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NERC Large Load Actions

The Future for Computational Loads

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May 7, 2026

Timeline of Major Releases 2024-2025

1. Incident with Data Center loss – Occurs **July 2024.**
2. Large Load Task Force (LLTF) formed - **October 2024**
3. Incident Review Released – **July 2025**
4. Release of *White Paper: Characteristics and Risks of Emerging Large Loads* – **July 2025**
5. NERC Level 2 Alert Issued – **September 2025**
6. Preliminary Guideline posted – **November 2025**

Large Loads Action Plan Webpage

NERC Alerts Webpage

Large Load Action Plan - 2026-2027 Timeline

Q1 2026

- Publish Whitepaper on Standard Gaps
- Review Guideline comments
- Conduct Alert analysis to inform registration/standards
- Assemble *ad hoc* advisory team
- Standards Committee (SC) accepts drafting team & Standard Authorization Request (SAR)
- Webinar: Large Load Action Plan

Q2 2026

- Publish Reliability Guideline
- Post registry criteria, SAR, and Level 3 Alert
- SC authorize drafting

Q3 2026

- Post Rules of Procedure registry criteria, glossary and standard(s)
- Level 3 Alert responses

Q4 2026

- Post ROP registry criteria, glossary and standard(s) for additional comment
- Board approval of registry criteria

Q1-Q4 2027

Q1

- Board adoption of glossary and standard(s)
- File ROP registry criteria changes with standards glossary revisions

Q1-Q4

- Draft and file additional applicable Reliability Standards,

Computational Loads – ROP Registration Changes

- Appendix 2
- Appendix 5A
- Appendix 5B
- Summary of Changes
- Technical Reasons

Posted 4/2/2026

Comments due: 5/15/2026

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Technical Reasoning

Proposed Computational Load Entity
April 2, 2026

NERC has been actively assessing the impact of large loads on the reliability of the Bulk Power System (BPS) since March of 2024 by engaging relevant stakeholders to understand risks and appropriate mitigation. In March 2024, the Reliability and Security Technical Committee (RSTC) hosted a panel discussing the impact of large loads originating from data centers and cryptocurrency mining centers. By Summer of 2024, the RSTC had launched what is today the Large Load Working Group (LLWG). The LLWG has been instrumental in helping to gauge the scope of risk, gaps, and next steps in response. Additional work by NERC and the Regional Entities, including the January 2025 incident review on a large loads loss event in the Eastern Interconnection, and the January 2026 incident review of voltage-sensitive crypto load reductions in Texas Interconnection, has also continued in parallel path.

Through these assessments, NERC identified the unique electrical behaviors, composition, and aggregate impacts when large amounts of computational load is connected at a site. To ensure that loads that pose an increased risk have specific requirements when connecting to the BPS, NERC determined that it should modify the NERC Registry Criteria to include Computational Load Entities. The NERC Registry Criteria set the threshold for which individual entities must register with NERC. At a minimum, an entity registered as a Computational Load Entity will be subject to at least one NERC Reliability Standard requirement (to be determined through the NERC Standards development process). In the proposed revisions to the NERC Rules of Procedure, NERC proposes to register entities that contribute to an aggregate capability of 20 megawatt (MW) connected at a BPS voltage greater than or equal to 60 kilovolt (kV), with 1 MW or greater of Computational Load. The following provides background on the technical reasoning of the proposed threshold. For a more thorough technical discussion of the impacts and risks of large loads, please refer to the source material provided on the Large Loads Action Plan web page.

In addition to comments on the proposed Rules of Procedure revisions, NERC welcomes comment on the technical reasoning behind the proposed Registry Criteria.

Users of the BPS

Under section 215, the Federal Power Act[1] provides the Federal Energy Regulatory Commission (FERC), via NERC as the Electric Reliability Organization (ERO), authority to regulate "users, owners, and operators of the Bulk Power System (BPS)."[2] While the Federal Power Act defines the parameters of the BPS, it does not define the terms "users", "owners", or "operators" of the BPS. FERC's regulations echo Federal Power Act section 215 by requiring that "each user, owner and operator of the [BPS] within the United States… shall register with the [ERO] and the Regional Entity for each region within which it uses, owns or operates [BPS] facilities, in such manner as prescribed by the Rules of the [ERO] and each applicable Regional Entity."[3] As with the Federal Power Act, FERC's regulations do not further define the terms "users", "owners", or "operators" of the BPS, leaving it to NERC and the Regional Entities to identify those entities through their rules, such as the NERC Registry Criteria. Thus, the Registry Criteria under Appendix 5B of NERC's Rules of Procedure establish the thresholds for when a user, owner, or operator becomes material to BPS reliability and should therefore be registered and subject to some Reliability Standard requirements. For further information, please consult NERC's initial

[1] 16 U.S.C. § 824o.
[2] Section 215(b).
[3] 18 C.F.R. § 39.2(c) (2026).

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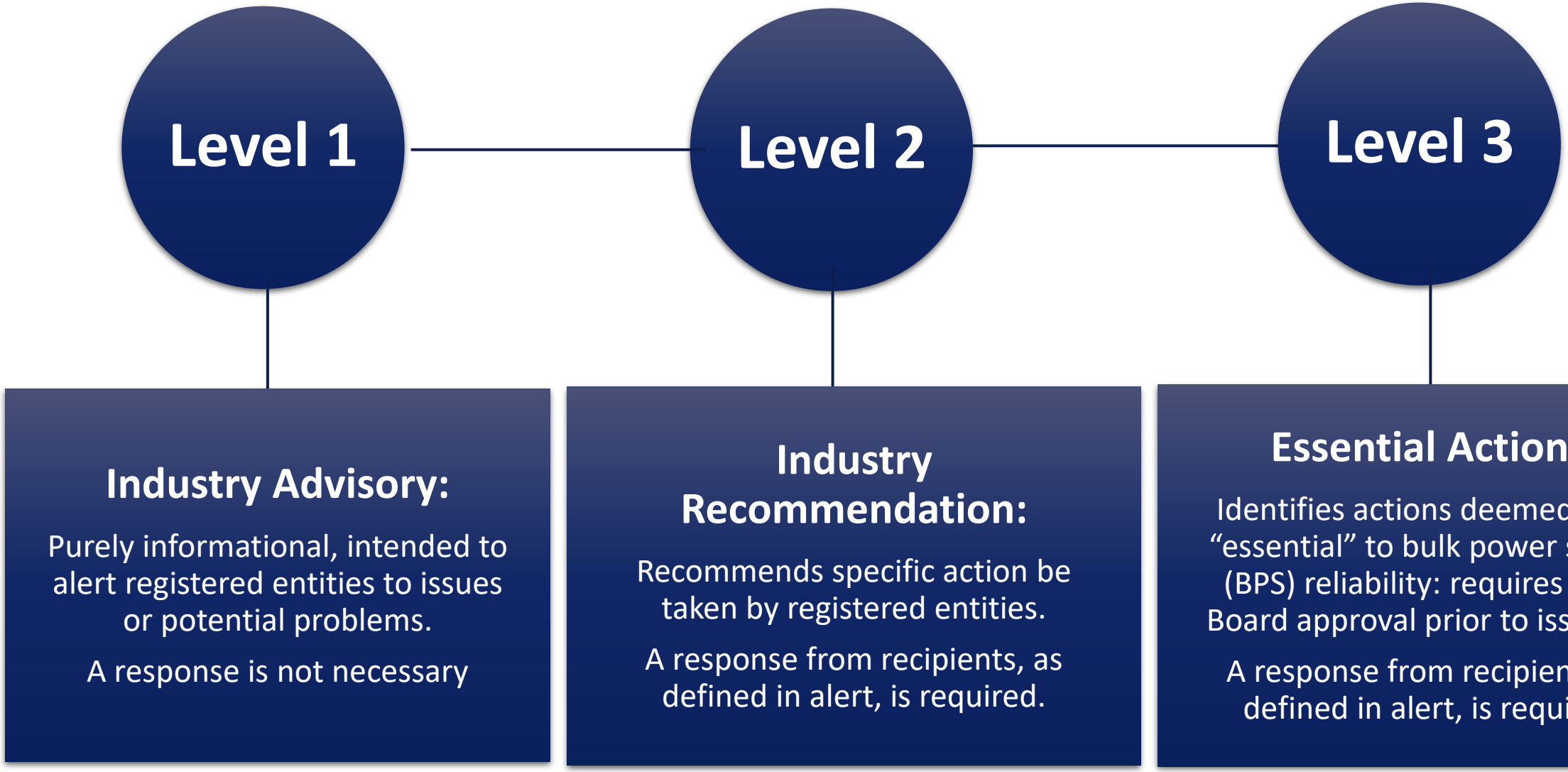
https://www.nerc.com/who-we-are/rules-of-procedure/proposed-changes-to-rules-of-procedure

NERC Alerts


Level 1
Level 2
Level 3
Industry Advisory:
Purely informational, intended to alert registered entities to issues or potential problems.
A response is not necessary
Industry Recommendation:
Recommends specific action be taken by registered entities.
A response from recipients, as defined in alert, is required.
Essential Actions:
Identifies actions deemed to be "essential" to bulk power system (BPS) reliability: requires NERC Board approval prior to issuance.
A response from recipients, as defined in alert, is required.

Level 2 Alert Overview

- Issued September 9, 2025
- 5 Industry Recommendations
  - Clear facility design and performance criteria
  - Interconnection and system-wide study process
  - Commissioning activities
  - Establish operating protocols
  - Include in planning horizon demand forecasts
- Additional worksheet for Transmission Owners (TO) and Distribution Providers (DP)
- Additional request for modeling files

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Industry Recommendation

Large Load Interconnection, Study, Commissioning, and Operations

Initial Distribution: September 9, 2025

The purpose of this alert is to address the risks observed from the analyzed large load behavior and to assess the status of industry preparedness in relation to large loads.

NERC, Regional Entities, and NERC registered entities have analyzed a series of disturbances that occurred on the bulk power system (BPS) resulting in widespread and unexpected customer-initiated load reduction of large loads. These disturbances involved multiple events during which 1,000+ MW of unexpected Large Loads output reduction occurred, with most events occurring in 2024 or 2025. The increase of Large Loads-related events coincides with an increase in Large Load penetration across the BPS.

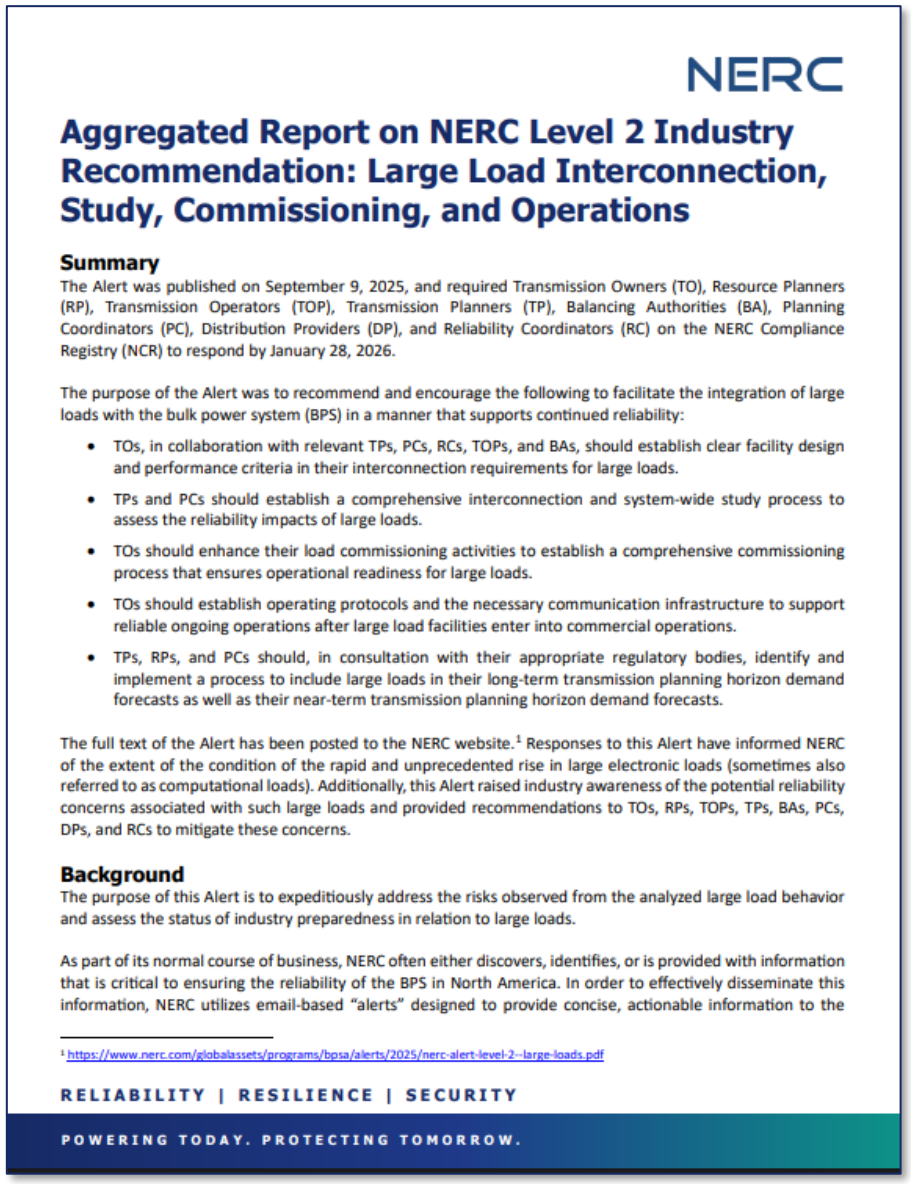
To better understand the reliability impact(s) of emerging large loads on the BPS, NERC established the Large Loads Task Force (LLTF) in August 2024. In July 2025, NERC published a white paper titled *Characteristics and Risks of Emerging Large Loads*[1] that highlights characteristics of Large Loads such as rapid fluctuations in demand and cyclical ramping. That paper includes the following high-priority categories of risks: Long-Term Planning, Operations/Balancing, and Stability.

For this Alert, the term "Large Load" is consistent with the definition in the LLTF white paper referenced above:

> **Large Load - "Any commercial or industrial individual load facility or aggregation of load facilities at a single site behind one or more point(s) of interconnection that can pose reliability risks to the BPS due to its demand, operational characteristics, or other factors. Examples include, but are not limited to, data centers, cryptocurrency mining facilities, hydrogen electrolyzers, manufacturing facilities, and arc furnaces."**

Rapid, major swings in load, experienced both in typical operations as well as in response to grid disturbances, can impact the BPS's ability to maintain frequency, regulate transmission voltage, and otherwise maintain stability. The comparatively large size, unique end-use operational characteristics, unique facility design, and unique operational performance of Large Loads necessitate enhancements to interconnection processes, BPS planning studies and models, validation of installed facility equipment, and operational communication with these customers. Accurate,

Level 2 Alert Findings



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Aggregated Report on NERC Level 2 Industry Recommendation: Large Load Interconnection, Study, Commissioning, and Operations

Summary

The Alert was published on September 9, 2025, and required Transmission Owners (TO), Resource Planners (RP), Transmission Operators (TOP), Transmission Planners (TP), Balancing Authorities (BA), Planning Coordinators (PC), Distribution Providers (DP), and Reliability Coordinators (RC) on the NERC Compliance Registry (NCR) to respond by January 28, 2026.

The purpose of the Alert was to recommend and encourage the following to facilitate the integration of large loads with the bulk power system (BPS) in a manner that supports continued reliability:

- TOs, in collaboration with relevant TPs, PCs, RCs, TOPs, and BAs, should establish clear facility design and performance criteria in their interconnection requirements for large loads.
- TPs and PCs should establish a comprehensive interconnection and system-wide study process to assess the reliability impacts of large loads.
- TOs should enhance their load commissioning activities to establish a comprehensive commissioning process that ensures operational readiness for large loads.
- TOs should establish operating protocols and the necessary communication infrastructure to support reliable ongoing operations after large load facilities enter into commercial operations.
- TPs, RPs, and PCs should, in consultation with their appropriate regulatory bodies, identify and implement a process to include large loads in their long-term transmission planning horizon demand forecasts as well as their near-term transmission planning horizon demand forecasts.

The full text of the Alert has been posted to the NERC website.[1] Responses to this Alert have informed NERC of the extent of the condition of the rapid and unprecedented rise in large electronic loads (sometimes also referred to as computational loads). Additionally, this Alert raised industry awareness of the potential reliability concerns associated with such large loads and provided recommendations to TOs, RPs, TOPs, TPs, BAs, PCs, DPs, and RCs to mitigate these concerns.

Background

The purpose of this Alert is to expeditiously address the risks observed from the analyzed large load behavior and assess the status of industry preparedness in relation to large loads.

As part of its normal course of business, NERC often either discovers, identifies, or is provided with information that is critical to ensuring the reliability of the BPS in North America. In order to effectively disseminate this information, NERC utilizes email-based "alerts" designed to provide concise, actionable information to the

[1] https://www.nerc.com/globalassets/programs/bpsa/alerts/2025/nerc-alert-level-2--large-loads.pdf

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- Do not have specific procedures for the unique challenges with large loads
  - Models
  - Commissioning Practices
  - Operational Readiness
  - Near-term and Long-term planning
- Do not coordinate with TOs and DPs to establish protection coordination for large loads
- Wait on or coordinate with a separate entity, primarily their Independent System Operators (ISO) or Regional Transmission Organizations (RTO)

https://www.nerc.com/globalassets/programs/bpsa/alerts/2025/aggregated-report-level-2-large-load-interconnection-study-commissioning-and-operations.pdf

NERC Level 3 Alert – May 2026

Modeling

- IT/motor load distinct models
- Collect specific modeling data
- Process for detailed modeling

Studies

- Identify risks and mitigate
- Assess credible contingencies

Fault Recording Instrumentation

- Install recording devices
- Capture facility performance
- Utility access to devices

Commissioning

- Checklist of key data
- Communicate with neighbors and affected Systems
- Evaluate “as-built” to validate and verify models

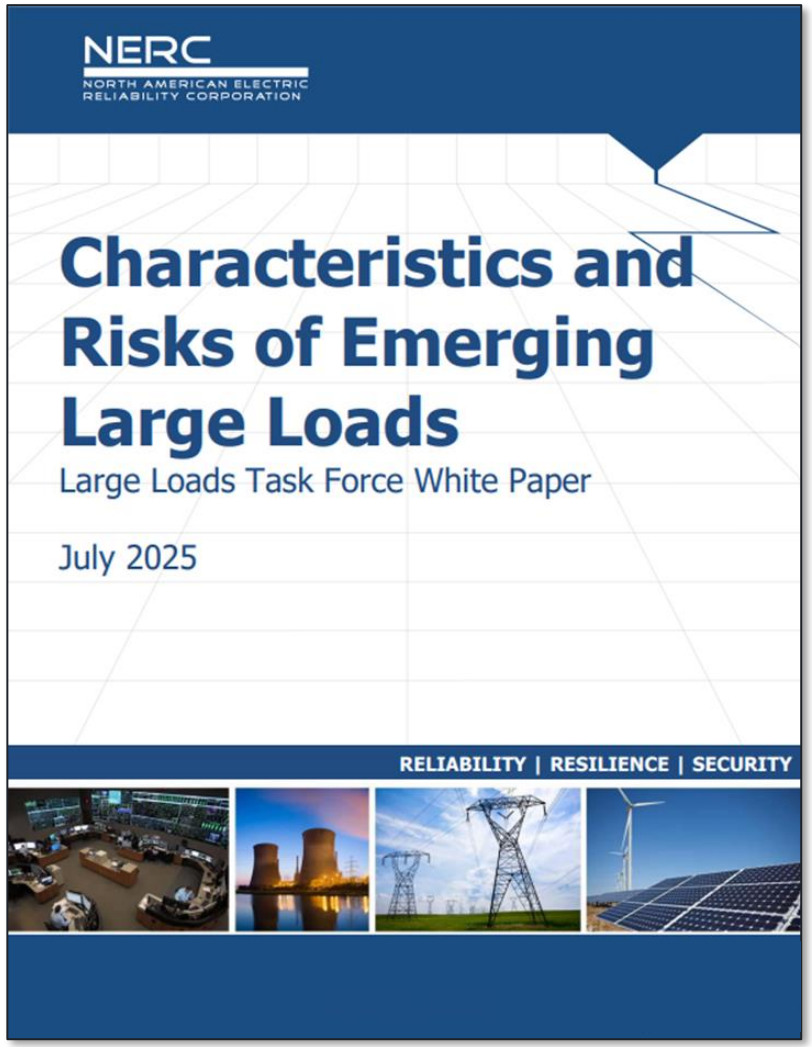
Operations

- Establish Interpersonal Communication capabilities
- Issue instructions to prevent Bulk Electric System (BES) Emergencies

Protection and Control

- Coordinate transmission and load protection
- No load decrease for typically cleared faults

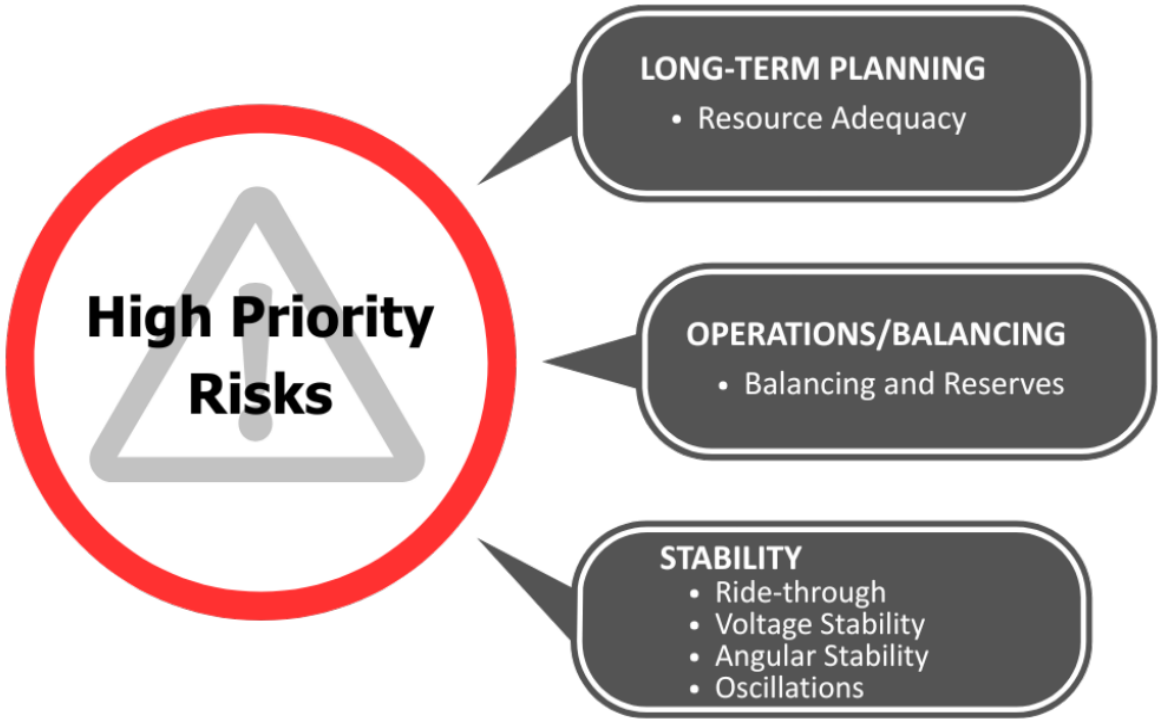
White Paper – Characteristics and Risks



https://www.nerc.com/globalassets/who-we-are/standing-committees/rstc/3_doc_white-paper-characteristics-and-risks-of-emerging-large-loads.pdf

Emerging Large Loads exhibit BPS risk

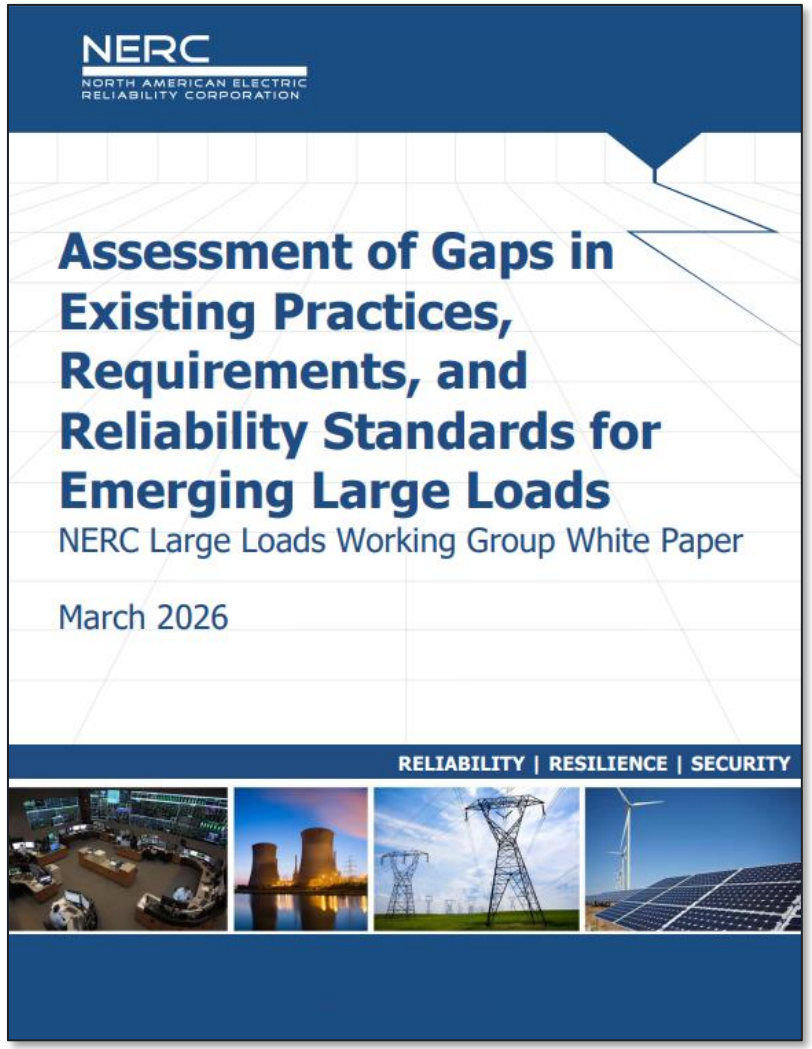
Certain Loads (Data Centers) are of concern



White Paper – Assessment of Gaps

Existing Reliability Standards, processes, and requirements for planning, operations, security are **inadequate** to address risks from emerging large loads

Updates are needed to registration criteria, Reliability Standards, processes/requirements, and other areas



https://www.nerc.com/globalassets/who-we-are/standing-committees/rstc/3_doc_white-paper-characteristics-and-risks-of-emerging-large-loads.pdf

Reliability Guideline – Preliminary Guidance

Best-practice guidance on mitigating risks to BPS reliability from integration of emerging large loads

Recommendations for all registered and large load entities:

- Data collection and modeling
- Interconnection and planning study processes
- Commissioning process/operational considerations
- Security and resilience
- High-speed monitoring

*To be published on April 30**

**Subject to RSTC approval*

Over 850 comments on preliminary draft!

Computational Loads – Standards Timeline

Currently in **Phase 1** of Standards Development

- Coordinating with NERC Rules of Procedure (ROP) Revisions Team to develop new terms and definitions
- Draft Reliability Standard(s) to address near-term actions
- Work with NERC staff and LLWG to draft **Phase 2** Standard Authorization Request (SAR) to develop new or revised standards

Phase 2 expected to commence in 2027

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Discussion