



Sector 8 Policy Input for the NERC Board of Trustees & Member Representatives Committee

February 13, 2025 Board Meeting

ELCON, on behalf of Large End-Use Consumers, submits the following policy input for the consideration of NERC's Board of Trustees (BOT) and the Member Representatives Committee (MRC). It responds to BOT Chair Ken Defontes, Jr.'s January 9, 2025 letter to Jennifer Flandermeyer, Chair of the MRC.

SUMMARY

Large Consumers (Sector 8) appreciate the urgency by NERC to ensure the reliability of the Bulk Power System is not negatively impacted by large load demand growth that produces unpredictable and variable operating characteristics (e.g., crypto-mining, data centers). Similar to the challenges experienced with ride-through capabilities of inverter-based resources, a significant portion of growing energy demand is coming from inverter-based loads which can rapidly increase or decrease demand. However, not all large loads are similarly situated or configured. As such, Sector 8 responds as follows:

1. What risks to reliability, resilience, and security do you see with the increasing integration of large loads?

- While studying the potential adverse reliability impacts caused by the rapid integration of large loads, Sector 8 cautions NERC to tailor any mitigation measures to those loads that have the potential to cause grid disturbances.
- Sudden unexpected drops in large load demand not only harms the reliability of the grid but can also damage other interconnected equipment including those of other loads.

2. What should NERC do to address these emerging risks?

- The NERC RSTC Large Load Task Force's efforts should continue to focus where reliability and security expert engineers have first-hand experience and knowledge of current large load operating characteristics and risks. Resources should be made available for data gathering and analytics.
- NERC should prioritize focus on measures and mandates meant to mitigate the reliability impacts from those large loads that have variable operating characteristics and hence pose potentially serious reliability impacts to the grid.

Many other classes of large loads, especially those in the large industrial and manufacturing sector are more predictable, reliable, ratable, with proven operational track records, and capable of riding through grid disturbances and thus do not pose major instability risks to the Bulk Power System.

Reliability Risks of Large Loads

Sector 8 appreciates NERC's efforts to anticipate reliability and security risks from integrating new large loads to the Bulk Power System. Sector 8 has historically represented large industrial and manufacturing users of electricity but has seen new customer classes with different configurations and operational characteristics. Unlike traditional large loads that can take several years to connect and generally operate predictably for decades, newer loads are seeking to connect massive amounts of electricity demand in relatively short time frames where usage can surge and drop in an instant, causing significant reliability risks.

For instance, crypto-mining loads are typically price driven and will ramp up or down operations according to those price signals. Conversely, data centers that power our global economy and are needed for artificial intelligence build-out and development, are typically more predictable with 24/7 power demand, but due to their configurations, small frequency or voltage blips can cause the entire load to trip offline resulting in a major unplanned grid disturbance.

Not only do these significant shifts in demand cause grid instability, but they can also damage sensitive equipment for other customers on the grid. For example, rotating motors and sensitive electronic components used in manufacturing equipment may be damaged during sudden losses and restoration of power. A sudden loss of power in a manufacturing plant in the process industries can cause a disruption in the flow of fluids and upset the process units. This can lead to equipment damage due to rapid temperature changes, over-pressuring of equipment, and/or mechanical stresses. Potential damage can include pipe or vessel ruptures; or plugging and mechanical damage to pumps and compressors. These issues can also result in personnel safety hazards and environmental exceedances.

As the NERC RSTC Large Load Task Force continues to research and understand the exact nature of these emerging large loads, it is imperative that NERC understand and differentiate amongst "large loads" based on key operating characteristic differences that may pose reliability risks instead of treating all "large loads" as a monolith. It's important to recognize that traditional large loads do not pose the same reliability risk that the emerging inverter-based load may pose to the Bulk Power System. For example, it would be very easy to combine all current Sector 8 companies into the category of "large loads" despite very different operating characteristics and threats posed to grid reliability.

What should NERC do to address these emerging risks?

NERC must continue to support the RSTC Large Load Task Force's efforts to accurately define the reliability challenges posed by new large loads and develop mitigation measures to combat grid instability. The Large Load Task Force is best positioned to provide the clearest roadmap for anticipating and dealing with reliability challenges caused by certain operational characteristics. This Large Load Task Force support should also include resources for accurate data gathering and analytics. Neither NERC nor Task Force participants should perform the work in vacuums. A collaborative approach is imperative to ensuring accuracy.

It is imperative that to the extent NERC develops mitigation measures or mandatory reliability standards, those measures are precisely tailored to those customers that actually pose risks to grid stability. Broadly applying measures, rules, or other costly programs will directly harm those large customers that have been reliably and predictably operating and served for decades. Those facilities that have ride-through capabilities, can't easily ramp up or ramp down, and exhibit steady demand should not be operationally or financially burdened with unnecessary mandates. Similar to the "cost causation" principle for transmission development, only those loads causing grid reliability challenges should be subject to any mitigation measures, programs, or rules meant to address the reliability risks they pose.

In closing, Sector 8 greatly appreciates NERC's diligence in addressing the challenge of new large loads connecting to the Bulk Power System. We look forward to working with NERC to identify the specific reliability challenges posed by certain large customers and how to mitigate those impacts. NERC must endeavor to apply future mitigation measures with precision so as not to unduly burden those predictable large loads that do not typically cause grid disturbances or further exacerbate challenging grid conditions.