NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

Agenda
Reliability Issues Steering Committee

June 27, 2024 | 1:00-4:00 p.m. Eastern
Virtual Meeting

WebEx Link: Join Meeting

Webinar password: RISC0624ATT (74720625 when dialing from a phone)

Audio Only: +1-415-655-0002 US Toll | +1-416-915-8942 Canada Toll

Access code: 2326 783 1164

Introductions and Chair's Remarks

NERC Antitrust Compliance Guidelines

Agenda Items

1. **RISC Work Plan Items* - Update**
   a. Reliability Leadership Summit
   b. RISC ERO Reliability Risk Priorities Report
2. **Impactful Topic: Large Loads and Data Centers* - Review and Discuss; Identify Evolving Reliability Risks and Implications**

2:30-2:45 p.m. BREAK (15 mins)

3. **Impactful Topic: Electrification* - Review and Discuss; Identify Evolving Reliability Risks and Implications**
4. **August Meeting Objectives* - Review**
   a. Impactful Topics
   b. RISC Charter Annual Review
5. **Other Matters, Closing Remarks and Adjournment**

*Background materials included.

RISC Work Plan Items

Action
Review

Reliability Leadership Summit
The purpose of the Reliability Leadership Summit is to gather industry leaders and keynote speakers to provide unique perspective into the key drivers of existing and emerging risks and use as a vehicle to prioritize identified risks as well as to potentially identify new and emerging risks. Panel sessions are put together to collaborate around key risks and mitigating strategies as well as to engage in meaningful debate about their relative importance and significance. The Reliability Leadership Summit serves as a key building block to the ultimate ERO Reliability Risk Priorities Report. NERC Staff will provide a status update on the Reliability Leadership Summit planning.

2025 ERO Reliability Risk Priorities Report
This 2025 ERO Reliability Risk Priorities Report (2025 Risk Report) will present the results of the RISC's continued work, the Reliability Leadership Summit, and the 2024 Emerging Risks Survey, to strategically define and prioritize risks to the reliable operation of the bulk power system and thereby provide recommendations to the Board of Trustees regarding the approach that NERC, the ERO, and industry should take to enhance reliability and manage those risks. NERC Staff will provide an overview of the 2025 Risk Report timeline.

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Reliability Issues Steering Committee
2025 ERO Reliability Risk Priorities Report Timeline

Task	Date	Responsible Party
2024 Reliability Leadership Summit	November 13-14	RISC Committee and NERC
RISC In-Person Committee Closed Meeting *Review and finalize report sections and select subgroups leadership/volunteers*	November 14	RISC Committee
Report Section Subgroups meet to develop the sections for the RISC Report	December-March	Report Section Groups
RISC Committee Closed Meeting to Review Draft RISC Report	Early April	RISC Committee
Report Section Groups Meet to Update Sections for RISC Report from RISC Meeting Feedback	Mid April	Report Section Groups
RISC Committee Closed Meeting to Review Proposed Final Report	Early May	RISC Committee
RISC Report Posted for Comments	Early May-End of May (20 days)	NERC Staff
NERC Staff Review Comments and Incorporate Updates as Needed	Early-Mid June	NERC Staff
RISC Committee Open Meeting to Review Comments Received/Recommended Updates to Report - Approve Report and Recommend for Board of Trustees Approval	Early July	RISC Committee
RISC Report presented to NERC Board for Acceptance	August 14	RISC Leadership

Agenda Item 2
Reliability Issues Steering
Committee Meeting
June 27, 2024

Impactful Topic: Large Loads and Data Centers

Action

Review and discuss; identify evolving reliability risks and implications.

Background

Industry is currently seeing a rapid integration of new large loads on the system, and this rapidly accelerating change is forcing transmission planners and operators to look at their systems differently. These emerging loads are very large, and they have a short timeline for interconnection. These loads also have different performance characteristics from historically large commercial loads, and they are presenting nuanced reliability and security challenges. This discussion will delve into two areas where we are seeing large loads impact the system at an accelerating pace: 1) electric vehicles and 2) data centers/crypto mining centers. Additionally, this discussion will serve as an introduction into some of the work that NERC's Engineering department will be undertaking to better understand the challenges of emerging loads and what the impact will be on the bulk power system.

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Impactful Topic: Large Loads and Data Centers

Soo Jin Kim, Vice President, Engineering and Standards
Reliability Issues Steering Committee Meeting
June 27, 2024

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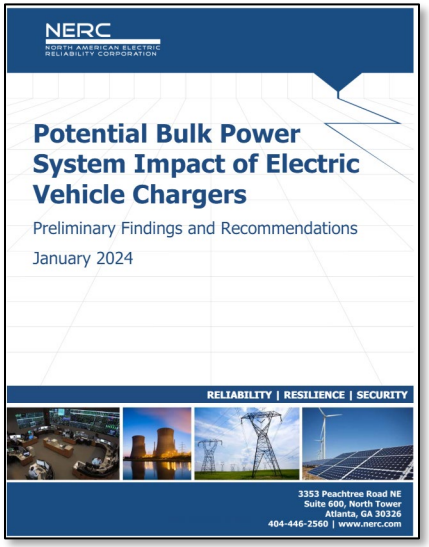
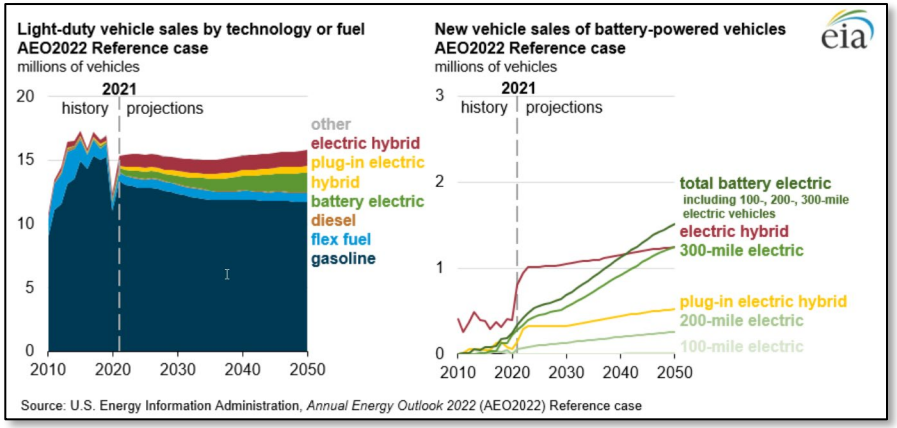
The Electrical Problem Statement

- **EV Charging Study** Key Takeaways:
  - Beta model “works”, but is on 7-12 year old equipment and assumptions.
  - Large amounts of EVs can affect BPS response to common outages
  - Utilities and automotive representatives need to talk and implement “grid friendly” transitions



- EV growth could be as great as an additional Interconnection in size



Where the Bulk Power System is Today

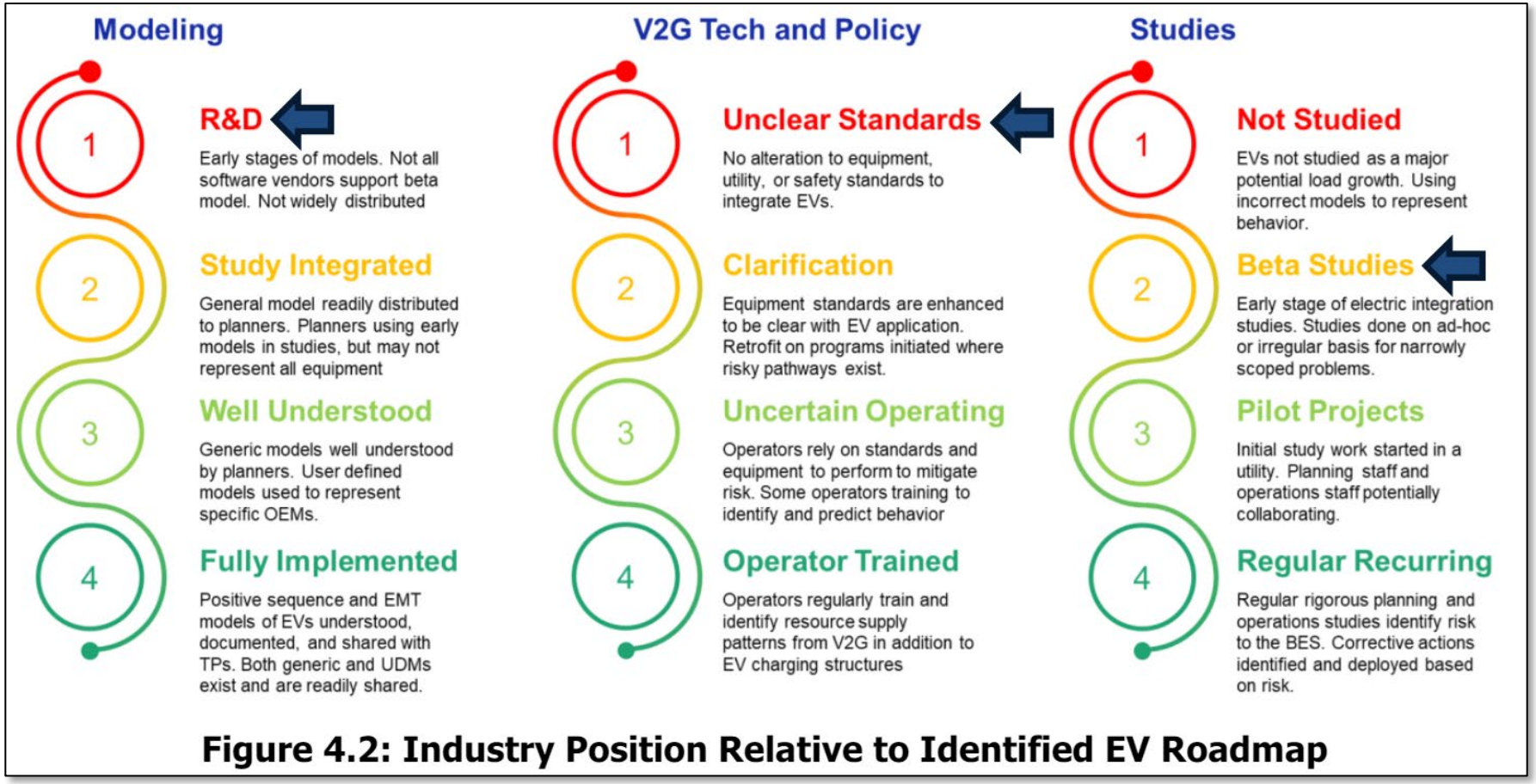
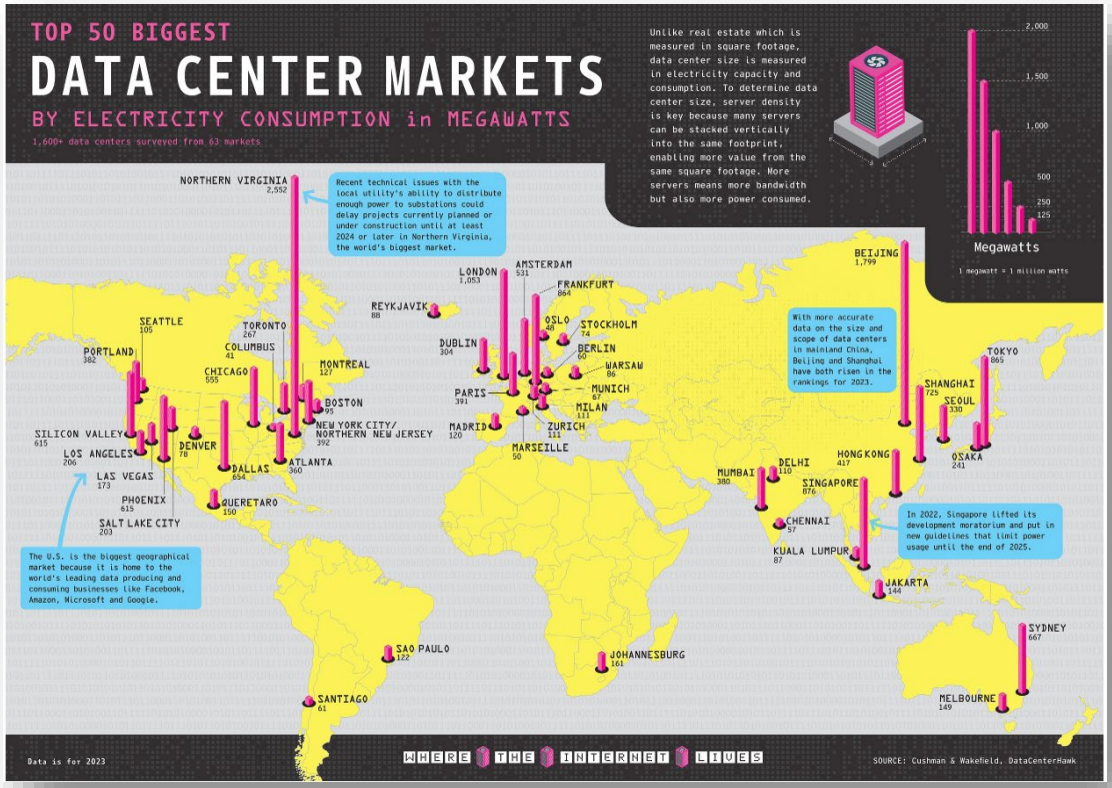


Figure 4.2: Industry Position Relative to Identified EV Roadmap

Large Loads - Risks



Source: https://www.visualcapitalist.com/cp/top-data-center-markets/

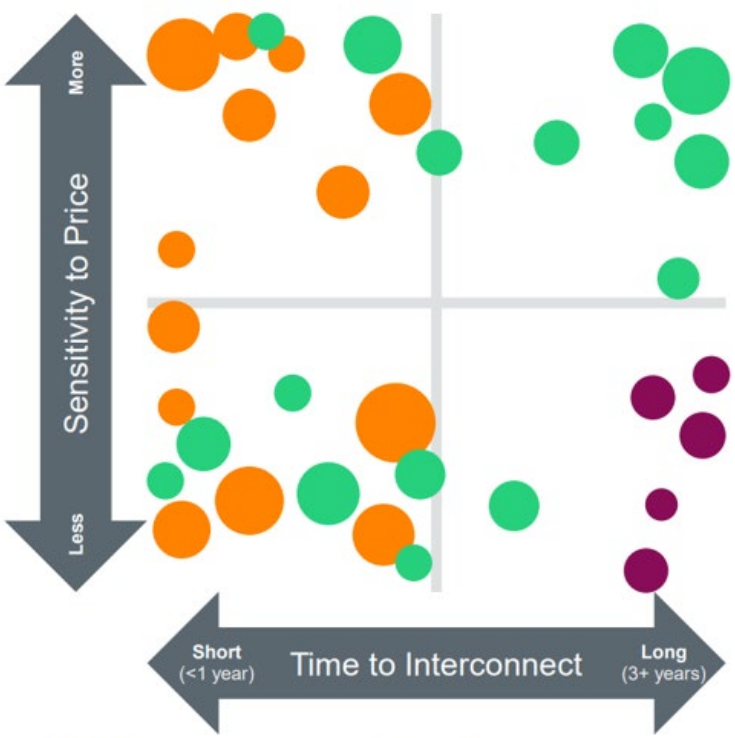
Reliability Risks

- Short Timelines to Interconnect
- Flexible, Price Sensitive
- Rapid Variations in Demand
- Voltage Ride-Through

Sample Data Center – Northern Virginia

Source: https://www.vedp.org/case-study/meta-friends-virginia

Large Loads Task Force Scope



ERCOT 's Historic (Purple), Current (Orange), Future (Green) Large Loads

Source : 2023_NATF-EPRI-NERC_PM_Virtual_Seminar-Day_1

- **Purpose**
  - Understand performance of emerging large loads and impact on the Bulk Power System
- **Deliverables**
  - Issue guidance in the form publishing technical documents
  - Recommendations to gaps in assessments

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Questions and Answers

Impactful Topic: Electrification

Action

Review and discuss; identify evolving reliability risks and implications.

Summary

Electrification is a term for replacing direct fossil fuel use (e.g., propane, heating oil, gasoline) with electricity in a way that reduces overall emissions and energy costs. There are many examples across the residential and commercial sectors where electricity is being substituted for existing processes such as heating, cooking, commercial and industrial processes. Additionally, after almost two decades of minimal load growth at the national level, electrification, extreme weather, and local/regional point sources are beginning to drive increases. In a net-zero greenhouse gas future, electricity could provide 40 to 60 percent of end use energy, versus 21% today. In addition, electricity could prove key to producing carbon-free fuels to "power" end-use applications that are hard or expensive to electrify.

Dr. Tom Wilson, Senior Program Manager at the Electric Power Research Institute (EPRI) will lead a discussion of the key drivers of load growth, the potential pace of change, regional variations, and key uncertainties, drawing insights from EPRI and other leading research efforts.

August 2024 Meeting Objectives

Action
Review

Impactful Topics for Future Meetings
NERC Leadership will review the recommended impactful topics from Committee members for review and discussion at future meetings and will seek Committee input and any additional recommendations for topics.

RISC Charter Annual Review
The Board of Trustees shall approve the charter of a standing committee and assign specific authority to conduct business within that charter. The RISC has been operating under its charter for almost four years, last approved by the Board in August 2020. NERC management and legal will conduct an annual review of the RISC Charter, taking into consideration potential administrative alignments with the other standing committees, and anticipates bringing forth recommended amendments for review and consideration by the Committee at the Committee's August meeting.

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Impactful Topics Recommendations from RISC Members

Transmission

- New Technologies such as Generative AI and Heimdall Neurons
- Geopolitical Stressors – how do we plan for outages at multiple Generation or transmission sites
- System strength and should this be part of Grid Transformation
- Grid impacts of utility-scale battery deployment
- Dynamic ratings, ambient adjusted ratings
- 1 day in 10 planning,
- Multi-factor Reliability Standards – why we need them
- Development of probabilistic planning techniques and tools to account for inherent risk of intermittent resources.
- Consolidation of Operational and Planning models and their supporting databases
- Supply chain (security and deliverability)
- System planning (expectations versus reality)
- The industry move to dynamic and real-time ratings is a good move and can be a big help to optimize the grid. The essence of it is to not operate so conservatively and be more realistic in real-time as to grid capacity and capability. It results in operating the grid closer to the edge of capability, which should be fine until a significant contingency occurs. I expect we will still operate with N-1 in mind. But when that contingency occurs, we may need to have specific response plans defined and able to be executed rather quickly. Since we will then be in N-1 situation, we may need to be able to quickly shift to N-2 operations. Dynamic ratings will necessitate more dynamic operational capabilities and adaptations. That will require more maturity in operational planning than we had in the past.

Load

- Emerging loads
  - Some of the emerging loads are very large, and the location, supply mix (capacity and energy) and transmission required for such a load could be challenging. Proximity of load centers and use of renewable/variable supply, might strain operational control flexibility and eat into contingency especially as we attempt to extend operational limits with dynamic adjusted ratings. The utility industry typically does not have much influence over where and when loads emerge, but with very large loads the potential for adverse consequences are more significant.
- Crypto mining and the use of loads as Resources

- Standard development for large loads
- Huge Datacenter loads (GW size) and their impact as single contingencies
- Voltage and ride through performance for large loads
- Generative AI
- Rapid addition of large loads
- Some things on this list could be combined into a very timely "super-session" on load growth:
  - Emerging loads, AI/datacenters, and hydrogen production. In my view, these are the "game changing" topics for this year's summit. Dealing with this unprecedented rate of growth, ensuring that new large loads participate in the markets and provide grid reliability service, and just keeping these resources connected to the bulk power system rather than going their own way (and potentially taking a large part of our nuclear fleet away from the grid!) are all key topics to include in this session.
- I'm just listening to an excellent workshop of the California Energy Commission from which we could identify some speakers. See https://www.energy.ca.gov/event/workshop/2024-05/ieprcommissioner-workshop-electricity-load-growth-areas

Resources

- IBR standards
- Grid Forming inverters
- Legacy equipment standards
- Hydrogen Tech & Compressed Natural Gas
- Deeper look at Energy Policy
- Defining a reasonable transition (fossil to green) expectation (it may take 20 years)
- Policy changes, SOC accounting, modeling, Planning assumptions
- Effective Energy Storage incorporation
- Retirement of dispatchable generation

Summit/Report

I think the general format for the summit should mirror the existing RISC profiles as follows:

- Policy
- Grid Transformation
- Resilience to Extreme Events
- Security
- Critical Infrastructure Interdependencies
  - I think the Resilience and Interdependencies topics could be merged as needed.

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Reliability Issues Steering Committee Charter

Approved by the NERC Board of Trustees
August 20, 2020

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Suite 600, North Tower
Atlanta, GA 30326
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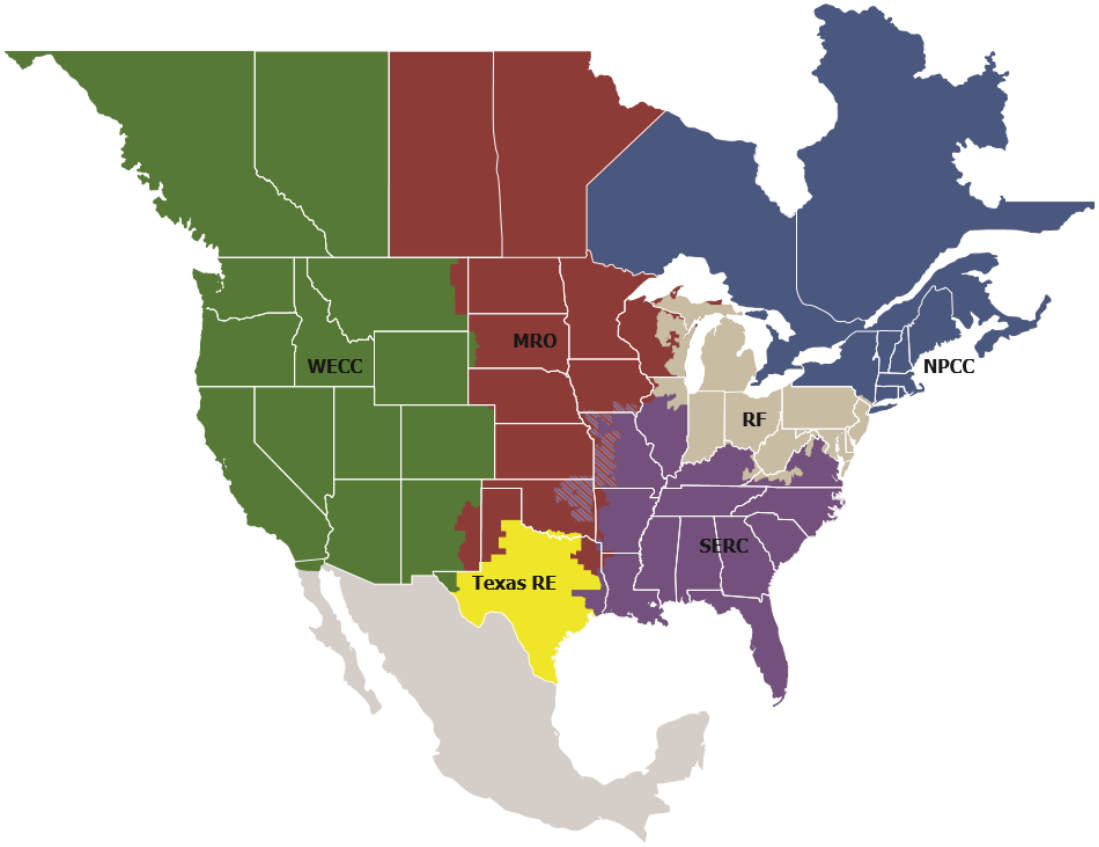
Preface

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

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

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



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

RISC Charter

Purpose

The Reliability Issues Steering Committee (RISC or Committee) is an advisory committee that triages and provides front-end, high-level leadership for issues of strategic importance to bulk power system (BPS) reliability and offers high-level stakeholder leadership engagement and input on issues that impact bulk-power system reliability. The RISC advises the North American Electric Reliability Corporation (NERC) Board of Trustees (Board), NERC standing committees (including the Standards Committee, Compliance and Certification Committee, and Reliability and Security Technical Committee), NERC staff, regulators, Regional Entities, and industry stakeholders to establish a common understanding of the scope, priority, and goals for the development of solutions to address these issues, including the use of solutions other than the development of new or revised reliability standards. In doing so, the RISC provides a framework for steering, developing, formalizing, and organizing recommendations to help NERC and the industry effectively focus their resources on the critical issues needed to best improve the reliability of the BPS.

Reporting

The RISC reports directly to the Board. The Board shall approve this Charter and any amendments to this Charter pursuant to Section 1300 of the NERC Rules of Procedure.

Overview and Functions

The RISC performs two primary functions for the Board.

The first function of the RISC is evaluating BPS reliability issues and risks. The RISC provides strategic leadership and advice to the NERC Board of Trustees and others to triage key reliability risks and propose solutions to manage those risks.

Second, the RISC provides an annual analysis of risks to the BPS, and produces a relative prioritization of the risks. The prioritization is designed to advise:

- Annual ERO action planning, resource allocation, budgeting and strategic planning processes; and
- Standing committee planning, including the development of the Reliability Standards Development Plan and coordination with the Reliability and Security Technical Committee.

In addition, the RISC performs such other functions that may, from time to time, be delegated or assigned by the Board.

Membership

The RISC shall be comprised of the following allocation of members:

1. At least six (6) stakeholder-based— four (4) from the MRC and at least two (2) At-Large members (not members of the MRC);
2. Three (3) committee-based—one (1) from each of the standing committees: Standards (SC), Reliability and Security Technical Committee and Compliance and Certification (CCC). The Board will be responsible for appointing the committee-based members to the RISC. These members will be the chair or vice chair unless otherwise recommended by the standing committee and be subject to NERC Board approval.

In advance of the annual February Board meeting, the RISC Nominating Committee (RISCNC) chaired by the Member Representatives Committee (MRC) vice chair and including the Board vice chair, the NERC President and CEO, and the Committee chair and vice chair will solicit a pool of candidates, with the goal of meeting the following general criteria:

1. Geographic and International diversity, including international, such that Eastern, Western, and Texas Interconnections, along with Canada are represented on the RISC;
2. Sector, size, and asset (transmission, distribution, load, generation, etc.) diversity;
3. High-level understanding and perspective on reliability risks;
4. Experience in a leadership role or background in an executive-level position is strongly preferred; and
5. Balanced consideration of these criteria, across the entire membership of the RISC.

The Board is responsible for appointing the committee-based, MRC and At-Large members to the RISC. At the February Board meeting each year (or as needed), the RISCNC shall present to the Board a recommended slate of all RISC member candidates as appropriate for consideration and approval.

All MRC and At-Large members will be appointed by the Board to serve for two-year terms, Membership terms will be staggered to ensure continuity.

Officers

1. **Selection of the Chair -** The Board shall appoint a chair of the RISC to serve a two-year term and direct the activities of the RISC, and work toward reaching consensus on all recommendations and actions.
2. **Selection and Duties of the Secretary -** NERC will appoint one senior staff person to serve as a secretary with the responsibility to:
    a. Prepare, distribute and post notices of Committee meetings, record meeting proceedings, and prepare, distribute and post meeting minutes.
    b. Maintain a record of all Committee proceedings, including responses, and correspondence.
    c. Maintain Committee membership records.

Meetings

1. **Open Meetings -** Meetings shall occur at least once every quarter and can be in person or by conference call as determined by the chair. All meetings of the RISC will be open to all interested parties (except as noted in the paragraph below for confidential sessions). Only members may act on items before the Committee. Meeting notices shall be publicly posted on the NERC website on the same day they are distributed to Committee members. Final minutes of Committee meetings shall be publicly posted on the NERC website. Notices shall describe the purpose of meetings and shall identify a readily available source for further information about the meeting.
2. **General Requirements -** The Committee shall hold meetings as needed and may use conference calls or email to conduct its business.
3. **Notice -** The RISC secretary shall announce its regularly scheduled meetings with a written notice (letter or e-mail) to all Committee members not less than ten and no more than sixty calendar days prior to the date of the meeting.
4. **Agenda -** The RISC secretary shall provide an agenda with a written notice (letter, facsimile, or e-mail) for

Committee meetings no less than five business days before a proposed meeting.

a. The agenda shall include, as necessary, background material for agenda items requiring a decision.

b. The agenda shall be posted on the NERC website the same day it is distributed to Committee members.

c. Items not in the agenda that require a decision cannot be added at a meeting without the consensus of the members present. If such a matter comes up, it may also be deferred to the next meeting so that Committee members have time to consult with others.

5. **Quorum.** The quorum necessary for the transaction of business (*i.e*., formal actions) at meetings of the committee is a majority of the members currently on the committee roster (*i.e.,* not including vacancies). The committee may engage in discussions without a quorum present.

6. **Proxies.** Proxies are not permitted.

7. **Observers.** Non-members may observe RISC meetings, either in person or via conference call.

8. **Confidential Sessions.** The chair of the RISC may limit attendance at a meeting or portion of a meeting, based on confidentiality of the information to be disclosed at the meeting. Such limitations will be applied sparingly and on a nondiscriminatory basis as needed to protect critical energy infrastructure information and other information that is sensitive to one or more parties. Confidential Information will only be disclosed as provided by Section 1500 of the NERC Rules of Procedure. Confidentiality agreements may also be applied, as necessary, to protect Confidential Information.

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Reliability Issues Steering Committee

2024 Roster

Board of Trustees Approved: February 2024

Member Type/Term	Name/Organization
Chair Term expiring January 31, 2026	Teresa Mogensen ATC
At-Large Member Term expiring January 31, 2026	Bill Zuretti EPSA
At-Large Member Term expiring January 31, 2026	Woody Rickerson ERCOT
At-Large Member Term expiring January 31, 2026	Jennifer Sterling Exelon
At-Large Member Term expiring January 31, 2026	Sean Gallagher SEIA
At-Large Member Term expiring January 31, 2026	Dennis McDermitt National Grid
At-Large Member Term expiring January 31, 2026	Jim Jones Great River Energy
At-Large Member Term expiring January 31, 2026	Walter Alvarado Consolidated Edison
At-Large Member Term expiring January 31, 2026	Mark Ahlstrom Nextera Analytics
At-Large Member Term expiring January 31, 2026	David Heitzer BP Energy Retail
At-Large Member Term expiring January 31, 2026	Morenike Miles Dominion Energy
At-Large Member Term expiring January 31, 2025	Brian Slocum, Past Chair ITC Holdings
At-Large Member Term expiring January 31, 2025	Al Tamimi Sunflower Electric Power Corporation
At-Large Member Term expiring January 31, 2025	Lee Ragsdale NC Electric Membership Corporation
At-Large Member Term expiring January 31, 2025	Joe Sowell Georgia Transmission
At-Large Member Term expiring January 31, 2025	Daniel Mishra JEA

At-Large Member Term expiring January 31, 2025	Tim Kelley SMUD
At-Large Member Term expiring January 31, 2025	Roderick Robinson PG&E
At-Large Member Term expiring January 31, 2025	Chris Lincoln NB Power
At-Large Member Term expiring January 31, 2025	Ranjika Manamperi Ontario Power Generation
At-Large Member Term expiring January 31, 2025	Tim Swanson FortisBC
At-Large and Past Chair Term expiring January 31, 2025	Nelson Peeler Duke Energy
At-large Member Term expiring January 31, 2025	Tom Galloway North American Transmission Forum
MRC Member Term expiring January 31, 2026	Jennifer Flandermeyer Nextera
MRC Member Term expiring January 31, 2026	Matthew Fischesser ACES
MRC Member Term expiring January 31, 2026	Darryl Maxwell Manitoba Hydro
MRC Member Term expiring January 31, 2026	Edison Elizeh BPA
Compliance and Certification Committee Term expiring January 31, 2025	Silvia Parada-Mitchell NextEra Energy
Reliability and Security Technical Committee Term expiring January 31, 2025	John Stephens City Utilities of Springfield
Standards Committee Term expiring January 31, 2025	Todd Bennett Associated Electric Cooperative, Inc
Secretary	Tina Buzzard NERC

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Reliability Issues Steering Committee
2024 Meeting Calendar

Meeting Date	Meeting Platform
June 27 | Central Time 12:00 p.m. Lunch 1:00-4:00 p.m. Meeting	Hybrid In-Person at Hilton Chicago O'Hare Airport
August 19 3:00-4:00 p.m. Eastern	Virtual via WebEx
September 19 4:00-5:00 p.m. Eastern	Virtual Via WebEx
October 31 3:00-4:00 p.m.	Virtual Via WebEx
Reliability Leadership Summit November 13 & 14	In-Person Westin | 999 9th St | Washington, D.C.
November 14 | 1:00-4:00 p.m. (or after conclusion of Summit/Lung)	In-Person Westin | 999 9th St | Washington, D.C.
December TBD	Virtual Via WebEx