Talk with Texas RE: Integration of Large Loads

Kyle Thomas
Elevate Energy Consulting

Jiecheng “Jeff” Zhao
Elevate Energy Consulting

June 23, 2026

Antitrust Admonition

Because this event brings together market participants who may be viewed as actual or potential competitors, we must be mindful to conduct it in a manner that is consistent with the antitrust and competition laws. Participants should not disclose non-public, proprietary, or competitively sensitive information.

Attendees should exercise independent judgment and avoid even the appearance of discussions of agreements or concerted actions that may be viewed as restraining competition. Any questions on Texas RE's Antitrust Compliance Corporate Policy may be directed to Texas RE's General Counsel.

Upcoming Events at Texas RE

Upcoming Events at Texas RE

August 19, 2026

Winter Weatherization Workshop

September 16, 2026

Q3 MRC and Board Meetings

November 4, 2026

Fall Standards, Security, & Reliability Workshop

Upcoming ERO Enterprise Events

Date	Event
June 23-25, 2026	WECC Reliability Fundamentals
July 13, 2026	Technical Talk with RF
July 29, 2026	SERC IBR Seminar #3

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#TXRE

Joining as a participant?

Enter event code

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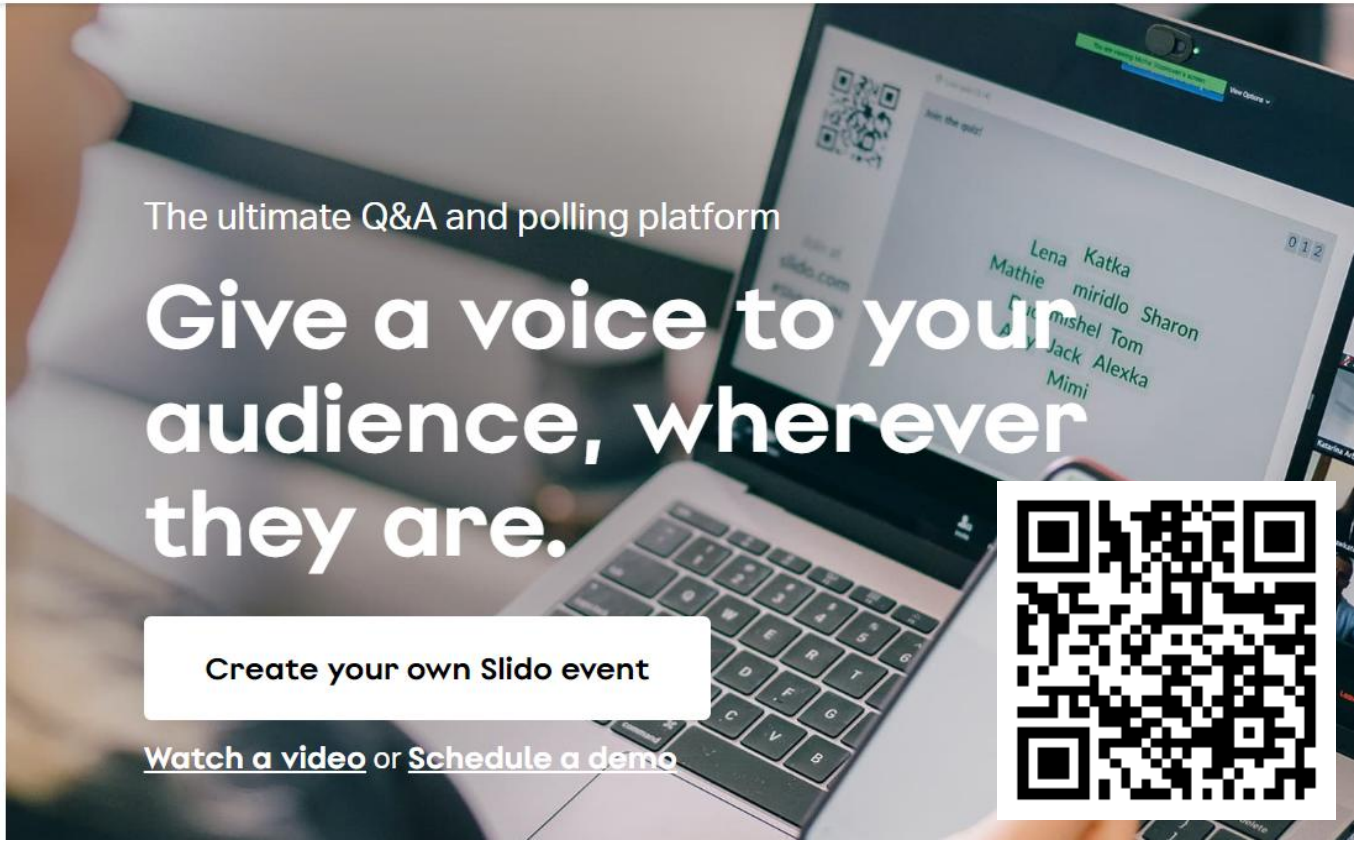

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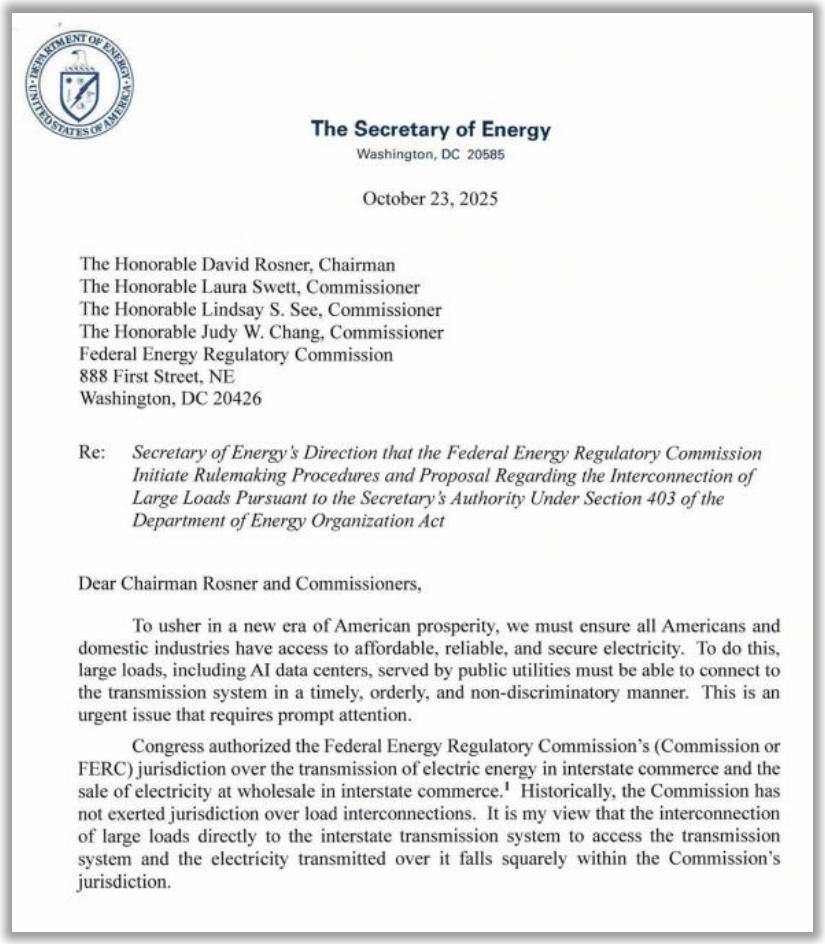
Latest Developments in Large Loads

Kyle Thomas, PE, *VP, Engineering and Compliance*
Jiecheng "Jeff" Zhao, PhD, PE, *Manager, Engineering*

June 23, 2026

Regulatory Updates

FERC ANOPR (October 2025)



The Secretary of Energy
Washington, DC 20585

October 23, 2025

The Honorable David Rosner, Chairman
The Honorable Laura Swett, Commissioner
The Honorable Lindsay S. See, Commissioner
The Honorable Judy W. Chang, Commissioner
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

Re: *Secretary of Energy's Direction that the Federal Energy Regulatory Commission Initiate Rulemaking Procedures and Proposal Regarding the Interconnection of Large Loads Pursuant to the Secretary's Authority Under Section 403 of the Department of Energy Organization Act*

Dear Chairman Rosner and Commissioners,

To usher in a new era of American prosperity, we must ensure all Americans and domestic industries have access to affordable, reliable, and secure electricity. To do this, large loads, including AI data centers, served by public utilities must be able to connect to the transmission system in a timely, orderly, and non-discriminatory manner. This is an urgent issue that requires prompt attention.

Congress authorized the Federal Energy Regulatory Commission's (Commission or FERC) jurisdiction over the transmission of electric energy in interstate commerce and the sale of electricity at wholesale in interstate commerce.[1] Historically, the Commission has not exerted jurisdiction over load interconnections. It is my view that the interconnection of large loads directly to the interstate transmission system to access the transmission system and the electricity transmitted over it falls squarely within the Commission's jurisdiction.

DOE letter to FERC initiated ***federal-level attention*** on large load integration…

- Limit FERC's role to transmission-connected loads, new loads >20 MW (flexible)
- Study large loads and co-located generation together
- Standardize deposits, readiness, and withdrawal rules
- Base hybrid studies on requested injection/withdrawal rights
- Require protection systems for hybrid facilities
- Faster studies for curtailable or dispatchable loads
- Make loads responsible for network upgrades they trigger
- Give loads the same "option to build" rights as generators
- Study any generator suspension (to serve load) like an SSR/RMR case
- Transmission service based on actual withdrawal rights
- Ancillary service charges tied to peak demand (no offsets)
- Define a clear transition plan for ongoing studies
- Ensure utilities serving large loads meet NERC/OATT obligations, and ensure NERC reviews standards for possible new registration categories

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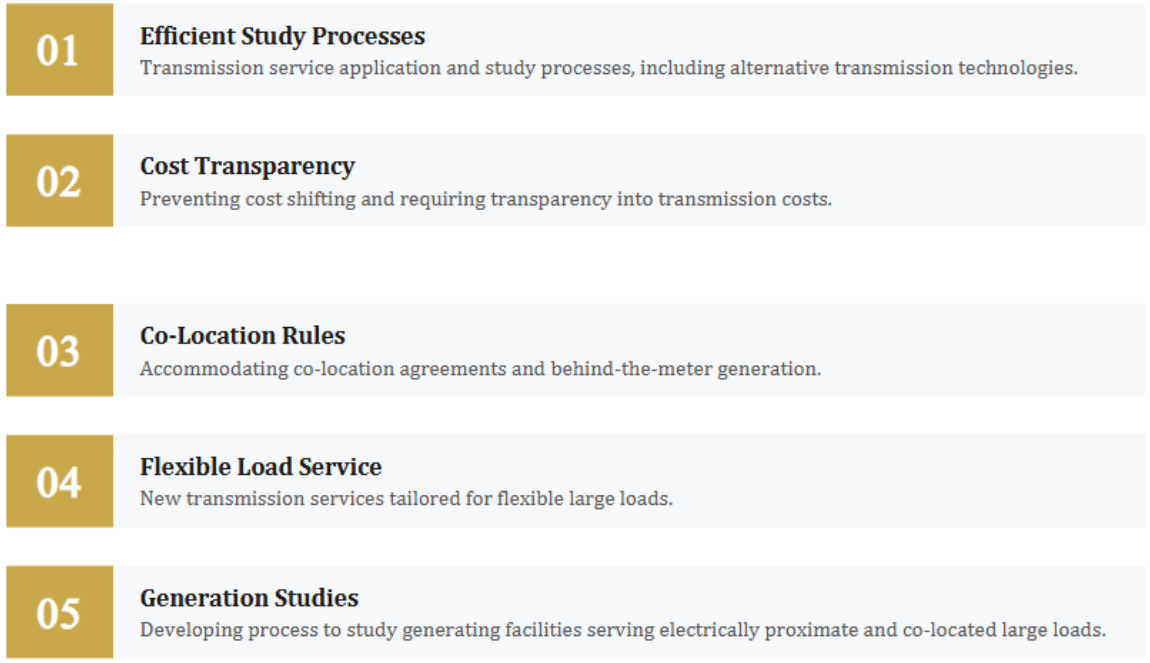
FERC Actions on Large Load Integration (6/18/2026)

- FERC issued show cause orders to all six regional grid operators to justify or reform tariffs for data centers & other large energy users
  - PJM, MISO, SPP, CAISO, ISO-NE, NYISO
- 60 days to respond; 30 days to file a report on resource adequacy
- Centered on 5 reform categories:



Source: FERC

FERC Jurisdiction in Spotlight with US Senate

- Fully off-grid projects would be exempt from Federal Power Act and US DOE (and FERC) regulation
- DATA Act of 2026 to amend the Federal Power Act to exempt consumer regulated electric utilities from FERC jurisdiction
- Goal of incentivizing manufacturers, data centers, and other energy-intensive industries to build systems off-grid
- Data center developers likely to support minimizing regulatory oversight and obligations
- Utilities likely oppose the bill due to incentive to go off-grid, and negative impacts to revenue

119TH CONGRESS
2D SESSION

S. 3585

To amend the Federal Power Act to exempt consumer-regulated electric utilities from Federal regulation, and for other purposes.

IN THE SENATE OF THE UNITED STATES

JANUARY 7, 2026

Mr. COTTON introduced the following bill; which was read twice and referred to the Committee on Energy and Natural Resources

A BILL

To amend the Federal Power Act to exempt consumer-regulated electric utilities from Federal regulation, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the "Decentralized Access to Technology Alternatives Act of 2026" or the "DATA Act of 2026".

Source: Utility Dive

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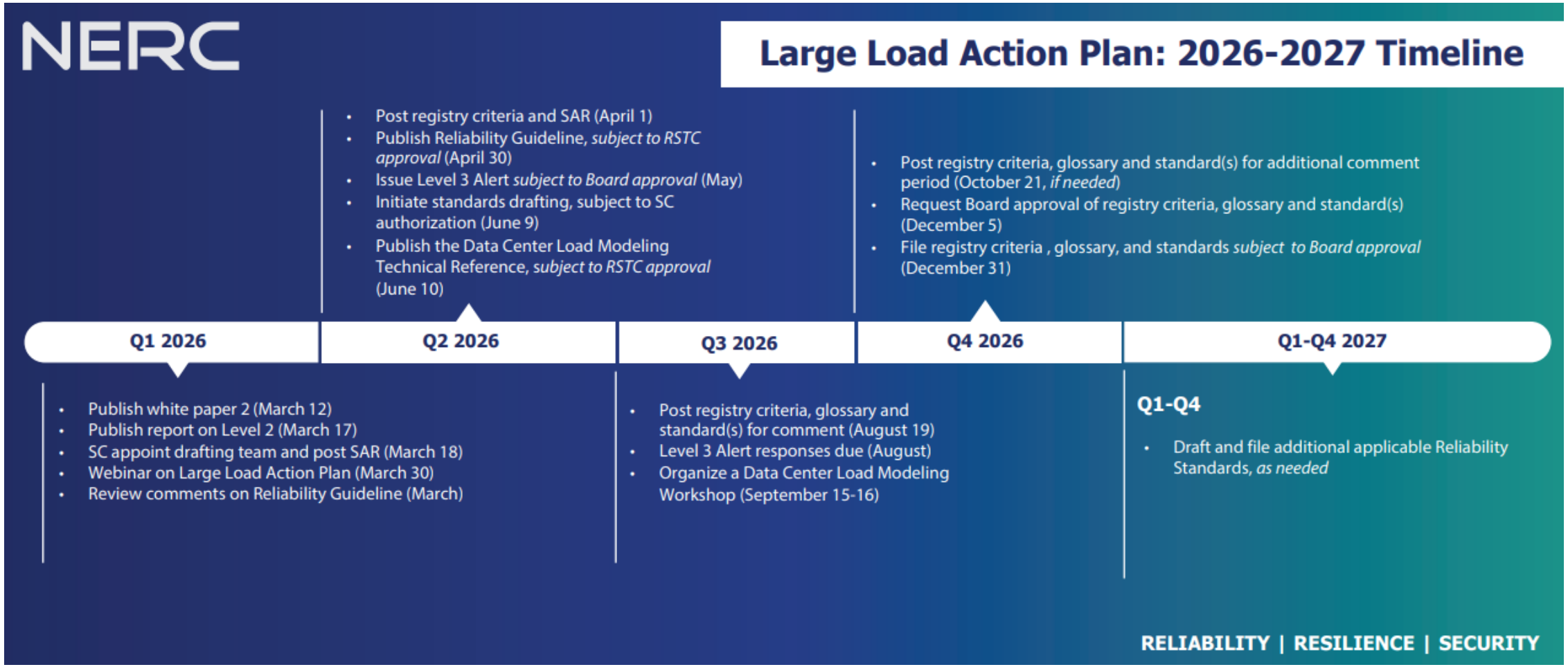
NERC ~~Large~~ Computational Load Action Plan: Q1 2026



Source: NERC

NERC Large Load and Load Modeling Working Group

Large Load Working Group (LLWG)

- White Paper 1: Characteristics & Risks of Emerging Large Loads (July 2025)
- White Paper 2: Assessment of gaps in existing practices, requirements, & Reliability Standards for Emerging Large Loads (March 2026)
- Reliability Guideline: Risk Mitigation for Emerging Large Loads (May 2026)
- White Paper: Large Load Disturbance Performance – Impact Analysis and Ride-Through Recommendations *(planned for Q4 2026)*
- White Paper: Simulation and Study Considerations for Large Loads *(planned for Q4 2026)*
- Review and Plan for SARs Necessary Based on LLTF White Paper #2 *(planned for Q3 2026)*

Load Modeling Working Group (LMWG)

- Released PERC1 (Power Electronic Reconnecting & Ceasing) Model in December 2025 for modeling aggregation of large number of power electronic loads (e.g., data center, cryptocurrency mining facility, EV charging)
- Data Center Load Modeling Technical Reference *(planned for June 2026)*
  - New approaches/refinements to modeling data centers
  - Potential approaches to differentiate between different types of computational facilities
- Data Center Load Modeling Workshop *(planned for Sept 2026)*

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NERC Alerts on Large Loads

NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

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:

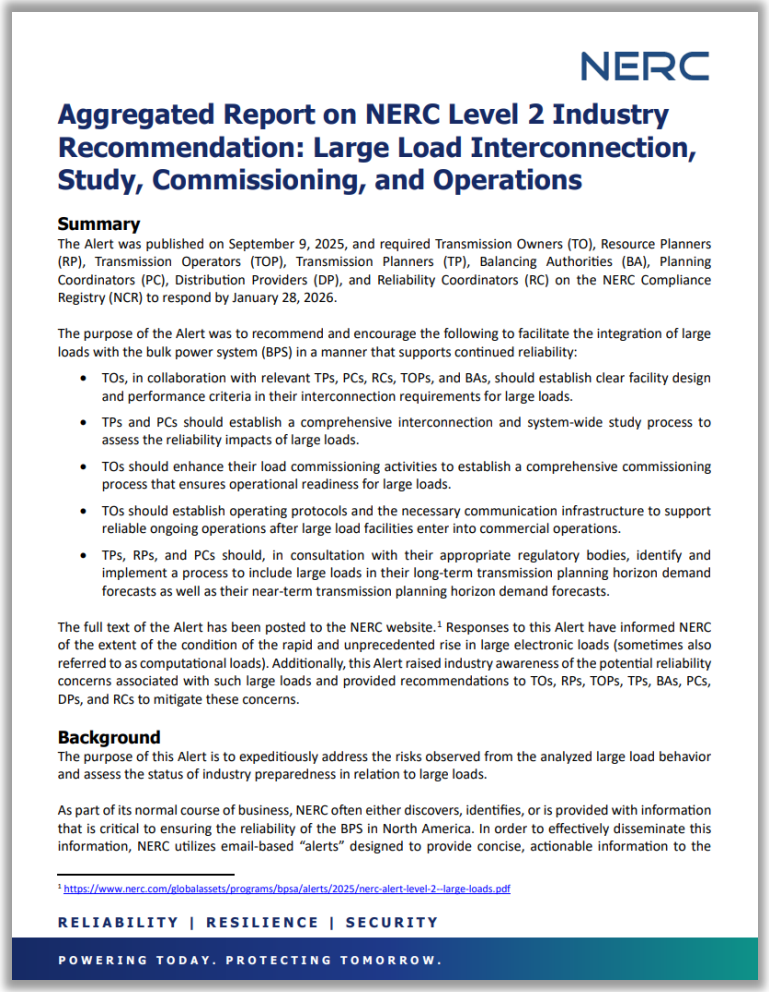
> **Large Load - "Any commercial or industrial individual load facility or aggregation of load facilities at a single site behind one or more point(s) of interconnection that can pose reliability risks to the BPS due to its demand, operational characteristics, or other factors. Examples include, but 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,

[1] "White Paper: Characteristics and Risks of Emerging Large Loads," NERC, Jul. 2025. Available: https://www.nerc.com/comm/RSTC_Reliability_Guidelines/Whitepaper%20Characteristics%20and%20Risks%20of%20Emerging%20Large%20Loads.pdf

RELIABILITY | RESILIENCE | SECURITY

Source: NERC



NERC

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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Source: NERC

NERC

Essential Action to Industry

Computational Load Modeling, Studies, Instrumentation, Commissioning, Operations, Protection, and Control

Initial Distribution: May 4, 2026

The purpose of this Level 3 NERC Alert is to ensure Essential Actions are taken by registered entities to address the risks posed by existing and new computational loads[1] interacting with the bulk power system (BPS), inclusive of computational load interconnecting with collocated generation.[2]

NERC issued a previous Level 2 Alert Industry Recommendation: *Large Load Interconnection, Study, Commissioning, and Operations*[3] that discussed the recommended practices that NERC deemed necessary to address the emerging risks from large loads. In the responses provided to the Alert, NERC found that entities generally did not have sufficient processes, procedures, or methods to address risks associated with computational loads. This contrasts with the robust historical experience with traditional non-power electronic non-computational load. As seen in the public report, NERC found specific deficiencies with the treatment of computational loads. Examples of this load include artificial intelligence training, cryptocurrency mining, and traditional data center uses.

As stated in the public report, NERC determined a set of immediate actions that registered entities should take to reduce the risk to the BPS that warrant issuance of this Level 3 alert. These actions relate to the modeling, study, installed fault recording or instrumentation, commissioning, operation, protection, and control of computational load.

NERC issues this Level 3 Alert for entities to implement specific changes[4] to handle critical risks. Additional actions are discussed as part of NERC's Large Loads Action Plan and include the draft registry criteria[5] and Standard Authorization Request (SAR) for computational load[6] posted on NERC's website on April 1, 2026. Responses will also help

[1] NERC is currently working to register a "Computational Load Entity" for these loads. Currently, this would include loads that are 20 MW and greater, connected at 60kV, and contain more than 1 MW of IT Load. More information is available on NERC's Rules of Procedure webpage.
[2] Colocation with generation is one significant way computational load is interacting and using the BPS.
[3] See *Aggregated Report on NERC Level 2 Industry Recommendation: Large Load Interconnection, Study, Commissioning, and Operations* to see the results of the previous Level 2 Alert.
[4] As indicated in the public level 2 alert report, entities that do not have and do not expect to integrate computational loads within two years may not find it useful to implement these Essential Actions. These Essential Actions are for those entities that have or could expect to have computational loads or that may include these loads in the next two years. This includes entities that do not have computational load in their territory but could feasibly receive a request for one. Entities should implement these Essential Actions prior to receiving a computational load interconnection request.
[5] More information is available on NERC's Rules of Procedure webpage.
[6] More information is available on the Project 2026-02 webpage.

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Source: NERC

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Applicable to **current Registered Entities*

NERC Level 3 Alert: Computational Loads

EA#1:
Modeling Requirements

EA#2:
System Studies

EA#3:
Qualified Change Definition

EA#4:
Commissioning Process and Checklist

EA#5:
Non-Consequential Firm Load Loss

EA#6:
Disturbance Monitoring

EA#7:
Interpersonal Communications

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NERC Computational Load Registration + New Standards

Computational Load: Load comprised of electric power demand from information technology equipment, such as servers, storage, and networking hardware.

Computational Load Entity: the end-user or the entity that hosts end-users that receives electric power for Computational Load.

Must be registered with NERC if:

1) contributes to an aggregate connected Load capability **>= 20 MW**, and
2) at a single point of interconnection to the BPS at a voltage **>= 60 kV**, and
3) hosts **>= 1 MW of Computational Load.**

Result: if a 20 MW building has at least 1 MW of computational load, would be NERC Registered.

NERC's proposed definitions & registration criteria for Computational Loads

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NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

Agenda Item 5a
Standards Committee Meeting
March 18, 2026

Standard Authorization Request (SAR)

Complete and submit this form, with attachment(s) to the NERC Help Desk. Upon entering the Captcha, please type in your contact information, and attach the SAR to your ticket. Once submitted, you will receive a confirmation number which you can use to track your request.

The North American Electric Reliability Corporation (NERC) welcomes suggestions to improve the reliability of the bulk power system through improved Reliability Standards.

Requested information			
SAR Title:	Reliability Standards to Address Computational Load - Phase I		
Date Submitted:	February 20, 2026		
SAR Requester			
Name:	Jamie Calderon, Sandhya Madan		
Organization:	NERC		
Telephone:	404-960-0568 470-698-8827	Email:	Jamie.Calderon@nerc.net Sandhya.Madan@nerc.net

SAR Type (Check as many as apply)

- [x] New Standard
- [x] Revision to Existing Standard
- [x] Add, Modify or Retire a Glossary Term
- [ ] Withdraw/retire an Existing Standard
- [ ] Imminent Action/ Confidential Issue (SPM Section 10)
- [ ] Variance development or revision
- [ ] Other (Please specify)

Justification for this proposed standard development project (Check all that apply to help NERC prioritize development)

- [ ] Regulatory Initiation
- [x] Emerging Risk (Reliability Issues Steering Committee) Identified
- [ ] Reliability Standard Development Plan
- [ ] NERC Standing Committee Identified
- [ ] Enhanced Periodic Review Initiated
- [ ] Industry Stakeholder Identified

What is the risk to the Bulk Electric System (What Bulk Electric System (BES) reliability benefit does the proposed project provide?):

This project will address the risks posed to the Bulk-Power System (BPS) due to the emergence of new large loads (e.g., data centers, crypto mining) that are connecting to the grid at an unprecedented scale and speed.

As discussed within the 2025 ERO Reliability Risk Priorities Report, these large loads change the landscape of customer demand from organic population-driven growth to rapid investment-based deployment of data centers (including hyperscalers, artificial intelligence (AI), and cryptocurrency), onshoring of manufacturing activities, electrification of industrial processes, and commercial and residential electrification. Some of these loads are asynchronous to the grid, creating system conditions and ride-through challenges during system events. Integrating these large loads and viewing them as BPS resources for flexibility and reliability contribution, when possible, will be challenging but crucial.

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SAR for NERC Standard(s) for Computational Loads

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Proposed NERC Standards (*work in progress*)

- **NERC CLE-001-1: Computational Load Interconnection, Studies & Modeling Data**
  - Covering interconnection requirements, interconnection studies, and modeling data required for planning analysis
  - *Covers Essential Actions 1 through 5*

- **NERC CLE-002-1: Computational Load Operational Data and Communications**
  - Covering operations data required by RC/BA/TOP for Real-time Assessment, Real-time monitoring, and Operational Planning Analyses.
  - Covering CLE's ability to comply with Operating Instructions issued by its TOP, BA, and RC
  - Covering interpersonal communication capabilities
  - *Covers Essential Action 7*

- **NERC CLE-003-1: Computational Load Protection Coordination and Disturbance Monitoring**
  - Covering high-resolution monitoring capability (FR and DDR)
  - Covering protection coordination between CLE and interconnecting entities (TO, GO, DP)
  - *Covers Essential Action 6*

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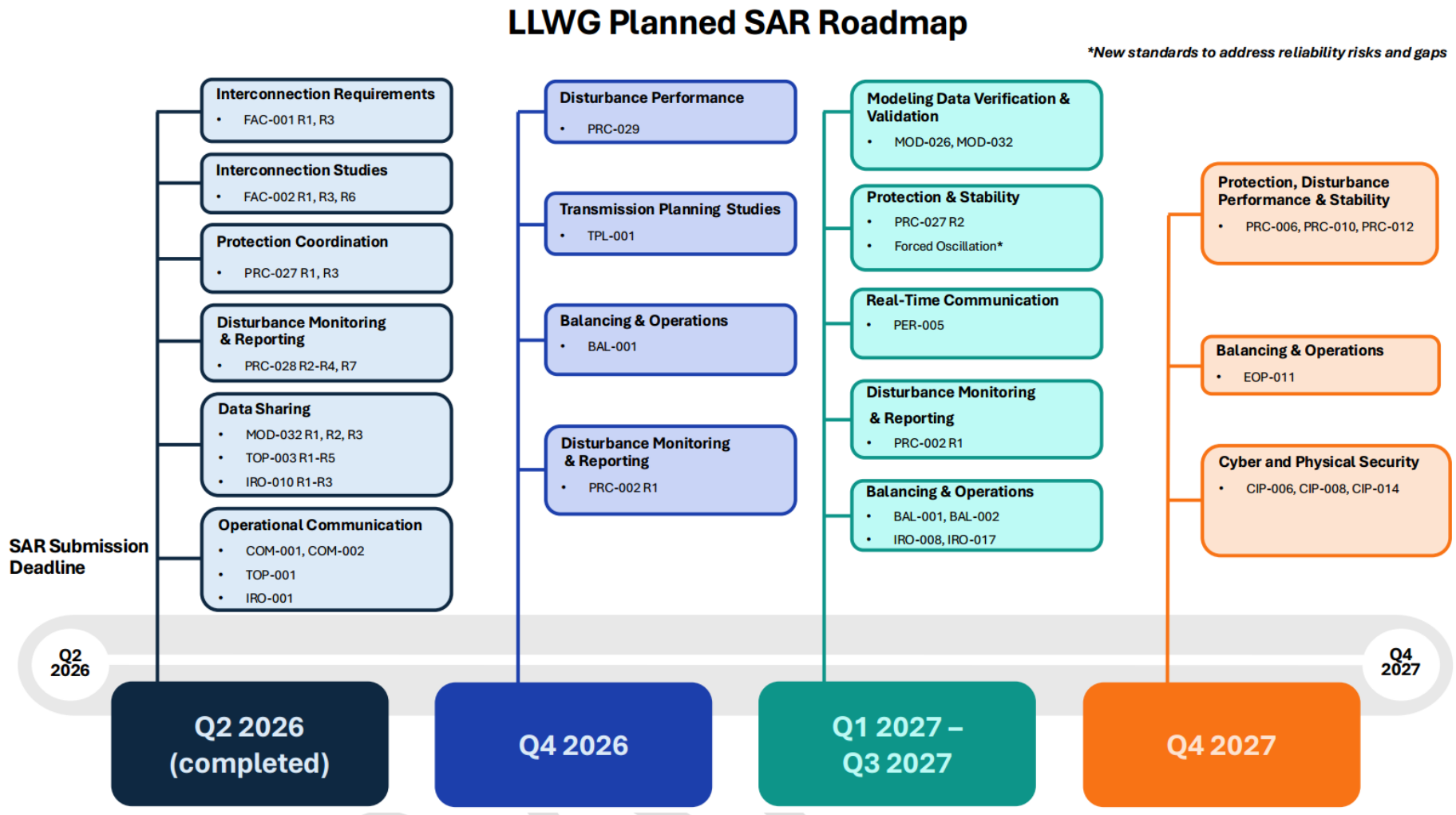
** Work in progress at this time; being discussed and developed by Project 2026-02 SDT.*

NERC LLWG Draft SAR Roadmap



SAR = Standard Authorization Request

ISO Activities and Updates

U.S. Large Load Landscape Examples

MISO

Requirements under development

LL Working Group; Zero-injection GIA; LL Interconnection Reliability Req; LL Additions Website

NYISO

PSEG LL Perform. Req.

LL Interconnection Considerations; NYSRC's LL Working Group

ISO-NE

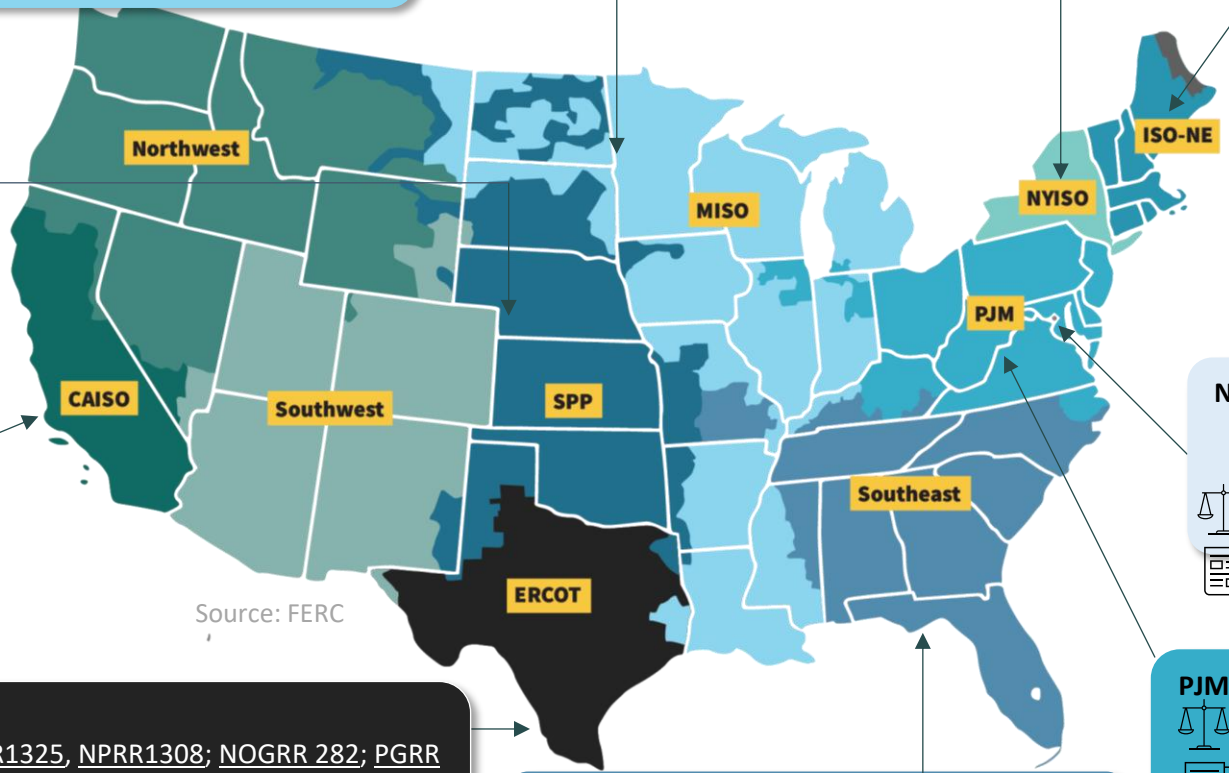
None requirements presently

Planning for Large Loads

SPP

Ride-through Req.

High-impact LL Integration (1,2); LL Presentation; LL design Presentation;



Source: FERC

Non-profits

IEEE Data Center Grid Readiness Efforts; ESIG LL Disturbance Events

CAISO

Requirements under development

LL Initiative Tech. Req. (Present., Webinar, Straw.); LL Considerations (Issue Paper, Present, Webinar)

NERC

NERC Alert

LLTF White Paper; LL Action Plan; LL Tech. Conference; Crypto Incident Review

ERCOT

PGRR145, NPRR1325, NPRR1308; NOGRR 282; PGRR 144; LL Power Variation Req.; Planning Guide; PGRR115; NPRR1234

LL 'Batch Study' process (Workshop #2, #3)

Southeast

Southern Company LL Tech Req.; Southern Company LL Modeling Req.

PJM

Dominion LL Interconnect. Req. (Attach. 8)

Expedited Interconnection Track (Present, FERC Filing): Interconnection Board Plan (Press Release, Letter)

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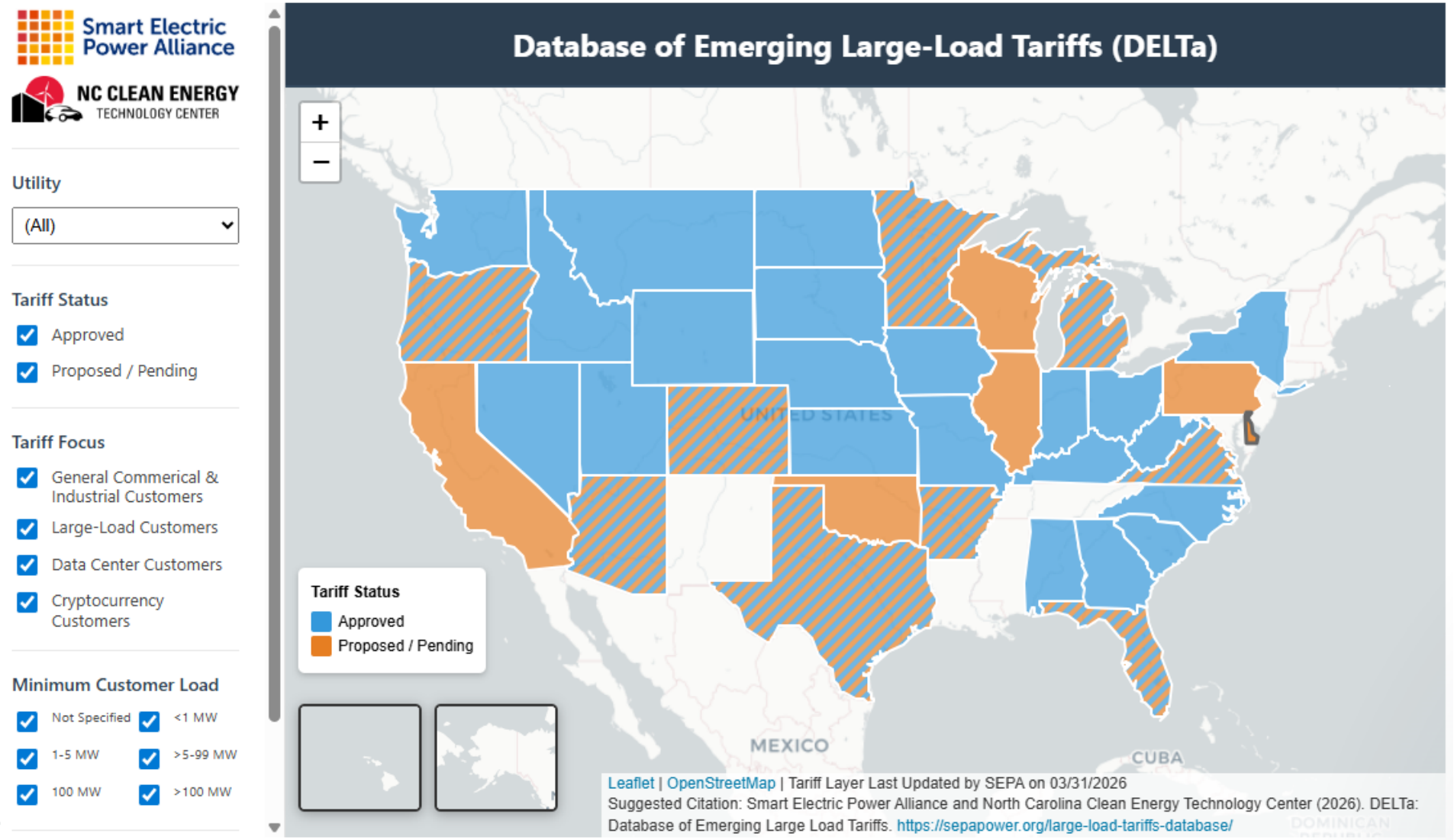
SEPA Database of Emerging Large Load Tariffs



Source: SEPA

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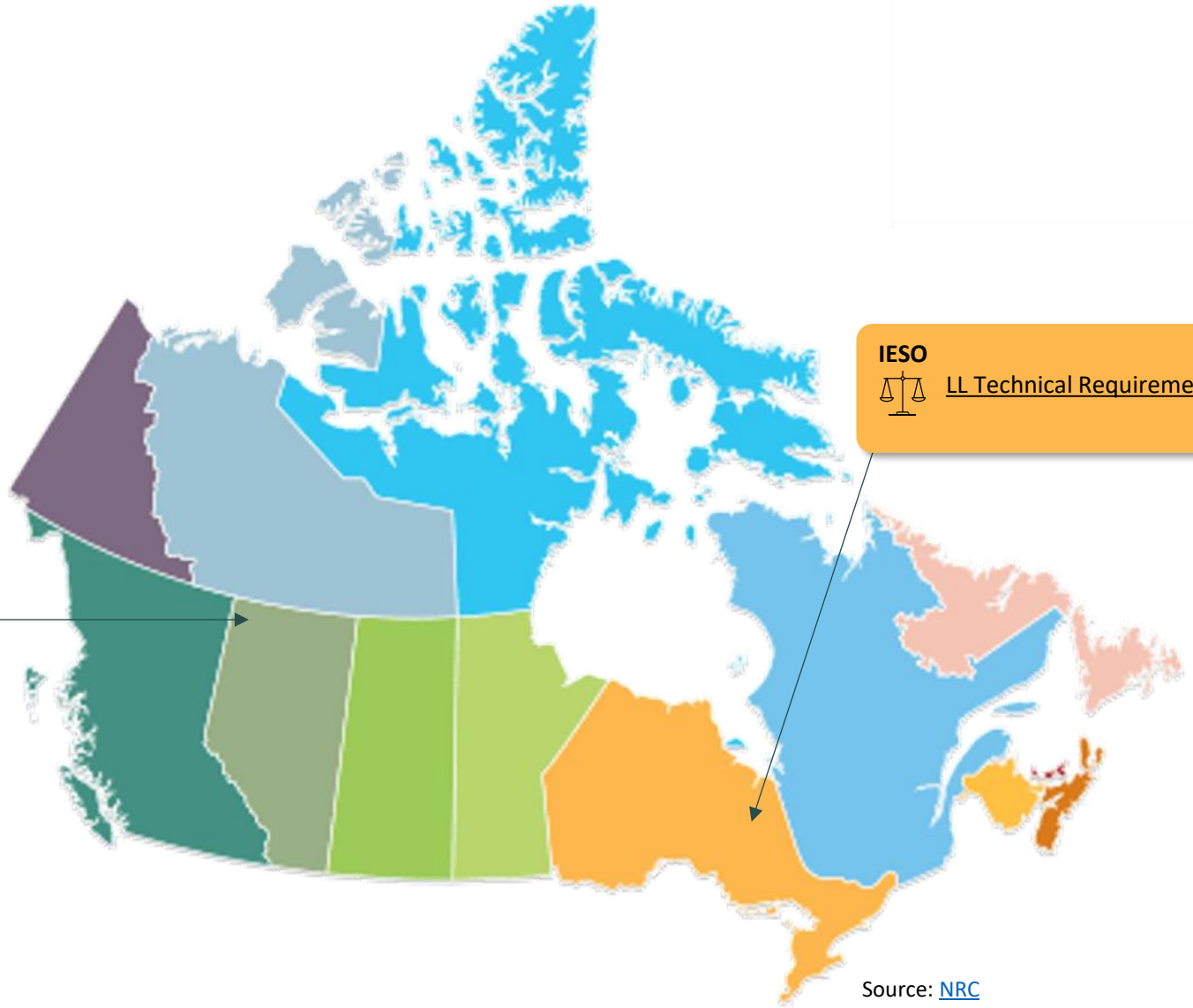
Canadian Large Load Landscape Examples



AESO

Data Centre Interconnection Req. Draft

DC Req. Repository; DC Information Session (Present, Webinar); Stakeholder Feedback; DC Update

IESO

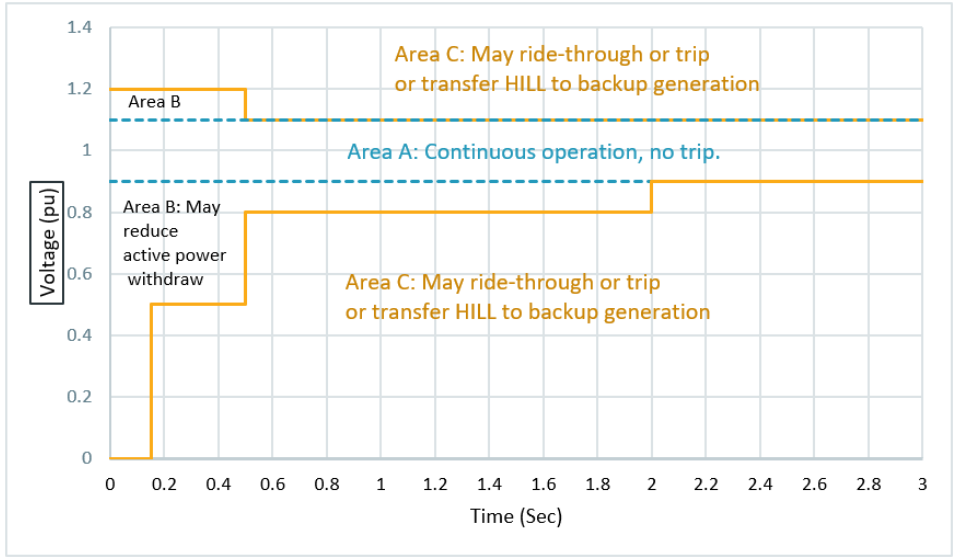
LL Technical Requirements

Source: NRC

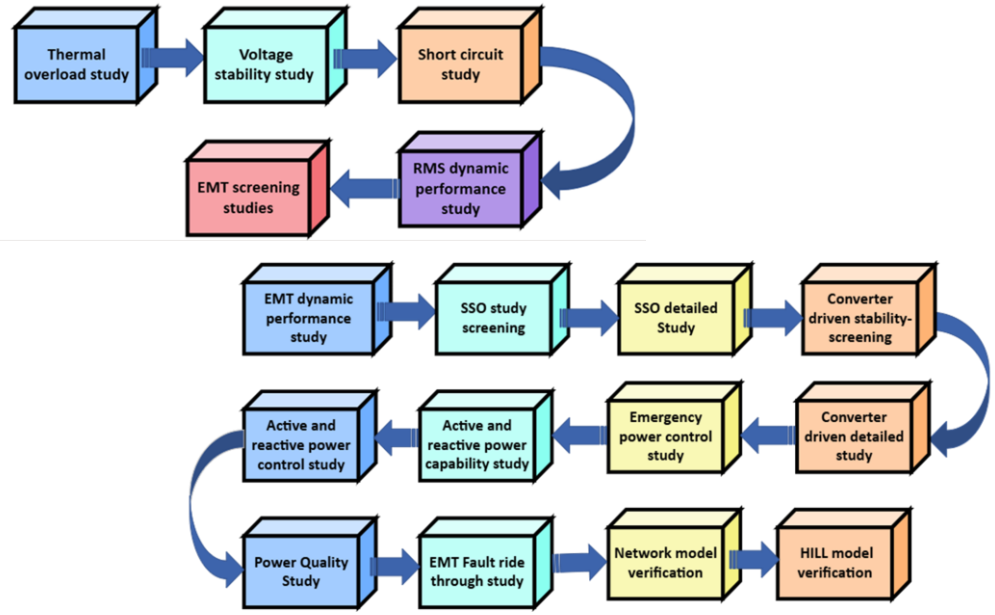
SPP Large Load Efforts

	HILL/HILLGA Firm Service Policies				Flexible Intermittent Policies	
	HILL (for Load) *MOPC (Aug 21) BOD (Sept. 4)*		HILLGA (for Generation) *MOPC (Aug 21) BOD (Sept. 4)*		Phase 1 *Phase 1 (Jan '26)*	*Phase 2* *Phase 2 (Apr '26)*
Service and parameters	**AQ Process** For LSEs with sufficient gen; load willing to wait on upgrades	**AX Process** For LSEs acquiring gen; load willing to wait on upgrades	**Common Bus** For supporting gen to be built behind a common bus with HILL	**Local Area** For supporting gen to be built behind a common bus with HILL	**CHILL** For large load willing to take curtailable service without sufficient gen	***PAL*** *For any load willing to take curtailable service to protect market prices*
Typical Customer	Heavy industry, mining, refineries data centers with continuous demand		Load-owned or partnership	LSE or developer-owned	Data centers with scalable operation	*Crypto Mining or Battery*
Time to study	90 days	90 days	90 days	90 days	90 days	*90 days*
Tx Cost allocation	Upgrades are base plan funded	Directly assigned until firm service acquired for new gen	Directly assigned	Directly assigned	Directly assigned	*Directly assigned*
Service Limit	No limit	No limit upon new	Gen will not be injected to the grid	Gen limited to HILL's need & system capacity	Curtailable for reliability (RA or Tx)	*Curtailable for price or reliability*
Length of Service	Permanent status	Permanent status	Permanent, or grid injection w/ DISIS/CPP	5-year limited status: must pursue DISIS/CPP	7-year CHILL status (after study complete), must pursue AX/AQ	*TBD*
Demand Response	Eligible resource	Eligible resource	N/A	N/A	Not eligible	*Not eligible*
Tx costs					Monthly / unreserved usage?	*Flow-based*

Source: SPP



Source: SPP



Source: SPP

MISO Large Load Efforts

Source: MISO, MISO, MISO

- Large Load Working Group:
  - Stakeholder forum spanning markets, system operations, planning, and resource utilization
  - All new issues related to large loads directed to this working group
  - Large load definition
  - Large Load Interconnection Reliability Requirements
  - Interconnection process adjustments
  - Tariff revisions
  - Zero-injection GIA
  - Business Practice Manual development

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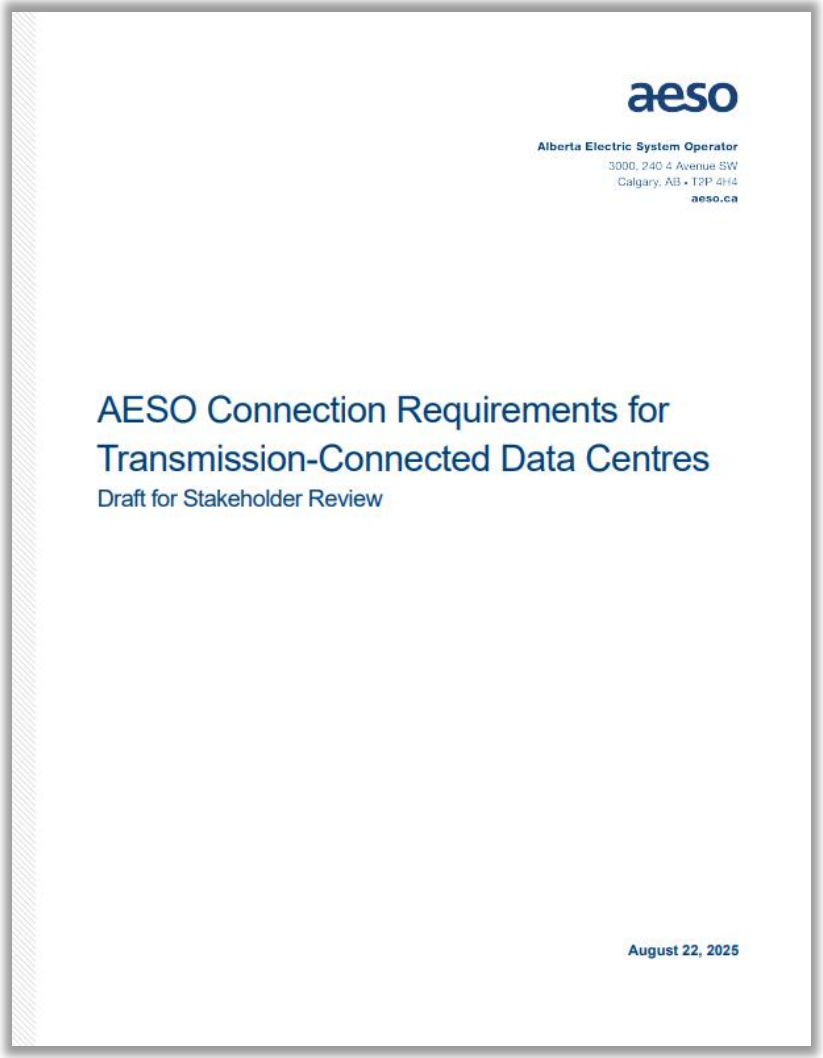
AESO Connection Requirements for Transmission-Connected Data Centres

- Mar 2026: Bring Your Own Generator (BYOG) Draft Front-End Process in progress
- Q1 2026: Requirements report will be available
- Nov 2025: Information session (Presentation and Recording)
- Oct 2025: Consolidated Written Feedback posted
- Sept 2025: Data Centre Update stakeholder feedback due
- Aug–Sept 2025: 1:1 stakeholder sessions
- Aug 2025: Materials posted



Source: AESO

IESO Technical Requirements for Connecting Large Computational Loads

- Public Engagement Webinar – July 23, 2026 (register here)
- Version 1.0 requirements developed

- Includes both the existing technical requirements for general load facilities **and** newly developed technical requirements that aim to address potential adverse impacts on system reliability caused by specific load behaviors of large computational loads

Source: IESO

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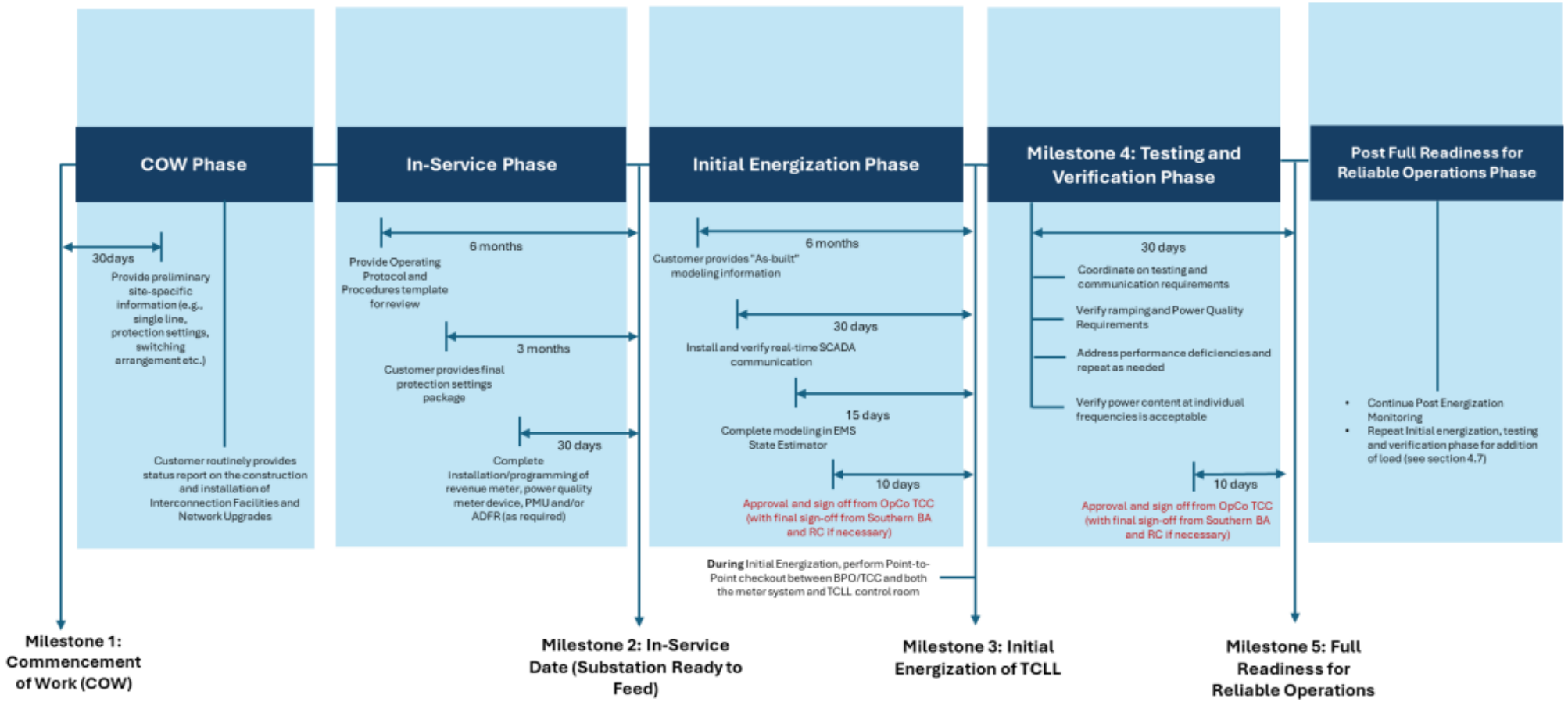
Southern Company Large Load Efforts




Southern Company

Technical Requirements for Transmission Connected Large Loads

Effective May 1st, 2026


Southern Company

Computational Load Modeling Requirements

Version: 2.0

Updated: March 31st, 2026

Source: OATI OASIS

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CAISO Large Load Technical Requirements Straw Proposal

First focused on:

- Frequency ride-through
- Voltage ride-through
- Post-Fault Active Power Recovery (PFAPR)
- Ramp-rate limitations
- Monitoring and telemetry requirements
- Modeling data requirements
- Commissioning, including data verification and model validation

Evaluations continue on:

- Low-frequency cycling limits (to prevent amplification of inter-area oscillations)
- High-frequency cycling limits (to prevent triggering of Subsynchronous Resonance (SSR), Subsynchronous Torsional Interaction (SSTI), and Subsynchronous Control Interaction (SSCI))
- Restrictions on operating in constant-power mode
- Power quality requirements, including harmonics, flicker, and Rapid Voltage Change (RVC)
- Dynamic reactive power support
- Phase-angle jump ride-through capability
- Protection requirements
- Other emerging technical considerations

California ISO

Large Load Technical Requirements Straw Proposal

Large Load Technical Requirements Working Group

California ISO
Gridliance West LLC
Pacific Gas and Electric Company
San Diego Gas and Electric Company
Silicon Valley Power
Southern California Edison
Valley Electric Association, Inc

Revision: R0

June 15, 2026

Source: Here,here,here

Others

- ISO-NE Planning for Large Loads (here)
- NYISO Load Interconnection Process (here) and NYSRC LLWG (here)
- PJM Expedited Interconnection Track (here, here) and Board Plan (here, here)
- PSEG Long Island Large Load Requirements (here)
- Dominion Large Load Interconnection Requirements (Attachment 8) (here)

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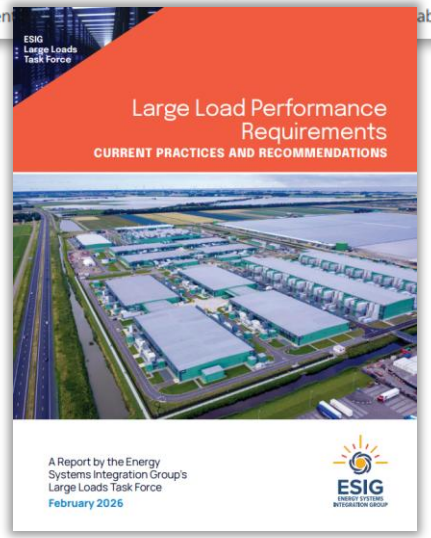
Interconnection Requirements Enhancements

Enhancing Interconnection Requirements

- Applicability and definitions
- Qualified change
- Frequency and voltage ride-through
- Power factor
- Power quality
- Oscillations and load variability
- Load ramping
- Automatic and manual demand disconnection and reconnection
- Short-circuit and protection coordination
- Monitoring – SCADA, disturbance monitoring, data sharing
- Operational notifications and data sharing
- Modeling data and information
- Commissioning checks, processes, and testing
- Co-located projects (generation and load)



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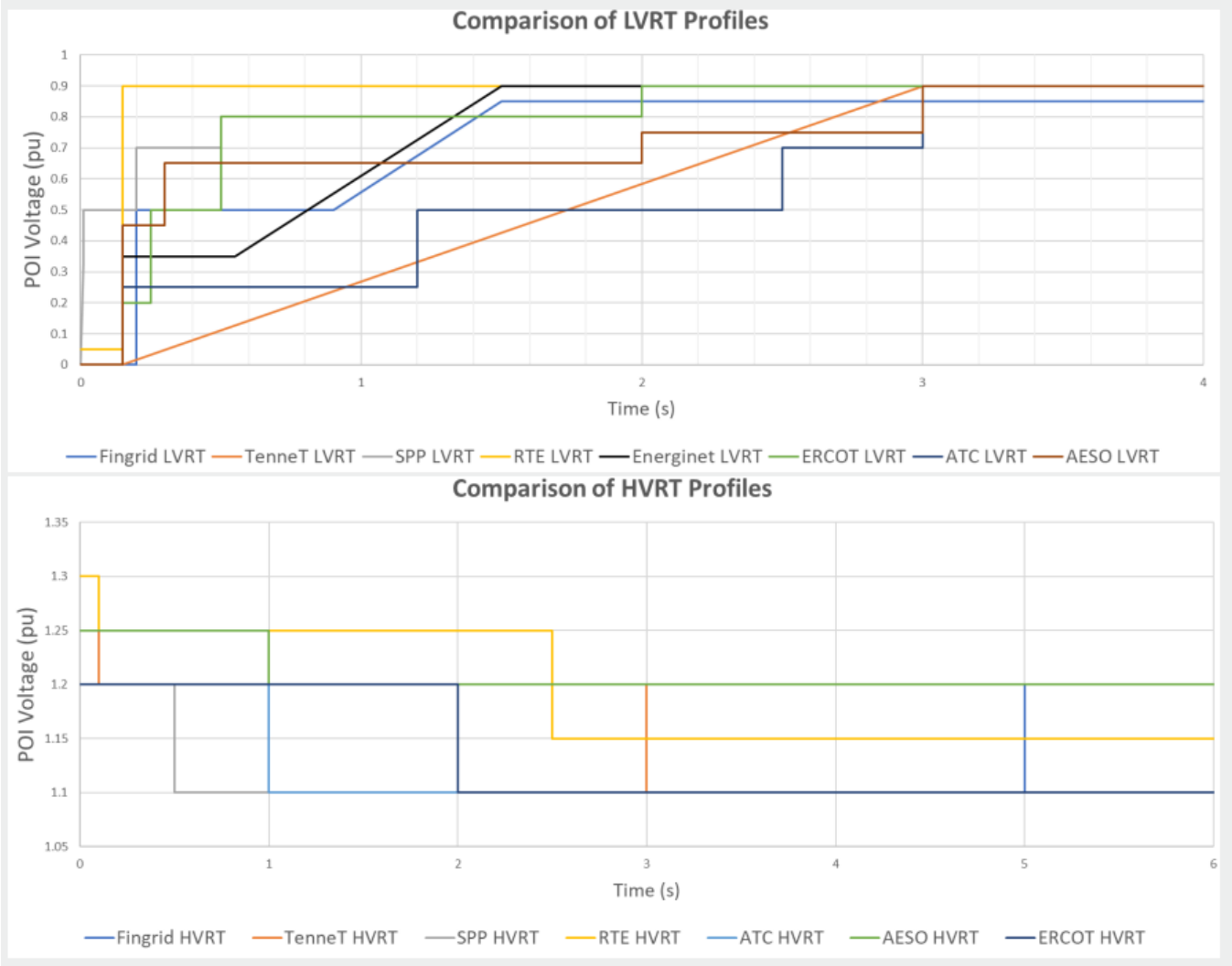
Different requirements being developed regionally



Source: ESIG

Relevant Industry Efforts

Relevant Industry Efforts

- NERC Large Load Working Group (here)
- NERC Load Modeling Working Group (here)
- NERC Project 2026-02 Computational Loads (here)
- WIRAB IAG Harmonizing Large Load Interconnection Requirements (here)
- ESIG Large Load Task Force (here)
- ESIG Large Load Interconnection Performance Requirements (here)
- SEPA Database of Emerging Large-Load Tariffs (here)
- Data Center Coalition (here)
- EPRI DCFlex (here)
- ERCOT Large Load Modeling (here)
- PNNL EMT Modeling of Large Data Centers Report (here)
- PNNL Data Center Model Library for PSCAD (here)
- IEEE Task Force on Datacenter Interaction with Transmission Systems (here)
- Power Stabilization for AI Training Datacenters Paper (here)

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ERCOT Large Load Efforts

- Batch Study Process

  (PGRR145, NPRR1325)

- Large Computational Load Definition

  (NPRR1308)

  Large Load
  One or more Facilities at a single site with an aggregate peak Demand greater than or equal to 75 MW behind one or more common Points of Interconnection (POIs) or Service Delivery Points.

  Large Computational Load (LCL)
  A Large Load in which 50% or greater of the Demand at the site consists of power electronic based load, specifically computational load, such as data centers and cryptocurrency mining facilities.

- Ride-Through Requirements

  (NOGRR282)

- Dynamic Model Requirements

  (PGRR144)

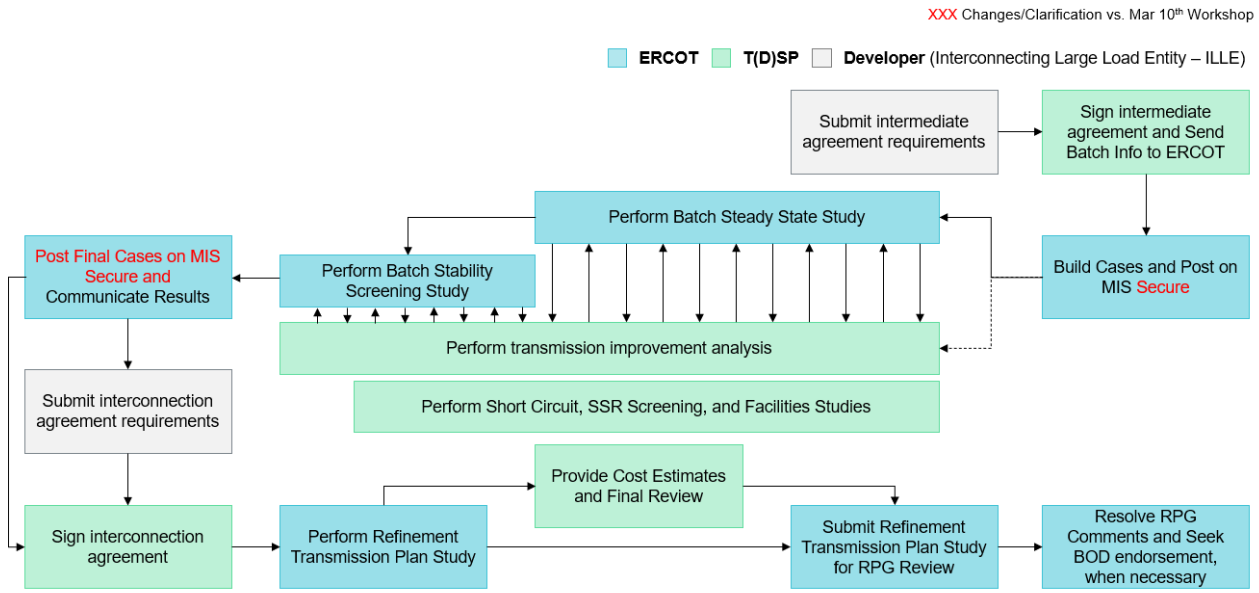

Table A

Frequency (f) in (Hz)	Minimum Ride-Through Time (seconds)
$f > 63.0$	May ride-through or trip
$61.2 < f \leq 63.0$	299
$58.8 \leq f \leq 61.2$	continuous
$57.5 \leq f < 58.8$	299
$f < 57.5$	May ride-through or trip

Table A

Root-Mean-Square Voltage (p.u. of nominal)	Minimum Ride-Through Time (seconds)
$V > 1.20$	May ride-through or trip
$1.10 < V \leq 1.20$	1.0
$0.90 \leq V \leq 1.10$	Continuous
$0.80 \leq V < 0.90$	2.0
$0.50 \leq V < 0.80$	0.5
$0.35 \leq V < 0.50$	0.25
$V < 0.35$	0.15

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Source: ERCOT