NPCC, Inc.

Inverter-Based Resource (IBR) Registration

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June 9, 2025

The Reliability Gap

ERO Enterprise assessments identified a reliability gap arising due to the increasing penetration of inverter-based resources (IBR) on the grid and the need for updated registration rules under the NERC Rules of Procedure (ROP).

FERC ordered NERC to prepare a work plan to accomplish the above by May 2026.

The Solution

NERC seeks to register Generator Owners (GO) and Generator Operators (GOP) of non-Bulk Electric System IBRs with an aggregate nameplate capacity ≥20 MVA connected at a voltage ≥60 kV.

Under this proposal, 97.5% of BPS-impactful IBRs would become subject to NERC Reliability Standards, commensurate to the 97% of BPS-impactful synchronous resources currently subject to these standards by nameplate capacity.

Rule of Procedure Modification

Generator Owner is the entity that:

- owns and maintains generating Facility(ies) (Category 1 GO); or
- owns and maintains non-BES inverter based generating resources that either have or contribute to an aggregate nameplate capacity of greater than or equal to 20 MVA, connected through a system designed primarily for delivering such capacity to a common point of connection at a voltage greater than or equal to 60 kV (Category 2 GO).

Rule of Procedure Modification

Generator Operators is the entity that:

- operates generating Facility(ies) and performs the functions of supplying energy and Interconnected Operations Services (Category 1 GOP); or
- operates non-BES inverter based generating resources that either have or contribute to an aggregate nameplate capacity of greater than or equal to 20 MVA, connected through a system designed primarily for delivering such capacity to a common point of connection at a voltage greater than or equal to 60 kV (Category 2 GOP).

Registration

Source: Microsoft Stock Images

IBR Registration Milestones

NERC is currently in **Phase 3** of the registration milestones identified in the FERC-approved work plan.

Source: Quick Reference Guide: IBR Registration Initiative

Category 2 Candidate Identification

Request for Information 1 (due September 2024)

- Balancing Authorities
- Transmission Owners

Request for Information 2 (initiated December 2024)

- Registration Candidates

REGIONAL ENTITY	NUMBER OF IBRS	MVA
MRO	118	5,130
NPCC	57	1,862
ReliabilityFirst	77	3,513
SERC	171	9,881
Texas RE	39	1,998
WECC	319	12,800
TOTAL	**781**	**35,184**

*The numbers in this table are subject to change based on further validation.

Source: IBR Registration Workplan May Update_Signed.pdf

NPCC IBR Candidate Expectations

RFI was distributed in December 2024

- Asset Verification Form
- Interconnection Agreement
- Third-Party Operating Agreement

NPCC Registration Outreach

- One-on-One with each Candidate
- Establish Expectations
- Answer Questions

Centralized Organization Registration ERO System (CORES)

- Category 2 expanded existing GO/GOP Functional Registration
- All existing registered GO/GOP should meet the BES Definition
- Modification are in progress to accommodate Category 2
  - Expected: Q3 2025

Standards

Glossary/ROP Alignment

Project 2024-01: Rules of Procedure Definitions Alignment

Terms:

Generator Owner (GO):	Generator Operator (GOP):
• The entity that: 1) owns and maintains generating Facility(ies) (Category 1 GO); or 2)owns and maintains non-BES Inverter-Based Resource(s) that either have or contribute to an aggregate nameplate capacity of greater than or equal to 20 MVA, connected through a system designed primarily for delivering such capacity to a common point of connection at a voltage greater than or equal to 60 kV (Category 2 GO).	• The entity that: 1) operates generating Facility(ies) and performs the functions of supplying energy and Interconnected Operations Services (Category 1 GOP); or 2) operates non-BES Inverter-Based Resources(s) that either have or contribute to an aggregate nameplate capacity of greater than or equal to 20 MVA, connected through a system designed primarily for delivering such capacity to a common point of connection at a voltage greater than or equal to 60 kV (Category 2 GOP).

Source: 2024-01 GO GOP Definitions_Clean_IB_032425.pdf

GO/GOP Category 2 (IBR) Standards

Phased-In Compliance Dates for the Listed Standards

Eight (8) Reliability Standards have been identified through a NERC staff analysis[1] as applicable and enforceable to generation assets that meet the Category 2 criteria without any revisions to those Reliability Standards or requirements.

For those generation assets that meet the Category 2 criteria in the modified definitions, GOs and GOPs shall comply with the below-listed Reliability Standards the later of May 16, 2026, or as otherwise provided for by the applicable governmental authorities in that jurisdiction.

These Reliability Standards are as follows:

- BAL-001-TRE-2
- IRO-010-5
- MOD-032-1
- PRC-012-2
- PRC-017-1
- TOP-003-6.1
- VAR-001-5
- VAR-002-4.1

Source: 2024-01 Implementation Plan

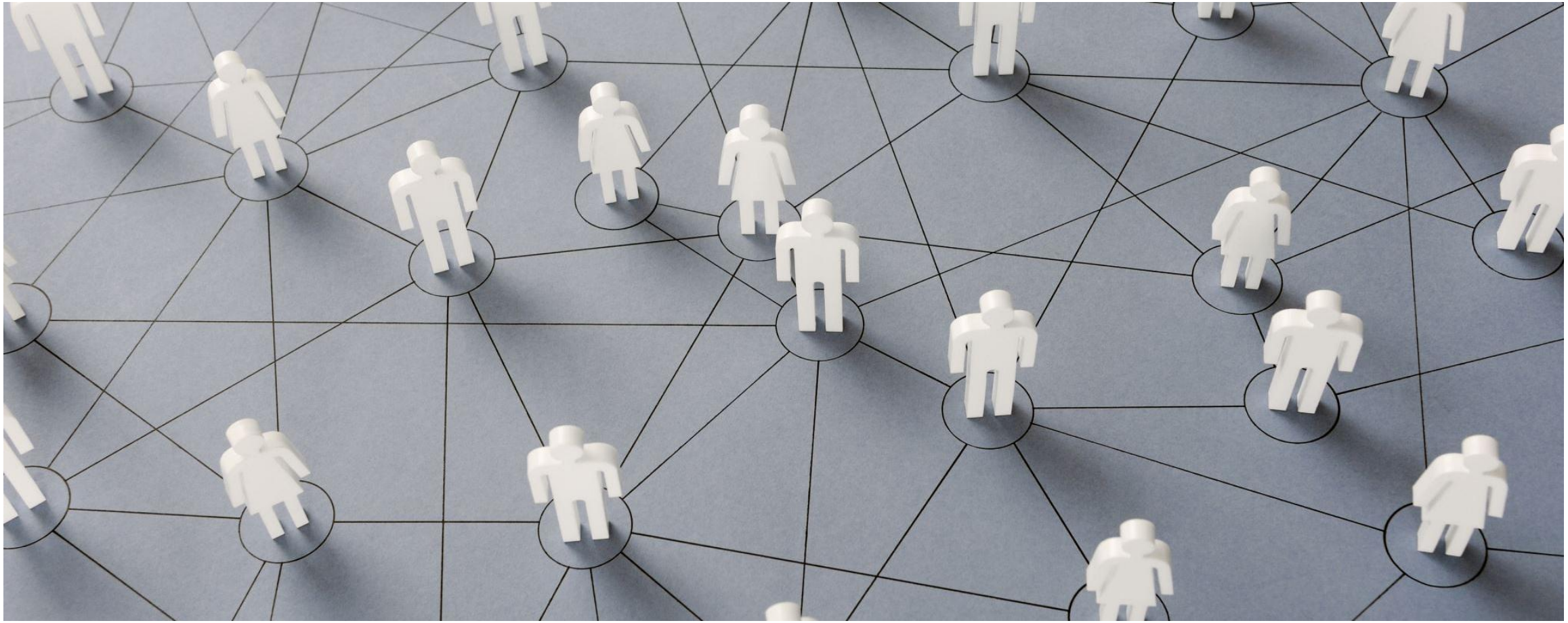
GO/GOP Category 2 (IBR) Standard Modifications

Modifications required for Additional Standards

[Reliability Standards Compliance Dates for Generation Owners & Generator Operators]

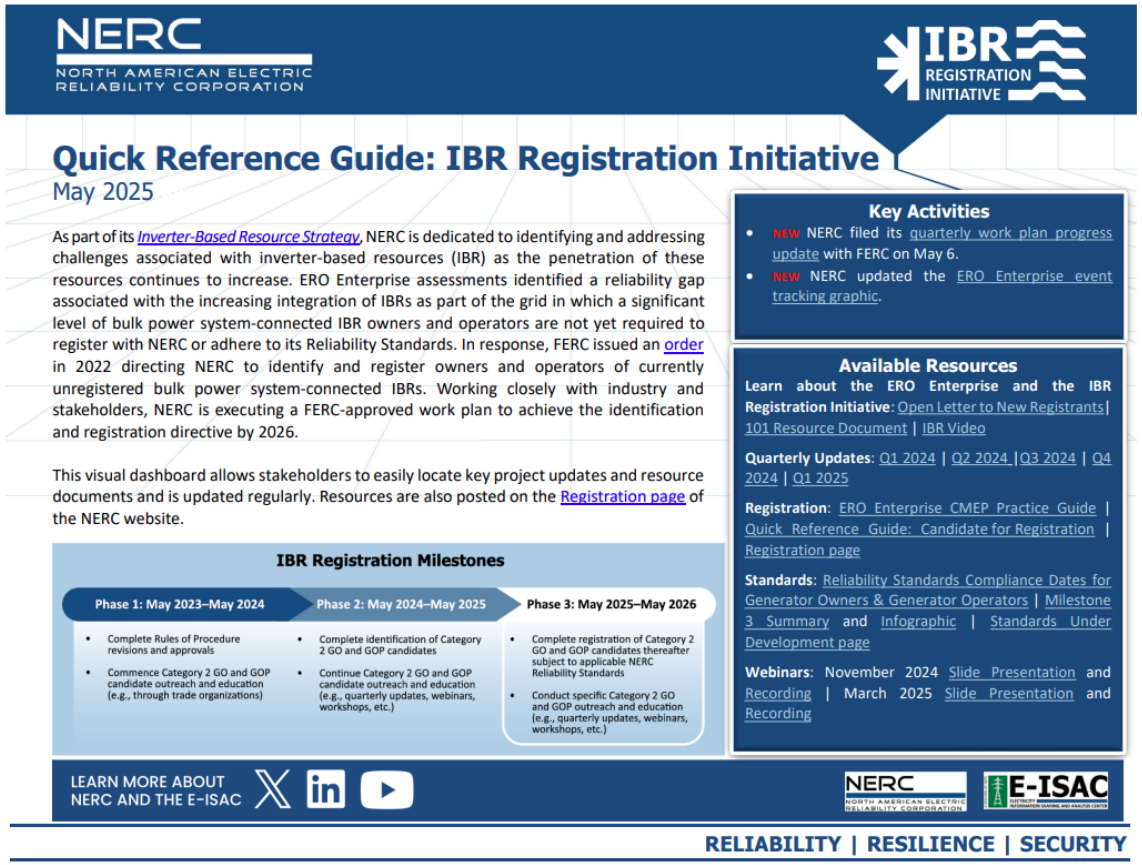
Reliability Standard	Standards Project # For Inclusion of Cat 2	Status	Effective Date of Standard	Category 2 IBR Compliance Date
PRC-019	-	Requires Modification	-	-
PRC-023	-	Requires Modification	-	-
PRC-024	-	Requires Modification	-	-
PRC-025	-	Requires Modification	-	-
PRC-026	-	Requires Modification	-	-
PRC-027	-	Requires Modification	-	-
PRC-028-1	Project 2021-04	Approved	4/1/2025	7/1/2026
PRC-029-1	Project 2020-02	Pending FERC Approval	Pending FERC Approval	Pending FERC Approval
PRC-030-1	Project 2023-02	Approved	TBD	TBD
TOP-001	-	Requires Modification	-	-
TPL-007	-	Requires Modification	-	-

Communications



Source: Microsoft Stock Images

Resources



NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

IBR REGISTRATION INITIATIVE

Quick Reference Guide: IBR Registration Initiative

May 2025

As part of its *Inverter-Based Resource Strategy*, NERC is dedicated to identifying and addressing challenges associated with inverter-based resources (IBR) as the penetration of these resources continues to increase. ERO Enterprise assessments identified a reliability gap associated with the increasing integration of IBRs as part of the grid in which a significant level of bulk power system-connected IBR owners and operators are not yet required to register with NERC or adhere to its Reliability Standards. In response, FERC issued an order in 2022 directing NERC to identify and register owners and operators of currently unregistered bulk power system-connected IBRs. Working closely with industry and stakeholders, NERC is executing a FERC-approved work plan to achieve the identification and registration directive by 2026.

This visual dashboard allows stakeholders to easily locate key project updates and resource documents and is updated regularly. Resources are also posted on the Registration page of the NERC website.

Key Activities

- NEW NERC filed its quarterly work plan progress update with FERC on May 6.
- NEW NERC updated the ERO Enterprise event tracking graphic.

Available Resources

Learn about the ERO Enterprise and the IBR Registration Initiative: Open Letter to New Registrants | 101 Resource Document | IBR Video

Quarterly Updates: Q1 2024 | Q2 2024 | Q3 2024 | Q4 2024 | Q1 2025

Registration: ERO Enterprise CMEP Practice Guide | Quick Reference Guide: Candidate for Registration | Registration page

Standards: Reliability Standards Compliance Dates for Generator Owners & Generator Operators | Milestone 3 Summary and Infographic | Standards Under Development page

Webinars: November 2024 Slide Presentation and Recording | March 2025 Slide Presentation and Recording

IBR Registration Milestones

Phase 1: May 2023–May 2024	Phase 2: May 2024–May 2025	Phase 3: May 2025–May 2026
• Complete Rules of Procedure revisions and approvals • Commence Category 2 GO and GOP candidate outreach and education (e.g., through trade organizations)	• Complete identification of Category 2 GO and GOP candidates • Continue Category 2 GO and GOP candidate outreach and education (e.g., quarterly updates, webinars, workshops, etc.)	• Complete registration of Category 2 GO and GOP candidates thereafter subject to applicable NERC Reliability Standards • Conduct specific Category 2 GO and GOP outreach and education (e.g., quarterly updates, webinars, workshops, etc.)

LEARN MORE ABOUT NERC AND THE E-ISAC

NERC E-ISAC

RELIABILITY | RESILIENCE | SECURITY

Currently Available

- Quarterly Updates: Q1 2025
- Quick Reference Guides and FAQs:
  - IBR Registration Initiative
  - IBR Activities
  - Candidate for Registration
  - IBR Webinar Series
  - ERO Enterprise CMEP Practice Guide
  - Inverter-Based Resources (IBR) Registration Initiative—101

Source: Quick Reference Guide: IBR Registration Initiative

A DIVISION OF NERC

E-ISAC

ELECTRICITY INFORMATION SHARING AND ANALYSIS CENTER

The Electricity Information Sharing and Analysis Center (E-ISAC)

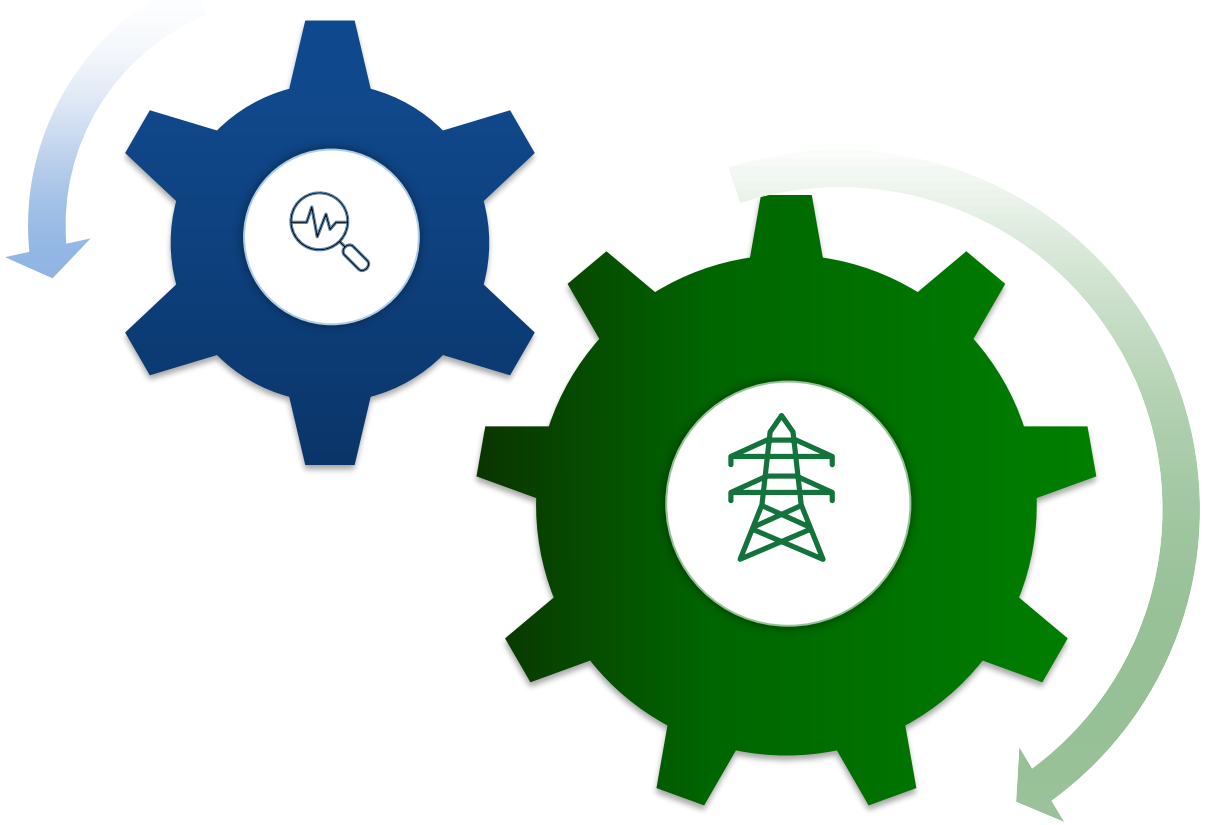
TLP:CLEAR

RELIABILITY | RESILIENCE | SECURITY




Vision

To be a world-class, **trusted** source for **quality analysis** and **rapid sharing** of security information for the electricity industry



Mission

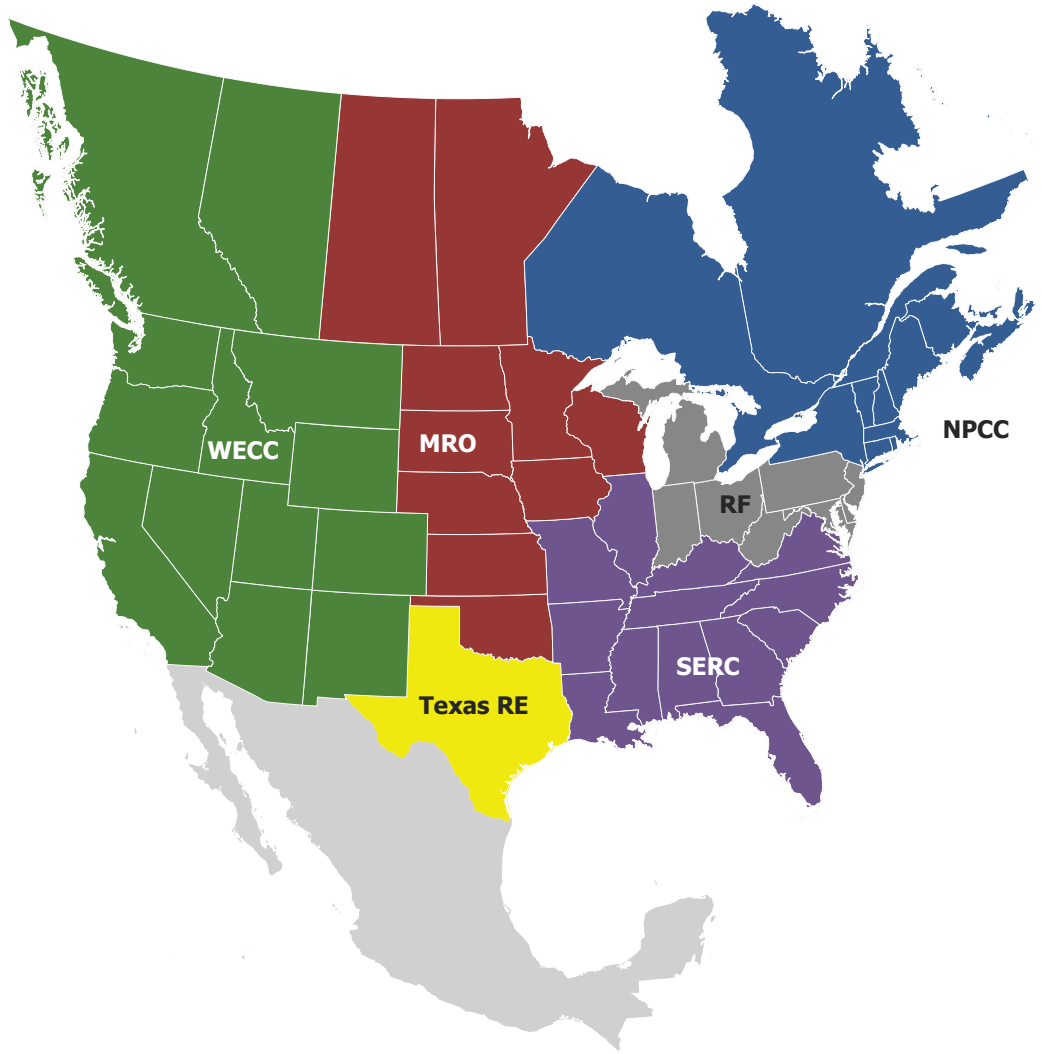
The E-ISAC reduces cyber and physical security risk to the electricity industry across North America by providing unique insights, leadership, and collaboration

Introduction

Protecting the North American Power Grid

The E-ISAC's **1900+ Member and Partner organizations** represent the largest information sharing community in the energy sector and more than **7,000 E-ISAC Portal users** serve as the first line of defense for critical infrastructure.

The larger our community grows, the better we become in strengthening the security of the grid.



Vendor Affiliate Partners

1898 & CO. | 3B Protection | CYWARE | DRAGOS | FORTINET | Google Cloud | Hitachi Inspire the Next / Hitachi Energy | Itron
Landis+Gyr | PKI Solutions | SANS | SAYARI | SEL Schweitzer Engineering Laboratories | Siemens Energy | UTILITYX | Wärtsilä

U.S Government

Homeland Security | U.S. Department of Energy

Trade Associations

American Public Power Association | NRECA America's Electric Cooperatives | EEI Edison Electric Institute
Electricity Canada | Électricité Canada

Canadian Government

Public Safety Canada
Canadian Centre for Cyber Security | Centre canadien pour la cybersécurité

International ISACs (Europe and Japan)

EE-ISAC | JE-ISAC Japan Electricity Information Sharing and Analysis Center

Other ISACs

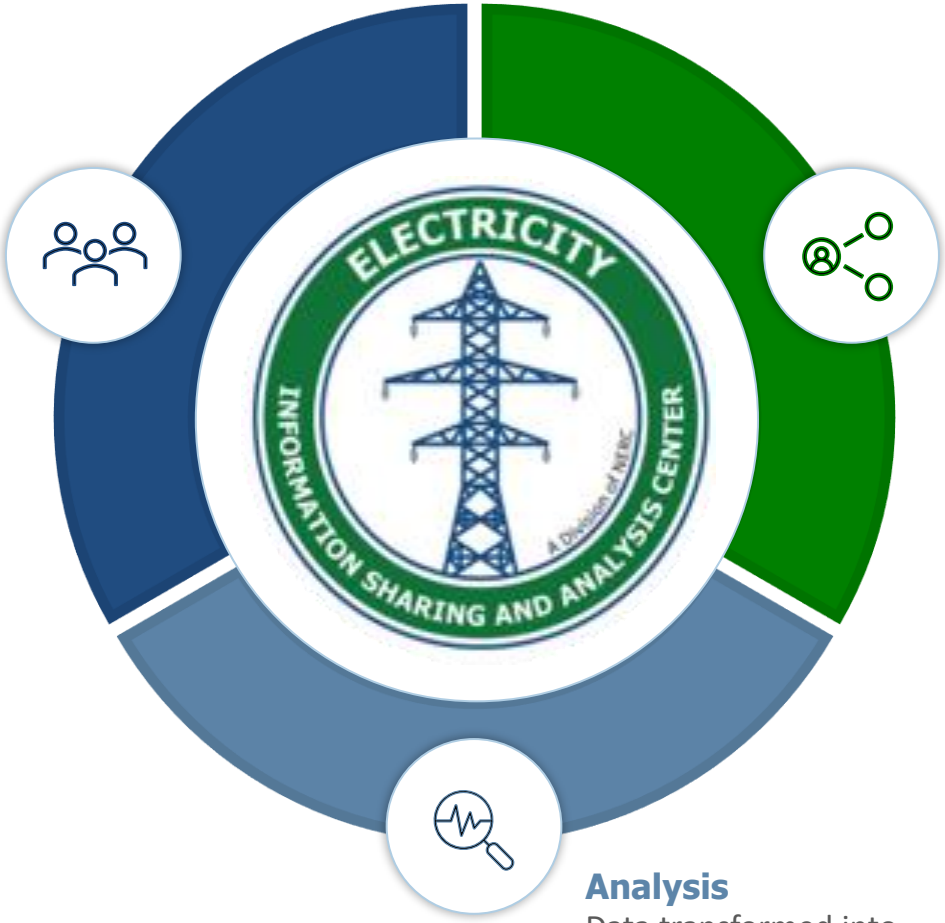
DNG-ISAC Downstream Natural Gas Information Sharing and Analysis Center | ONE-ISAC Oil and Natural Energy ISAC — Energizing the Exchange of Cyber Intelligence
FS-ISAC | MS-ISAC Multi-State Information Sharing & Analysis Center

Focus Areas

E-ISAC Stakeholder Value

- Exchanging information among industry government, and partners for situational awareness and threat mitigation
- Transforming data into strategic insights so stakeholders can understand and respond to evolving security threats
- Building trusted relationships, facilitating collaboration , and strengthening resilience through consistent communication

Engagement
Strong relationships for meaningful collaboration



Info Sharing
Trusted hub for timely, relevant, actionable info

Analysis
Data transformed into strategic insights and recommended actions

Membership

Offerings

- Bulletins
- Briefings
- In-depth and Targeted Analysis
- Workshops and Engagement Programs
- Exercises And Conferences
- CRISP
- Digital Communities
- Information Sharing Platforms

Membership

Workshops and Engagement Programs

The E-ISAC facilitates collaboration, advances its mission, and shares critical security information through workshops that bring together industry leaders and partners to drive grid security, enhance information sharing, and foster valuable networking opportunities.

- The Industry Engagement Program (IEP) is an interactive learning experience for electricity industry analysts
- Security Advisory Groups are comprised of industry subject matter experts who serve as advisors to the E-ISAC on threat mitigation strategies and other topics related to physical and cyber security
- Security Workshops such as VISA (Vulnerability of Integrated Security Analysis) provide utilities with an effective risk mitigation tool to identify critical countermeasures and upgrades to protect their assets from a growing fleet of adversaries

Membership

GridEx

Hosted every two years by the E-ISAC, GridEx gives E-ISAC member and partner organizations a forum in which to practice how they would respond to and recover from coordinated cyber and physical security threats and incidents.

- GridEx VIII will be held on November 18-19, 2025
- GridEx VII had more than 15,000 participants
- The E-ISAC releases a public report after every GridEx

Membership

GridSecCon

GridSecCon is the premier security conference for the North American electric industry, co-hosted annually by NERC, the E-ISAC, and a regional partner. The event brings together industry leaders, security professionals, and government partners to address emerging cyber and physical threats to the bulk power system. Through keynote addresses, technical trainings, briefings, and collaborative breakout sessions, GridSecCon fosters information sharing, operational readiness, and trusted partnerships that strengthen grid resilience.

- The 14th annual grid security conference, GridSecCon, will be from October 7-10 at the MGM Grand in Las Vegas
- Join cyber and physical security leaders for four days of collaboration, networking, and expert training sessions
- Hear from industry and government about the evolving threat landscape, effective threat mitigation programs, best practices, and more

E-ISAC Membership

- All electricity industry asset owners and operators and select government partners in North America
- Intended audience: security directors, cyber and physical security analysts, general managers
- Those with CMEP roles may not be an E-ISAC member

To request a membership, visit www.eisac.com

Share Information

Operations@eisac.com

Contact Us

MemberServices@eisac.com

Questions

Contact Us (npcc.org)