ADVANCED ENERGY UNITED™

FERC Order 2023 Toolkit:

Highlights from the first leg of the transmission reform marathon

Over the last few years, one barrier to advanced energy deployment has become increasingly acute: the interconnection application process. Interconnection is the necessary process of studying the impact of plugging a new project into the grid and identifying any upgrades required to maintain reliability. Unfortunately, delays and cost increases have resulted in canceled projects, lost jobs, and wasted effort. Advanced energy deployment is continuing to accelerate due to price and technology trends, consumer demand, state policies, the Inflation Reduction Act, and rising fuel costs for conventional generation, which makes fixing this issue of increasing importance. The Federal Energy Regulatory Commission (FERC) knocked down its first domino toward streamlining the interconnection process in July 2023 when it issued Order No. 2023, but there is a long way to go.

FERC's process to consider interconnection reforms began in July of 2021 when the Commission released an Advanced Notice of Proposed Rulemaking (ANOPR) related to transmission planning, cost allocation, and interconnection. FERC then split its proposals, releasing its Notice of Proposed Rulemaking (NOPR) related to Transmission Planning and Cost Allocation (Transmission Planning NOPR) in April 2022, followed by another NOPR which proposed changes to its regulations governing interconnection processes and agreements nationwide in June 2022. After months of work reviewing thousands of pages of NOPR comments, FERC issued Order 2023 on July 27, finalizing several interconnection queue reforms. FERC did enshrine many of its proposed changes to interconnection queue processing, replacing the serial "first come, first served" process with cluster studies, increasing requirements imposed on generators to demonstrate commercial readiness, requiring transmission providers to adhere to strict interconnection study timelines, providing interconnection process flexibility for advanced energy technologies like energy storage, and requiring consideration of Grid Enhancing Technologies to help address interconnection upgrade needs.

FERC's reforms alter the *pro-forma* Large Generator Interconnection Procedures and Large Generator Interconnection Agreement (LGIP / LGIA) and make some changes to the *pro-forma* Small Generator Interconnection Procedures and Small Generator Interconnection Agreement

(SGIP / SGIA). The changes apply to all public utility transmission providers, including Regional Transmission Organizations and Independent System Operators (RTOs/ISOs) as well as utilities in non-RTO/ISO regions. Some transmission providers have already proposed and implemented deviations from FERC's *pro forma* interconnection procedures, including adopting some of the reforms in the Order. All transmission providers have until December 5, 2023 to comply with the new requirements, which they could do by adopting the *pro forma* language and/or proposing some deviations provided that they meet the "consistent with or superior to" standard (for non-RTO/ISO transmission providers) or are justified by the "independent entity variation" (for RTOs/ISOs).

FERC Major Categories

FERC's Order No. 2023 shifts the interconnection process with rules that fall into these major categories:

Get out of line and into the cluster

FERC changed the current first-come, first-served process to a first-ready, first-served cluster study process. Under the existing process, when a higher-queued generator drops out, time-consuming restudies must be performed for each of the projects behind it, since it was assumed that the higher-queued project would build transmission facilities needed to accommodate its request. In a cluster process, the transmission provider gathers up interconnection requests received during an open submission window and processes those requests as a group, studying the need for transmission upgrades to accommodate all of the requests. The cluster process also theoretically limits (but does not eliminate) the need for restudy, by providing specific opportunities for projects to drop out of the cluster. The use of a cluster study process has been identified by advanced energy companies as a best practice and is in use by multiple RTOs/ISOs and utilities, including the California Independent System Operator, the Midcontinent Independent System Operator, and Southwest Power Pool today; PJM Interconnection is currently in the process of transitioning to a cluster study process. While the transition to a cluster process is generally acknowledged to be an improvement, some elements of the rule intended to streamline the process may actually do more harm than good. For instance, interconnection customers must choose a definitive point of interconnection (POI) before proceeding to a cluster study, potentially forcing interconnection customers out of the queue when their POI must be relocated due to unforeseen circumstances. FERC also did not require transmission owners (which may differ from the transmission provider in RTO/ISO regions, but still have important responsibilities in the interconnection process) to attended scoping meetings during the customer engagement window, limiting the usefulness of those meetings and potentially forcing interconnection customers to enter the cluster study process without critical information. The rule also allows

transmission providers to set their own parameters around how and when cluster restudies are conducted.

FERC is also adopting a cluster study transition process for those transmission providers that have not already adopted a cluster study process, with three options for interconnection customers. Interconnection customers can enter a transitional serial study comprised of a facilities study, enter a transitional cluster study comprised of a clustered system impact study and individual facilities studies, or withdraw their project from the queue without penalty. Unfortunately, the cost of remaining in the transitional queues is high, requiring a deposit equal to 100% of interconnection facility and nodal upgrade costs allocated in the system impact study to enter the serial transition study, or a $5 million deposit to enter the transitional cluster study.

Money where your mouth is

To ensure that the cluster study process serves those projects that are truly "first ready" and to minimize the likelihood of late project withdrawals that trigger costly and time-consuming restudies, the Commission imposes a series of readiness requirements that interconnection customers must meet as they move through the cluster study process. To join and remain in a cluster, projects must make higher financial commitments and meet tighter site control requirements, which FERC says is necessary to discourage speculative requests. The financial commitments include increased deposits and withdrawal penalties, which are based on a percentage of identified network upgrade costs, rather than a percentage of the initial study deposit (as initially proposed), which rewards projects for utilizing sites that require fewer network upgrades to interconnect.

Interconnection customers are exempt from withdrawal penalties if cost estimates provided by the transmission provider increase by a certain threshold, although the thresholds set in the Order are high, especially for cost increases occurring late in the process (interconnection costs would need to more than *double* following the facilities study for a project to be eligible for penalty-free withdrawal). In addition, FERC requires interconnection customers to demonstrate 90% site control at the time they enter the queue (reduced from 100% in the NOPR). In Order 2023, FERC says this means that a project developer must have "(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."

FERC did remove the non-financial readiness requirements included in the NOPR, meaning projects are not required to provide an executed term sheet, reasonable evidence of demand for the project (such as selection in an integrated resource plan or evidence of demand from a commercial customer), or a provisional Large Generator Interconnection Agreement (LGIA) that includes a commitment to construct the identified interconnection facility(ies). These provisions were widely criticized by project developers and associations, including Advanced Energy United, as being discriminatory and inconsistent with project development timelines and processes.

The following table summarizes the deposits, readiness requirements, withdrawal penalties, and transmission provider penalties that comprise the cluster study process.

	Facility (MWac)	Submit Interconnection Request	Enter Cluster Study	Deposit to Enter Cluster Re-Study	Enter Facilities Study	Execute LGIA or request filing unexecuted
Financial Deposit	> 20 MW < 80 MW	$35,000 + $1,000/MW	2x study deposit	5% of identified Network Upgrades (less deposit already paid)	10% of identified Network Upgrades (less deposit already paid)	20% of identified Network Upgrade costs (less deposit already paid)
	≥ 80 MW < 200 MW	$150,000				
	≥ 200 MW	$250,000				
Commercial Readiness – Site Control		Gen Site: 90% of defined acres/MW			Gen Site: 100% of defined acres/MW	
Penalty for Withdrawal after Satisfying Milestone = Greater of study deposit OR...			2x study cost	5% of Network Upgrade costs	10% of Network Upgrade costs	20% of Network Upgrade costs
Penalty for Transmission Provider for study delays			$1,000 per business day for delay of cluster study	$2,000 per business day for delay of cluster re-study	$2,500 per business day for delay of facilities study	

Deadlines are not suggestions

FERC is adopting new obligations for transmission providers to process the queue and perform study work in a reasonable and predictable timeframe. Most importantly, FERC eliminated the permissive and effectively unenforceable "reasonable efforts" standard, which required transmission providers to employ "reasonable efforts" to complete interconnection studies and requests on time, rendering study deadlines meaningless. In its place, FERC is imposing deadlines for transmission provider studies with penalties for delay, allowing 150 days for initial cluster studies and 150 days to conduct a restudy.

FERC also took commenter suggestions to heighten the penalties for TP study delays, which initially would have been only $500 per day. Now study delay penalties are much higher and tiered with each study milestone, increasing from $1,000 per day for the cluster study, $2,000 per day for cluster re-study, and $2,500 per day for the facilities study, as indicated in the table above.

Won't you be my neighbor?

FERC also proposes reforms intended to standardize and streamline the "affected systems" study process, which is required when an interconnecting generator(s) may cause impacts on a neighboring transmission system, thereby causing the need for another transmission provider to study the project(s). Lack of standardization and coordination in the existing affected systems study process has led to uncertainty and delay. Accordingly, the Order attempts to address this by setting requirements around notification, timing, and study processes.

FERC is instituting a requirement that the "host" transmission provider conducting the primary cluster study notify neighboring affected system operators within 10 business days of discovering a potential system impact and that the transmission provider notify the relevant interconnection customer(s) and provide them with a list of potentially affected systems along with contacts at those system operators. Transmission providers are also required to provide affected system operators with regularly updated data about its transmission system and generation fleet.

Transmission providers acting as the affected system operators also have new requirements. Affected system operators must respond to affected system notifications from other transmission providers within 15 business days. The affected system operator is also responsible for setting a schedule to complete the affected system study, drafting and tendering the affected system study agreement to all relevant parties, and conducting the affected system study and any necessary restudies. The Order sets a 150-calendar day

deadline for the initial affected systems study and a 60-calendar day deadline for restudies, in addition to imposing penalties on system operators that fail to meet these deadlines.

Similar to the cluster study process, costs in the affected system facilities study agreement are assigned based on the proportional impact method. Unlike the cluster study process, there is no penalty-free withdrawal available to interconnection customers regardless of cost increases in affected systems study results.

Keeping up with the times

FERC also integrates several key technological advancements into the interconnection process.

First, FERC included a series of reforms that reflect shifts in the kinds of resources entering interconnection queues—in particular, battery storage and hybrid storage-plus-generation projects. The Commission required transmission providers to allow interconnection customers to co-locate more than one resource, such as solar and energy storage, behind a single point of interconnection, and to add storage to an existing project without losing their queue position. This means, for example, that transmission providers cannot simply add together the capacity of a solar generator and the storage at the same location and require grid upgrades for the total amount when, in operation, the solar and storage would not be discharging into the grid at the same time. In addition, when conducting interconnection studies, transmission providers must, if requested by the interconnection customer, use accurate assumptions about the charging behavior of storage resources, instead of assuming that charging would occur during stressed conditions (thus triggering unnecessary upgrades).

Second, FERC took a small step toward ensuring that advanced technologies are considered as solutions to lower the cost and reduce the time required to address upgrade needs identified in the interconnection process. The Commission required that transmission providers evaluate the use of proven grid-enhancing technologies (GETs, also called advanced transmission technologies, or ATTs) like advanced power flow control devices. GETs can unlock capacity on the existing grid, often addressing constraints identified during the study process more cost-effectively and efficiently than traditional network upgrades. FERC specifies which GETS must be evaluated and declined to list Dynamic Line Ratings and storage serving as transmission in the enumerated list of alternative transmission technologies, despite evidence that these technologies can help to address interconnection needs. Transmission providers retain discretion regarding how to evaluate GETs and whether to ultimately adopt them in any particular case.

Finally, FERC required that non-synchronous generating facilities (i.e., solar and wind) provide transmission providers with accurate models of their behavior.

What the future holds

How transmission providers propose to comply with Order No. 2023, and how FERC acts on those compliance filings, will have a significant impact on the impact of the Order. Additionally, the Commission's response to the various rehearing requests filed in August 2023 may result in changes to the requirements imposed on transmission providers and interconnection customers.

Looking beyond rehearing and compliance with Order No. 2023, additional reforms will be needed to achieve a truly efficient and effective interconnection process that facilitates timely entry of new resources to ensure reliability, competition, and affordability. Acting FERC Chair Phillips recognized when announcing Order No. 2023 that is FERC "just getting started," and that additional reforms, such as reforms to transmission planning, are needed to fully address interconnection backlogs and cost increases. Commissioner Clements offered what is effectively a roadmap of future potential policy reforms in her concurrence. Some of these policies are reforms that United and our member companies pushed for in our comments and related advocacy, including linking the interconnection process to overall transmission planning, facilitating a "focused" interconnection process, and using automation to improve project study timelines.

After a year plus of dedicated work soliciting comments and meeting with stakeholders, FERC produced a rule that will be helpful in setting up queues for better efficiency. There is no doubt this is a landmark piece of regulation in the journey to a truly accessible grid and the transmission system of the future.

United will work to support FERC as it seeks to implement these additional improvements to the interconnection process. United will also be participating in the compliance process for Order 2023 to ensure its proper implementation in the RTO/ISO regions. Initial compliance filings from RTOs/ISOs and non-RTO/ISO transmission providers will be due December 5, 2023.