

Trade Associations Comments

Thank you for the opportunity to comment on the draft proposed revisions to the North American Electric Reliability Corporation's (NERC) Rules of Procedure (ROP) on the registration of large computational loads. The Trade Associations,¹ on behalf of their members, support NERC's objective of protecting the bulk electric system from reliability risks associated with large computational loads. The Trades understand there are various considerations needed in developing registration criteria and mechanisms for the owners and operators of computational loads.

To achieve our shared objective, the Trade Associations provide these comments in four parts:

- I. **Overarching Principles:** We describe core principles that form the basis for our proposed and alternative solutions in sections II and III, as well as our comments to NERC's proposal in section IV. We urge NERC to consider these principles when drafting the registration criteria for new entities.
- II. **Proposed Solution:** We propose changes to definitions and registration criteria that focus on the highest priority risks.
- III. **Alternative Solution:** We propose alternate definitions and registration criteria that would define two categories of large computational loads.
- IV. **Comments with NERC's Proposal:** If NERC does not accept the Trade Associations' proposed or alternative solutions, we describe the concerns we have with NERC's draft proposal that we urge NERC to address.

I. OVERARCHING PRINCIPLES

DATA CENTER REGISTRATION SHOULD BE RISK-BASED.

Treating different-sized facilities the same would depart from NERC's longstanding risk-based approach to registration. Registration criteria should focus on the loads most likely to have a material impact on bulk electric system (BES) reliability and should avoid imposing unnecessary compliance obligations on facilities that do not present comparable reliability risks.

¹ The Trade Associations are the: American Public Power Association (APPA), Edison Electric Institute (EEI), Large Public Power Council (LPPC), National Rural Electric Cooperative Association (NRECA), Transmission Access Policy Study Group (TAPS), and the National Association of Regulatory Utility Commissioners (NARUC) as a member association.

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THE DEFINITION SHOULD CAPTURE LARGE DATA CENTERS AND CRYPTO MINES BUT NOT CAPTURE TRADITIONAL COMMERCIAL OR INDUSTRIAL LOADS.

The registration criteria should focus on the category of large computational loads that NERC has identified as potentially presenting material reliability risks. They should not inadvertently capture traditional commercial or industrial loads that contain information technology equipment but do not operate primarily as computational load facilities, because such loads do not pose material risk to the BES.

For example, large office buildings with server rooms, defense infrastructure (e.g., the Pentagon), and industrial facilities (e.g., aluminum smelters or automobile manufacturing plants) should not be registered merely because they use servers, storage, networking hardware, or other information technology equipment in support of their ordinary operations. The criteria should distinguish facilities whose primary load characteristics raise the reliability concerns identified by NERC from facilities that use information technology equipment only as an incidental part of a broader commercial or industrial process.

RESPONSIBILITY FOR IDENTIFYING NEWLY REGISTERED ENTITIES SHOULD NOT FALL ON EXISTING REGISTERED ENTITIES.

Transmission Owners (TO), Transmission Operators (TOP), Transmission Planners (TP), Distribution Providers (DP), and other existing registered entities do not always have—and may lack legal authority to obtain—the information necessary to determine whether a particular customer meets the criteria for registration as a computational load owner or operator. NERC and the Regional Entities should therefore retain responsibility for identifying large computational loads that may meet the registration criteria.

The registration framework should not impose new, open-ended data collection obligations on existing registered entities or require them to determine whether a customer's facilities meet the proposed computational load criteria. Existing registered entities may have relevant system information, but they should not become the default mechanism for identifying, classifying, or certifying customers for registration.

NEW REGISTRATION CRITERIA SHOULD NOT CREATE COMPLIANCE OBLIGATIONS FOR SMALL DISTRIBUTION UTILITIES OR RESULT IN CHANGES TO THE DEFINITION OF BULK ELECTRIC SYSTEM.

Any new registration criteria for large computational load should not directly or indirectly change the criteria for registering distribution providers, nor should it result in changes to the BES definition. For example, if a large computational load interconnects to a non-BES line, that should not inadvertently convert that line into a BES facility and cause the owner of that facility to become a Transmission Owner.

II. TRADE ASSOCIATIONS' PROPOSED SOLUTION

The Trade Associations propose that NERC define computational load facilities as facilities with at least 75 megawatts (MW) of computational load connected at 100 kilovolts (kV)² or higher, and that NERC register the owners (e.g., the landlords) and operators of the computational load facilities.

CONSISTENT WITH OTHER REGISTRATION CATEGORIES, NERC SHOULD DEFINE FACILITIES AND THEN REGISTER THE OWNERS AND OPERATORS OF THOSE FACILITIES.

A. Add a definition of "Computational Load Facility": A clear definition of a Computational Load *Facility* is essential for Project 2026-02 success. Existing standards that currently address the same types of essential actions being proposed for data centers but are applicable to other comparable equipment (like generators) consistently rely on a *Facility*-type definition. This is consistent with how Generator Owner/Operator and Generating Facility are treated, defined, and included in the registration criteria.

Data center sites can have a significant number of physical and electrical configurations. For example, many data center sites can consist of one or more buildings, with each building having one or more connections to the Bulk Power System (BPS) at the same location. In some cases, data center owners may consider that each building is an individual data center, while in other cases the collection of buildings connected to the grid is viewed as the data center. The risk to the BES comes from the aggregate load behavior of facilities *at a single site*. This was emphasized in NERC's "Characteristics and Risks of Emerging Large Loads" whitepaper that, while specific load types and thresholds to define large loads could not be defined across industry at that time, all agreed that any such definition should include "aggregation of load facilities at a single site behind one or more point(s) of interconnection that can pose reliability risks to the BPS."

We therefore recommend the following definition of "Computational Load Facility" – A collection of electrical equipment located at one or more buildings, structures, or installations that is designed to receive power, has an aggregate connected maximum peak demand of Computational Load greater than or equal to 75 MW, and is served through electric facilities at a voltage level greater than or equal to 100 kV from one or more points of connection.

B. Replace "Computational Load Entity" with "Computational Load Owner" and "Computational Load Operator" or alternatively make changes to "Computational Load Entity."

The Trade Associations recommend that the Computational Load Entity definition be replaced with new definitions that align with the "Owner" and "Operator" Model currently in place in the NERC Rules of Procedure for registration criteria. Today we have registration criteria for TO, TOP, Generator Owner (GO), and Generator Operator (GOP). This structure is in place because for transmission and generation facilities, there are often situations that occur where the owner of the facilities is

² NARUC's position is 115kV or higher as opposed to 100kV or higher.

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different from the operator of the facilities. This registration criteria set up allows different entities to be responsible only for the activities for which they are contractually obligated as the owner and/or operator. For Computational Load Facilities, these facilities have the same type of structure. There are many cases where the owner is different from the operator.

Therefore, because of the actual structure of the facilities, and to align with existing NERC registration criteria, the Trade Associations recommend replacing the Computational Load Entity definition with Computational Load Owner and Computational Load Operator, with proposed definitions for each included below.

“Computational Load Owner” means the end-user entity that owns and maintains a Computational Load Facility, **and/or** the entity that owns and maintains a Computational Load Facility that hosts end-users that receives electric power **at a Computational Load Facility**.

“Computational Load Operator” means the end-user entity that operates a Computational Load Facility, **and/or** the entity that operates a Computational Load Facility that hosts end-users that receives electric power **at a Computational Load Facility**.

However, as discussed in more detail below, if NERC staff retains only one registered entity, the Trade Associations suggest the following modifications to the Computational Load Entity definition:

“Computational Load Entity” means the end-user **and/or** the entity that hosts end-users that receives electric power ~~for~~ **at a Computational Load Facility**.

The risk to the BPS and the gaps in NERC's reliability standards, as noted in NERC's "Assessment of Gaps in Existing Practices, Requirements, and Reliability Standards for Emerging Large Loads" are driven by computational load impacts and behavior, not *other type* of loads, so the Computational Load Entity definition should focus only on the amount of data-centric/information technology type of load.

COMPUTATIONAL LOADS SHOULD BE DEFINED AS LOADS MADE UP PRIMARILY OF POWER ELECTRONICS-BASED INFORMATION TECHNOLOGY EQUIPMENT.

Clarify the Computational Load definition: The Trade Associations recommend that the proposed Computational Load definition focus on the power electronic-based information technology equipment, which is the focus of the risks to the BPS as documented by NERC's Large Loads Task Force and Large Loads Working Group.

NERC's "Assessment of Gaps in Existing Practices, Requirements, and Reliability Standards for Emerging Large Loads" identifies risks associated with the behavior and impacts of computational loads. Those risks arise from the data-centric and information technology characteristics of the load, not from unrelated load at the same site. The definition should therefore focus only on the amount of computational load and should not sweep in other types of loads that do not raise the same reliability concerns.

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Therefore, we urge NERC to update it as follows: **“Computational Load”** means Load comprised **primarily** of electric power demand from **power electronic-based** information technology equipment.

THE REGISTRATION THRESHOLD SHOULD BE SET TO 75 MW/100 KV.

The Trade Associations recommend that NERC revise the proposed thresholds in Appendix 5B. The proposed 20 MW/60 kV threshold with the 1MW Computational Load criteria is set unnecessarily low and sweeps in a substantial number of facilities that pose no material impact to the reliability of the BPS and, thus, does not justify the burden of NERC registration. The current Rules of Procedure, Registration, and Standard Drafting efforts related to Computational Loads should focus on those loads that pose the most meaningful risk to the BPS. The threshold criteria (20 MW, 60 kV) is too low and we recommend the threshold be set to 75 MW connected at $\geq 100\text{kV}$ for Computational Load Facilities, consistent with the NERC BES definition for dispersed power producing resources (i.e., inverter-based resources) – where the current criteria is greater than 75 mega volt amperes (MVA) at a common point of connection at $\geq 100\text{kV}$ is utilized.

Although NERC has developed a Technical Reasoning Proposed Computational Load document, it does not provide sufficient explanation or practical examples to justify the selected thresholds in the proposed registration criteria. The Trade Associations are concerned that NERC's proposed approach could inadvertently create compliance obligations for DP entities by effectively deeming them TO or TOP. It is critical to ensure that DP do not lose the radial system exemption when solely serving load and not operating transmission facilities. Clear justification and refinement of the proposed thresholds are required to demonstrate that there are identifiable and material risks to the BES.

In addition, NERC's "Characteristics and Risks of Emerging Large Loads" indicated that "most of the survey respondents qualified 'large' as greater than 50 MW, and the single size number most commonly suggested was 75 MW," and the NERC Alert 2 results confirmed this. NERC's "Assessment of Gaps in Existing Practices, Requirements, and Reliability Standards for Emerging Large Loads" references the first Whitepaper and in the definition section, and focuses on really large loads and how several smaller loads (still much bigger than 20 MW) are not as big of a risk. "The potential impact of several 100 MW loads may be less than the impact of a 500 MW load and may require different treatment."

Furthermore, NERC's "Ten benchmarks of an Effective Reliability Standard" white paper emphasizes that "each [NERC reliability standard] requirement is 'not a lowest common denominator' exercise but instead achieves an objective that is the best approach for bulk power system reliability." The same applies to definitions and reliability criteria. NERC's decision to select 20 MW appears to be a "lowest common denominator" choice, instead of a higher value that the majority of the industry agrees with.

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The Trade Associations recommend NERC adopt an initial threshold of 75 MW at a common point of connection of 100 kV or higher. This pairing adheres to the current BES definition and appropriately balances reliability risk to compliance burden. A 75 MW/100 kV starting point focuses computational load entity registration on the facilities most likely to have a material impact on BPS reliability. It would also give NERC and the Regional Entities time to identify entities for registration, develop reliability standards, and gain compliance oversight experience with a manageable population. Further, it avoids imposing new obligations on facilities whose individual contribution to reliability risk is limited.

III. TRADE ASSOCIATIONS' ALTERNATIVE PROPOSAL

As an alternative, the Trade Associations recommend that NERC adopt an approach that mirrors the Category 1 and Category 2 Generator Owner and Generator Operator definitions adopted as part of NERC's Inverter-Based Resources Registration Initiative.

THE NEW REGISTRATION FRAMEWORK SHOULD STILL DEFINE FACILITIES AND THEN REGISTER THE OWNERS AND OPERATORS OF THOSE FACILITIES.

As with our primary proposal, our alternative proposal retains the structure of defining Computational Load Facilities and registering the owners and operators of those facilities.

THE NEW REGISTRATION SHOULD CONSIST OF TWO CATEGORIES OF COMPUTATIONAL LOAD OWNERS AND OPERATORS.

If a threshold lower than 75 MW is deemed necessary by NERC staff, the Trade Associations recommend that NERC staff enhance the Technical Reasoning document to reflect the analysis/evidence demonstrating the lower facility threshold is needed for BPS reliability. In addition, in this scenario, the Trade Associations also recommend that NERC staff adopt the same registration criteria model that was developed for inverter-based resources with the Category 1 GO/GOP and Category 2 GO/GOP. NERC should create a new Category 1 Computational Load Owner/Operator (CLO/CLOP) and Category 2 CLO/CLOP definitions, and structure the MW and voltage criteria for each to align with the Category 1 GO/GOP and Category 2 GO/GOP.

With NERC expected to address computational load risk on an accelerated timeline by the end of 2026, this structure would allow ERO Enterprises to focus its initial entity registration, standards development efforts, and compliance education activities on the highest-risk CLOs/CLOPs first. This framework also establishes a more manageable path to subsequently address lower-risk Category 2 CLOs/CLOPs in future work phases. Finally, this structure would enable a risk-based compliance approach by allowing more stringent reliability and security requirements to be applied to Category 1 CLOs/CLOPs compared to Category 2 CLOs/CLOPs.

Under this alternative structure, the following definitions are proposed:

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“Computational Load Facility” means a collection of electrical equipment located at one or more buildings, structures, or installations that is designed to receive power, is served through electric facilities from one or more points of connection **and meets the criteria in either Category 1 or Category 2 Computational Load Owner/Operator registration categories.**

“Category 1 CLO/CLOP” should be aligned with the BES criteria, which would be entities who own/operate Computational Load Facilities (CLFs) that are **>= 75 MW** of Computational Load connected at **>= 100kV**.

“Category 2 CLO/CLOP” should be aligned with the lower threshold value supported by NERC and industry, which would be entities who own/operator Computational Load Facilities that are **>= 20 MW** of Computational Load connected at **>= 60kV**.

IV. COMMENTS ON NERC'S PROPOSED REVISIONS

As noted earlier, the Trade Associations have several concerns with NERC's proposed revisions to the Rules of Procedure. If, however, NERC declines to adopt either solution, and proceeds with the approach in the April 1, 2026, draft, we urge NERC to address the following concerns before finalizing any revisions.

REPLACE “CAPABILITY” WITH “MAXIMUM PEAK DEMAND.”

The draft Computational Load Entity registry criteria use the word “capability,” which can be interpreted as the maximum load of a Computational Load Facility (CLF). For example, if the CLF facility has a maximum possible load demand of 100 MW, then this is the load “capability” of the CLF. However, this “capability” term as used with load is likely not widely understood or utilized today.

We recommend an alternative to the use of “capability” such as **“maximum peak demand”** of a facility to be clearer. In addition, evaluating a CLF's impact on the BES should not rely solely on its size. Incorporating operational characteristics, such as interruptibility, load flexibility, and the availability of on-site or contracted backup generation, will provide a more comprehensive and accurate assessment of system impacts.

CLARIFY HOW “POINT OF INTERCONNECTION” APPLIES TO LARGE COMPUTATIONAL LOADS.

The proposed registration criteria include a reference to a “point of interconnection” at 60 kV. “Point of interconnection” is primarily a term referring to generation interconnections – interconnections that most often rely on one generating tie-line. Data centers often have many connections to the BPS at the same location. The ownership of equipment can also vary site to site, in which some connect to utilities directly at the high voltage kV bus by owning the high-voltage transformation, while others do not own the transformation or equipment greater than 60 kV.

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CLARIFY HOW TOTAL AGGREGATE LOAD WILL BE CALCULATED.

NERC's current proposed Computational Load Entity registration criteria would register an entity that "contributes to an aggregate connected Load capability" of 20MW or greater. How will NERC determine the amount of Computational Load or the amount of aggregate connected load thresholds? Will it be based on the "nameplate" of the various racks in a data center warehouse or some other methodology? Regardless of the method(s) for determining these values, the Trade Associations recommend that this should be confirmed between the CLE and its Regional Entity and NERC should not be dependent on other registered entities for providing this information to Regional Entities. Critically this criteria state load, not Computational Load. The Trade Associations believe this is incorrect and should be updated to state "Computational Load capability." In our proposed Computational Load Facility definition, we have included the use of Computational Load in the definition so that the focus is only on data-centric/information technology load.

NERC should also clarify how it will calculate the relevant load quantity. For example, NERC should explain whether the calculation will rely on the nameplate rating of server racks or other equipment, contract demand, projected maximum peak demand, measured demand, or another methodology. Clear rules will reduce uncertainty and improve consistency across regions.

THE 1 MW THRESHOLD SHOULD BE ELIMINATED.

It is unclear how, in NERC's April 1 proposal, a Computational Load is fundamentally different from other large traditional loads, such as steel mills, food processors, or automobile manufacturers. All large loads must be studied to ensure their interconnection and operation do not create grid reliability issues. There is concern that, as written, it may capture facilities that are not data centers or cryptocurrency mining operations, which are the business types that NERC has identified as potentially impacting the reliability of the BES. For example, many industrial and commercial facilities may operate more than 1 MW of information technology equipment (either now or in the future), such as servers, storage, and networking hardware to control and support processes, yet these are not solely or primarily computational in nature. In addition, it seems unreasonable that the loss of a 1 MW load, regardless of load type, would have a significant impact on the BES, therefore including a de minimis criteria of 1 MW of Computational Load drives significant confusion, pulls in a significant number of entities unnecessarily, and has no justification pertaining to actual risk to the BPS. The 1 MW de minimis threshold conflicts with the material impact standard applied throughout Appendix 5B and would expand registration beyond entities capable of materially impacting BPS reliability. The 1 MW de minimis threshold should be removed from the Computational Load threshold.

THE TERM "ENTITIES THAT HOST END-USERS" IS UNCLEAR AND SHOULD BE REPLACED.

The proposed materials use the phrase "entities that host end-users." That phrase appears intended to address data center owners or landlords that host tenants. But the phrase could also be read more broadly.

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For example, a distribution utility may own a substation that serves 20 MW of load, including a credit card processing facility with 2 MW of servers. In that circumstance, the distribution utility could be described as “hosting” the load on its system, even though it does not own or operate the computational load facility. The registration criteria should not create that result.

NERC should replace or clarify the phrase “entities that host end-users” to ensure that it does not include distribution utilities, retail service utilities, TO, TOP, TP, or DP that merely serve, study, or interconnect computational load facilities. The registered entity should be the entity that owns or operates the Computational Load Facility, not the utility that provides electric service to it.

As noted above, the Trades suggest the following language to address the concern:

“Computational Load Entity” means the end-user **and/or** the entity that hosts end-users that receives electric power **for at a** Computational Load **Facility**.

ADDITIONAL TRADE ASSOCIATIONS QUESTIONS REGARDING NERC'S APRIL 1 PROPOSAL

To build on the concerns shared and the alternatives provided the Trade Associations ask the following questions

- “How will a Computational Load Entity(ies) be identified for registration under the proposed framework?”
- Will the TO, TOP, or TP be responsible for identifying this/these load(s) and sharing that information with their Regional Entity?
- Additionally, will responses to the NERC Level 3 Alert on Computational Loads be used to inform or determine registration requirements?

In addressing these questions, the Trade Associations recommend that the identification CLEs for potential registration should be the responsibility of the Regional Entity and NERC should not be dependent on other registered entities for providing this information to Regional Entities.

CONSIDER AN EXCEPTION PROCESS FOR LARGE COMPUTATIONAL LOADS THAT MEET THE CRITERIA BUT CAN BE SHOWN NOT TO HAVE A MATERIAL IMPACT ON THE BULK ELECTRIC SYSTEM.

Brightline Criteria

Computational Load Entity (CLE) registration should be based on clear, brightline criteria coupled with a formal exception process similar to the BES definition framework. Such an approach would allow an entity to demonstrate, through documented technical justification, that its facilities do not have a material impact on the BES. This balance is necessary to ensure that registration and compliance obligations are applied only where there is a substantiated reliability risk, while

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avoiding unnecessary regulatory burden for entities whose operations do not pose a material threat to BES reliability.

NERC SHOULD DEVELOP A REFERENCE DOCUMENT.

The proposed criteria raise practical questions about how facility topology and interconnection configurations will affect registration. NERC should develop a reference document addressing the new registration criteria. The document should give industry and the drafting team a clear opportunity to review how NERC and the Regional Entities expect to apply the criteria. That reference document would promote consistent implementation and reduce the risk of unintended consequences.

CANDIDATES MUST MEET ALL CRITERIA TO BE REGISTERED.

The Trade Associations also note that NERC's document "Summary of Revisions" states candidates for Computational Load registration must meet all the criteria in the proposed revisions in Appendix 5B to be registered as a Computational Load Entity; however, that is not explicitly stated in the proposed changes in Appendix 5B and should be stated.