

NERC

NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

WECC Reliability and Security Workshop

IBR Related Risk

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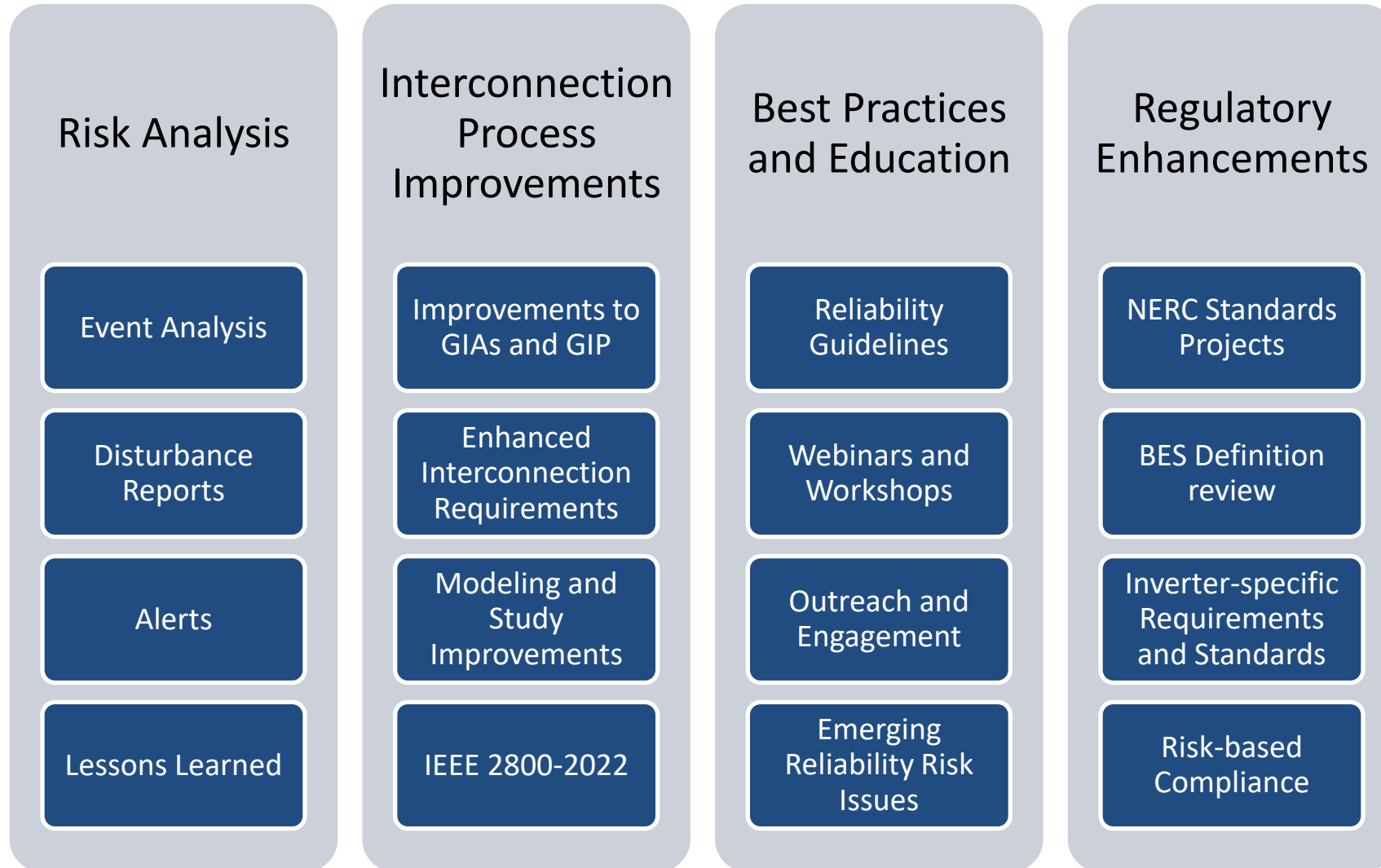
October 14, 2025

RELIABILITY | RESILIENCE | SECURITY

- Background
- IBR Initiative Work Plan
- Standards
- Q & A

According to NERC, the rapid integration of IBRs is “the most significant driver of grid transformation” on the bulk power system.

NERC, Inverter-Based Resource Strategy: Ensuring Reliability of the Bulk Power System with Increased Levels of BPS-Connected IBRs, (Sep. 14, 2022)



Planned Upcoming Reports:

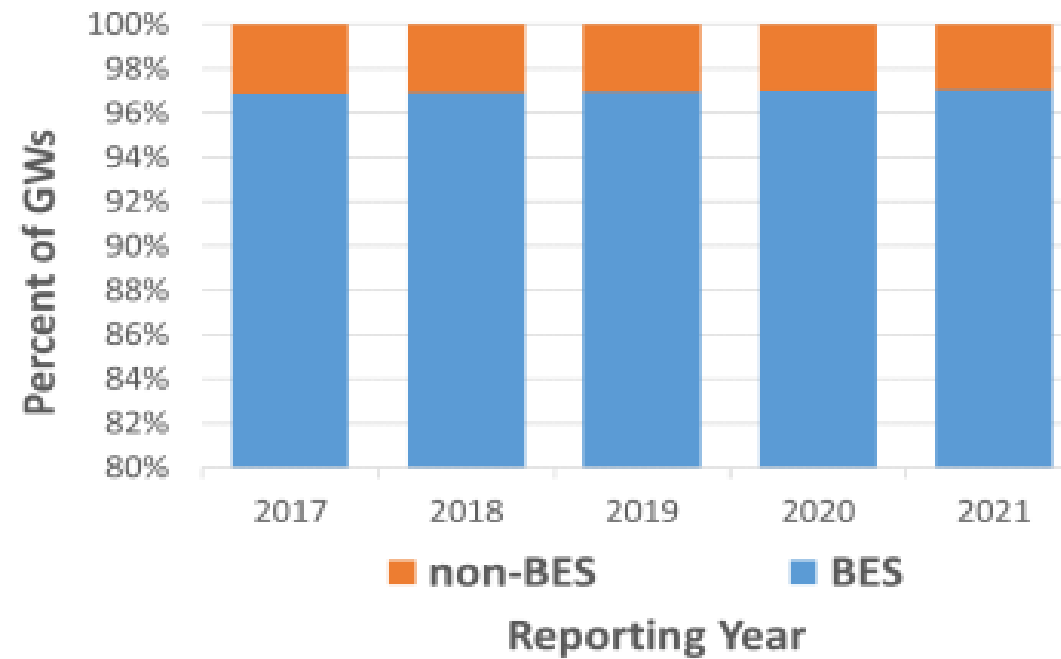
- BESS-Related Events in California in 2022
- Texas Wind Event in Texas in 2022
- Solar PV Related Event in Utah in 2023



<https://www.nerc.com/pa/rrm/ea/Pages/Major-Event-Reports.aspx>

Despite the potential for IBRs to have a significant aggregate impact on the BPS, many of the owners and operators of these individual resources are not required to register with NERC or comply with NERC's mandatory Reliability Standards.

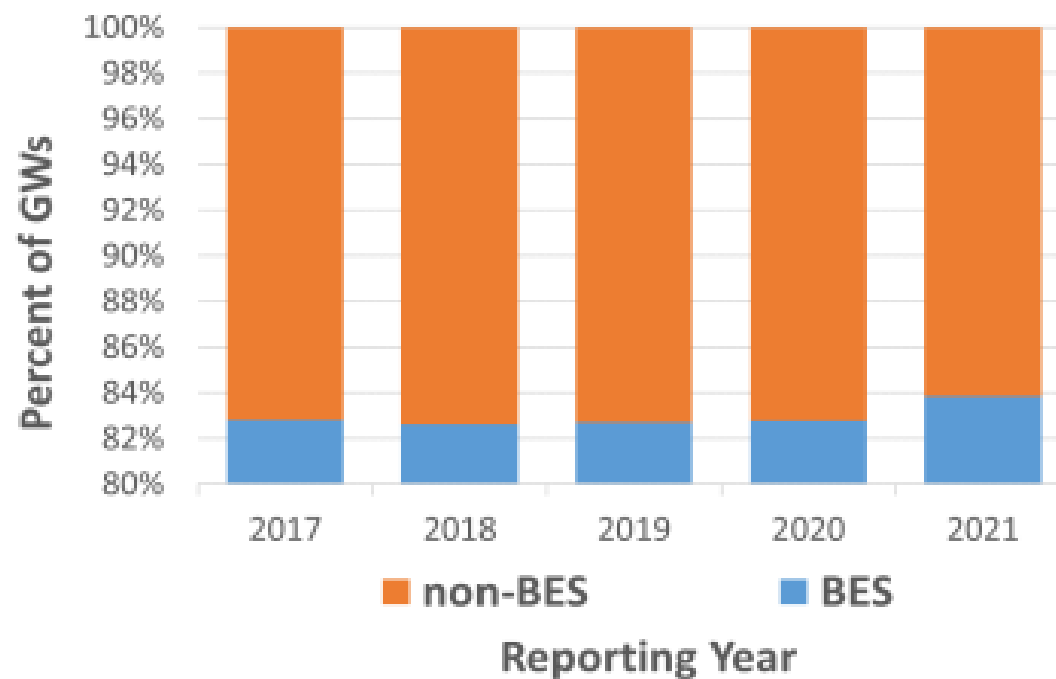
Percent Share of BPS Conventional Resources by BES and Non-BES



What % of installed IBR are registered?

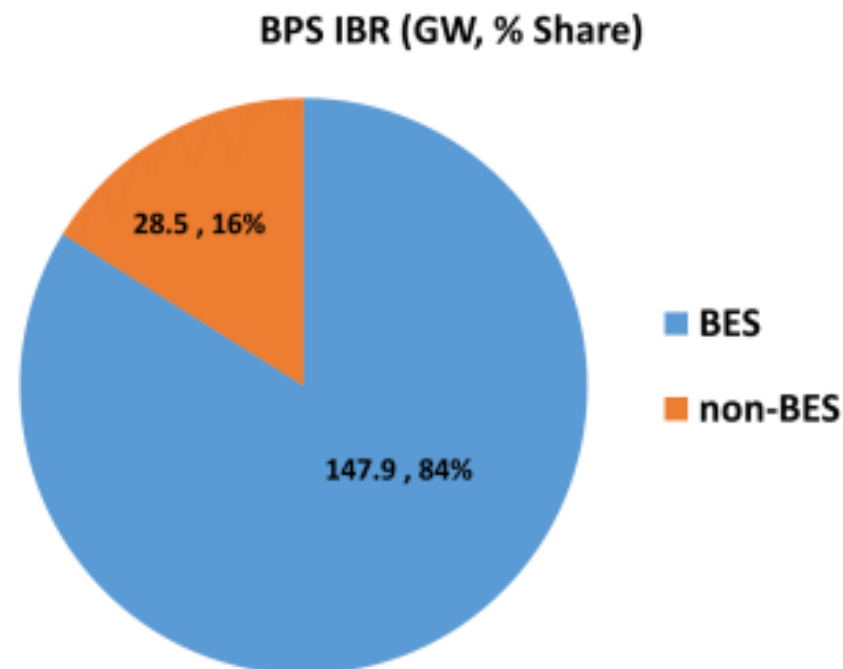


U.S. Percent Share of BPS IBRs by BES and non-BES



The ERO has observed that

- Significant shift from conventional resources to IBRs
- BES IBR capacity (84%) is significantly lower compared to conventional resources (97%)
- IBR growth is a BPS Reliability Risk due to lack of:
 - facility interconnection analysis
 - data for modeling and verification
 - protection coordination
 - resource performance



- FERC Order - Registration of Inverter-based Resources
 - 181 FERC ¶ 61,124 (November 17, 2022):
 - <https://www.ferc.gov/media/e-1-rd22-4-000> (“IBR Order”).
- Directed NERC to file a work plan to identify and register unregistered owners and operators of Inverter Based Resources (IBRs) that in the aggregate, materially impact the reliable operation of the Bulk-Power System
 - Submit a Work Plan within 90 days of Order
 - Also requires updates to Work Plan every 90 days
 - Modify processes to address IBRs (by May 2024)
 - Identify owners and operators of IBRs (by May 2025)
 - Register owners and operators of IBRs (by May 2026)

IBR Registration Milestones

Phase 1: May 2023–May 2024

- Complete Rules of Procedure revisions and approvals
- Commence Category 2 GO and GOP candidate outreach and education (e.g., through trade organizations)

Phase 2: May 2024–May 2025

- 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.)

Phase 3: May 2025–May 2026

- 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.)

- Revision to the NERC Registry Criteria for “Generator Owner” and “Generator Operator” to add a new category of owners and operators of unregistered Bulk-Power System connected, non-BES IBRs
 - Appendix 5B, Statement of Compliance Registry Criteria
 - Appendix 2, Definitions used in the Rules of Procedure
- FERC approved these revisions on June 27, 2024

➤ Phase 1: **COMPLETED**

Generator Owner

The entity that:

- 1) owns and maintains generating Facility(ies) (Category 1 GO);or
- 2) 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).

Generator Operator

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 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).

- ERO Request for Information to registered Balancing Authorities and Transmission Owners
- Regional Request for Information to the identified Category 2 GO Candidates
- Development of educational tools and outreach activities
 - Communications Resources
 - CMEP Practice Guide for Cat2 GOs and GOPs
 - ERO Webinars and various Regional Outreach / Workshops

➤ Phase 2 - **COMPLETED**

- Cat2 IBRs identified per Workplan Update Submitted to FERC on 8/4/2025:

Regional Entity	Number of IBRs	MVA
MRO	110	4454
NPCC	50	1752
ReliabilityFirst	73	3572
SERC	171	9881
Texas RE	34	1792
WECC	282	10725
TOTAL	720	32176

- Numbers are subject to change due to some of the following reasons:
 - (1) facilities have been cancelled or have had their expected commercial operations date delayed past May 15, 2026;
 - (2) facilities were Type 1 or Type 2 wind turbines that do not qualify as Category 2 resources;
 - (3) facilities were determined to be Category 1 resources, and the affected Regional Entities will register those facilities as such; or
 - (4) facilities were inaccurately reported and should be removed from the list.

Quick Reference Guide: IBR Registration Initiative

September 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.

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.)

Key Activities

- [NERC Changes to the NERC Compliance Registry](#)
- [NERC filed Petition for Approval of Revised GO and GOP Definitions](#) to FERC on August 27, 2025.
- [Visit the ERO Enterprise event tracking graphic](#) to see upcoming events.

Available Resources

[Learn More: Open Letter to New Registrants](#) | [101 Resource Document](#) | [IBR Video](#)

Quarterly Updates: [Q1 2024](#) | [Q2 2024](#) | [Q3 2024](#) | [Q4 2024](#) | [Q1 2025](#) | [Q2 2025](#)

Registration: [Joining the ERO Enterprise](#) (Infographic) | [Expanding Your Registration](#) (Infographic) | [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](#) | [July 2025 Slide Presentation and Recording](#) | [August 2025 MRO IBR Recording](#)

LEARN MORE ABOUT NERC AND THE E-ISAC

NERC NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

E-ISAC ELECTRIC INFRASTRUCTURE SECURITY AND CYBERSECURITY AUTHORITY

RELIABILITY | RESILIENCE | SECURITY

- **Dashboard:** [IBR Registration Initiative Quick Reference Guide](#)
- **Quarterly Updates:** [Q2 2025](#), Q3 2025 (expected mid-October)
- **Infographics and Visual Aids:** [Joining the ERO Enterprise](#) | [Expanding Your Registration](#) | [ERO Enterprise IBR Events](#) | [RE Registration Contacts](#)

- ERO Registration Process
 - Regional Assessments of Entity Data Submittal
 - Registration Recommendations to NERC
 - NERC Approvals (CORES)
 - NERC Notification Letter to Entity
- Processed in batches between August 2025 and April 2026
 - All Category 2 GO and GOP entities
 - New and Existing Entities
 - Future Effective Date: May 15, 2026
 - NERC NCR updated
- ✓ **Important for timely coordination with WECC Registration to ensure BPS Reliability**

➤ Phase 3 – **IN PROGRESS**

- FERC Order 901
 - October 2023
 - 4 Milestones through November 2026
 - IBR related performance issues
 - Leverage existing guidance where possible





STANDARDS MILESTONES: ORDER 901

1

**COMPLETED
JANUARY
2024**

Order No. 901 Work Plan
submission

2

**DUE
NOVEMBER 4,
2024**

Standards development and filing to
address performance requirements
and post-performance validations for
Registered IBRs

3

**DUE
NOVEMBER 4,
2025**

Development and filing of Reliability
Standards to address data sharing
and model validation for all IBRs

4

**DUE
NOVEMBER 4,
2026**

Development and filing of Reliability
Standards to address use of
performance data in Operational and
Planning studies

Definition IBR

Plant Level

For use in all
NERC
Standards

New PRC-028

Installation of
disturbance
monitoring
equipment

Share data on
request

New PRC-029

Performance
based ride-
through
criteria

Capability
based ride-
through
criteria

New PRC-030

Analysis of
performance
during a
disturbance

Triggers what
is evaluated for
ride-through
performance

Project 2022-02
MOD-032, TOP-003,
IRO-010

Establish
Uniform
Modeling
Framework

Aggregated
nonregistered
IBR and DER

Project 2020-06
MOD-026

Modeling
Verification and
Validation

Performance
based
validation

Project 2021-01
MOD-033

System level
validation

Project 2024-03

Operational
Studies

Initial Draft in
Development

Project 2024-04

Planning
Studies

Initial Draft in
Development

Reliability Standards Compliance Dates for Generator Owners & Generator Operators

Inverter-Based Resource Registration Initiative Supplemental
Q2 2025

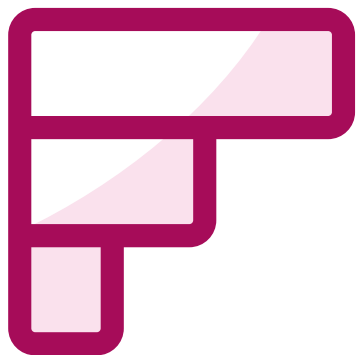
Purpose

The North American Electric Reliability Corporation (NERC) Staff has prepared the continued Inverter-Based Resource (IBR)¹ Registration Initiative. I provide awareness to those non-Bulk Electric System (BES) IBR owners and approved registration criteria for Generator Owners (GOs) and Generators referred to as "Category 2 IBR." Further, this document includes all final the applicability and enforceability of individual Reliability Standards.

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

- NERC facilitates the Standards Development process
- The Drafting Team develops specifics
- A strong Reliability Standard:
 - Identifies responsible entity(ies) - WHO
 - Specifies objectives – WHAT
 - Specifies a periodicity – WHEN
- A strong Reliability Standard does not specify the HOW
 - Entity facts & circumstances must be considered
 - Entities have flexibility in meeting objectives

What is your biggest challenge to get involved with Standards



 *The Slido app must be installed on every computer you're presenting from*

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A map of North America, including the United States, Canada, and Mexico. A horizontal band of varying shades of blue and grey stretches across the middle of the map, passing through the United States. The text "Questions and Answers" is centered within this band.

Questions and Answers