



FERC Implements Generator Interconnection Process Reforms: Compliance Filings Due December 2023

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On July 27, 2023, the Federal Energy Regulatory Commission (FERC) unanimously voted to adopt [Order No. 2023](#), “Improvements to Generator Interconnection Procedures and Agreements.”¹ Following publication in the Federal Register on Sept. 6, 2023, the final rule becomes effective Nov. 5, 2023. The final rule, one of the longest in FERC’s history, aims to expedite the request process for interconnection customers and thus speed up the connection of new power projects to the electric grid.

The final rule adopts many of the proposed reforms in FERC’s June 2022 [notice of proposed rulemaking](#) (NOPR)² introducing potential changes to its pro forma Large Generator Interconnection Procedures (LGIP), pro forma Small Generator Interconnection Procedures (SGIP), pro forma Large Generator Interconnection Agreement (LGIA) and pro forma Small Generator Interconnection Agreement (SGIA). After receiving and considering more than 4,500 pages of comments on the proposed changes, FERC adopted the vast majority of reforms listed in the NOPR.

The reforms address interconnection queue backlogs, which are currently four times longer than they were 10 years ago. FERC Chairman Willie Phillips reported that over 2,000 GW of generation and storage still waited in queues at the end of 2022, and that projects currently face an estimated five-year wait time to connect to the grid. According to a FERC [press release](#), these backlogs have led to timing and cost uncertainty for interconnection customers and undue discrimination against new sources of power generation.

The final rule recognizes innovative efforts already taken by transmission providers, including independent system operators and regional transmission organizations (ISOs/RTOs), to address backlog issues in their interconnection queues. Many of the newly adopted reforms build upon those already implemented by transmission providers to keep up with the rapidly transforming electricity sector.

All transmission providers (including transmission providers seeking to maintain their reciprocity Open Access Transmission Tariff safe harbor) must submit a compliance filing no later than Dec. 5, 2023 addressing the mandates in Order No. 2023.

Read on for a summary of Order No. 2023 and a discussion of next steps for implementation of the final rule.

I. Implementing a First-Ready, First-Served Cluster Study Process

Order No. 2023’s key reform is to mandate that transmission providers fundamentally change how they process interconnection studies. FERC found the existing pro forma “serial” method of evaluating individual interconnection requests on a first-come, first-serve basis, to be unjust and unreasonable. Order No. 2023 modifies the LGIP to require all transmission providers to transition to a “first-ready, first-served” cluster process, where transmission providers will study a group of requests in the same study.

¹ *Improvements to Generator Interconnection Procedures and Agreements*, Order No. 2023, 184 FERC ¶ 61,054 (2023) (Order No. 2023).

² *Improvements to Generator Interconnection Procedures and Agreements*, Notice of Proposed Rulemaking, 179 FERC ¶ 61,194 (2022) (NOPR).

Previous Study Process

Under the pre-Order No. 2023 serial first-come, first-served study process, transmission providers evaluated individual requests, usually in three stages: (1) feasibility study, providing a preliminary evaluation of the system impact and cost of interconnecting the generating facility to the transmission provider's transmission system; (2) system impact study, evaluating the impact of a proposed interconnection on the safety and reliability of a transmission system and, if applicable, an affected system; and (3) facilities study, determining a list of facilities, the cost of these facilities and the time required to connect the generating facility with the transmission system.

Additionally, under the pre-Order No. 2023 process, restudies could be conducted to account for changes, such as when a higher-queued project withdraws from the queue. Historically, restudies related to withdrawals have been a major driver in delays and can lead to “cascading” withdrawals when costs are shifted to lower-queued projects.

New Study Process

Under Order No. 2023's revised approach, the cluster study process, transmission providers must hold, at least annually, a cluster study window where potential interconnections can submit interconnection requests. All valid interconnection requests can then move to the cluster study process, where the transmission provider will evaluate interconnection requests together.

Along with the cluster study process, Order No. 2023 adopts changes to the LGIP to reduce the number of speculative requests in interconnection queues. Under a “first-ready, first-served construct,” interconnection customers must demonstrate higher levels of site control and financial commitment to enter a cluster study process.

Together, these reforms are intended to eliminate existing backlogs, accelerate the processing of interconnection requests and provide interconnection customers with more cost certainty earlier in the process. Highlights of the structure of the new process and key elements are described below.

A. Cluster Study Process Overview

Order No. 2023 requires a transmission provider to conduct a cluster study at least annually.³ The final rule does not dictate “how transmission providers should form clusters” or when they kick off their process.⁴ However, transmission providers must provide 180 days' advance notice before opening a new cluster.⁵

Information Access

To implement a cluster study process, FERC established fixed deadlines for each phase of the process. Because the cluster study process skips the feasibility study step and goes straight to a system impact analysis, Order No. 2023 adopts information access reforms to allow customers seeking to enter a cluster to best prepare their interconnection requests.

³ Order No. 2023 at P 177.

⁴ Order No. 2023 at P 181.

⁵ Order No. 2023 at PP 135, 147-48.

- A heatmap, updated within 30 days of each cluster study and restudy, will provide information calculated under N-1 conditions on each point of interconnection in the transmission provider's footprint.⁶
- A table of the following interconnection metrics will allow prospective interconnection customers to see estimates of a potential generating facility's effect on the transmission provider's transmission system:
 - distribution factor;
 - MW impact, based on the proposed project size and the distribution factor;
 - percentage impact on the monitored facility, based on the MW values of the proposed project and the monitored facility rating;
 - percentage of power flow on the monitored facility before the proposed project; and
 - percentage of power flow on the monitored facility after the injection of the proposed project.⁷

Transmission providers will be required to update this information within 30 days after the completion of each cluster study and restudy.⁸

FERC declined to require transmission providers to offer informational studies to individual customers, instead opting to rely on the publicly posted heatmap and table of information described above.⁹

Timeline for Cluster Study Cycle:

- Cluster Request Window — 45-day period. Transmission providers will determine when it begins.¹⁰
- Customer Engagement Window — 60 days after close of Cluster Request Window.¹¹ During that time, the transmission provider will hold a scoping meeting with all interconnection customers in the cluster.¹²
- Cluster Interconnection System Impact Study — to be completed within 150 days from close of Customer Engagement Window.¹³
- Restudy (if needed) — to be completed within 150 days of informing the cluster of the need for the restudy.¹⁴

⁶ Order No. 2023 at P 135.

⁷ Order No. 2023 at P 135.

⁸ Order No. 2023 at P 135.

⁹ Order No. 2023 at P 89.

¹⁰ Order No. 2023 at PP 223-24.

¹¹ Order No. 2023 at P 232.

¹² Order No. 2023 at PP 223, 232, 245.

¹³ Order No. 2023 at P 259.

¹⁴ Order No. 2023 at P 259.

- Facilities Study — to be completed within 90 days after receipt of an executed Facilities Study Agreement for a +/- 20% cost estimate, or 180 days for a +/- 10% cost estimate.¹⁵
- There is also a process and timetable for affected systems studies, as discussed in more detail below.

Queue Position: Transmission providers will determine queue position based on the time and date they receive valid interconnection requests, including all items required by section 3.4 (Valid Interconnection Request) of the pro forma LGIP. All interconnection customers in the same cluster will be considered equally queued. Clusters initiated earlier will have a higher queue position than those initiated later.¹⁶

Transmission Provider Reporting: Transmission providers will be required to post metrics about their cluster processing time.¹⁷

Allocation of Costs for Network Upgrades

Transmission providers will be required to allocate network upgrade costs to customers within a cluster using a “proportional impact method,” determined by the degree to which each project in the cluster study contributes to the need for a specific network upgrade.¹⁸ FERC declined to adopt a standardized method for calculating “proportional impacts,” instead leaving those details to individual transmission provider compliance filings.¹⁹

The same proportional impact analysis also will be used to determine whether a facility constituted a “stand-alone” network upgrade, i.e., needed for only one project in the cluster and allocated to that customer.²⁰

With respect to substation network upgrades, Order No. 2023 modifies the definition of stand-alone network upgrades such that when a substation network upgrade is needed by only one or more specific generators in the cluster, these upgrade costs would be allocated per capita to the generators interconnecting at that substation.²¹

B. Increased Financial Commitments and Readiness Requirements for Interconnection Customers

Designed to reduce the number of speculative requests in the current interconnection queue, Order No. 2023 establishes increased financial commitments and readiness requirements for interconnection, to incentivize customers to submit viable interconnection requests and to withdraw as early as possible if the project becomes nonviable.

¹⁵ Order No. 2023, Appendix B, Section 8.3 of Pro Forma LGIP. This deadline is not changed from the existing *pro forma* language.

¹⁶ Order No. 2023 at PP 276-77.

¹⁷ Order No. 2023 at P 259.

¹⁸ Order No. 2023 at P 453.

¹⁹ Order No. 2023 at P 463.

²⁰ Order No. 2023 at P 460.

²¹ Order No. 2023 at PP 458-466.

- **Study Deposits and Costs.** To enter a cluster study cycle, an interconnection customer will pay a single study deposit with its interconnection request, ranging from \$36,000 to \$250,000, based on the size of the proposed facility.²²

Size of Proposed Generating Facility Associated with Interconnection Request	Amount of Deposit
> 20 MW < 80 MW	\$35,000 + 1,000/MW
≥ 80 MW < 200 MW	\$150,000
≥ 200 MW	\$250,000

Transmission providers will be allowed to propose their own study cost allocation ratios for study costs, provided that:

- between 10% and 50% of study costs are allocated on a per-capita basis, based on the number of interconnection requests in the cluster; and
 - the remaining 50% to 90% of study costs are allocated on a pro-rata basis, based on the requested energy capacity in the cluster.²³
- **Site Control Requirements.** To prevent customers from submitting requests for speculative, nonviable proposed generating facilities, the final rule implements more stringent site control requirements.
 - Aside from one limited exception described below, site control must be demonstrated through documentation establishing: (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 the interconnection customer to exclusively occupy a site of sufficient size to construct and operate the generating facility.²⁴
 - Interconnection customers must provide:
 - evidence of 90% site control for the generating facility at the time of submission of the interconnection request; and
 - evidence of 100% site control at the time of execution of the facilities study agreement and when executing, or requesting the unexecuted filing of, the LGIA.²⁵
 - Transmission providers will be required to publicly post site control acreage requirements by technology.²⁶

²² Order No. 2023 at P 502. This modifies the NOPR proposal, which had included three separate study deposits, one each upon entering the cluster study, restudy and facilities study phase. NOPR at PP 106-07; Order No. 2023 at P 503.

²³ Order No. 2023 at PP 416-22.

²⁴ Order No. 2023 at P 584.

²⁵ Note that Order No. 2023 requires site control demonstration only for the generating facility, and *not* for the interconnection customer's interconnection facilities. Order No. 2023 at P 603.

²⁶ Order No. 2023 at P 586.

- Site control for co-located generating facilities must be demonstrated by a contract or other agreement that allows for shared land use for all generating facilities that are co-located that meet the provisions of the site control definition.²⁷
- The only option to submit a deposit in lieu of site control will be to demonstrate that a “regulatory limitation” prohibits an interconnection customer from obtaining site control at that time.²⁸
 - The deposit amount will be set at \$10,000 per MW, subject to a \$500,000 floor and \$2 million ceiling.²⁹
 - The deposit will be held until the interconnection customer can demonstrate 90% site control before the execution of the facilities study agreement or 100% site control at or after the execution of the facilities study agreement.³⁰
 - Order No. 2023 did not provide a definition for “regulatory limitation” but noted that generally it would be “a federal, state, Tribal, or local law that makes it practically infeasible to obtain site control within the time frame detailed in the *pro forma* LGIP.”³¹ The transmission provider will be required to explain what it will consider to be a regulatory limit in its compliance filing, and to publicly post its definition thereafter.
- **Commercial Readiness Deposits and LGA Deposit.** Interconnection customers will be required to submit commercial readiness deposits at the beginning of each study in the cluster study process (i.e., the initial cluster study, any cluster restudy and the facilities study)³² and a deposit at the LGIA stage.³³ This reflects a significant departure from the NOPR proposal, which would have permitted nonfinancial evidence of commercial readiness or increasing deposits up until execution of an LGIA.³⁴ The final rule adopted the following deposit structure, with the deposit amounts being total amounts (i.e., not additive).³⁵

Phase of Process	Total Financial Readiness Deposit
Enter Initial Cluster Study	2 x study costs
Enter Cluster Restudy	5% of network upgrade costs
Enter Facilities Study	10% of network upgrade costs
At Execution of/Request to File Unexecuted, the LGIA	20% of network upgrade costs

²⁷ Order No. 2023 at P 586.

²⁸ Order No. 2023 at PP 605-12.

²⁹ Order No. 2023 at P 605.

³⁰ Order No. 2023 at P 605.

³¹ Order No. 2023 at PP 606-07.

³² Order No. 2023 at P 690.

³³ Order No. 2023 at P 714.

³⁴ NOPR at P 129; Order No. 2023 at PP 694-95.

³⁵ Order No. 2023 at P 693.

- **Withdrawal Penalties.** Subject to two exceptions, interconnection customers will be subject to penalties if they withdraw from their cluster or their project fails to reach commercial operation. Withdrawal penalties will be calculated as the greater of the study deposit or the amounts listed below, and increase in later stages of the process.

Phase of Withdrawal	Total Withdrawal Penalty (if greater than study deposit)
Initial Cluster Study	2 x study costs
Cluster Restudy	5% of network upgrade costs
Facilities Study	10% of network upgrade costs
After Execution of, or After the Request to File Unexecuted, the LGIA	20% of network upgrade costs

Unlike the NOPR proposal, there will be **no cap** on withdrawal penalties.³⁶

Interconnection customers will not be required to pay a withdrawal penalty if:

- the withdrawal follows a significant unanticipated increase in network upgrade cost estimates (a more than 25% increase compared to the prior cluster study, or if after receipt of the facilities studies, more than 100% increase versus the cluster study); or
- the withdrawal does not materially harm other interconnection customers.³⁷

C. Transition From Serial Queue to Cluster Queue Process

Order No. 2023 establishes a uniform process for transitioning to a cluster study process. The transition process is designed to give transmission providers and customers “time to adjust to new processes and requirements” and will “prioritize and process interconnection requests[] based on how far they have advanced through the interconnection process and their level of commercial readiness.”³⁸ Transmission providers that have already adopted a cluster study process or are in the process of transitioning to one will not be required to implement a new transition process.³⁹

Otherwise, transmission providers will be required to adopt FERC’s proposed transition process. FERC specifically denied requests to permit transmission providers to craft their own transition, noting the efficiency of standardization.⁴⁰ Specifically, transmission providers must offer transition options to existing interconnection customers, determined by which phase of the serial study process their requests are in.

- If an interconnection customer has been tendered a facilities study agreement as of 30 days of the transition provider’s initial filing to comply with the final rule, it may proceed to

³⁶ Order No. 2023 at P 793.

³⁷ Order No. 2023 at P 784.

³⁸ Order No. 2023 at P 856.

³⁹ Order No. 2023 at P 861.

⁴⁰ Order No. 2023 at P 862.

a transitional serial interconnection facilities study, opt to move to a transitional cluster study (composed of a clustered system impact study and individual facilities study), or withdraw its interconnection request without penalty.

- If an interconnection customer has an assigned queue position as of 30 days of the transition provider's initial filing to comply with the final rule, it may proceed with a transitional cluster or withdraw its interconnection request without penalty.⁴¹

Interconnection customers using either transition option must demonstrate 100% site control for their proposed generating facilities.⁴² Further aiming to deter speculative interconnection requests during this process, the final rule also implements a transitional study withdrawal penalty equal to nine times the study cost.⁴³

II. Implementing a First-Ready, First-Served Cluster Study Process

In continued efforts to reduce queue backlogs, the final rule implements various requirements on transmission providers, all aiming to standardize and speed up the interconnection study process.

B. Elimination of the Reasonable Efforts Standard

Order No. 2023 eliminates the long-standing "reasonable efforts" standard for transmission providers' completion of interconnection studies.⁴⁴ Instead, the *pro forma* LGIA will impose firm deadlines on transmission providers:

- 150 calendar days to complete cluster studies;
- 150 calendar days to complete cluster restudies;
- 150 calendar days to complete affected system studies; and
- 90 days to complete facilities studies, or 180 days upon request for a more accurate cost estimate.

Starting with the third cluster after FERC's order accepting tariff revisions on compliance, transmission providers will be required to pay penalties for late studies.⁴⁵ After a grace period of 10 business days, transmission providers must pay a penalty per business day, per study (subject to caps), as follows.⁴⁶

⁴¹ Order No. 2023 at P 855.

⁴² Order No. 2023 at P 870.

⁴³ Order No. 2023 at P 860.

⁴⁴ Order No. 2023 at PP 965-972.

⁴⁵ Order No. 2023 at PP 962-1025. This implementation date applies both to entities transitioning to a cluster study from a serial process and to transmission providers that already use a cluster cycle. See Order No. 2023 at P 980.

⁴⁶ Order No. 2023 at PP 965-972 (describing overall structure); P 981 (describing grace period); P 973 (adopting penalty amounts); 984-86 (describing caps on penalties).

Applicable Study	Deadline (calendar days)	Penalty (per business day)	Penalty Cap
Cluster Study	150	\$1,000	100% of the initial deposits received for all the interconnection requests in the cluster
Cluster Restudy	150	\$1,000	100% of the initial deposits received for all the interconnection requests in the cluster
Facilities Study	90	\$2,500	100% of the study deposit(s) the affected system transmission provider collects for conducting the affected system study
Affected Systems Study	150	\$2,000	100% of the initial study deposit received for the single interconnection request in the study

Other key elements of this new penalty structure are described below.

- Extensions of time:
 - Penalties will not be due if the transmission provider completes the study within the grace period. However, those 10 business days of the grace period will count toward the total penalty amount if the studies are not completed within that time.⁴⁷
 - Study deadlines may be extended by 30 business days upon agreement between the transmission provider and all customers with interconnection requests in the relevant study.⁴⁸
- *Distribution of penalties:* Penalties will be distributed to interconnection customers with valid interconnection requests in the relevant study at the time of the missed deadline on a pro-rata basis and will become payable within 45 days of the completed study, subject to the appeals process discussed below.⁴⁹
- *Appeals process:*
 - A transmission provider can file an appeal with FERC within 45 days after the late study is completed to seek relief from paying the penalty.⁵⁰ This is a new concept that was not included in the NOPR and is not described in detail in Order No. 2023.
 - FERC will review such requests for “good cause.” FERC did not articulate a standard of review but noted that it may consider: (1) extenuating circumstances outside the transmission provider’s control, such as delays in affected system study results; (2) efforts of the transmission provider to mitigate delays; and (3) the extent to which the transmission provider has proposed process enhancements either in the stakeholder process or at FERC to prevent future delays.⁵¹

⁴⁷ Order No. 2023 at P 981.

⁴⁸ Order No. 2023 at P 982.

⁴⁹ Order No. 2023 at P 990.

⁵⁰ Order No. 2023 at PP 987-89.

⁵¹ Order No. 2023 at P 987.

- The transmission provider’s obligation to distribute the penalty will be stayed pending FERC action on the appeal.⁵²
- FERC did not specify the form for such requests but noted that they should not be filed under FPA Section 206.⁵³ Accordingly, it is not clear whether appeals would trigger FERC’s 60-day clock for action on FPA Section 205 filings.
- *Prohibition on recovery of penalties through rates:*
 - Non-RTO/ISO transmission providers and transmission-owning members of RTOs/ISOs may not recover study delay penalties through transmission rates or from interconnection customers.⁵⁴
 - However, FERC suggested that RTOs/ISOs could collect study penalties through something akin to an administrative charge.⁵⁵
- *Recovery in RTO/ISO markets:*
 - RTOs/ISOs will be permitted in compliance filings to propose a “default structure” for recovering study delay penalties. Alternatively, they can make individual FPA Section 205 filings to recover specific penalties.⁵⁶
 - Where a transmission-owning member performs studies within the RTO/ISO, penalties will be directly imposed on that transmission owner.⁵⁷
- *Transparency:* Transmission providers will be required to post quarterly study delay penalty updates on their Open Access Same-Time Information Systems (OASIS) or other publicly accessible websites, including the total amount of study delay penalties from the previous reporting quarter and the highest study delay penalty paid to a single interconnection customer during that quarter.⁵⁸

C. Standardization of Affected Systems Process and Adoption of *Pro Forma* Agreements

There is currently little consistency among transmission providers on affected system studies, which evaluate the impact of proposed interconnection requests on neighboring transmission systems. Delayed affected systems studies can slow down the host transmission provider’s study process and create cost uncertainty for interconnection customers. Accordingly, Order No. 2023 creates a standard affected systems study process as part of the LGIP along with *pro forma* agreements to implement the process.⁵⁹

Key elements of the standard process include:

- **A notification and response timeline.** Transmission providers will be required to notify the affected system operator at the first instance of an identified potential affected system

⁵² Order No. 2023 at P 987.

⁵³ Order No. 2023 at P 987 & n.1991.

⁵⁴ Order No. 2023 at PP 992-93.

⁵⁵ Order No. 2023 at P 998.

⁵⁶ Order No. 2023 at P 994; *see also* PP 996-98 (discussing how RTOs/ISOs may recover penalties).

⁵⁷ Order No. 2023 at P 995. This will be accomplished through revisions to 18 C.F.R. § 32.28(f)(1)(ii). *Id.*

⁵⁸ Order No. 2023 at P 1002.

⁵⁹ Order No. 2023 at PP 1026-1293.

impact, which may occur at the completion of the cluster study or the cluster restudy.⁶⁰ Affected system transmission providers must respond to such notification within 20 days, indicating whether they intend to conduct an affected system study.⁶¹

- **A clustered study process with firm deadlines and penalties.**
 - Affected system transmission providers must study interconnection requests from the same host transmission provider that cause the need for the affected system study as a cluster and must complete the affected system study and provide the affected system study results within 150 calendar days of receipt of the affected system study agreement and deposit.⁶²
 - Queue position will be based on when the affected systems study agreement is executed. An affected systems interconnection customer's queue priority will be *higher* than requests of the affected systems operator's customers in its queue who have not yet received their cluster study results, and *lower* than those that have already received cluster study results.
 - Failure to meet the study deadline will result in penalties under the penalty structure discussed above.
- **Cost allocation procedures.** Affected system network upgrade costs must be allocated using a proportional impact method.⁶³
- **Repayment requirements.** Affected system transmission providers must repay to the affected system interconnection customer, over a period of no more than 20 years, the costs of network upgrades on their system.⁶⁴
- **Modeling standards.** Affected system transmission providers must study all affected system interconnection requests using the Energy Resource Interconnection Service (ERIS) modeling standards, regardless of whether the underlying interconnection request seeks ERIS or Network Resource Interconnection Service (NRIS) on the host transmission system.⁶⁵
- **Pro forma affected system study and facilities construction agreements.** Affected system study agreements will be multiparty agreements between the affected system operator and one or more affected system interconnection customers. Affected system facilities construction agreements and multiparty affected system facilities construction agreements will establish the terms and conditions by which the affected system transmission provider will be responsible for the design, procurement, construction, and installation of all network upgrades and terms and conditions by which the affected system interconnection customer(s) will initially fund, and be reimbursed for, the cost of any assigned affected system network upgrades.⁶⁶
- **Impact on host transmission provider process.** If an interconnection customer does not receive its affected system study results prior to the deadline to execute/request

⁶⁰ Order No. 2023 at P 1119.

⁶¹ Order No. 2023 at P 1121. Additional timing detail is provided in Order No. 2023 paragraphs 1131-35. 1154-59, and 1165.

⁶² Order No. 2023 at PP 1133-34, 38.

⁶³ Order No. 2023 at PP 1149-52.

⁶⁴ Order No. 2023 at PP 1244, 1247.

⁶⁵ Order No. 2023 at PP 1132-1323.

⁶⁶ Order No. 2023 at PP 1231-55.

unexecuted filing of its LGIA with the host transmission provider, the interconnection customer can request it be delayed until 30 days after receipt of the affected system study.⁶⁷ If delay would cause a material impact on a lower- or equal-queued interconnection customer, the host transmission provider must notify the interconnection customer, and its deadline to execute its LGIA or request it be filed unexecuted will be 30 days after that notice is provided.⁶⁸

III. Incorporating Technological Advancements Into the Interconnection Process

A. Changes to Permit Flexibility to Interconnection Customers

Considering the influx of technological advancements in the electrical sector, and in particular storage and hybrid facilities, the final rule establishes a series of reforms intended to increase flexibility and efficiency in the generator interconnection process.

- **Ability of interconnection customer to submit a single interconnection request for co-located generating facilities.** Transmission providers will be required to allow more than one generating facility interconnecting at the same voltage level to co-locate on a shared site behind a single point of interconnection and share a single interconnection request.⁶⁹ Where the generators will interconnect at different voltages, each must have a separate interconnection request.⁷⁰
- **Revisions to the material modification process to provide greater flexibility to interconnection customers.** Transmission providers will be required to study the proposed addition of a generating facility at the same point of interconnection prior to execution of the facilities study, rather than automatically deem it a material modification, so long as the addition does not change the originally requested service level.⁷¹ Requests to add a generating facility after the facilities study has been executed can be automatically deemed a material modification.⁷²
- **Ability of interconnection customers to use surplus interconnection service prior to commercial operation of a facility.** Interconnection customers will be permitted to access any surplus interconnection service process once the original interconnection customer has executed an LGIA or requests the filing of an unexecuted LGIA (versus the current standard, which does not permit use of surplus service until after the facility reaches commercial operation).⁷³ Where the LGIA of the original interconnection request is suspended, any submitted request for surplus interconnection also will be considered suspended and, if the underlying LGIA is terminated, any related surplus interconnection service also will be terminated.⁷⁴
- **Ability for interconnection customer to request particular operating assumptions for interconnection studies for electric storage resources.** Transmission providers, at the request of the interconnection customer, will be required to study electric storage

⁶⁷ Order No. 2023 at P 1123.

⁶⁸ Order No. 2023 at P 1124.

⁶⁹ Order No. 2023 at PP 1346-1357.

⁷⁰ Order No. 2023 at PP 1351-52.

⁷¹ Order No. 2023 at PP 1406-19.

⁷² Order No. 2023 at P 1409.

⁷³ Order No. 2023 at PP 1436-1447.

⁷⁴ Order No. 2023 at P 1440.

resources using operating assumptions that reflect the proposed charging behavior of electric storage resources.⁷⁵ Transmission providers will be able to deny such assumptions if they conflict with good utility practice, and interconnection customers will be able to resubmit an alternative proposal.⁷⁶ Accepted operating assumptions will be reflected in the interconnection customer's LGIA, in a new Appendix H, and thus will bind the interconnection customer.⁷⁷ Failure to abide by the operating assumptions can constitute a breach of the LGIA.⁷⁸

- **Requirement for transmission provider to evaluate alternative transmission technologies.** Transmission providers will be required to evaluate an enumerated list of alternative transmission technologies in their cluster studies for all interconnection customers in the cluster.⁷⁹ Transmission providers will retain the sole discretion to determine whether to *implement* an alternative technology but must describe their evaluation in the relevant cluster study, including a discussion of feasibility, cost and any time savings.⁸⁰ Specifically, transmission providers must evaluate:
 - static synchronous compensators,
 - static VAR compensators,
 - advanced power flow control devices,
 - transmission switching,
 - synchronous condensers,
 - voltage source converters,
 - advanced conductors, and
 - tower lifting.⁸¹

B. Modeling and Performance Standards for Nonsynchronous Resources

The NOPR discussed a host of FERC concerns related to the increased penetration of nonsynchronous generating facilities and impacts on reliability. Specifically, FERC described various NERC-documented generation disturbance events related to nonsynchronous generation where such facilities engaged in “momentary cessation,” i.e., they ceased injecting current during transmission system disturbances.⁸² The NOPR further described the steps the North American Electric Reliability Corporation (NERC) and individual transmission providers have taken to address reliability challenges.⁸³ Order No. 2023 affirmed that such momentary cessation can

⁷⁵ Order No. 2023 at PP 1510-33.

⁷⁶ Order No. 2023 at P 1511.

⁷⁷ Order No. 2023 at P 1521.

⁷⁸ Order No. 2023 at P 1521.

⁷⁹ Order No. 2023 at PP 1578-81.

⁸⁰ Order No. 2023 at PP 1581, 1587-90.

⁸¹ Order No. 2023 at P 1579; *see also* PP 1592-97 (discussing each alternative technology in turn). FERC eliminated dynamic line ratings from the list of technologies proposed in the NOPR. Order No. 2023 at P 1579, 1598.

⁸² NOPR at PP 303-17.

⁸³ NOPR at PP 303-17.

pose significant risk to reliability, and it adopted, with only minor modification, all of the modeling and performance standards proposed in the NOPR in response to these reliability challenges.

- **Requirement that interconnection customers provide additional modeling information.** Interconnection customers requesting to interconnect nonsynchronous generating facilities, such as wind and solar projects, will be required to submit the following additional modeling information at the time of their interconnection request:
 1. a validated user-defined RMS positive sequence dynamic model;
 2. an appropriately parameterized generic library RMS positive sequence dynamic model, including a model block diagram of the inverter control system and plant control system, that corresponds to a model listed in a new table of acceptable models or a model otherwise approved by WECC; and
 3. a validated EMT model, if the transmission provider performs an EMT study as part of the interconnection study process.⁸⁴

Failure to provide this information within deadlines (including the 10-day cure period) will render the interconnection request invalid.⁸⁵

- **Requirement that all generating facilities have ride-through capability.** All interconnection customers must be able to provide frequency and voltage ride-through capability consistent with any standards and guidelines that are applied to other generating facilities in the balancing authority area on a comparable basis.⁸⁶ More specifically, the final rule requires that, during abnormal frequency conditions and voltage conditions within the “no trip zone” defined by NERC Reliability Standard PRC-024-3 or successor mandatory ride-through reliability standards, nonsynchronous generating facilities must continue active power at predisturbance levels.⁸⁷

IV. Next Steps and Forward Outlook

The effects of this rule will not be immediate and likely will take many months (or years) to implement, particularly for transmission providers that currently rely on a serial process and will need to transition to a cluster study process. Requests for rehearing must be submitted by Aug. 28, 2023. The final rule will become effective Dec. 5, 2023. At this time, transmission providers’ compliance filings are due within 90 days of the publication date, or by Dec. 5, 2023. However, transmission providers have already requested that FERC extend the deadline, and FERC historically has entertained such requests.⁸⁸ Three RTOs, PJM Interconnection, L.L.C., Midcontinent Independent System Operator, Inc., and Southwest Power Pool, Inc. submitted a request that FERC extend the deadline until after it issues a substantive rehearing order on Order

⁸⁴ Order No. 2023 at PP 1659-1683.

⁸⁵ Order No. 2023 at P 1666

⁸⁶ Order No. 2023 at PP 1711-28.

⁸⁷ Order No. 2023 at P 1715.

⁸⁸ For example, FERC extended the deadline for Order No. 2003 by 90 days, for a total compliance period of 120 days. Similarly, the Commission extended the compliance deadline for Order No. 845 twice, resulting in a total compliance period of close to a year.

No. 2023.⁸⁹ Numerous entities filed rehearing requests by the Aug. 28, 2023, deadline, seeking FERC's reconsideration of a range of details in the final rule.

While a main goal of Order No. 2023 is consistency, there likely will still be a fair level of variation among transmission providers. FERC made it clear that retaining a serial study process will be a nonstarter.⁹⁰ However, in general, transmission providers may seek deviations from the new *pro forma* language under the “consistent with or superior to” standard for transmission providers outside of RTO/ISO markets or the “independent entity variation” standard for RTO/ISO transmission providers.⁹¹ FERC specifically acknowledged the efforts some transmission providers have already taken to reform their processes and noted that the rule “is not intended to divert or slow potential progress represented by those efforts.”

There is no clear timing for when FERC will act on compliance filings once submitted. FERC interprets its FPA “60-day clock” as not applying to compliance filings. Accordingly, once compliance filings are submitted, FERC has no deadline to act, and likely will act outside a 60-day period, and so on a staggered basis. In its final order, FERC made it clear that any tariff revisions resulting from the rule “will not be effective until the Commission-approved effective date of the transmission provider’s filing in compliance with this final rule.”⁹² In other words, the status quo remains in place at least until FERC action on a particular transmission provider’s compliance filing.

In addition, implementation details related to the final rule may end up being reflected outside of FERC-filed tariffs in business practice manuals. For example, PJM noted that specific technical information about how it handles cost allocation is included in a business practice manual.⁹³ FERC agreed, finding that “technical information surrounding implementation of the proportional impact method by a particular transmission provider does not need to be included in the transmission provider’s tariff under the rule of reason because these provisions are properly classified as implementation details that do not significantly affect rates, terms, and conditions of service.”⁹⁴ Accordingly, it will be important for transmission providers to evaluate the extent to which details on Order No. 2023 reforms are better suited for business practice manuals, and for interconnection customers to check all sources of information to ensure they are best informed about current practices.

Order No. 2023 is the first of what may be a number of reforms. FERC’s companion [NOPR](#) on transmission expansion and associated cost allocation is still pending.⁹⁵ Commissioner Phillips further underscored the potential for additional reforms in his remarks on the final rule:

Our transmission policies must keep pace with the rapid changes in the makeup of our nation’s power generation resource mix.... Today’s rule is an important milestone. But

⁸⁹ See *Improvements to Generator Interconnection Procedures and Agreements*, Motion to Extend the Compliance Deadline and Request for Expedited Action of the Joint RTOs, Docket No. RM22-14-000 (filed Aug. 28, 2023). The motion sought FERC action by September 27, 2023.

⁹⁰ Order No. 2023 at P 178 (“We also decline requests to allow transmission providers to either continue to use a serial study process or to create a parallel serial study process[.]”).

⁹¹ Order No. 2023 at P 10.

⁹² Order No. 2023 at P 1769.

⁹³ Order No. 2023 at P 435.

⁹⁴ Order No. 2023 at P 463.

⁹⁵ *Building the Future Through Electric Regional Transmission Planning and Cost Allocation and Generator Interconnection*, 179 FERC ¶ 61,028 at P 56 (2022).

there is so much more to do. The Commission is working diligently on how to address the key issues of regional transmission planning and cost allocation. We need to take a longer-term, forward-looking approach to planning for essential transmission facilities and to allocate the costs of those facilities in a just and reasonable manner while enhancing the reliability and resilience of the grid.⁹⁶

Order No. 2023 represents a significant step in FERC's efforts to accelerate the connection of new generation resources to the electric grid. Because implementing interconnection reform will vary by region and will take more time in some places than in others, it is important for developers, generators, transmission owners and transmission providers to stay engaged as these reforms are developed into tariffs and compliance filings. McGuireWoods will continue to monitor and assist clients through these processes.

⁹⁶ <https://www.ferc.gov/news-events/news/ferc-transmission-reform-paves-way-adding-new-energy-resources-grid>