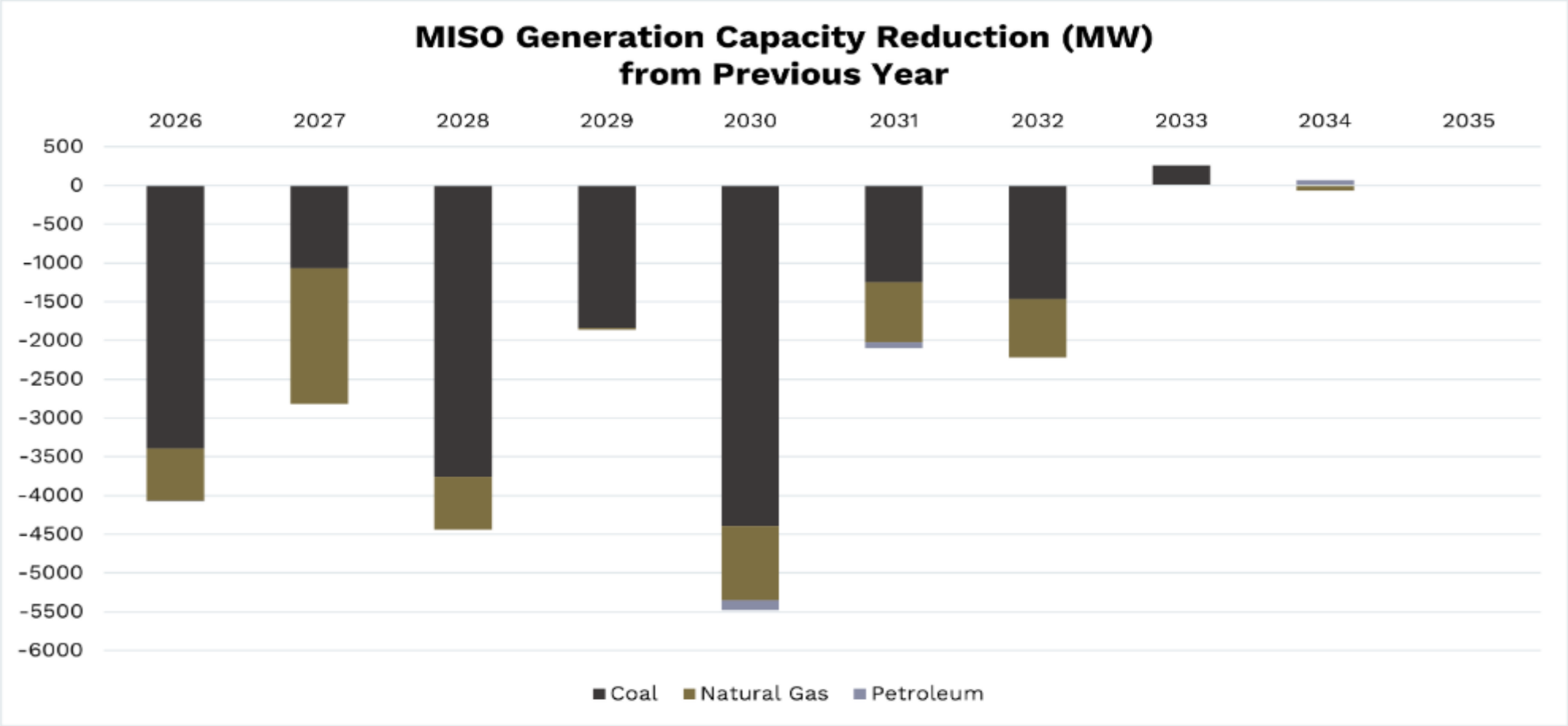
RESOURCE REDUCTION - PJM

- Between 2026 and 2035, PJM expects a net capacity reduction in coal, natural gas, and petroleum of 4 GW



RESOURCE REDUCTION - MISO

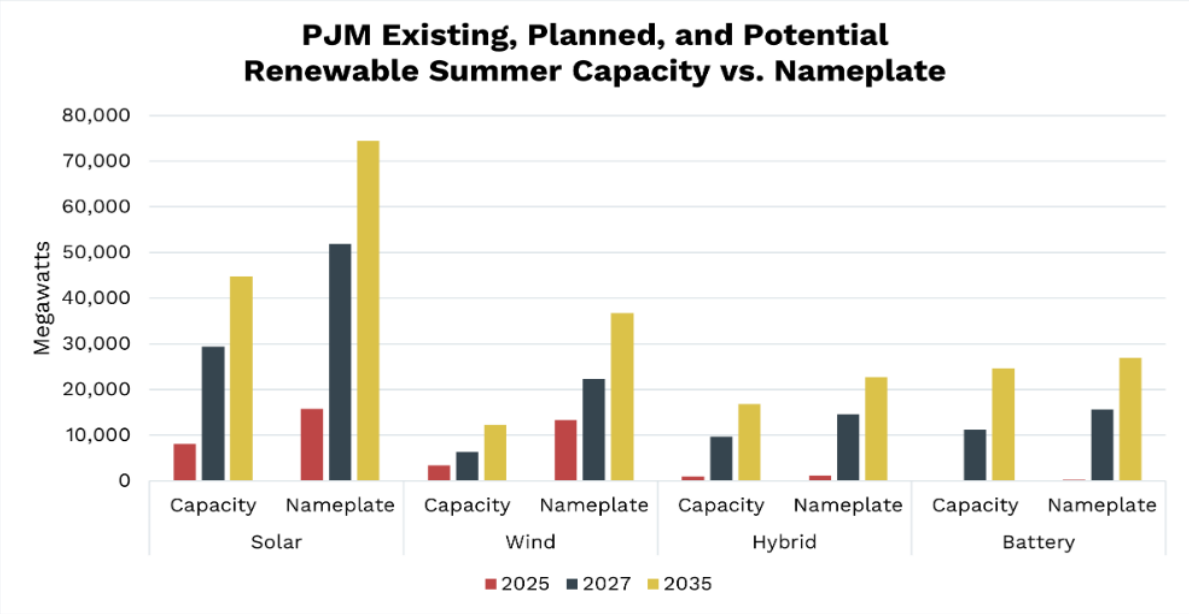
- Between 2026 and 2035, MISO anticipates a net capacity reduction in coal, natural gas, and petroleum of 23 GW

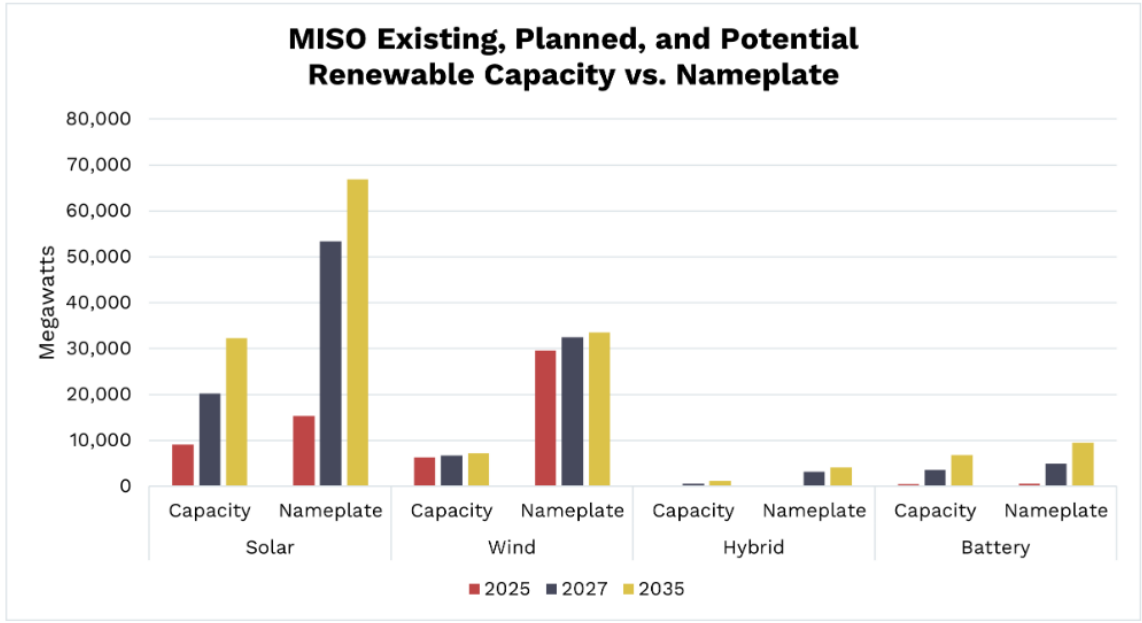


RESOURCE VARIABILITY

Both PJM and MISO:

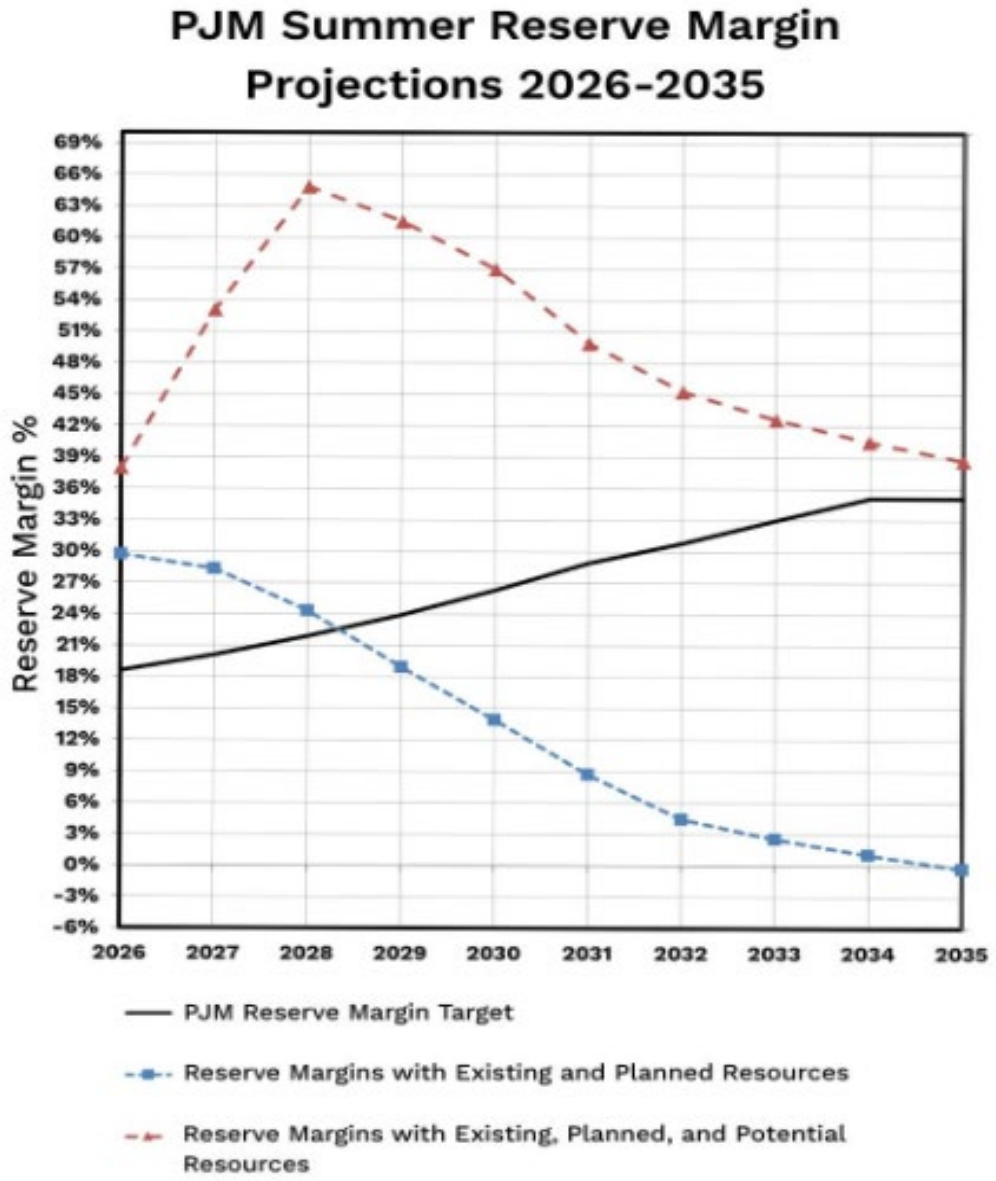
- Display large growth in solar and wind
- Report large amounts of nameplate capacity, but the share of that capacity that is truly available during critical periods can vary widely
- Have battery growth that is not on pace with solar and wind





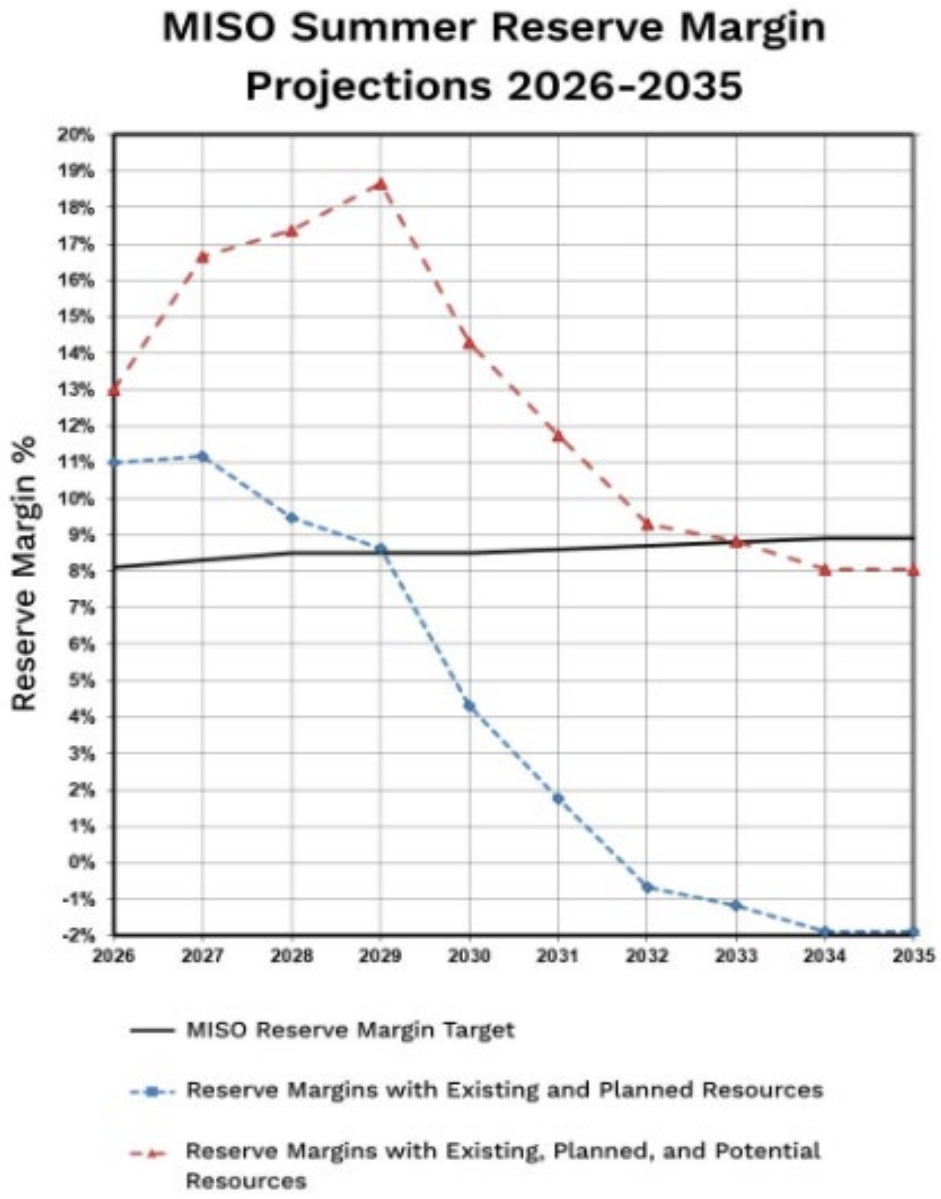
RESOURCES - PJM

- **Blue**: With only Existing and Planned resources, PJM may not be able to meet its reserve margin starting in 2029 and beyond.
- **Red**: With Existing, Planned, and Potential resources, PJM is projected to meet its reserve margin target beyond 2035.



RESOURCES - MISO

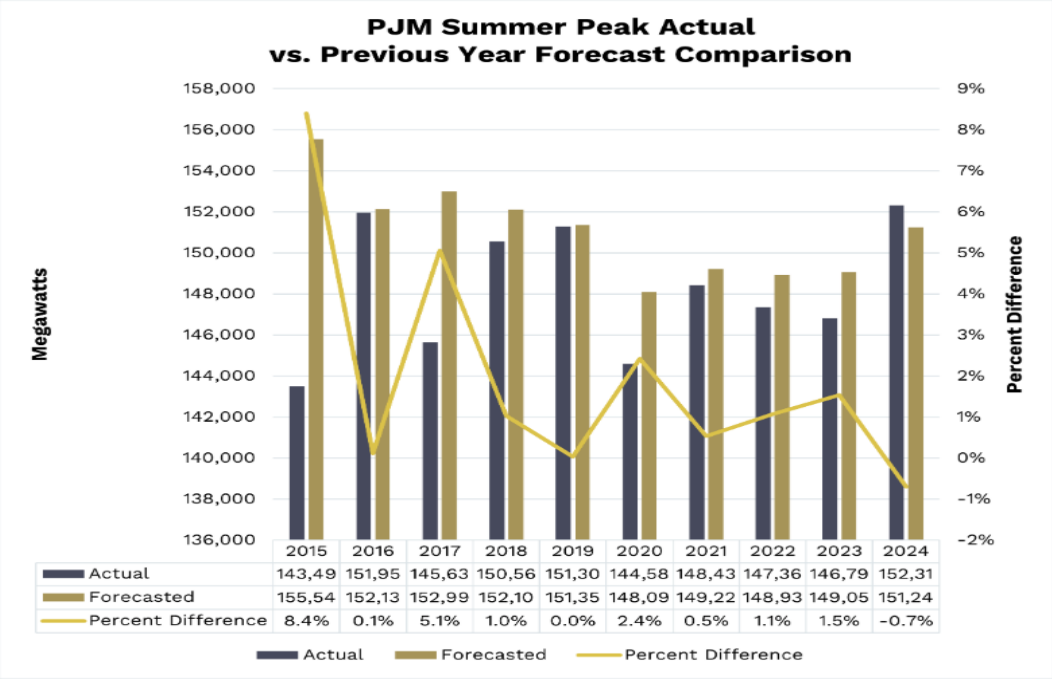
- **Blue**: With only Existing and Planned resources, projected shortfall starting in 2030 due to confirmed retirements and rising demand.
- **Red**: With Existing, Planned, and Potential resources, MISO may face challenges in meeting its reserve margin beyond 2033.

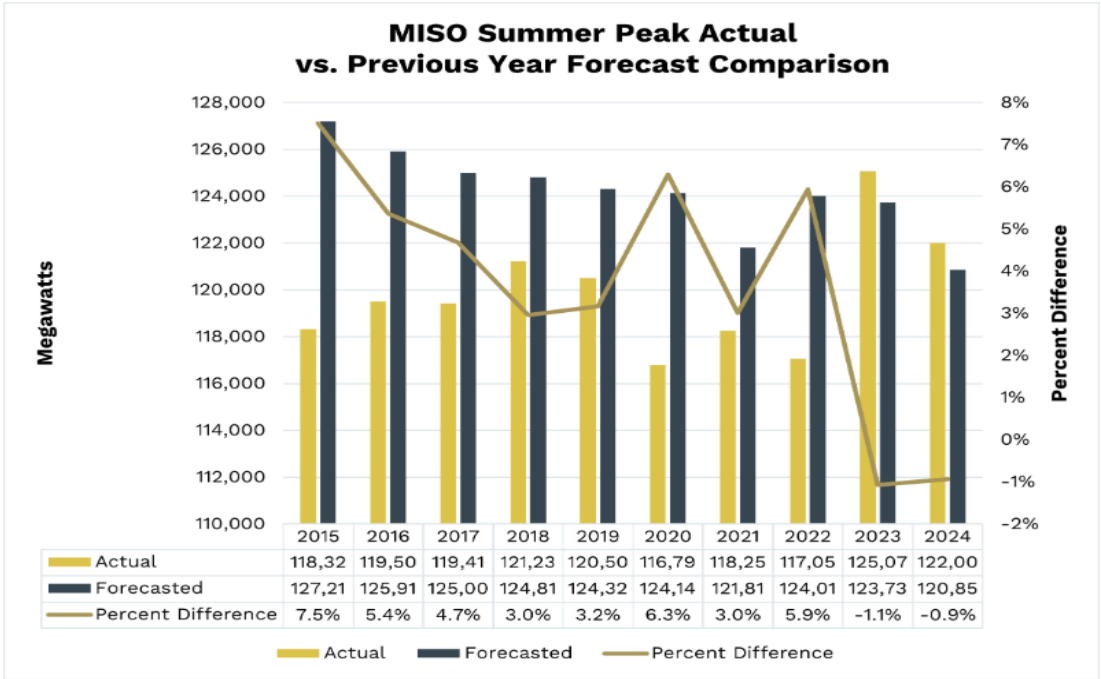


LOAD FORECASTING ACCURACY

Both PJM and MISO

- PJM's next-year peak forecast has averaged a 2.1% difference, with its accuracy improving steadily since 2015
- MISO had an average forecast difference of 4.1% from 2015 to 2024 when predicting the next year's peak but improved in 2023 and 2024 (with an average of just 1% difference)





RF RESOURCE ADEQUACY RISK

Over the next decade

- Increase in solar, wind, and battery resources
- Retirement of coal, natural gas and petroleum resources
- Battery/storage growth is not on pace with solar and wind
- Solar, wind and battery output varies during high demand periods
- Accurate load forecasts are essential for ensuring grid reliability and cost efficiency

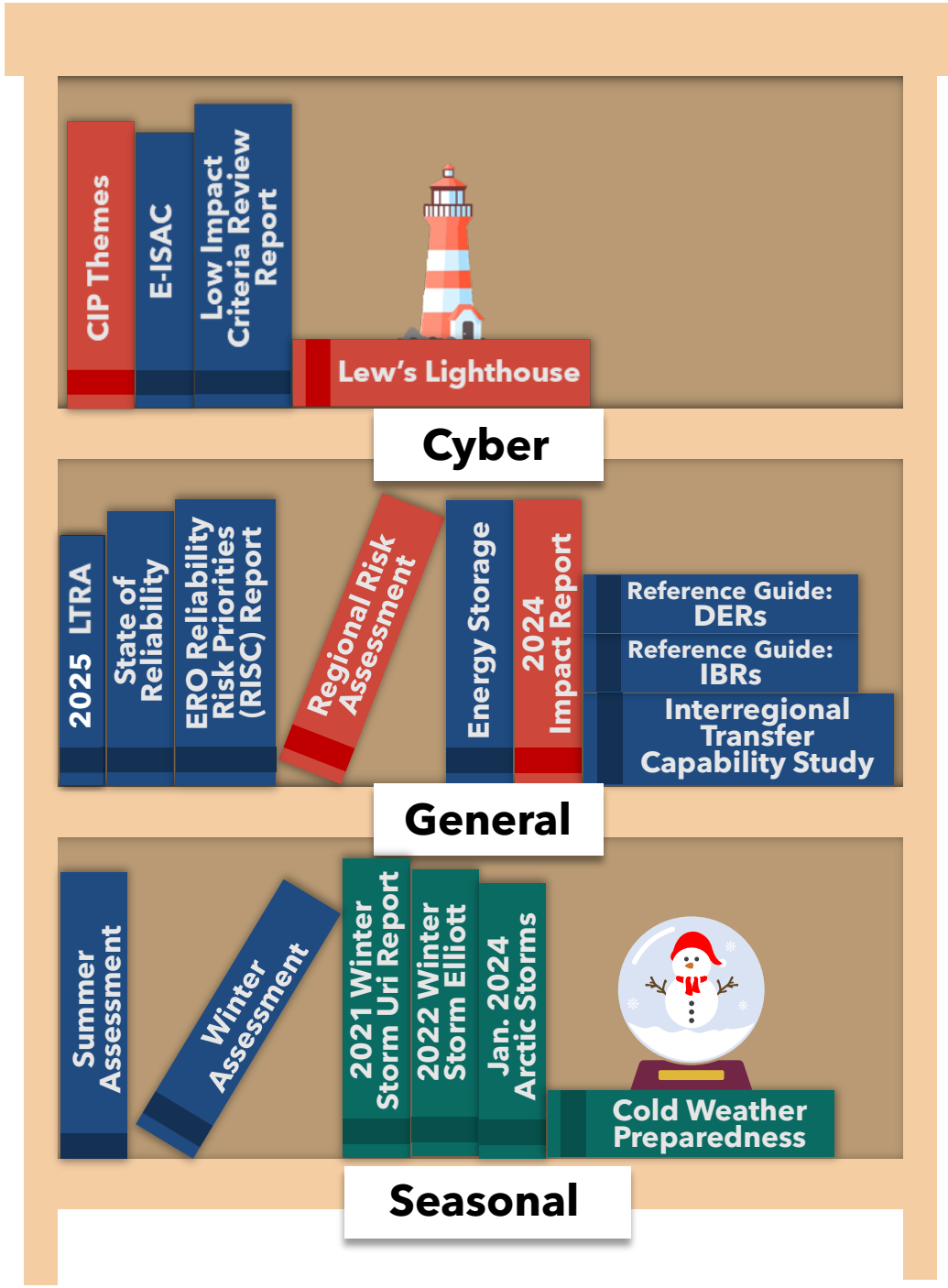
Results in high risk for resource shortfall in 2028 (MISO) and 2029 (PJM)

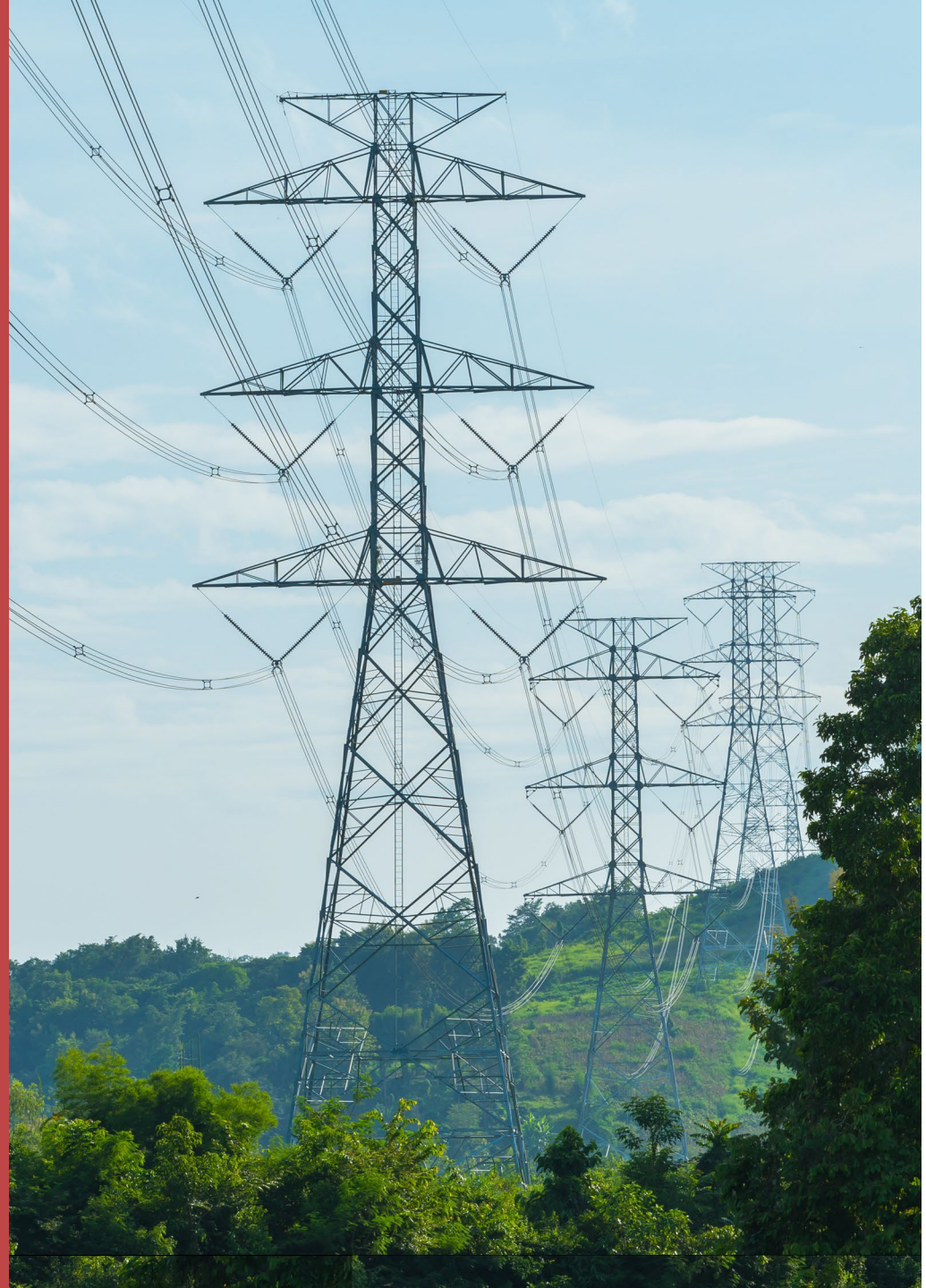
All findings are based on data collected in 2025

FORWARD TOGETHER RELIABILITYFIRST

WHAT'S ON OUR BOOKSHELF?

Full Report





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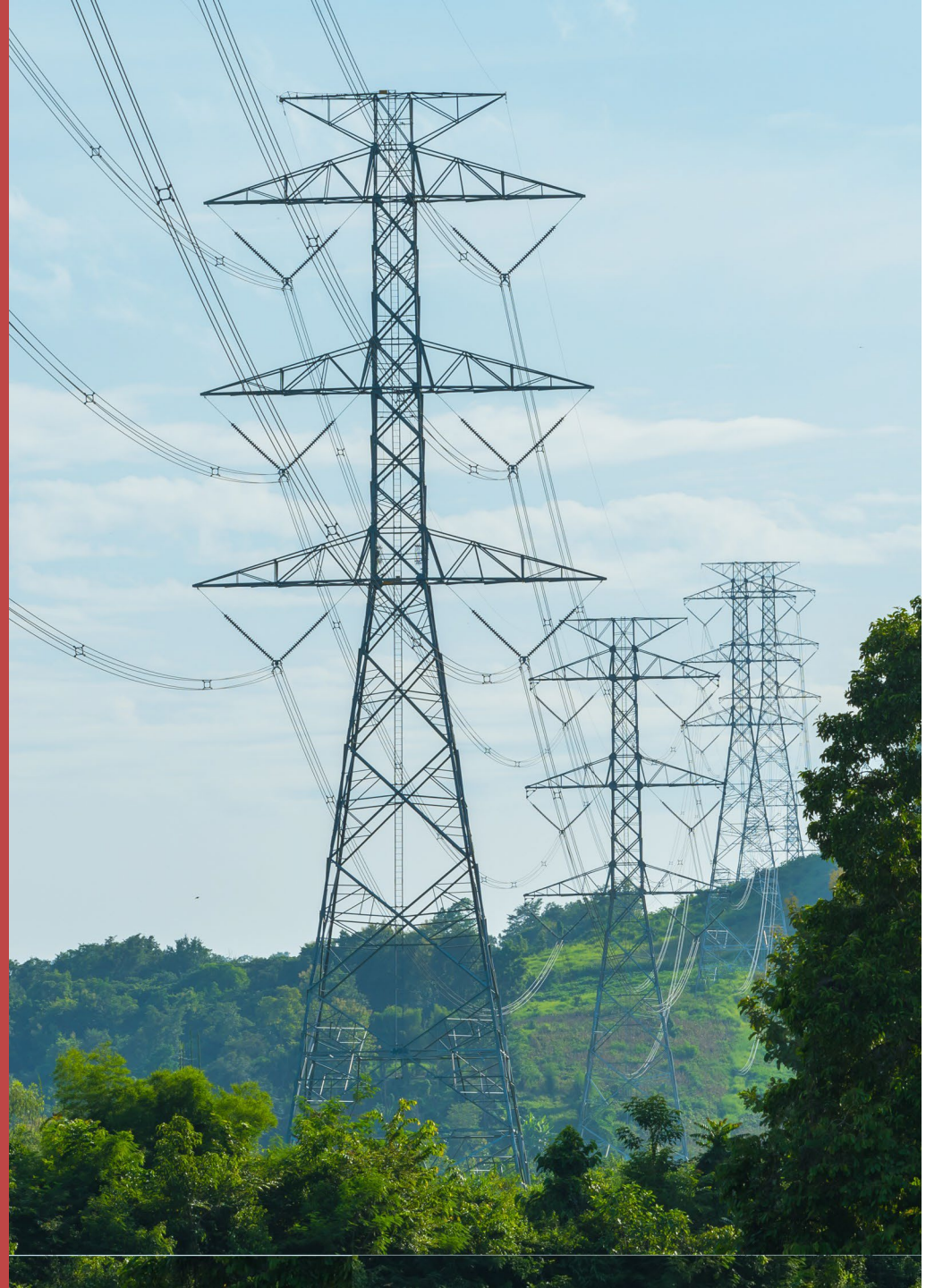
Thank You

Tim Fryfogle

tim.fryfogle@rfirst.org



FORWARD TOGETHER RELIABILITYFIRST

THANK YOU

Join us for our next Tech Talk – April 20th 2-3:30 pm EST

Webinar Link