Clean Grid Alliance Comments on MISO's Large Load Workshop
Feb 23, 2026

Clean Grid Alliance applauds MISO's efforts to inform and collaborate with stakeholders through the Jan 30, 2026 large load workshop
https://www.misoenergy.org/events/2026/large-load-workshop---january-30-2026/

MISO is facing unprecedented circumstances with the push for rapid load growth due to expanded electrical needs to support rapid and large incremental spot load growth. In MTEP 25, there were approximately 11.6 GW of spot load additions with load behavior, interfaces, operations, generation supply needs, and infrastructure that significantly differ from what MISO and its transmission owners are accustomed to managing. This transition requires input and support from diverse stakeholders for MISO to make informed and sound decisions.

Clean Grid Alliance represents and consists of members that include generation developers, data center developers, original equipment manufacturers, engineering and law firms, as well as environmental organizations. CGA's diverse membership provides broad perspectives (from across the country and around the globe) and insights that are crucial for properly addressing the important challenges MISO, like other ISOs/RTOs, now squarely faces.

We offer a few key high-level suggestions for MISO to consider as it addresses the challenges that come with rapid expansion of new loads that are expected to be much larger and to behave very differently than loads MISO and its transmission owners have accommodated to date.

1. **Visibility:** While large loads are currently being handled[1] at the transmission owner level –they impact many other processes at MISO and may interact with each other and completely change conditions for nearby load and generators. **Clean Grid Alliance recommends that MISO maintain a public list of large load interconnection requests at the initial request, prior to vetting and approval by a transmission owner, similar to its generator interconnection queue prior to Phase 1 study kick off. Having early process visibility and standardized study procedures (similar to DPP Phase 1) to identify large load constraints would allow for market investment and collaborations to address reliability issues created by large loads seeking to interconnect.**

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[1] MISO's initial ZGIA (Zero Generator Interconnection Agreement) proposal represents nothing new except to clarify that utilities can interconnect load+gen at the transmission level the same way they had been doing "pre-MISO" and the way it is currently now on the sub-transmission level, without having to go through MISO. MISO has already approved 3 ZGIAs (in MISO South). This approach effectively removes a significant amount of oversight by MISO, undermining the very need for and core function of a Regional Transmission Organization and potentially leaving serious reliability gaps.

2. **<u>Standardization</u>:** While transmission owners are a key partner of any RTO, ultimately the RTO is responsible for operation and reliability of the bulk electric power and transmission system. **Clean Grid Alliance recommends that MISO create a well-defined and standardized set of minimum reliability modeling and performance metrics for large loads similar to what currently exists for generation interconnection (and harmonized/consistent across market processes, including new market entry).** In regard to engineering and reliability planning models, MISO may want to consider adopting the standardization metrics applied to Surplus Interconnection/Net Zero generation interconnection requests.[2] In regard to projects that are already proceeding and for ZGIA projects to come, MISO must consider standardizing rules for "netting" generation resources and load for resource adequacy (and resource expansion planning) as well as transmission expansion planning purposes. Put differently, it is crucial for MISO and all TOs to define, monitor, and forecast Network Load properly.[3]

3. **<u>Utilization of Available Technology/Resources/Markets</u>:** MISO has long been a leader in many aspects of grid modernization, especially renewable energy integration and co-optimized marginal cost-based pricing that minimizes uplift costs. However, in regard to energy storage technologies, particularly in applications necessary for reliable integration and operation of large data centers, MISO still has much work to do. MISO's primary approach to date to address data center needs has been creating new rules that largely favor thermal generation. Those efforts, which focus on resource adequacy, largely fail to address energy market operational challenges like rapid large ramping variations and unplanned/instantaneous power imbalances that today's new large loads introduce[4]. **Clean Grid Alliance recommends that MISO urgently develop operational capabilities and market rules for the coordinated use of renewable energy resources, energy storage, HVDC, DER, and other available technologies,** [5] **that provide reliability-enforcing financial incentives to address large load expansion needs.**

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[2] MISO BPM 16, Section 6.7.4 "Qualified Change Evaluation Criteria", available at https://www.misoenergy.org/legal/rules-manuals-and-agreements/business-practice-manuals/

[3] MISO can consider reviving previous discussions/solution ideas that still merit consideration –including "BTMG/btmg" discussions from years back, where MISO proposed a solution that would count as Network Load any load associated with any resource participating in MISO markets: https://www.misoenergy.org/engage/MISO-Dashboard/consistent-treatment-of-btmgbtmg-within-planning-processes/

[4] Because MISO has not been addressing large load holistically – it has become necessary for data centers to do so at the medium voltage level to ensure availability and resilience. A public example of one such effort was noted by a stakeholder in MISO's large load work shop – by a data center developer https://www.volts.wtf/p/can-data-centers-be-good-grid-citizens

[5] MISO is infamously lagging other ISOs/RTOs on implementing Order 881 (GETs) and Order 2222 (DER) as well as policies that will support/facilitate HVDC, all of which can help in managing planned and unplanned/instantaneous large load swings.

While these comments are intended to be high-level, we would like to also offer a few more detailed suggestions (and will follow up with several presentations[6] at MISO stakeholder meetings such as the PAC, PSC, MSC and RASC to further demonstrate use cases and opportunities for energy storage and other resources on the MISO system to meet large load needs).

Additionally, below are two Storage Specific Recommendations to Support Large Loads, the first of which relates to work MISO is currently doing:

1. **Transition storage away from "fuel based" storage dispatch in planning models:** MISO's "Removing Storage Charging Limitations" (PAC 2004-3)[7] issue (next presentation at the upcoming March 11 2026 Planning Subcommittee) offers a great opportunity to more accurately model storage behavior in planning to remove unnecessary barriers that prevent this valuable tool from providing ramp services and meeting other needs that it can supply to support large loads. While MISO has not yet revealed any proposal on "how" storage modeling might change, we would like to offer that because storage operates as a load, generator, and a transmission asset simultaneously, it is unnecessarily limited by "fuel based" dispatch, and should be considered more holistically in planning, and operations. This could potentially, (but not necessarily) include the need for an entirely new multi-purpose resource category and rules for storage.

2. **Update MISO's market dispatch model to better manage storage:** Storage can charge and discharge both synchronously and asynchronously[8], for 4 hours (most common currently), as well as 6, 8, 10, 12 and 24 hours (among others). A (typical) 4 hour duration battery is often "stacked" to manage events greater than 4 hours in duration. MISO ideally should collect and present both historical and predicted outage data including location and duration to demonstrate what percent of outages that storage at 4, 6, 8, 12 and 24 hours, or can effectively address. In addition, MISO can look at CAISO[9] and ERCOT[10] for experience in developing market designs (including CAISO's current active stakeholder

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[6] Any MISO stakeholders or individuals interested in receiving notification of stakeholder-led large load educational presentations at MISO stakeholder meetings, or related whitepapers, journal papers, and conference presentations can send a request to largeloadintegration@intertranec.com.

[7] https://www.misoenergy.org/engage/MISO-Dashboard/removing-storage-charging-limitations-in-gias/

[8] Synchronous and asynchronous charging/discharging in energy storage systems refers to whether the storage device directly synchronizes its power output and frequency with the AC power grid, or if uses power electronics to decouple from it. In synchronous charging/discharging an energy storage system mimics a traditional synchronous generator, providing instantaneous inertia, frequency stabilization and voltage control (GFM – Grid Forming Unit where a constant phase angle relative to the grid is maintained allowing it to counteract frequency drops and provide black starts, and regulate voltage and frequency). In asynchronous charging/discharging the energy storage system does not inherently provide inertia, allowing it to charge/discharge at a different frequency than the grid.

[9] CAISO is moving toward more robust, long-term, and automated modeling in its market dispatch system, such as incorporating variable ramp rates based on SOC, to ensure they can manage storage dispatch during critical,, high-load conditions, among other adaptations. Storage is increasingly used to manage both morning and evening peaks, with market enhancements designed to address non-linear battery performance and improve outage visibility, including better communication of real-time constraints.

[10] Energy Storage in ERCOT participates in Fast Frequence Response (FFR) and ERCOT Contingency Reserve Service (ECRS), offering quick injection of power to manage frequency deviations due to ramping and power swings. Energy storage is used to mitigate fast, short-duration solar ramps in the late afternoon, charging when solar is high and discharging when it falls off in the evening.

proceeding analyzing potential modifications to its market design) to utilize energy storage to mitigate the serious risks that outages and variations in large loads such as data centers can present.

MISO should consider the above two recommendations as ways to implement the following "key improvements" recommended in the Independent Market Monitor's 2024 State of the Market report:[11]

- "[D]evelop an uncertainty product for the day-ahead and real-time markets to account for increasing uncertainty associated with load, intermittent generation, NSI, and other factors;
- "[I]mplement a look-ahead dispatch and commitment model to optimize:
    - "The dispatch of slower-ramping resources that may need to begin ramping 15 to 30 minutes in advance of a sharp increase in net load or at times of increased uncertainty;
    - "The intra-day commitment of resources that can start in ten minutes to two hours; and
    - "The utilization of storage resources, DERs, and resources with energy limitations;
- "[Integrate] technologies and processes that allow MISO to optimize the operation of the [transmission] network by redirecting flows to minimize congestion…"

Clean Grid Alliance applauds MISO's Large Load Workshop on Jan 30th, and looks forward to future workshops and more detailed discussions in stakeholder meetings. Incorporating large loads onto the MISO system in a holistic and transparent manner and with the utilization of energy storage to address reliability gaps, will help to effectively mitigate the risks that ramping and instantaneous loss of (combinations and permutations of) multiple combined large loads can introduce on the MISO transmission system.

Sincerely,
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[11] See document pages 26-28, https://www.potomaceconomics.com/wp-content/uploads/2025/06/2024-MISO-SOM_Report_Body_Final.pdf