

ORDER NO. 2023: INTERCONNECTION REFORM IS FINALLY HERE

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US Energy, Infrastructure, and Resources White Paper

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On 28 July 2023, the Federal Energy Regulatory Commission (FERC) issued Order No. 2023,¹ implementing reforms to its generator interconnection agreements and procedures aimed at alleviating the backlog of generation and storage projects pending in interconnection queues throughout the country.² Acting Chairman Willie Phillips said, “[t]he final rule is one of the largest in FERC’s history,” and “represents the largest and most significant set of interconnection reforms since the pro forma interconnection procedures were created two decades ago.”³

Currently the waiting period for a generation or storage project to connect to the grid can be up to five years and possibly longer in some regions.

Regional distribution of proposed solar, wind, storage and gas capacity⁴

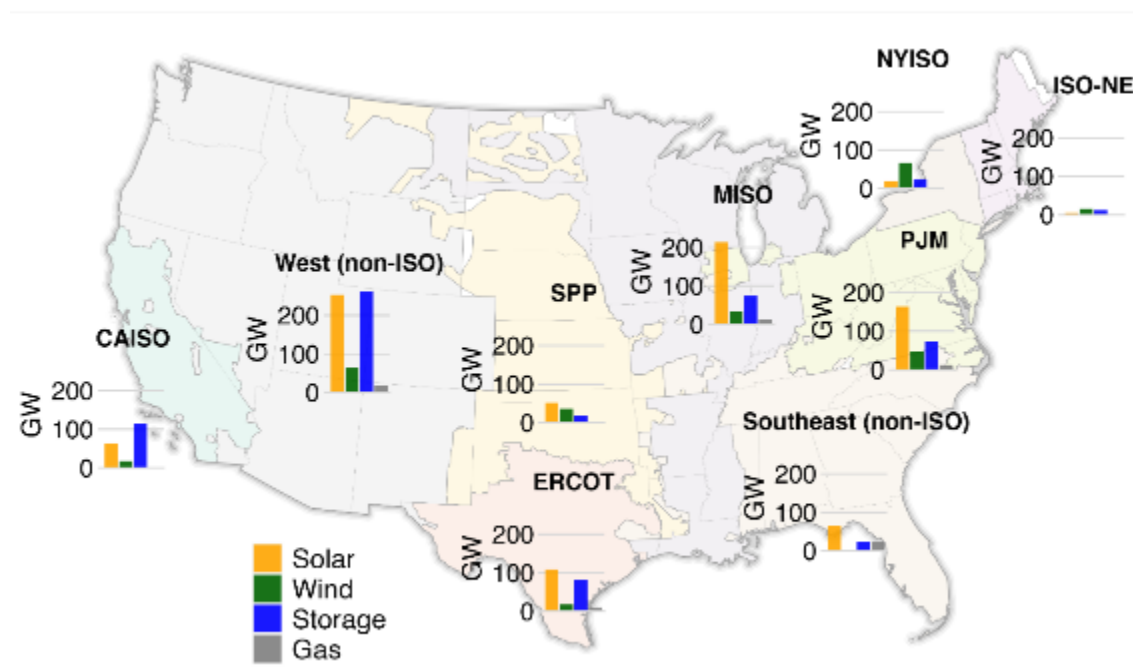


Image Source: Lawrence Berkley National Labs Website

Studies have quantified these delays and also highlighted the impact of queue withdrawals.⁵ With solar, wind, and storage projects making up approximately 94% of the total capacity in interconnection queues,⁶ this backlog is one of the primary obstacles for the clean energy transition. Generation interconnection has posed a massive problem for at least the past five years. By the end of 2022, over 2,000 gigawatts of proposed generation and storage projects were waiting in interconnection queues.

EXECUTIVE SUMMARY

Order No. 2023 makes numerous changes to current interconnection processes. The most significant elements include the following:

- Transition from a first-come, first-served (serial) study process to a first-ready, first-served process studying groups of interconnection requests that may be served by the same transmission upgrades (cluster studies);
- Increased financial commitments, site control requirements, and withdrawal penalties for developers;
- Firm study deadlines and penalties for transmission providers or transmission owners conducting the studies;
- Requirements to evaluate alternative transmission technologies;
- Increased opportunities for proposed projects to make use of a single interconnection (co-location) and changes to the material modification process to permit the addition of electric storage or other facilities that do not change the requested interconnection service limit;
- Public sharing of interconnection information, including a “heatmap” of interconnection capacity;
- Standardization of affected system studies; and
- Mandated modeling updates.

Order No. 2023 requires that transmission providers submit compliance filings that include tariff provisions implementing the changes mandated by the rule in their interconnection agreements, both LGIA and SGIA, and interconnection procedures, both LGIP and SGIP, within 90 days of the date of the rule's publication in the Federal Register.

With Order No. 2023 published in the Federal Register on 5 September 2023, transmission providers' compliance filings will be due on 5 December 2023.

KEY PROVISIONS

First-Ready, First-Served Cluster Study Process

Order No. 2023 replaces the current serial interconnection process with an annual cluster study process, which allows for the study of a group of interconnection requests by multiple generating facilities at the same time rather than individually and sequentially. Under the cluster study process, all interconnection requests received before the close of a cluster request window—i.e., a 45 calendar-day period, during which all interconnection customers must submit their interconnection requests—will be considered equally queued and of equal study priority.

Transmission providers must assess the viability of all interconnection requests during this 45 calendar day request window. Customers that submit invalid interconnection requests must cure all deficiencies within 10 business days of receiving a deficiency notice but no later than the close of the cluster request window. If the customer does not respond by the deadline, the interconnection request is immediately deemed withdrawn.

Following the close of the cluster request window, transmission providers will begin a 60 calendar day “customer engagement window,” during which transmission providers must post on their OASIS websites—within 10 business days—details on the makeup of the cluster, including information on the amount of interconnection services and the location of proposed generating facilities. An interconnection customer may withdraw its interconnection request without penalty during the customer engagement window. Any interconnection customer that submits a valid interconnection request during the customer request window will become part of the cluster if the customer executes a cluster study agreement by the end of the customer engagement window. Any request that is not deemed valid at the close of the customer engagement window will not be included in the cluster.

FERC has expressed its intent to make more information available to interconnection customers for the purpose of encouraging informed decision-making. As a result, the new rule adds the 60 day “customer engagement window” precisely so that more information is available to customers to assess the continued viability of their proposed generating facilities earlier in the interconnection process—i.e., prior to the start of the cluster study and before withdrawal of the interconnection request will incur a penalty.

At the close of the customer engagement window, transmission providers will have 150 days to conduct initial cluster studies, pursuant to which they will collectively evaluate in groups the interconnection requests for those who executed a timely cluster study agreement. FERC rejected requests that the cluster study process should only permit transmission providers to conduct one cluster study at a time, choosing instead to give transmission providers the option to conduct multiple cluster studies at any given time. Network upgrade costs will be allocated among interconnection customers in the same cluster through a proportional impact method.

Versions of a first-ready, first-served cluster method are already in place in many independent system operators and regional transmission organizations (ISOs/RTOs) and a number of transmission providers in the Western Interconnect. This change is likely to be far more profound where individual utilities not part of an ISO/RTO are still processing interconnection requests on a first-come, first-served basis. Significantly, FERC has declined to permit transmission providers to process interconnection requests by a method other than the annual cluster study process. As such, the move to a cluster study process is mandatory and must be implemented by all transmission providers.

Increased Financial Commitments for Developers

Transmission providers have raised concerns that developers have been “squatting” on multiple interconnection requests, only one of which would eventually proceed, which led to greater delays in the serial interconnection process. By requiring significant application and readiness deposits, withdrawal penalties, and bolstered site control requirements, the new rule seeks to reduce speculative or duplicative interconnection requests with more stringent requirements for entering and remaining in the queue.

Under FERC's new approach interconnection customers must submit a nonrefundable US\$5,000 application fee during the cluster request window to enter the interconnection queue. They must also pay a single initial study deposit to enter the cluster, the amount of which varies (between US\$55,000 and US\$250,000) based on the size of their project.

The new rule also requires the interconnection customer to make commercial readiness deposits at the beginning of each study in the cluster study process (i.e., the initial cluster study, the cluster restudy, and the facilities study). Initial commercial readiness deposits will be two times the initial study deposit and remaining commercial readiness deposits will be based on a percentage of the interconnection customer's assigned transmission network upgrade costs (5% for the cluster restudy and 10% for the facilities study).

When executing an LGIA or requesting the filing of an unexecuted LGIA, interconnection customers must also submit a deposit to increase the total commercial readiness deposit to 20% of estimated network upgrade costs. This deposit will be treated as part of the security that the interconnection customer must provide before the construction of network upgrades begins. Transmission providers must use the LGIA deposit in its entirety before requiring interconnection customers to submit additional security.

Customers that withdraw after the start of the cluster study will be subject to monetary penalties if withdrawal has a material impact on either the cost or timing of equal- or lower-queued requests. The amount of withdrawal penalties will correspond to the amount of the commercial readiness deposits submitted with the interconnection request and will increase as interconnection customers proceed through the interconnection process. Customers will be exempt from withdrawal penalties, however, if the reason for the withdrawal is "significant, unanticipated increases in network [upgrade] cost estimates" during the study process, or if the withdrawal is immaterial to other interconnection customers.⁷ FERC defines "significant, unanticipated increases" as (i) an increase of 25% or more of the assigned network upgrade costs in the most recent cluster study report; or (ii) an increase of 100% or more of the assigned network upgrade costs in the individual facilities study report. The withdrawal penalties will be "used to fund studies conducted under the cluster study process" and once all such studies have been completed, "any remaining withdrawal penalty funds [shall] be used to offset net increases to network upgrade cost assignments experienced by interconnection customers from the same cluster."⁸ Any remaining funds will be returned to the withdrawing project.

To further discourage premature or likely nonviable interconnection requests, Order No. 2023 also establishes more stringent site control requirements. Interconnection customers must now demonstrate control of 90% of site acreage for the generating and storage facilities at the time they submit their interconnection requests and then provide evidence of 100% site control at the time they execute the Facilities Study. Except under certain limited circumstances when there is a regulatory limitation to obtaining site control, interconnection customers will no longer have the option to provide a financial deposit in lieu of demonstrating site control.

Deadlines and Penalties for Transmission Providers

Under existing rules transmission providers have been permitted to use "reasonable efforts" to process interconnection requests in a timely manner, but have not been held to any specific timelines. Order No. 2023 now subjects transmission providers to firm deadlines and penalties if they fail to process interconnection requests on time. As previously noted, the new rule gives transmission providers 150-calendar days to complete initial cluster studies. Any cluster restudies must be completed within 150-calendar days of the transmission provider providing notice that a restudy is needed.⁹

To enforce these deadlines, Order No. 2023 imposes penalties on transmission providers that fail to complete studies on time:

- Delays of cluster studies will incur a penalty of US\$1,000 per business day;

- Delays of cluster restudies will incur a penalty of US\$2,000 per business day;
- Delays of affected system studies will incur a penalty of US\$2,000 per business day; and
- Delays of facilities studies will incur a penalty of US\$2,500 per business day.

Penalties will be distributed on a pro rata basis to the interconnection customers and affected system interconnection customers included in the relevant cluster study that did not withdraw, or were not deemed withdrawn, to offset their study costs. Although non-ISO/RTO transmission providers and transmission-owning members of ISO/RTOs will be unable to recover study delay penalties through transmission rates, ISO/RTOs will be allowed to submit a Federal Power Act (FPA) Section 205 filing to recover penalties from at-fault transmission owners.¹⁰

To give transmission providers time to transition to the new rule, penalties will not be applied until the third cluster study cycle after the FERC-approved effective date of the transmission provider's compliance filing. Once penalties are in effect, transmission providers will receive a grace period of 10 business days to complete the applicable interconnection studies within the cluster, and deadlines may be extended for 30 business days by mutual agreement of the transmission provider and all affected interconnection customers. Transmission providers do not need to provide notice when invoking the grace period.

Notably, FERC did not adopt the proposed rule's force majeure penalty exception. Instead, transmission providers can appeal study delay penalties to FERC. "[T]ransmission providers may explain in any appeal to FERC any circumstances that caused the delay, including any events that qualify as force majeure, and FERC will consider such circumstances as part of its evaluation of whether good cause exists to grant relief."¹¹

Alternative Transmission Technologies

Order No. 2023 requires transmission providers to evaluate alternative transmission technologies and to include in the cluster study report an explanation of the results of such evaluation for feasibility, cost, and time savings as an alternative to a traditional network upgrade. The specific alternative transmission technologies that must be evaluated include the following:

- Static synchronous compensators, which provide or absorb reactive current, thereby regulating the voltage at the point of connection to a power grid;
- Static VAR compensators, which compensate for the reactive power of the load connected to a power system and stabilize voltage;
- Advanced power flow control devices, which push or pull power away from overloaded lines and onto underutilized corridors within the existing transmission grid;
- Transmission switching, which can switch flows from one transmission line to another;
- Synchronous condensers, which can improve the power factor of transmission lines by producing or absorbing reactive power;
- Voltage source converters, which are capable of generating AC voltages;

- Advanced conductors, electric conductors with a modern composite core and shaped, low-resistance aluminum wire (instead of traditional steel wires), which can greatly improve the efficiency of a transmission line; and
- Tower lifting, which raises a transmission tower and permits the attached transmission line to meet clearance criteria, thereby operating at its design rating.

Transmission providers must evaluate these alternative transmission technologies in all instances, without the need for a request from an interconnection customer. This requirement has significant potential to increase the speed of interconnection by permitting faster and less costly solutions than potentially expensive network upgrades that take significant time to study, develop, and construct. By mandating the consideration of alternative transmission technologies, FERC balanced concerns by developers of alternative transmission technologies that barriers to entry exist for advanced transmission technologies versus concerns raised by transmission providers that mandated use of alternative transmission technologies could be problematic and time-consuming.

Co-Location and Sharing

Order No. 2023 requires transmission providers to allow multiple resources to share a single interconnection request and “to co-locate on a shared site behind a single point of interconnection and to share a single interconnection request.”¹² To the extent that a project will be co-located with one or more projects at 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. From a practical perspective, this means that the co-located projects must be on the same development timeline. While a multi-phase project is not prohibited by the rule, milestones would need to be carefully negotiated to ensure that timing issues do not arise from interconnection procedure requirements.

Before an interconnection customer returns an executed facilities study agreement, it can request to add a co-located resource at the same point of interconnection (without any increase in interconnection service) and the transmission provider cannot automatically deny such request and must evaluate whether such request would constitute a material modification. Once an executed facilities study agreement has been returned, however, transmission providers may automatically treat such requests as material modifications without review. This window of opportunity is limited to the brief time period from receipt of the facilities study agreement to the date that the executed facilities study must be returned to the transmission provider.

FERC proposed two further related reforms. First, it has expedited access to surplus interconnection service by allowing such access once the original interconnection customer signs the LGIA or requests that the LGIA be filed unexecuted. Second, FERC has modified the material modification provision to permit the addition of further generating facilities at the same location, without being deemed a material modification, if that addition does not change the requested service level.

Interconnection “Heatmap” and Metrics

Order No. 2023 requires that transmission providers make more information available to help developers make decisions about siting and other aspects of their proposed facility. Each transmission provider will be required to maintain an interconnection “heatmap” that provides “an interactive visual representation of available interconnection capacity.”¹³ The heatmap will be focused on estimated incremental injection capacity available at

each bus on the transmission provider's system. Transmission providers will also be required to publish a table of "relevant interconnection metrics that allow prospective interconnection customers to see certain estimates of a potential generating facility's effect on the transmission provider's transmission system."¹⁴ The heatmap and metrics table must be updated within 30 days of each cluster completion.

Standardized Affected System Studies

While the existing LGIP contained a pro forma interconnection agreement and study agreements for the host transmission provider, there were no such standard agreements or study procedures for affected system operators.¹⁵ Consequently, some regions have experienced significant delays completing affected system studies, which then caused delays to the interconnection process itself.

In Order No. 2023, FERC found that the existing affected system study process lacked consistency, certainty, and transparency, and caused delays in the interconnection process. FERC has therefore adopted pro forma affected system study agreements and facilities construction agreements. FERC has also imposed firm deadlines for transmission providers to initiate the affected system study process and to conduct affected system studies. When a transmission provider is identified as a potential affected system for multiple interconnection requests, the affected system study process will also move to a cluster study process. These reforms aim to streamline the affected system study process and to ease the delays that affected system issues cause.

Mandated Modeling Updates

When conducting interconnection studies, the models provided by the interconnection customer and used by the transmission provider in the study have a significant role in identifying the network upgrades needed to complete an interconnection request.¹⁶ In Order No. 2023, FERC adopted certain modeling updates intended to make the study process more efficient for non-synchronous resources. For example, battery energy storage systems will now be able to specify operating restrictions applicable to the project (e.g., not charging during peak load conditions or discharging during light load). Those operating restrictions will then be incorporated into the interconnection customer's LGIA. For affected system studies, the affected system transmission provider must also study the impact of those interconnection requests on its system based on the identified operating restrictions.

These changes may reduce the network upgrades that would have otherwise been needed to accommodate an interconnection request. By more specifically tailoring the study to the proposed facility's parameters, including operating restrictions, the proposed facility presumably will not trigger the need for network upgrades driven only by system conditions at peak periods or other limited periods, during which the facility may not be injecting power onto the grid.

TRANSITION PROCESS

To smooth the transition away from the first-come, first-served serial study process, transmission providers must offer existing interconnection customers up to three transition options depending on the stage of the serial study process their interconnection requests are in:

- Interconnection customers that have been tendered facilities study agreements may choose one of two pathways: (i) transitional serial facilities study, requiring a deposit equal to 100% of the assigned interconnection facilities and network upgrade costs, or (ii) transitional cluster study comprised of a

clustered system impact study and individual facilities studies, requiring a deposit equal to US\$5 million.¹⁷ Alternatively, they may withdraw from the queue without penalty.

- Interconnection customers with an assigned queue position as of 30 days after the filing date of the transmission provider's Order No. 2023 compliance filing may join the transitional cluster study process. Alternatively, they may withdraw from the queue without penalty.

If an interconnection customer chooses to remain in the transition process and later withdraws, it will be subject to a withdrawal penalty of nine times the study costs.¹⁸ All other interconnection customers will be subject to the new interconnection procedures.

INDIVIDUAL COMMISSIONER STATEMENTS

Commissioners Allison Clements, James Danly, and Mark Christie each issued an individual concurrence to Order No. 2023, adding their own personal positions on the rule and the rulemaking process. Commissioner Danly expressed a preference for using individual Section 206 proceedings rather than general rulemakings. Commissioner Christie raised concerns with four issues: (i) the evaluation of alternative transmission technologies, which he thinks should not be a planning tool; (ii) affected system upgrade repayment policies; (iii) the potential allocation of certain costs to consumers, including penalties and maintenance of the interconnection heatmap; and (iv) the ability of ISOs/RTOs, working through their stakeholder processes, to create “different but equally effective” solutions. Commissioner Clements issued a lengthy concurrence, highlighting the issues she believes will require further attention and reform. These include alignment of interconnection processes with state-driven competitive resource solicitations, more focused interconnection studies for energy-only resources, and smaller, targeted reforms to existing processes.

CHALLENGES TO ORDER NO. 2023

Over 30 entities filed requests for rehearing or clarification, on a wide range of issues raised by Order No. 2023. All of the parties seeking rehearing expressed overall support for FERC's goal to ensure timely and reliable interconnection.

ISO-RTOs

All of the ISO/RTOs filed requests for rehearing, asking FERC to overturn or clarify certain elements of the rule. Several noted that they have either already implemented significant interconnection reform measures, or are in the process of doing so. As such, they asserted, Order No. 2023 should not derail those efforts and FERC should encourage continued use of the independent entity variation. The transmission-owning utilities in many ISO/RTO regions filed requests for rehearing that echoed many of the issues raised by the ISO/RTOs.

Each of the ISO/RTOs challenged FERC's application of penalties for delays in performing interconnection studies. They asserted that ISO/RTOs have no opportunity to recover such costs, except for funds coming from customers. Several requested that FERC restructure the penalty provisions as applied to ISO/RTOs, if they are to be retained. Further, several ISO/RTOs challenged FERC's establishment of the 150-day firm interconnection study timeline, asserting that each region should be permitted to create its own reasonable timelines, rather than using a one-size-fits-all approach. Several ISO/RTOs also challenged FERC's elimination of the “reasonable efforts” standard in favor of the firm interconnection study timeline.

Next, several ISO/RTOs challenged the requirement that transmission providers permit electric storage resources to specify operating parameters for study, asserting that this requirement may violate market rules and creates additional complexity. Some ISO/RTOs asserted that FERC should have permitted them to utilize Network Resource Integration Service (NRIS) modeling standards, rather than the required Energy Resource Integration Service (ERIS) standards, or granted flexibility in how transmission providers approach energy storage resource interconnection and study. One ISO/RTO challenged this provision on the grounds that the ISO/RTO has no means by which to monitor the energy storage resource's real-time operations or enforce the studied operating restrictions once the resource goes into service. Several ISO/RTOs suggested that this issue could be addressed through a stakeholder proceeding.

Finally, a number of ISO/RTOs sought clarification on the calculation and distribution of withdrawal penalties if a project withdraws from the queue. Under this provision, transmission providers must distribute penalties collected from withdrawing projects to projects in the cluster. Several ISO/RTOs asserted that this distribution process is too complex, and cannot exceed the dollar amounts already in the possession of the ISO/RTO from the project.

Utilities in Non-ISO/RTO Regions

Utilities in non-ISO/RTO regions raised a number of issues on rehearing. Several utilities noted that they are early adopters of many of FERC's proposals and should be permitted to utilize the independent entity variation. They also raised a variety of concerns regarding the transition process, asking for flexibility and time to complete current studies before moving to the new regime.

Similar to the ISO/RTOs, many utilities challenged FERC's proposal of penalties for delayed interconnection studies. They asserted that the proposal is unlawful, as well as unjust and unreasonable. Several utilities proposed that the penalty regime should be withdrawn and revisited once the rest of Order No. 2023's reforms have taken hold. In addition, a number of utilities and utility trade groups challenged the elimination of the "reasonable efforts" standard for utilities in processing interconnection requests.

A number of utilities also challenged the interconnection heatmap requirement. They asserted that maintenance of the heatmap will be particularly costly and challenging for individual utilities, as compared to ISO/RTOs maintaining one map for an entire region. They questioned where the funds to create such a heatmap would be sourced, and asserted that FERC did not complete a cost-benefit analysis for the heatmap. They also questioned when the heatmap must be published on the utilities' sites.

Several utilities raised concerns about the affected system study process, noting that many issues remain unresolved, including cost allocation that FERC found to be beyond the scope of Order No. 2023. They also challenged the use of ERIS modeling standards in affected system studies, and argued that transmission providers should be able to study the deliverability of a proposed project regardless of the type of service it requests.

Finally, multiple utilities challenged FERC's direction that compliance filings be filed within 90 days of the date of publication of the rule in the Federal Register. They asserted that FERC arbitrarily reduced the compliance time period from the standard 180 days to 90 days, which will be challenging to meet. As noted below, a group of ISO/RTOs has filed a motion requesting that the compliance deadline be extended.

Developers

Developers also raised concerns with Order No. 2023. Several questioned the transition process, noting that the settled expectations of projects already in the interconnection queue must be preserved. Others noted that the transition process must take into account the reality that various transmission providers may be at different stages of adopting a cluster study approach. As such, they assert, even transmission providers who have begun to implement a cluster study approach may need to develop an Order No. 2003-compliant transition plan.

Also, developers challenged FERC's site control requirements, asserting that FERC should have required control not only of the generator site, but also of the interconnection facilities. This, they assert, would improve the quality of interconnection studies and increase certainty to interconnection customers. A group of independent power producers asserted that projects should be permitted to utilize electrically equivalent alternative points of interconnection during the cluster study, as this would not constitute a material modification. They further asserted that any changes required as a result of public policy changes should also not constitute a material modification.

Several developers raised concerns about the information required in the process. Several noted that the provision of EMT studies at the time of application can be burdensome. Others commented that developers should have the opportunity to withdraw penalty-free if affected system studies require significant network upgrades, and should be allowed to delay signing an interconnection agreement if the affected systems study is delayed. A developer further asserted that the 30-day window for executing a Facilities Study Agreement once the cluster study is complete is too compressed and gives insufficient time to a developer to analyze the study results.

WHAT'S NEXT

Unless extended, compliance filings are due on 5 December 2023.¹⁹ Each transmission provider, including those that have adopted, or are in the process of adopting, similar reforms as those adopted in the final rule must submit a compliance filing. FERC rejected requests to presume that any transmission provider's tariff meets the final rule's requirements. However, transmission providers that have already adopted a cluster study process or are undergoing a transition cluster study process will not be required to implement a new transition process. In addition, transmission providers may demonstrate that its existing or proposed provisions are consistent with or superior to the tariff revisions adopted in Order No. 2023.

While Order No. 2023 is a significant step, further rulemakings pending before FERC could have a meaningful impact on the development of renewable resources. FERC continues to work to issue a final rule governing transmission planning and cost allocation.²⁰ FERC and several Commissioners in their individual statements acknowledged throughout the rulemaking process that transmission and interconnection planning must be linked more closely. For example, Commissioner Clements stated that "[i]nterconnection processes are overloaded in part because they are being relied on to build out core transmission system infrastructure that should be considered in regional planning processes."²¹ Further, Commissioners have referenced the development of a notice of proposed rulemaking on interregional transmission development, an area also in need of significant reform.

27 OCTOBER 2023 UPDATE

On 25 October 2023, FERC issued an order granting rehearing in part that (1) extends the compliance filing deadline of 5 December 2023 to 3 April 2024 for all transmission providers, except for those with wholesale distribution access tariffs (WDATs), and (2) allows transmission providers with WDATs to submit their compliance

filings within 90 calendar days of the date on which their RTO/ISO submits its compliance filing.²² Other issues on rehearing will be addressed in a future order.

FOOTNOTES

¹ *Improvements to Generator Interconnection Procedures and Agreements*, 184 FERC ¶ 61,054 (2023), 88 FR 61,014 (Sept. 6, 2023) (“Order No. 2023”).

² While Order No. 2023 states that it is applicable to both Large Generator Interconnection Agreements and Procedures (LGIA and LGIP) and Small Generator Interconnection Agreements and Procedures (SGIA and SGIP), the majority of the changes made by Order No. 2023 are to the LGIA and LGIP. Order No. 2023 makes certain changes to the SGIA and SGIP, but those changes are limited.

³ See Press Conference, FERC 1:16-28 (July 27, 2023), https://www.youtube.com/watch?v=9PIWqdCj8_g.

⁴ JOSEPH RAND, ET AL., GRID CONNECTION REQUESTS GROW BY 40% IN 2022 AS CLEAN ENERGY SURGES, DESPITE BACKLOGS AND UNCERTAINTY, LAWRENCE BERKELEY NAT'L LAB (Apr. 6, 2023), available at <https://emp.lbl.gov/news/gridconnection-requests-grow-40-2022-clean>.

⁵ JOSEPH RAND, ET AL., QUEUED UP: CHARACTERISTICS OF POWER PLANTS SEEKING TRANSMISSION INTERCONNECTION AS OF THE END OF 2022, LAWRENCE BERKELEY NAT'L LAB 16–17 (Apr. 2023), available at https://emp.lbl.gov/sites/default/files/queued_up_2022_04-06-2023.pdf.

⁶ See FED. ENERGY REGUL. COMM'N, 2022 STATE OF THE MARKETS STAFF REPORT 1, 29 (Mar. 16, 2023), available at [2022_State-of-the-market.pdf \(ferc.gov\)](https://www.ferc.gov/2022-State-of-the-market.pdf).

⁷ Order No. 2023 at P 784. The order does not explicitly define what “immaterial to other interconnection customers” means, but references not delaying the timing of other customers' interconnections in the same cluster, or increasing the cost of network facilities for other proposed facilities.

⁸ Order No. 2023 at P 781.

⁹ Section 7.5(3) of the revised LGIP provides that the transmission provider shall determine if cluster restudy is required if one or more interconnection customers withdraws from the cluster, or is deemed withdrawn.

¹⁰ To the extent that ISO/RTOs elect to create a tariff mechanism for recovering study delay penalties, rather than relying on individual filings, they may submit an FPA section 205 filing to propose such a default structure. Order No. 2023 at P 997.

¹¹ Order No. 2023 at P 1003.

¹² Order No. 2023 at PP 1325, 1406.

¹³ Order No. 2023 at P 94.

¹⁴ Order No. 2023 at P 94.

¹⁵ As defined by FERC, an affected system is an electric system other than the transmission provider's transmission system that may be affected by a proposed interconnection.

¹⁶ Specifically, Order No. 2023 requires that the interconnection customer provide up to three models to the

transmission provider: “(1) a validated, user-defined root mean square (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 [Western Electricity Coordinating Council] WECC; and (3) a validated [electromagnetic transient] EMT model, if the transmission provider performs an EMT study as part of the interconnection study process.” Order No. 2023 at P 1659.

¹⁷ Order No. 2023 at P 855.

¹⁸ Order No. 2023 at P 860.

¹⁹ Per Order No. 2023, compliance filings are due 90 days after publication in the Federal Register. Publication occurred on 6 September 2023. On 28 August 2023, the Joint RTOs filed a motion to extend the compliance deadline to 90 days after FERC issues a substantive order on rehearing. They further requested that FERC act on this request for extension by 27 September 2023.

²⁰ See Building for the Future Through Electric Regional Transmission Planning and Cost Allocation and Generator Interconnection, Notice of Proposed Rulemaking, 179 FERC ¶ 61,028 (2022) (“Transmission Planning Final Rule”).

²¹ Order No. 2023, Clements Concurrence at P 13.

²² *Improvements to Generator Interconnection Procedures and Agreements*, 185 FERC [para mark] 61,063, at PP 9-11 (2003).

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