Customized Energy Solutions

FERC Order 2023: Unveiling the Differences in ISO Compliances

FERC Order 2023 seeks to address the ongoing problem of interconnection delays[1] by introducing several key reforms: it mandates a 'first-ready, first-served' cluster interconnection study process, establishes stricter criteria for projects to qualify, streamlines certain aspects of the study to speed up timelines, and allows for greater technological flexibility.[2] In their compliance filings, many ISOs advocated for independent entity variations to retain or slightly modify their current interconnection tariffs and procedures. Our analysis below examines how standalone and hybrid energy storage resources will be modeled in the interconnection studies (technological flexibility) and how ISOs intend to allocate the resulting network upgrade costs.

How will energy storage resources be studied in the interconnection process?

Because energy storage resources can both charge and discharge to help balance supply and demand, ISOs typically study storage resources both as a generation and as a load during the interconnection process. When studying storage as a load, ISOs often assume a worst-case scenario, such as the storage charging during peak system demand. This approach typically leads to high upgrade costs, making storage projects financially unfeasible, especially in load pockets that can benefit from storage shifting demand across different hours of the day. FERC Order 2023 requires ISOs to consider the actual operating characteristics of storage resources during these studies. This means acknowledging that, due to market incentives to charge during low-priced hours and discharging during high-priced hours, storage is unlikely to be charging during peak system demand.

In their compliance filings, NYISO and PJM opposed such accommodations for storage resources, arguing that they would complicate and prolong the cluster study process. NYISO, for example, cited its Minimum Interconnection Standard, saying that it will try to redispatch resources before resorting to system upgrades. In practice, this redispatch could mean limiting the ability of storage resources to charge or discharge based on system conditions.

In contrast, CAISO agreed to consider the charging characteristics provided by storage resources. ISO-NE chose a middle ground, deciding to study all storage resources under the assumption they are charging during peak shoulder load, when system-wide demand is at 18,000MW[3]. This approach is a compromise between tailoring to individual operating characteristics and assuming charging during peak demand.

[1] See, for example, analysis from LBNL: Link
[2] See FERC Order 2023 Explainer: Link
[3] ISO-NE's current (pre-Order 2023) interconnection process already allows storage resources to request different charging and discharging interconnection service levels (including a "not to be exceeded" charge rate) as a way to reduce system impacts and thus network upgrades.

MISO proposed revising its tariff language to require that a Generating Facility specify whether it will charge from the grid and at what level, without truly considering the resource's operating characteristics[4]. For example, if a storage resource plans to charge from the grid, it must specify that it needs to charge at maximum charging rate. MISO will then study the resource as if it will charge at that maximum rate during peak load.

SPP is avoiding this issue entirely by only studying the discharging aspect of storage in the Generator Interconnection Procedure, which Order 2023 aims to reform. The charging aspect is instead examined when the project requests transmission services.

Network upgrade cost allocation

The main outcome of the interconnection study is determining the network upgrade costs necessary to integrate the proposed project into the grid. Order 2023 requires that ISOs allocate these costs using the proportional impact method and distribute substation upgrade costs on a per-project basis.

The proportional impact method involves a technical analysis to determine how much each generating facility contributes to the need for a specific network upgrade. This approach ensures that the costs are shared among multiple projects that both benefit from and contribute to the need of these upgrades. In other words, these costs will be allocated on a pro-rata basis depending on the MW size of the proposed projects.

Most ISOs adhered to the network upgrade cost allocation methods outlined in Order 2023. However, NYISO and PJM proposing to maintain their existing, more detailed cost allocation approaches while CAISO clarified the terminology differences under its existing tariff[5]. For example, NYISO allocates costs based on the specific type of upgrade

(i) thermal upgrades are allocated based on MW impact,
(ii) short circuit upgrades on ampere impact,
(iii) stability upgrades on ampere impact,
(iv) voltage upgrades on voltage deviation impact, and
(v) protection/communication upgrades are shared equally among projects[6].

Conclusion

Based on these aspects of the compliance filings, we do not anticipate significant changes in the network upgrade costs for standalone and hybrid energy storage resources, except in CAISO and, to a lesser extent, ISO-NE. However, it is still unclear whether FERC will accept the independent entity variations proposed by the ISOs to bypass parts of the ruling. If you are interested in understanding how FERC Order 2023 might impact renewables and storage projects across different ISOs, contact us today: Ann Yu at ayu@ces-ltd.com or Rishi Diwan at rishi.diwan@ces-ltd.com.

[4] See p.69 of MISO compliance filing: Link
[5] See p. 28 of CAISO compliance filing: Link
[6] See p.69 of NYISO compliance filing: Link

About Customized Energy Solutions (CES)

Established in 1998, Customized Energy Solutions is an energy advisory, software and services company that works closely with clients to navigate the wholesale and retail electricity markets across the United States and globally. CES offers software solutions, back office operational support, and advisory and consulting services focused on asset optimization and energy market participation efficiency. Additionally, CES serves as a third-party asset manager, overseeing over 500 assets and approximately ~28,000 MWs of renewable and conventional generation resources across all ISOs in the United States, Ontario, Canada and Guam. CES empowers clients to achieve their goals by helping them navigate the evolving energy markets, complex market rules, and new energy technologies. To learn more, visit CES-LTD.com or connect with CES on LinkedIn, Twitter, and Facebook.