

INSIGHTS

FERC Finalizes Interconnection Queue Reforms

August 1, 2023

By: [Theodore F. Duver](#), [Tyler S. Johnson](#), [Catherine P. McCarthy](#), and [Boris Shkuta](#)

On July 28, 2023, following up on its June 2022 [Notice of Proposed Rulemaking](#) (“Generator Interconnection Reform NOPR”), the Federal Energy Regulatory Commission (“FERC” or “Commission”) issued its long-awaited rulemaking order, Order No. 2023, requiring reforms to FERC’s *pro forma* interconnection procedures and *pro forma* interconnection agreements found in Transmission Providers’ Open Access Transmission Tariffs (“OATTs”).

Against the backdrop of burgeoning interconnection queues across the country and pressure to integrate renewable energy resources expeditiously, the unanimous and bipartisan Order No. 2023 targets perceived inadequacies in FERC’s generator interconnection processes that FERC believes are creating barriers to the timely, efficient and cost-effective integration of generation resources.

The central aim of Order No. 2023 is to transition the currently effective “first-come, first-served” approach found in many Transmission Providers’ OATTs to the first-ready, first-served cluster model. The “first-ready, first-served” cluster approach—which is already in place in most organized markets—is intended to increase efficiency and decrease the number of speculative generation projects that enter interconnection queues. In addition, the Commission’s reforms include other efforts to accelerate the interconnection process, such as replacing the “reasonable efforts” standard with penalties that cannot be recovered in transmission rates for Transmission Providers that fail to conduct studies in a timely manner. Order No. 2023 also implements a set of reforms intended to incent the use of new grid and transmission technologies.

The Commission’s reforms are widely viewed as common-sense measures and are described in more detail below. Transmission Providers (or independent system operators/regional transmission organizations [“ISOs/RTOs”]) are required to submit revisions to their *pro forma* interconnection procedures 90 calendar days after publication of the new rules in the *Federal Register*, which has not yet occurred. The revised OATT provisions for the Transmission Provider or ISO/RTO will become effective following a FERC order accepting the revisions.

PROCEDURAL CONTEXT

Order No. 2023 is part of a holistic re-evaluation of FERC’s policies regarding both generator interconnection processes and transmission planning and follows FERC’s July 15, 2021 [Advanced Notice of Proposed Rulemaking \(“ANOPR”\)](#) and June 16, 2022 Generator Interconnection Reform NOPR. In addition to Order No. 2023, and also directly stemming from

the ANOPR, on April 21, 2022, FERC requested comments in a [Notice of Proposed Rulemaking on proposed reforms for long-term transmission planning](#) (“Long-Term Transmission Planning NOPR”). The Commission has not yet issued a final rule on the proposed long-term transmission planning reforms, which we anticipate may occur later in 2023. If the generator interconnection reforms work as intended, Order No. 2023—together with FERC’s actions in the Long-Term Transmission Planning NOPR proceeding—could accelerate the interconnection of proposed generators as well as shift certain transmission investment taking place through the generation interconnection process to the transmission planning process.

As further context, in November 2022, FERC accepted PJM Interconnection, L.L.C.’s (“PJM”) interconnection process reforms that shifted PJM’s process to a first-ready, first-served cluster approach requiring interconnection customers to satisfy certain benchmarks to enter and remain in the queue. *PJM Interconnection, L.L.C.*, 181 FERC ¶ 61,162 (2022). Many of the issues that prompted PJM’s interconnection reform are the very same issues that underpin Order No. 2023. Before filing the reforms, PJM implemented a two-year pause on new interconnection requests and has represented that it has a significant backlog of interconnection requests.^[1] Indeed, in 2022, PJM represented that it had approximately 2,500 projects in its queue. The amount of new generation capacity pending in the PJM interconnection queue likely far exceeds projections of PJM’s actual needs for generation capacity (renewable or otherwise).

In PJM and elsewhere, there has been a proliferation of renewable energy projects resulting from, among other things, state policies promoting renewable generation, increased corporate demand for virtual power purchase agreements that allow corporations to meet “renewable” or “green” energy targets and federal tax incentives. Order No. 2023 recognizes that there are a significant number of generation projects planned for development but that many of the projects in Transmission Providers’ queues will not reach commercial operation. Both PJM’s interconnection reforms and Order No. 2023 attempt to balance requirements intended to expedite processing of interconnection requests for those projects likely to achieve commercial operation, on the one hand, with more stringent requirements for generation projects to enter and remain in the queue in an effort to weed out projects that are not viable, on the other hand.

PROPOSED GENERATOR INTERCONNECTION REFORMS

I. First-ready, First-served Cluster Process

A. Cluster Process Reforms to Increase the Speed of Queues

The Commission adopts the Generator Interconnection Reform NOPR proposal to make the first-ready, first-served cluster study model the universally required interconnection study method. Under a first-ready, first-served cluster study process, interconnection requests are studied in groups (meaning, individual requests submitted during a certain time window are processed together with the same priority) and interconnection customers face increasing financial commitments and readiness requirements as they proceed through the queue. In contrast, a serial study approach assigns each interconnection request a unique queue position based on when they enter the queue.

FERC suggests that requiring cluster studies will make interconnection processes more efficient by allowing Transmission Providers to perform larger interconnection studies that cover numerous interconnection requests and scenarios, as opposed to performing studies on an individual interconnection request basis. FERC also maintains that cluster studies will help alleviate interconnection queue backlogs by reducing the risk of cascading re-studies, which are triggered under the serial approach when a higher-queued interconnection customer withdraws or modifies its interconnection request. The Commission's move from the serial method to the cluster method is unsurprising, given that versions of a first-ready, first-served cluster approach are already in place in many ISOs/RTOs, and with PJM having recently initiated its official transition to the cluster method as of July 10, 2023.^[2]

B. Shared Network Upgrades

Cost Allocation Within Clusters

The Commission adopts the Generator Interconnection Reform NOPR proposal, with some modifications, to require Transmission Providers to allocate network upgrade costs based on a *proportional impact* method, meaning to the degree to which each generator in the cluster study contributes to the need for a specific System Network Upgrade. The Commission directs Transmission Providers to craft procedures to establish a technical basis for determining which customers contribute (and by how much) towards the need for a given upgrade. For its rationale, the Commission explains that the proportional impact allocation reflects its interconnection pricing policy for network upgrades needed for the interconnection of the cluster. The Commission also updates the definition of "Stand Alone" network upgrades to avoid disputes over which customer in the cluster had the right to construct which facilities.

The Commission creates an exception to the proportional impact allocation methodology. For costs of substation network upgrades needed by specific generator(s) (and not by all generators in the cluster), the Transmission Provider would allocate all such costs to the specific customer(s), recognizing that it would be inconsistent with cost causation for other generators, not interconnecting at that substation, to bear those costs. In other words, such substation upgrade costs would be allocated *per capita* to the generators interconnecting at that substation. In addition, the Commission requires Transmission Providers to assign directly the costs of Interconnection Facilities but requires *per capita* sharing of costs when customers agree to share the costs of Interconnection Facilities, unless the parties reach a different agreement.

Cost Allocation to Later Clusters (Shared Network Upgrades)

The Commission declines to adopt the Generator Interconnection Reform NOPR proposal that later clusters who benefit from earlier network upgrades contribute to the funding of such network upgrades. The Commission explains that the proportional impact funding mechanism will provide customers with more cost certainty during the interconnection process and will allow for sharing of network upgrade costs between customers that benefit from those upgrades within the same cluster. The Commission also realizes that its Generator Interconnection Reform NOPR proposal carries significant administrative burdens for Transmission Providers and could erode cost certainty for customers, contrary to key objectives of the rulemaking. The Commission also asserts that its existing crediting policy would mitigate

free-rider concerns with later-in-time customers benefitting from upgrades constructed by earlier-in-time customers.

C. Increased Financial Commitments to Decrease Speculative Generation Projects

A key objective of Order No. 2023 is to disincentivize the submission of speculative interconnection requests. In furtherance of this objective, the Commission requires steadily increasing financial commitments and readiness requirements throughout the cluster study process. Order No. 2023 also establishes requirements that are designed to ensure that interconnection customers demonstrate the viability of their projects, and their intention to develop those projects, earlier in the interconnection process. These are summarized below.

Increased Study Deposits

Order No. 2023 requires customers to provide study deposits to the Transmission Provider via a tiered approach based on project size, recognizing that larger projects within a cluster generally cost more to study than smaller projects. The following deposits are required:

- For facilities between 20 MW and 80 MW, a \$35,000 deposit plus \$1,000 per MW;
- For facilities between 80 MW and 200 MW, a \$150,000 deposit; and
- For facilities larger than 200 MW, a \$250,000 deposit.

Notably, whereas Generator Interconnection Reform NOPR proposed that customers submit a study deposit at each phase of the cluster study process, Order No. 2023 requires that the transmission provider collect a single initial study deposit at the time that the project submits its interconnection request. In addition, the Commission also eliminates a proposed requirement that transmission providers issue monthly invoices to interconnection customers for work conducted on facilities studies.

Site Control

Order No. 2023 establishes more stringent site control requirements, adopting key proposals (with some modifications) in the Generator Interconnection Reform NOPR. Specifically, for site control, interconnection customers now will be required to demonstrate exclusive rights to develop, construct, operate, and maintain a project at the time of submission of the interconnection request, though the Commission declined to provide technology-specific acreages. The interconnection customer is required to provide evidence of 100% site control at the time of execution of the facilities study and when executing or requesting the unexecuted filing of the Large Generator Interconnection Agreement (“LGIA”). The Commission reasons that this new requirement will balance stringent site control requirements with development challenges faced by interconnection customers.

Site control is established by “(1) ownership of, a leasehold interest in, or a right to develop a site of sufficient size to construct and operate the Generating Facility; (2) an option to purchase or acquire a leasehold site of sufficient size to construct and operate the Generating Facility; or (3) any other documentation that clearly demonstrates the right of Interconnection Customer to exclusively occupy a site of sufficient size to construct and operate the Generating Facility.”

Co-location of projects on the same site is allowed. To the extent that a project will be co-located with one or more projects on the same site and behind a single point of interconnection, interconnection customers must demonstrate site control and shared land use by a contract or other agreement. Projects that are to be co-located must also demonstrate that the site is large enough to host multiple projects.

The Commission also adopts the proposal allowing for a limited option for a deposit in lieu of site control. This initial deposit allowance is for those projects where regulatory limitations prohibit the customer from obtaining site control. Interconnection customers facing such regulatory limitations may submit a deposit of \$10,000 per MW, subject to a floor of \$500,000 and a ceiling of \$2 million. This deposit is held until the interconnection customer can demonstrate 90% site control prior to the execution of the facilities study agreement or 100% site control at or after the execution of the facilities study agreement.

Commercial Readiness

The Commission adopts the proposals requiring interconnection customers to demonstrate commercial readiness through financial deposits linked to the size of the generator while eliminating non-financial commercial readiness demonstrations, such as executed terms sheets or contracts for the sale of energy from the generator. This commercial readiness requirement is established through the payment of a commercial readiness deposit at the beginning of each study in the cluster study process (i.e., the initial cluster study, the cluster restudy and the facilities study). The commercial readiness deposits are based first on the study deposit and then on percentages of the interconnection customer's identified network upgrade costs.

LGIA Deposit

The Commission adopts, with modification, the Generator Interconnection Reform NOPR's proposal to require an LGIA deposit at the time of executing the LGIA (or requesting that the LGIA be filed unexecuted) in an amount increasing the total commercial readiness deposit to equal 20% of the estimated network upgrade costs identified in the LGIA. This deposit also is subject to withdrawal penalties in the event the project is withdrawn after execution of the LGIA or a request for filing an unexecuted LGIA.

Withdrawal Penalties

Though withdrawing interconnection customers are eligible to receive a refund of their study deposits to the extent their deposits exceed the study costs incurred by the Transmission Provider, such refunds are subject to any applicable withdrawal penalties, which have the potential to wipe out potential refunds.

The withdrawal penalties may apply to those projects where "(1) the interconnection customer withdraws its interconnection request at any point in the interconnection process; (2) the interconnection customer's interconnection request has been deemed withdrawn by the Transmission Provider at any point in the interconnection process; or (3) the interconnection customer's generating facility does not reach commercial operation (such as when an interconnection customer's LGIA is terminated prior to reaching commercial operation)."

Withdrawal penalties can range from two times study costs to 20% of network upgrade costs. The scale of withdrawal penalties depends on the stage at which the project withdraws. The amount of the penalty increases as the interconnection customer proceeds through the interconnection process. The Commission also eliminated withdrawal penalty caps.

Order No. 2023 provides that Transmission Providers are allowed to impose withdrawal penalties only in those instances where the withdrawal has a material impact on either the cost or timing of any interconnection request for those projects that have an equal or lower queue position. In addition, Order No. 2023 provides that an interconnection customer is exempt from withdrawal penalties if the reason for the withdrawal is significant, unanticipated increases in network upgrade cost estimates included in the cluster study report or facilities study report.

D. Transition Process

FERC concludes that moving to the new cluster study process exclusively without a transition process could create large initial clusters causing delays. FERC also finds that if Transmission Providers used only a serial study process to transition, existing interconnection requests could be at greater risk of “cascading withdrawals” that could delay the adoption of standard cluster study processes.

Order No. 2023 identifies three paths for the processing of pending interconnection requests during the transition to the new interconnection process rules, depending on which phase of the serial study process their interconnection requests are in:

Path 1: Proceed under a transitional serial study process (*i.e.*, a transitional serial interconnection facilities study);

Path 2: Proceed under a transitional cluster study (composed of a clustered system impact study and individual facilities study); or

Path 3: Withdrawal from the interconnection queue without penalty.

Transmission Providers will be required to offer Path 1 (the transitional serial interconnection facilities study option) to interconnection customers that have been tendered a facilities study agreement (even if the customer has not yet executed the agreement), as of 30 calendar days after the Transmission Provider’s initial filing to comply with Order No. 2023. Such customer may also withdraw its interconnection request without penalty (Path 3). With respect to Path 2, Transmission Providers are required to offer the transitional cluster study option to interconnection customers with an assigned queue position as of 30 calendar days after the filing date of the Transmission Provider’s initial Order No. 2023 compliance filing. Such a customer may also opt to withdraw its interconnection request without penalty (Path 3). FERC also implemented a transitional study withdrawal penalty equal to nine times the study cost in order to deter speculative interconnection requests in both the standard cluster study and the transition process.

FERC states that interconnection customers will have 120 calendar days after publication of Order No. 2023 in the *Federal Register* to achieve eligibility for the transition process (90 calendar days for Transmission Providers to make the required compliance filings plus the 30-day calendar day eligibility cut-offs).

FERC also emphasizes that the transition provisions of Order No. 2023 are not intended to interfere with in-progress cluster studies and transition processes. Transmission Providers that have already adopted a cluster study process or are undergoing a transition to a cluster study process will not be required to implement a new transition process.

II. Accelerating Interconnection Queue Processing

A. Penalties for Delay

FERC eliminates the “reasonable efforts” standard in the *pro forma* Large Generator Interconnection Procedures (“LGIP”) that previously governed Transmission Providers’ study timeliness. Instead, the *pro forma* LGIP will provide that delays of cluster studies beyond the tariff-specified deadline will incur a penalty of \$1,000 per business day; delays of cluster restudies beyond the tariff-specified deadline will incur a penalty of \$2,000 per business day; delays of affected system studies beyond the tariff-specified deadline will incur a penalty of \$2,000 per business day and delays of facilities studies beyond the tariff-specified deadline will incur a penalty of \$2,500 per business day. The Commission also specified that (1) there will be no study delay penalties until the third cluster study cycles after the effective date of a Transmission Provider’s Order No. 2023 compliance filing; (2) a 10-business day grace period applies before a penalty will be assessed; (3) deadlines may be extended for a particular study by 30 business days by mutual agreement of Transmission Provider and all interconnection customers with interconnection requests in the relevant study; (4) penalties will be capped at 100% of the initial study deposits received for all of the interconnection requests in the cluster for cluster studies and restudies, 100% of the initial study deposit received for the single interconnection request in the study for facilities studies, and 100% of the study deposits that the Transmission Provider acting as an affected system operator collects for conducting the affected system study and (5) Transmission Providers will have the ability to appeal any study delay penalties to FERC with FERC determining whether good cause exists to grant the relief requested.

Order No. 2023 also specifies that Transmission Providers must distribute study delay penalties to interconnection customers in the relevant study on a *pro rata* basis per interconnection request or affected system interconnection customer to offset their study costs. FERC also holds that non-RTO/ISO Transmission Providers and transmission owning members of RTOs/ISOs may not recover study delay penalties through transmission rates. In addition, FERC will allow RTOs/ISOs, as non-profit entities, to submit an FPA Section 205 filing to propose a default structure for recovering study delay penalties and/or to recover the costs of any specific study delay penalties. Order No. 2023 provides that revised interconnection procedures require Transmission Providers to make quarterly informational postings regarding penalties on their Open Access Same-Time Information Systems or other publicly accessible website.

B. Affected Systems

Order No. 2023 also adopts new rules (including new *pro forma* agreements) for projects that impact affected systems, *i.e.*, systems other than the region in which the project will have a direct interconnection. The process requires initial notification of the affected system of a potential impact to the affected system, a study process, cost allocation procedures (to allocate affected system upgrade costs using a proportional impact method), and a financial penalties assessment. FERC also is requiring affected system Transmission Providers to study affected

system interconnection requests in clusters and is requiring Transmission Providers to adopt a *pro forma* Affected System Study Agreement as well as a *pro forma* Affected System Facilities Construction Agreement. The stated purpose of these revisions is to more closely involve affected systems from the outset of the interconnection process.

Importantly, Order No. 2023 also requires all affected system transmission providers to use the Energy Resource Interconnection Service (“ERIS”) standard when conducting affected system studies, where presently transmission providers have discretion on whether to use ERIS or the higher Network Resource Interconnection Service (“NRIS”) standard. FERC explains this change avoids the affected system transmission provider studying the interconnection request as a network resource on its own system when that affected system transmission provider has no obligation to continually ensure deliverability on its system. Moreover, FERC also requires affected system transmission providers to repay the costs of network upgrades on its system to the affected system interconnection customer over a period not more than 20 years.

III. Incentivizing the Study and Deployment of New Technologies

Order No. 2023 adopts a variety of revisions to help promote the consideration and possible adoption of new technologies through the interconnection process. These reforms include the following:

- **Flexibility in Co-Location:** Order No. 2023 requires Transmission Providers to allow more than one resource to co-locate on a shared site behind a single point of interconnection and share a single interconnection request.
- **Changes to Material Modification Provisions:** Order No. 2023 alters the material modification analysis so that it is more permissive for technological changes that do not result in a change in a facility’s output. However, Order No. 2023 also allows for an exception from these revised rules for transmission providers, such as the Midcontinent Independent System Operator, Inc., that employ fuel-based dispatch assumptions in their interconnection studies.
- **Surplus Interconnection Service:** Order No. 2023 requires Transmission Providers to allow interconnection customers to access surplus interconnection service prior to commercial operation, by allowing access to this service once the original interconnection customer has executed an interconnection agreement. The purpose is to allow unused interconnection capacity to be accessed at an earlier point than what is currently typically allowed.
- **Incorporating Alternative Transmission Technologies:** Order No. 2023 requires Transmission Providers to evaluate an enumerated list of alternative transmission solutions (static synchronous compensators, static VAR compensators, advanced power flow control devices, transmission switching, synchronous condensers, voltage source converters, advanced conductors, and tower lifting) during cluster studies and restudies, without the need for a request from an interconnection customer.

Order No. 2023 also imposes a variety of changes regarding modeling and assumptions used in interconnection studies to, for example, better study the incorporation of non-synchronous and electric storage facilities onto the grid.

IV. Next Steps for Compliance with Order No. 2023 Directives

Order No. 2023 requires Transmission Providers, including ISOs/RTOs, to revise the LGIP, LGIA, Small Generator Interconnection Procedures (“SGIP”) and Small Generator Interconnection Agreement (“SGIA”) in their OATTs. The deadline for a Transmission Provider Order No. 2023 compliance filings is 90 calendar days from Order No. 2023’s publication in the *Federal Register* rather than the 180 calendar days FERC proposed in the Generator Interconnection Reform NOPR. On the FERC-approved effective date of such compliance filing, the Transmission Provider will commence the transition study process. Transmission Providers and interconnection customers will not be subject to the requirements of Order No. 2023 until FERC issues an order on a Transmission Provider’s compliance filing with a FERC-approved effective date for the tariff revisions.

Following the conclusion of the transition study process, the Transmission Provider will begin the first standard cluster study process and the Transmission Provider is required to indicate in its compliance filing the number of calendar days after the conclusion of the transmission study process it will begin the first standard cluster study process.

Consistent with FERC’s approach in Order No. 888, FERC will apply a “consistent with or superior to” standard when considering deviations from Order No. 2023’s requirements. FERC will also continue to use the “independent entity variation” standard when considering proposals from RTOs/ISOs. In addition, for Transmission Providers that are not in RTOs/ISOs, FERC will continue to allow these public utilities to use a “regional differences rationale” to seek variations made in response to established reliability requirements.

FERC does not intend to interfere with efforts by Transmission Providers that have already adopted or are in the process of adopting similar reforms to those adopted by Order No. 2023. On compliance, FERC suggests that such Transmission Providers can propose deviations from the Order No. 2023 requirements, including deviations seeking to minimize interference with ongoing transition plans and demonstrate how those deviations satisfy the standards FERC articulates above.

FERC is also requiring those non-jurisdictional entities with OATTs to satisfy the reciprocity requirement of Order No. 888 to update their OATTs to reflect changes to the LGIP, LGIA, SGIP and SGIA.

CONCLUSION AND TAKEAWAYS

Order No. 2023 is only part of FERC’s larger proposal to mitigate the extensive delays the industry is experiencing in interconnecting new generation and storage facilities. Aside from the Order No. 2023 reforms, there are issues raised in the ANOPR that have not yet been addressed in a follow-on rulemaking, including interregional transmission planning (separate from the regional planning reforms proposed in the Long-Term Transmission Planning NOPR); transmission incentive reforms; participant-funding reforms and transmission development reforms (likely focused on cost control related to transmission development). FERC has previously expressed concerns about the need for enhanced oversight of investment in transmission and related cost recovery to ensure that ratepayers are not responsible for transmission investment that is not necessary or prudent. FERC has suggested state commission or independent oversight to monitor transmission spending in each transmission region.^{[\[3\]](#)}

The efficacy of the Order No. 2023 reforms also will depend in part on any final rule adopting reforms to the long-term transmission planning process. FERC's Long-Term Transmission Planning NOPR highlighted FERC's concerns about the tendency for interconnection-related needs to be identified repeatedly in interconnection studies, only for these needs to go unresolved due to the withdrawal of generation resources from the process. To address that issue, FERC's Long-Term Transmission Planning NOPR proposes to require that Transmission Providers evaluate for possible selection in the regional transmission plan and corresponding cost allocations, regional transmission facilities to address interconnection-related needs that have been identified in at least two interconnection queue cycles during the preceding five years; have a voltage of at least 200 kV and/or an estimated cost of at least \$30 million and have not been developed due to the withdrawal of interconnection customers. FERC's proposal in the Long-Term Transmission Planning NOPR would be a step towards harmonizing the generator interconnection process with regional transmission planning—processes that historically have employed different assumptions when evaluating reliability needs, with the result that many reliability issues identified in the generator interconnection process remain unresolved.

[1] It is worth mentioning that the queue backlog and PJM's decision to "pause" the generator interconnection queue has had wide and unexpected consequences, affecting projects other than new generation development. Existing generation projects are required to enter the interconnection queue to the extent that they seek to materially modify their resources, including modifying the technical characteristics of their resources or adding additional capacity behind the same point of interconnection. Also, certain requests for transmission service are required to be processed through the PJM queue and have been adversely affected due to the pause in PJM's queue.

[2] PJM Interconnection, L.L.C., Notification of Occurrence of Transition Date, Docket Nos. ER22-2110-000 and ER22-2110-001 (filed July 11, 2024).

[3] In a case currently pending before FERC, the California Independent System Operator Corporation has pointed out that the transmission developer agreed to a cost cap of \$258,961,024 for a transmission project and is seeking recovery of almost \$300 million more than the binding cost cap. California Independent System Operator Corp., Motion to Intervene and Comments, Docket No. ER23-2309-000 (filed July 21, 2023).