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Federal Energy Regulatory Commission Issues Final Rule Overhauling Interconnection Procedures

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I. Introduction

On July 28, 2023, in its first major overhaul of its standardized interconnection rules, procedures, and agreements since issuing Order No. 2003 20 years ago, the Federal Energy Regulatory Commission (Commission or FERC) issued its long-awaited final rule addressing “Improvements to Generator Interconnection Procedures and Agreements,” which was appropriately-labeled Order No. 2023.¹ The Final Rule is the culmination of a two-year long effort by the Commission, after review of a record number of comments submitted as part of its Notice of Proposed Rulemaking (NOPR), to respond to the nation’s ever-growing interconnection queue backlogs. The Final Rule is chiefly aimed at reducing those backlogs, in which projects that had the financing, equipment, site control, and were otherwise ready to go, sat languishing in greatly backlogged interconnection queues, years away from reaching commercial operation.

Interconnection is an essential step for project developers – a renewable energy-generating facility cannot sell into the market or reduce carbon emissions unless and until that facility is interconnected to the grid. But navigating the interconnection gauntlet in a timely way has become in recent years the greatest challenge to the development and deployment of new renewable energy-generating facilities. Besides the need to pay the costs of upgrades associated with the interconnection, there is also power sale opportunities lost when projects that are ready to go are stuck in backlogged queues. On the other side of the coin, interconnecting utilities have expressed frustration that customers must be subject to higher deposits and other financial milestone requirements, tighter site control obligations, and other “readiness” criteria, in order to weed out speculative, non-financially viable projects from the queue.

The Final Rule attempts to balance both sets of needs by adopting key reforms, including a move toward a first-ready, first-served cluster study process, with tighter deposit, site control and other readiness requirements, into the *pro forma* Large Generator Interconnection Procedures (LGIP) and Small Generator Interconnection Procedures (SGIP). A number of these proposals are new, such as a new late study penalty regime, but others have long been used (with varying degrees of success) by the Independent System Operators (ISOs) and Regional Transmission Organizations (RTOs). Overall, the Final Rule is a critical step forward that attempts to balance the need for more stringent rules to weed out overly-speculative projects with the need of developers for flexibility in bringing viable projects to

commercial operation. Time will tell if these reforms will achieve the Commission's goal of reducing the interconnection queue backlogs.

As a practical matter, regulated transmission providers across the country are directed to submit compliance filings to the Commission to revise the generator interconnection procedures in their respective Open Access Transmission Tariffs (OATT) on file with the Commission as prescribed in the Final Rule. These compliance filings are due within 90 days of the date of publication of the Final Rule in the *Federal Register*. Regulated transmission providers will have a relatively-short turnaround to submit their compliance filings. Industry participants should carefully review those filings to ensure they are fully compliant with the Commission's directives. Non-public utility transmission providers with safe harbor tariffs must also adopt these requirements as a condition of maintaining their safe harbor status, although the Commission did clarify that its Final Rule does not modify the reciprocity requirement in Order Nos. 888 and 2003 or impact the ability of non-public utilities to use a request for waiver or bilateral agreement to satisfy the reciprocity requirement.²

II. Background

On July 15, 2021, the Commission issued an Advance Notice of Proposed Rulemaking (ANOPR) that sought to obtain initial comments and feedback from the industry on the need for reform to the generator interconnection procedures and the types of reforms that should be considered.³ On June 16, 2022, after considering two rounds of public comments on the ANOPR, the Commission issued its NOPR in Docket No. RM22-14 that proposed numerous reforms to the *pro forma* Large Generator Interconnection Procedures and the Small Generator Interconnection Procedures (which are applicable to generator interconnection requests under 20 MW).⁴ The NOPR focused on several areas of reform, including (1) implementing a first-ready, first-served cluster study process; (2) improving interconnection queue processing speed; (3) incorporating technological advancements into the interconnection process; and (4) updating modeling and performance requirements for system reliability.

The Final Rule is only the Commission's second suite of reforms to the generator interconnection process since 2003, when it issued Order Nos. 2003 and 2006. Those groundbreaking orders established the initial *pro forma* standard interconnection procedures and agreements for large and small generators, respectively. Then, in 2018, the Commission issued Order No. 845, which adopted a number of reforms such a surplus interconnection service process, provisional interconnection agreements, and significantly, reporting requirements for transmission providers to provide the Commission with aggregate interconnection study performance data. The NOPR, and, ultimately, the Final Rule built on the data collected in the Order No. 845 reports as the basis for several of the reforms, such as its decision to eliminate the reasonable efforts standard (discussed below).

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

A. Interconnection Information Access

In the Final Rule, the Commission adopted a proposed reform to improve interconnection customers' access to information necessary to facilitate efficient development efforts. The Commission found that absent reforms, speculative interconnection requests will likely remain at current levels and continue to contribute to study delays and increased costs in the interconnection process.⁵ To address the current lack of transparency, which leads to submission of multiple speculative interconnection requests that contribute to queue congestion,⁶ the Commission therefore adopted reforms to provide a means for interconnection customers to obtain additional information prior to entering the interconnection queue.

The Commission addressed two discrete proposals for stakeholders to consider from the NOPR, declining to adopt informational interconnection study requests and adopting the public interconnection information proposal.

Informational Interconnection Study Requests

The Commission declined to adopt the NOPR proposal to modify the *pro forma* LGIP to require transmission providers to offer an informational interconnection study for prospective interconnection customers.⁷ Specifically, FERC was persuaded by: (1) concerns that requiring an informational interconnection study could divert the transmission provider's resources, undermining the benefits that this proposal sought to achieve; (2) comments on the limitations of an informational interconnection study, which would reflect different assumptions than an interconnection request, thereby, providing limited benefits; and (3) an understanding that the informational interconnection study requests is not the most effective means of providing interconnection customers with pre-interconnection queue information.

Public Interconnection Information

Recognizing, that there is a lack of information available to prospective interconnection customers prior to entering the interconnection queue,⁸ the Commission adopted, without modification, the NOPR proposal to revise the *pro forma* LGIP to require transmission providers to publicly post congestion heat map, as well as a table including relevant interconnection metrics that allow prospective interconnection customers to see certain estimates of a potential generating facility's effect on the grid.⁹ The heat map must be updated within 30 calendar days after the completion of each cluster study and restudy and must include: (1) the distribution factor; (2) the MW impact; (3) the percentage impact on each impacted transmission facility; (4) the percentage of power flow on each impacted transmission facility before the proposed project; and (5) the percentage power flow on each impacted transmission facility after the injection of the proposed project.¹⁰ In approving this proposal, the Commission determined that benefits of additional transparency outweigh added administrative burden to transmission providers¹¹ because prospective interconnection customers will be better able to assess a proposed generating facility's viability before submitting an interconnection request, reducing the number of speculative interconnection requests.¹²

B. Cluster Studies

Moving from a serial study to the cluster-study process is a fundamental basis for the move from a first-come, first-served method, to the new first-ready, first-served approach. How the transmission provider conducts the cluster studies and allocates the costs of the studies and the network upgrades called for in the studies will drive whether the process has resulted in a just and reasonable allocation of costs among the interconnection customers in the cluster.

The Commission found in the NOPR that first-come, first-served interconnection study process has been a "major cause of the backlogs delaying transmission providers' interconnection queue."¹³ Studying interconnection requests on an individualized, serial basis can result in a piecemeal identification of network upgrades that does not contemplate possible efficiencies across multiple interconnection requests. The Commission noted that in some cases, the serial study process identifies a very large, expensive network upgrade that makes the project non-viable, resulting in the interconnection customer withdrawing from the queue.¹⁴ A cluster-study approach might have identified other interconnection customers who could have shared in the cost of the network upgrade, allowing all the affected interconnection customers to go forward. For these reasons, the NOPR called for a transition to a cluster-

study process. The crux of the cluster-study process enables transmission providers to process interconnection requests within a group or cluster, rather than performing separate studies for each individual requests sequentially based on their queue position.

The Commission believes that the cluster-study process will provide greater certainty to interconnection customers, both as to the timing of studies and the magnitude of network upgrade costs.¹⁵ When coupled with increased financial commitments and requirements to enter the interconnection requirements (such as site-control demonstration), the cluster study process will disincentivize customers from submitting interconnection requests for speculative generation projects and to help ensure that viable proposed generating facilities can proceed through the study process.¹⁶

The Commission addressed certain specifics to be applied by the transmission provider in implementing the first-ready, first-served methodology through the cluster study process.

- an interconnection customer must select a definitive point of interconnection to be studied when executing the cluster-study agreement.¹⁷ The Commission clarified that any changes to the Point of Interconnection can only be made with the consent of the interconnection customer.¹⁸
- interconnection requests must be filed within the cluster-request window, which is a 45-day calendar day period with the start date to be determined by each transmission provider. The Commission declined to extend the cluster window, as proposed by certain commenters.¹⁹ Customers must provide requested information within 10 business days of receiving an interconnection deficiency notice. The Customer Engagement Window is extended from the 30 to 60 days, during which the customer can cure deficiencies.²⁰
- transmission providers must conduct a scoping meeting with all interconnection customers whose requests were received in that cluster request window, but the Commission declined to require scoping meetings with individual interconnection applicants.²¹
- transmission providers must post metrics for cluster study and restudy processing time, including the number of cluster studies completed within 150 calendar days of the close of the customer-engagement window.²²
- transmission providers must assign queue positions based on the date and time of receipt of a valid interconnection request, but all interconnection customers that submitted requests with a cluster-request window must be considered equally queued.²³ Further underscoring the difference between the serial and the cluster process, the Final Rule makes clear that network upgrade costs will be allocated amongst the interconnection customers in the cluster per the proportionate method, and will not be assigned to one customer, as in the serial process.²⁴

C. Allocation of Cluster Study Costs

In the NOPR, the Commission had proposed to allocate the shared costs of cluster studies as follows: “90% of the applicable study costs to interconnection customers on a pro rata basis based on requested MWs included in the applicable cluster, and 10% of the applicable study costs to interconnection customers on a per capita basis based on the number of interconnection requests included in the applicable cluster.”²⁵ The Commission sought comment on different cost allocation approaches or whether each transmission provider should be provided additional flexibility to propose a cost allocation approach on compliance with any final rule.²⁶

The Commission received a number of comments noting the importance of affording transmission providers the flexibility to propose a different cost allocation approach. Based on review of the different positions of the commenters, the Commission decided to allow each transmission provider to propose its own cost-allocation ratio for allocating the shared costs of cluster studies, provided that between 10% and 50% of the cluster-study costs are allocated on a per-capita basis, with the remainder (90% and 50%) allocated pro rata by MW.²⁷ The pro-rata costs are based on requested MWs included in the applicable cluster and the per-capita costs are allocated based on the number of interconnection requests included in the applicable cluster.²⁸

The Commission considered comments that the proposed 90%-10% allocation could in some instances unduly burden larger generation facilities, when a cluster includes a large number of interconnection requests representing small generating facilities and a small number of large generation facilities.²⁹ Conversely, the 90%-10% allocation could burden smaller generating facilities, given the role that size plays in study cost determinations.³⁰ The Commission concluded it was appropriate to permit transmission providers "a degree of flexibility in proposing on compliance the method for allocating study costs in their tariff to adapt to their specific regional circumstances and help avoid unreasonable outcomes."³¹

D. Allocation of Cluster Network Upgrade Costs

The Commission proposed to require transmission providers to allocate network upgrade costs to interconnection customers within a cluster using a "Proportional Impact Method." Under this method, the transmission provider would determine the degree to which each generating facility in the cluster contributes to the need for a specific network upgrade.³² The Commission expects that this proposed reform will reduce the frequency of an individual customer being allocated a large network upgrade that benefits subsequent interconnection customers, will reduce the incentive to submit multiple speculative requests, and will reduce the amount of cascading withdrawals and re-studies.³³ Such an allocation among interconnection applicants in a cluster is one of the key differences with the serial approach, where a customer triggering a network upgrade may pay all or most of the costs, even though the upgraded benefitted other lower-queued interconnection applicants.

The Commission in the Final Rule adopted the proposal to allocate cluster network upgrades on a proportionate basis, with some modifications.³⁴ Once again, the Commission was faced with adjusting the policies underpinning the serial study process, which would assign full-cost responsibility for all network upgrades identified in a study to a single interconnection customer that causes those upgrades. In transitioning to a cluster-study process, the Commission concluded that a proportional impact method is the appropriate application of the Commission's interconnection policy when allocating the costs of network upgrades that are needed for an entire cluster of proposed generating facilities, because this would enable the transmission provider to assess an individual generating facilities contribution to the need for network upgrades identified for the cluster.³⁵

Based on comments reviewed, the Commission determined it would be reasonable to distinguish between substation network upgrades and system network upgrades for all interconnection customers.³⁶ Substation network upgrades will initially be allocated only to those interconnection customers seeking to interconnect at the same substation. System network upgrades for all interconnection customers in a cluster would initially be allocated based on the technical analyses to be specified under the transmission provider's proportional impact method.³⁷ The Final Rule has defined "Substation network upgrades" as "those network upgrades required at the substation located at the point of interconnection."³⁸ "System network upgrades" are defined as the "network upgrades required beyond

the substation located at the point of interconnection.”³⁹ The “Point of Interconnection” is defined as the point “where the interconnection facilities connect to the transmission provider’s transmission system.”⁴⁰

The move to cluster studies was supported by a number of industry participants. However, the proportionate method for allocating system network upgrades amongst interconnection customers in the cluster could give rise to factual disputes as to how the method is applied proportionately, and underscores the need to have specific, detailed studies to support the transmission provider’s desired proportionate allocation.

E. Shared Network Upgrades

In its Final Rule, the Commission reversed course from its NOPR proposal to implement shared network upgrades between interconnection customers in different queue clusters. Citing the need to ensure conformity with its cost causation principles, the Commission had proposed to require transmission providers to use their cluster-study processes to identify if interconnection customers in *later* clusters directly interconnect to certain network upgrades that have been in service for less than five years.⁴¹ The Commission proposed to designate such network upgrades as “shared network upgrades” and to require the interconnection customer in the later cluster to pay a pro-rata share of the shared network upgrade’s remaining undepreciated capital costs. The Commission also proposed a power-flow analysis with a two-part test to determine the later interconnection customer’s use of and benefit from the network upgrades from an earlier cluster.⁴²

In declining to adopt this proposal, the Commission was persuaded by commenters who argued that implementing it would be burdensome for transmission providers, lead to increased disputes and section 206 complaints, and result in more study delays and restudies.⁴³ The Commission also noted that its proposal would reduce cost certainty for developers because there is no guarantee that customers in subsequent clusters will actually provide reimbursement for the cost of network upgrades.⁴⁴ The Commission stated that the “free rider” issue would be addressed by the Commission’s policy of reimbursing interconnection customers through transmission credits.⁴⁵

F. Increased Financial Commitments and Readiness Requirements

Order No. 2023 mandates transmission providers to implement a number of new financial commitment and readiness requirements in their tariffs and practice manuals, as part of its shift to a “first ready” approach. While some commenters lamented the risks these increased requirements would pose on developers, others praised the Commission’s adoption of increased deposit requirements and penalties. Overall, the adopted requirements will require developers to put more skin-in-the-game throughout the process, with the goals of (1) disincentivizing speculative and non-viable projects from initiating interconnection requests and eliminating them earlier in the process, and (2) offsetting impacts of withdrawn projects on other queue customers. The Commission was responsive to concerns from transmission providers regarding the intensity of resources required to meet FERC’s requirements, as demonstrated by FERC’s decision to streamline certain processes to ease the administrative burden on transmission providers.

Increased Deposits

The Commission has elected to employ standardized deposit requirements based on project size, on the following scale:⁴⁶

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

Departing from its NOPR proposal, FERC (1) requires a single upfront deposit rather than staged collections through the cluster process, and (2) eliminated the proposal for transmission providers to engage in monthly invoicing for transmission provider work on facilities studies. FERC revised these requirements to streamline and reduce the administrative burden associated with implementation of the proposal.⁴⁷

Site Control

The Final Rule also adopts new “site control” requirements that employ more stringent policies on developers to prove they have adequate rights to the land on which they plan their projects. FERC has elected to employ the definition of “site control” as follows:

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.⁴⁸

The Commission also implemented clarifications that would prevent developers from leasing the same site in order to remain in the interconnection queue; requiring “exclusive” land rights such that developers may not “double dip” by attributing the same land parcels as site control evidence for multiple projects.⁴⁹ Interconnection customers must demonstrate 90 percent site control at the time of the interconnection request, and 100 percent at the time of the facilities study.⁵⁰ The percentage will be based on per MW acreage requirements for each generating facility technology, to be included in the transmission provider’s business practice manual.⁵¹

With respect to shared and co-located facilities, FERC modified the interconnection procedures to provide that site control for a generating facility that is co-located with one or more generating facilities on the same site and behind the same point of interconnection must be demonstrated by a contract or other agreement that allows for *shared* use for all generating facilities that are co-located, also in an effort to guard against duplicative representations for the same land. While FERC will permit interconnection customers to use lease options to demonstrate site control, FERC has clarified that such options must be held exclusively by the interconnection customer.⁵²

While the Commission considered a framework that would have permitted additional financial deposits instead of site control; FERC ultimately determined that only in the case of a regulatory limitation (*i.e.*, a federal, state, or local limitation on the interconnection customer’s ability to obtain site control). Only interconnection customers with regulatory limitations may submit an initial deposit in lieu of site control

of (\$10,000 per MW, subject to a floor of \$500,000 and a ceiling of \$2 million.) The rule leaves open to transmission providers to define what is a “regulatory limitation” for the purpose of their tariffs; and disregarded its proposal to allow deposits in lieu of site control except in the narrow circumstance of regulatory limitations.

Commercial Readiness

Also proceeding in favor of ensuring developers have enough skin-in-the game and reduce late stage interconnection queue withdrawals, the Commission is implementing a suite of commercial readiness requirements, including requiring escalating commercial readiness deposits at each study phase of the cluster-study process.⁵³ The Commission abandoned its NOPR proposal to include certain non-financial commercial-readiness demonstrations in the interconnection procedures, ultimately determining they were not sufficient to accomplish its first-ready, first-served objectives.

FERC also pivoted on how it would measure commercial-readiness deposits. While it retains a project-sized based requirement for the initial deposit; FERC pivoted to metrics based on the costs of assigned network upgrades to determine further deposit amounts for the second and third commercial-readiness deposits. FERC determined that 5% of network upgrade costs would be do at the cluster-study phase, with 10% due at facilities study.⁵⁴

Also consistent with FERC’s pivot to use interconnection upgrade costs as a measure for appropriate study amounts rather than project size where possible, FERC changed its originally proposed size-based LGIA deposit to equal 20% of estimated network upgrade costs.⁵⁵

Withdrawal Penalties

Among the more controversial of FERC’s proposals is its framework for exacting penalties on interconnection customers who withdraw from the interconnection queue. This is among the most aggressive of the Commission’s rules intended to penalize late-stage queue withdrawals; offering only narrow exceptions (discussed below) to the imposition of penalties. The withdrawal penalty for an interconnection customer will be calculated as the greater of the study deposit or:

1. two times the study cost if the interconnection customer withdraws during the cluster study or after receipt of a cluster-study report;
2. 5% of the interconnection customer’s identified network upgrade costs if the interconnection customer withdraws during the cluster restudy or after receipt of any applicable restudy reports;
3. 10% of the interconnection customer’s identified network upgrade costs if the interconnection customer withdraws during the facilities study, after receipt of the individual facilities study report, or after receipt of the draft LGIA; or
4. 20% of the interconnection customer’s identified network upgrade costs if, after executing, or requesting to file unexecuted, the LGIA, the interconnection customer’s LGIA is terminated before its generating facility achieves commercial operation. The table below summarizes the withdrawal penalty structure adopted herein.⁵⁶

Phase of Withdrawal	Total Withdrawal Penalty (if greater than study deposit)
Initial Cluster Study	2 times 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 upgrades costs

Moreover, FERC withdrew its proposal to cap penalties to be assigned, suggesting that would “mute the economic signals that withdrawal penalties are intended to send to interconnection customers in the interconnection queue.”⁵⁷ FERC further clarified that penalties were not to be applied to study costs. Accordingly, a customer that withdraws is on the hook for *both* (1) the applicable withdrawal penalty, and (2) applicable study costs.⁵⁸ Under the rule, transmission providers *must* assess penalties to withdrawing interconnection customers unless

1. the interconnection customer withdraws its interconnection request after receiving the most recent cluster-study report and the network upgrade costs assigned to the interconnection customer’s request have increased 25% compared to the previous cluster study report,
2. the interconnection customer withdraws its interconnection request after receiving the individual facilities study report and the network upgrade costs assigned to the interconnection customer’s request have increased by more than 100% compared to costs identified in the cluster-study report, or
3. impacts of the withdrawal are immaterial to the costs or timing of projects at the same stage or lower in the queue process.⁵⁹

The Commission provided that the withdrawal penalties are to be allocated by transmission providers for the following purposes:

1. to fund studies and restudies in the same cluster;
2. if withdrawal penalty funds remain, to offset net increases in costs borne by other remaining interconnection customers from the same cluster for network upgrades shared by both the withdrawing and non-withdrawing interconnection customers prior to the withdrawal; and
3. if any withdrawal penalty funds remain, they will be returned to the withdrawing interconnection customer.⁶⁰

With respect to the penalty guidelines, transmission providers will have a good deal of implementation discretion beyond the criteria outlined above. Interconnection customers will want to carefully review the compliance proposals for transmission providers in the regions of their target development pipelines to assess impacts on their projects.

G. Transition Process

The Commission adopted the NOPR proposal to modify the *pro forma* LGIP to establish a process for transitioning to the first-ready, first-served cluster-study process, with certain modifications. The Commission noted the importance of the transition process, which intends to balance the need to move to the new cluster-study process with giving market participants adequate time to adjust to the new processes and requirements.⁶¹ Under the Final Rule, transmission providers are required to offer existing interconnection customers up to three transition options, depending on the serial study process phase of the interconnection request: (1) a transitional serial study comprised of a facilities study (first transitional option); (2) a transitional cluster study comprised of a clustered system-impact study and individual facilities studies (second transitional option); or (3) withdrawal from the interconnection queue without penalty.⁶² Under the Final Rule, after the cut-off period, the transitional study withdrawal penalty will equal nine times the study costs, refunding the remainder of the deposit.⁶³ Additionally, the Commission declined to adopt the imposition of a commercial-readiness demonstration proposed in the NOPR, instead adopting, with modifications, the NOPR's site control requirements.⁶⁴

The Final Rule modified eligibility for the first and second transitional options proposed in the NOPR. Specifically, the Final Rule requires transmission providers to offer the first transitional option to interconnection customers that were tendered a facilities studies agreement as of 30 calendar days after the filing of the transmission provider's initial compliance filing.⁶⁵ These interconnection customers may proceed with a transitional serial study or withdraw its interconnection request without penalty.⁶⁶ Similarly, under the Final Rule, transmission providers must offer the second transitional option to interconnection customers with an assigned queue position as of 30 days after filing the transmission provider's initial compliance filing.⁶⁷ These interconnection customers may either opt to proceed with a transitional cluster study or withdraw its interconnection request without penalty.⁶⁸ The Commission determined the 30-day cutoff in the Final Rule would benefit both transmission providers and interconnection customers by allowing the transitional studies to begin sooner.⁶⁹

The Commission declined to adopt the NOPR's commercial readiness demonstration options for transitional studies, and instead proposed modified site control requirements in the NOPR. To provide additional assurance that an interconnection customer is ready to proceed with construction, the Final Rule requires interconnection customers electing either a transitional serial study or transitional cluster study to demonstrate 100% site control for their proposed generating facilities.⁷⁰ Interconnection customers are not required to demonstrate 100% site control for any interconnection customer's interconnection facilities, as it would be overly burdensome.⁷¹

IV. Increasing the Speed of Interconnection Queue Processing

A. Elimination of the Reasonable Efforts Standard

One of the more controversial – and perhaps impactful – revisions in the Final Rule is the elimination of the "Reasonable Efforts" standard and implementation of a study delay penalty structure for late interconnection studies. Project developers have pushed for this reform for much of the last decade, arguing that the standard is too loose, that it does not properly incentivize transmission developers to complete studies on time, and that it cannot be enforced. Prior to issuance of this Final Rule, "Reasonable Efforts" carried the same definition since the standard was first promulgated in Order No. 2003: it was defined as "actions that are timely and consistent with Good Utility Practice and are otherwise substantially equivalent to those a Party would use to protect its own interests."⁷²

The Reasonable Efforts standard has come under fire in each of the last two rulemakings to address generator interconnection. Stakeholders pushed for its removal in the rulemaking process leading up to the Commission's issuance of Order No. 845, but the Commission declined to do so at the time, concluding it lacked a sufficient record to eliminate the Reasonable Efforts standard and instead created a reporting requirement.⁷³ Based in part on information it received from the Order No. 845 informational reports, the Commission raised the issue again in its NOPR, seeking comment on its proposal to eliminate the standard and replace it with study delay penalties.⁷⁴ In comments to the NOPR, the Commission's proposal was criticized on both sides—by transmission providers for being too harsh, unnecessary, and counterproductive, and by project developers for being too small and not going far enough to make a difference.

In the Final Rule, the Commission found that it now has the information it needs to eliminate the Reasonable Efforts standard.⁷⁵ The Commission found that, in light of the growing interconnection queue backlogs throughout the country, the Reasonable Efforts standard was insufficient to properly incentivize transmission providers to complete interconnection studies on time.⁷⁶ In place of the Reasonable Efforts standard, the Commission adopted its NOPR proposal and instituted a study delay penalty structure for late interconnection studies.⁷⁷ The Final Rule was very much shaped by the comments and appears to be the result of compromise: while the Commission raised the penalty amounts imposed for late studies, it also created rules to help out transmission providers, such as a 10-day grace period and an appeals process.

The Final Rule now requires that transmission providers must pay penalties for study delays beyond the tariff-specified deadline in the following amounts:

- delays of cluster studies will incur a penalty of \$1,000 per business day;
- delays of cluster restudies will incur a penalty of \$2,000 per business day;
- delays of affected system studies will incur a penalty of \$2,000 per business day; and
- delays of facilities studies will incur a penalty of \$2,500 per business day.⁷⁸

As noted above, these penalty amounts exceed the NOPR proposed amount of \$500 per day. The Commission agreed with commenters that \$500 per day would be "insufficient to incentivize transmission provider actions that will reduce the incidence of study delays."⁷⁹ As noted by commenters, this amount is exceedingly small in comparison to the value of these transmission provider's assets. But the Commission did not go as high as some commenters had proposed, further which is further indication that the Final Rule is the result of compromise.

The Final Rule then laid out the key features of the new study delay penalty regime. First, transmission providers will not be subject to penalties until the third cluster-study cycles after the effective date of the transmission provider's compliance filing in response to the Final Rule.⁸⁰ Second, transmission developers will have a 10-business day grace period, meaning that penalties will not be assessed if studies are delayed by 10 business days or fewer.⁸¹ Third, the study deadlines may be extended by 30 business days if the transmission provider and all interconnection customers with requests in the relevant study agree to the extension.⁸²

Fourth, the Final Rule will cap study delay penalties at (1) 100% of the initial study deposits received for all of the interconnection requests in the cluster for cluster studies and cluster restudies; (2) 100% of the initial study deposit received for the single interconnection request in the study for facilities

studies; and (3) 100% of the study deposit(s) that the affected system transmission provider collects for conducting the affected system study.⁸³ As the Commission explained, the Final Rule deviated from the NOPR proposal by requiring transmission providers to collect a single study deposit from interconnection customers only upon entry into the cluster (called the initial study deposit), rather than a study deposit at each phase of the study process. Thus, the Commission's Final Rule similarly-capped study penalty amounts based on the initial study deposit to ensure consistency and also ensure the penalties are "not unnecessarily punitive."⁸⁴

Fifth, under the Final Rule, transmission providers have the right to appeal any study delay penalties to the Commission within 45 calendar days after the late study has been completed.⁸⁵ The Commission, in considering such appeals, will look to factors, including whether the delay was outside the transmission provider's control, what efforts the transmission provider took to prevent the delay, and whether the transmission provider is pursuing changes through its stakeholder processes to address similar delays in the future.⁸⁶

Sixth, the Commission adopted its NOPR proposal to require transmission providers to distribute study delay penalties to interconnection customers in the relevant study on a *pro rata* per interconnection request basis to offset their study costs.⁸⁷ Unless the penalty is appealed, these amounts must be distributed no later than 45 calendar days after the late study has been completed. Seventh, transmission providers that are not RTOs or ISOs, and transmission-owning members of RTOs and ISOs, may not pass through the costs of any study delay penalties to ratepayers, which essentially requires that such costs be covered by shareholders.⁸⁸ Eighth, pursuant to section 205 of the FPA, RTOs and ISOs may propose a default structure for recovering study delay penalties and/or recovering the costs of specific study delay penalties, which will allow RTOs and ISOs to craft specific rules for cost recovery through their stakeholder processes.⁸⁹ The Commission modified its NOPR proposal to require that, in RTOs or ISOs where the transmission-owning members are responsible for conducting the studies, the penalties will be directly imposed on them when they complete studies late.⁹⁰

Finally, similar to the reporting requirement from Order No. 845, the Final Rule will require transmission providers to post quarterly on their OASIS or other publicly-accessible website (a) the total amount of study delay penalties from the previous reporting quarter and (b) the highest study delay penalty paid to a single interconnection customer in the previous reporting quarter.⁹¹ The Commission also declined to adopt the NOPR's proposed *force majeure* penalty exception, instead finding that the appeal process will adequately *force majeure* events.⁹²

B. Affected Systems

Another key focus of interconnection reform efforts over the past decade or so is the so-called affected systems issue, which refers to the coordination that must occur between transmission providers and neighboring transmission systems to ensure that no adverse impacts occur to the neighboring systems as the result of a proposed interconnection. Project developers have complained for years that affected system operators have no obligation to respond to study deadlines in time for the developers to make informed decisions about their interconnections, among other issues.⁹³ In the Final Rule, the Commission agreed that the lack of a consistent affected-systems study process is resulting in increased costs for interconnection customers and consumers alike, and thus the Commission is requiring affected system transmission providers to study all affected-system interconnection requests using ERIS modeling standards.⁹⁴ The Commission declined to adopt its NOPR proposal to allow affected system transmission providers to conduct such studies using NRIS upon seeking, and receiving, Commission approval through a section 205 filing.⁹⁵ The Commission found that using ERIS is more consistent with Order No. 2003,

noting that interconnection is separate from deliverability, and also because it would prevent affected systems from being forced to construct expensive network upgrades on the transmission provider's system.⁹⁶

C. Optional Resource Solicitation Study

The Commission declined to adopt the NOPR proposal to implement a new optional resource solicitation study for certain resource planning entities. Specifically, the Commission determined that there was insufficient evidence to justify this proposed reform across all regions for coordinating state-level resource planning with the interconnection process.⁹⁷ In declining to adopt the optional resource solicitation study reform, the Commission noted its concern that the "one size fits all" approach would create cost and timing uncertainty for interconnecting to the transmission system.⁹⁸ The Commission also agreed with commenters who noted that the NOPR's proposed reform would divert transmission provider resources and could lead to additional delays in the processing of the interconnection queue.⁹⁹ The Commission did, however, acknowledge that its decision does not prejudice future resource solicitation study proposals that transmission providers may file pursuant to section 205 of the Federal Power Act.¹⁰⁰

V. Incorporating Technological Advancements into the Interconnection Process

A. Increasing Flexibility in the Generator Interconnection Process

In the Final Rule, in order to incorporate technological advancements into the interconnection process, FERC requires transmission providers to (1) allow more than one generating facility to co-locate on a shared site behind a single point of interconnection and share a single interconnection request; (2) evaluate the proposed addition of a generating facility at the same point of interconnection prior to deeming such an addition a material modification if the addition does not change the originally-requested interconnection service level, (3) allow interconnection customers to access the surplus interconnection service process once the original interconnection customer has an executed LGIA or requests the filing of an unexecuted LGIA, and (4) use operating assumptions in interconnection studies that reflect the proposed charging behavior of an electric storage resource.

Co-Located Generation Sites

In the Final Rule, FERC revised *pro forma* LGIP section 3.1.2 to require transmission providers to allow more than one generating facility to co-locate on a shared site behind a single point of interconnection and share a single interconnection request.¹⁰¹ Under the Final Rule, co-located generating facilities can be owned by a single interconnection customer with multiple generating facilities sharing a site, or by multiple interconnection customers that have a contract or other agreement that allows for shared land use.¹⁰² FERC explained that this reform will improve efficiency for transmission providers in the study process by reducing the number of interconnection requests in the interconnection queue, reduce costs for interconnection customers because they will only submit a single set of deposits to enter the interconnection queue,¹⁰³ and lessen the delays experienced in many interconnection queues.¹⁰⁴

Revisions to the Material Modification Process

FERC also revised section 4.4.3 of the *pro forma* LGIP to require transmission providers (except for those that employ fuel-based dispatch assumptions in their interconnection studies) to evaluate the proposed addition of a generating facility at the same point of interconnection prior to deeming such an addition a material modification, if the addition does not change the originally-requested interconnection service level, and if the request to add a generating facility to an existing interconnection request is submitted before the interconnection customer returns the executed facilities study agreement to the

transmission provider.¹⁰⁵ FERC clarified, however, that an equipment change, whether for synchronous or non-synchronous resources, that does not change the originally-requested interconnection service level and does not qualify for evaluation under the transmission provider's technological change procedure must be evaluated by the transmission provider to determine if it is a material modification.¹⁰⁶

Availability of Surplus Interconnection Service

In the Final Rule, FERC also revised section 3.3.1 of the *pro forma* LGIP to require transmission providers to allow interconnection customers to access the surplus interconnection service process by submitting surplus interconnection services requests to the transmission provider once the original interconnection customer has an executed LGIA or requests the filing of an unexecuted LGIA.¹⁰⁷

Operating Assumptions for Interconnection Studies

FERC revised the *pro forma* LGIA and article 17.2 and Appendix H of the *pro forma* LGIA to require transmission providers, at the request of the interconnection customer, to use operating assumptions for withdrawals of energy (e.g., the charging of an electric storage resource) in interconnection studies that reflect the proposed charging behavior of electric storage resources that, is whether the interconnecting generating facility will or will not charge during peak load conditions, unless good utility practice, including applicable reliability standards, otherwise requires the use of different operating assumptions.¹⁰⁸ If a transmission provider finds an interconnection customer's proposed operating assumptions to be in conflict with good utility practice, it must provide the interconnection customer with a clear written explanation of why the submitted operating assumptions are insufficient or inappropriate by no later than 30 calendar days before the end of the customer engagement window and allow the interconnection customer to revise and resubmit the proposed operating assumptions one time at least 10 calendar days before the end of the customer engagement window.¹⁰⁹

B. Incorporating Alternative Transmission Technologies

In the Final Rule, FERC affirmed its preliminary finding in the NOPR that alternative transmission technologies have the potential to provide benefits to optimize the transmission system in specific circumstances.¹¹⁰ In the Final Rule, FERC revised section 7.3 of the *pro forma* LGIP ion 7.3 to require transmission providers to evaluate identified alternative transmission technologies, specifically, (1) static synchronous compensators, (2) static VAR compensators, (3) advanced power flow control devices, (4) transmission switching, (5) synchronous condensers, (6) voltage source converters, (7) advanced conductors and (8) tower lifting, during the cluster study, including any restudies, of the generator interconnection process in all instances without the need for a request from an interconnection customer. FERC also required transmission providers to evaluate each alternative transmission technology listed in pro form LGIP section 7.3 and to determine in the transmission provider's sole discretion, whether it should be used, consistent with good utility practice, applicable reliability standards, and other applicable regulatory requirements.¹¹¹ FERC also requires each transmission provider to include in the *pro forma* LGIP cluster study report, an explanation of the result off the evaluation of the enumerated alternative transmission technologies for feasibility, cost and time savings as an alternative to a transition network upgrade.¹¹²

FERC also revised sections 3.3.6 and 3.4.10 of the *pro forma* SGIP to require transmission providers to evaluate the specified alternative technologies in all instances, without the need for a request from an interconnection customer during the *pro forma* SGIP feasibility study and system impact study of the generator interconnection process, where network upgrades are identified.¹¹³ FERC also required transmission providers to include in the feasibility study report and the system impact study report an

explanation of the results of the evaluation of the specified alternative transmission technology for feasibility, cost and time savings as an alternative to a traditional network upgrade.¹¹⁴

FERC emphasized that while the Final Rule mandates a process of evaluation of alternative transmission technologies, it does not mandate outcomes in specific cases and does not create a presumption in favor of substituting alternative transmission technologies for necessary traditional network upgrades, either categorically or in specific cases.¹¹⁵

C. Modeling and Ride-Through Requirements for Non-Synchronous Generating Facilities

The Commission adopted reforms to modeling and performance requirements for non-synchronous generating facilities. The Commission affirmed its determination that the current procedures render unjust, unreasonable, and unduly discriminatory rates because non-synchronous facilities are subject to less strict modeling and performance requirements compared to synchronous generating facilities.¹¹⁶

Modeling

The Commission adopted the NOPR's proposal to revise the *pro forma* LGIP and *pro forma* SGIP to require interconnection customers requesting to interconnect a non-synchronous generating facility to submit certain information. The Commission affirmed its prior determination that the *pro forma* LGIP and *pro forma* SGIP are unduly discriminatory or preferential resulting in unjust and unreasonable rates because they do not require an interconnection customer to provide a comparable information for synchronous generators and non-synchronous generators.¹¹⁷ These date issues contribute to study delays and interconnection queue backlogs.¹¹⁸ The Commission therefore adopted the NOPR proposal. The Final Rule therefore requires an interconnection customer requesting to interconnect to a non-synchronous generating facility to submit: (1) a validated user-defined RMS positive sequence dynamic model; (2) an appropriately parameterized generic library RMS positive sequence dynamic model; and (3) a validated EMT model, if the transmission provider performs an EMT study as part of the interconnection study process.¹¹⁹ Relatedly, the Commission adopted the NOPR's proposal to modify the *pro forma* LGIP and SGIP to require that proposed modifications to the interconnection request are accompanied by updated models.¹²⁰ These reforms are intended to improve the accuracy of interconnection and reliability studies while simultaneously addressing concerns regarding non-synchronous generation disturbance events.¹²¹

Ride Through

The Commission affirmed its preliminary finding that the *pro forma* LGIA and *pro forma* SGIA fail to account for synchronous generating facility's ability to engage in momentary cessation¹²² and adopted, with modifications the NOPR proposal to acknowledge the physical limitations of newly interconnecting non-synchronous generating facilities.¹²³ Recognizing that certain non-synchronous generators, without costly modifications, may not be able to ride through disturbances as synchronous generating facilities,¹²⁴ the Final Rule requires non-synchronous generating facilities, to configure their facilities to be able to ride through disturbances and continue to support system reliability.¹²⁵ Specifically, this proposal, unlike that in the NOPR, prioritizes reactive power while prohibiting non-synchronous generating facilities from configuring settings to artificially limit such resources below their actual capability.¹²⁶

Applicability of Ride Through Requirements

Lastly, the Commission affirmed its finding in the NOPR that the *pro forma* LGIA may result in undue discrimination because while the *pro forma* SGIA requires newly interconnecting small generating facilities to ride through abnormal frequency and voltage events, the comparable article in the *pro forma* LGIA lacks the same requirement.¹²⁷ The Commission therefore adopted the NOPR proposal, revising the *pro forma* LGIA, requiring that all newly interconnecting large generating facilities provide frequency and voltage ride through capability consistent with standards and guidelines applies to other generating facilities in the balancing authority area on a comparable basis.¹²⁸

VI. Implications for the Industry

The Final Rule will have a widespread and long-lasting effect on the industry. The order itself is voluminous, filling well over 1,400 pages and addressing dozens of issues and a record number of comments from various stakeholder groups. Despite its size and scope, the Final Rule is unlikely to solve all of the issues faced by transmission providers and interconnection customers, as even the most detailed discussions may leave some areas for interpretation. Stakeholders and industry participants will want to closely review the compliance filings made by regulated public utilities and file appropriate comments if it appears the proposed compliance measure fall short of the letter and intent of the Final Rule.

As discussed in the Final Rule, there was nearly unanimous agreement that reforms were needed to address the ever-growing interconnection queue backlogs and study processing delays, but as always, the details are important. The Final Rule attempts to balance the diverse needs of the various stakeholder groups that filed comments in this proceeding, which includes ISOs, RTOs and other transmission providers, project developers, interconnecting utilities, generation off-takers, investors, and lenders. While there are certainly going to be winners and losers within each of those groups, the industry will benefit overall from a more efficient and transparent generator interconnection process. Transmission providers may dislike the penalty provisions and elimination of the reasonable efforts, for example, but the increased milestone payments and site control and readiness requirements should encourage speculative projects to drop out of the queue at the appropriate stage, which should help reduce their backlogs and ease the work (and cost) expended on processing interconnection requests and conducting studies.

Additionally, there are well-known benefits to the first-ready, first-served cluster process that is now being adopted as the nationwide standard. Cluster studies tend to be more efficient and help reduce the need to continuous and rolling restudies as higher queued projects withdraw. However, some industry participants have pointed out that cluster studies have been used by RTOs and ISOs, and individual transmission providers, for years, and yet they still have backlogged queues. The question is whether the other reforms of the Final Rule, such as new deposit, financial, site control and other readiness requirements, will help chip away at the backlogged queues of the transmission providers that have already adopted the cluster study approach.

Still other challenges await as the shift to the first-ready, cluster-study approach is implemented. The allocation of network upgrade costs amongst interconnection customers in the cluster through the "Proportional Impact Method"¹²⁹ may engender disputes between cluster members, who believe their project is being allocated a disproportionate amount of the upgrade costs. While this may be the case, as the Commission has noted, this approach is preferable to the outcomes of the serial approach, where one customer triggering a network upgrade may be required to pay all or most of the upgrade costs, even though lowered queued projects will benefit from the upgrade.¹³⁰

While the cluster study technique has such benefits when compared to the serial approach, the clusters will still be made up of individual projects filing interconnection applications sequentially, and in some cases the applicants may be seeking to avoid known areas of transmission constraints, especially at the seams between different RTO/ISO systems or even within particular systems. As more projects are built and reach commercial operation, facilitated by the first-ready, first-served cluster approach, existing transmission capacity, even when supplemented with Network Upgrades identified through the cluster study process, may become even more constrained, both within a system and between the seams of adjoining systems. Such a scenario calls for a more comprehensive, overarching transmission planning system that identifies such constraints and develops a plan for relieving them. And, the Commission recognizes this need, as it has solicited comments on these and other transmission issues through a separate Transmission NOPR.¹³¹ When the final rule on the Transmission NOPR is issued, the implementation and coordination of both the Interconnection and Transmission Final Rules together can go a long way toward ensuring that the transmission systems are robust and highly functioning, and more forward looking where future constraints can be identified sooner than later, and perhaps obviating the need for expensive network upgrades to be allocated to members of particular clusters.

More immediately, some transmission providers and other stakeholders that are dissatisfied with the Final Rule may seek rehearing and/or clarification from the Commission. This is a common occurrence, especially in response to major rulemakings, which often results in a number of orders on compliance that provide more detail or explanation on the Commission's directives. Additionally, regulated transmission providers will be required to submit their compliance filings to the Commission to adopt the directives in the Final Rule within 90 days from the date of publication of the Final Rule in the Federal Register (as opposed to the 180 turnaround time proposed in the NOPR). Interested stakeholders, including project developers, will need to review and monitor the compliance filings in regions in which they have active queue positions to ensure that transmission providers are properly complying with the Commission's directives. Finally, if individual RTOs and ISOs hold stakeholder processes to vet their proposals before submitting them to the Commission, monitoring and participating in those processes will be key for developers wishing to make their voices heard.

VII. Conclusion

We continue to monitor opportunities to engage with the Commission on matters affecting clients' interests and are actively following this proceeding and other areas within the Commission's jurisdiction that may be impacted by the Final Rule.



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

² Final Rule at P 1768.

³ *Building for the Future Through Electric Regional Transmission Planning & Cost Allocation & Generator Interconnection*, 176 FERC ¶ 61,024 (2021) (ANOPR).

⁴ *Improvements to Generator Interconnection Procedures and Agreements*, 179 FERC ¶ 61,194 (2022) (NOPR).

⁵ Final Rule at P 67.

⁶ *Id.* at P 61.

⁷ *Id.* at P 89.

⁸ *Id.* at P 90.

⁹ *Id.* at P 135.

¹⁰ *Id.* at P 135.

¹¹ *Id.* at P 136.

¹² *Id.* at P 137.

¹³ NOPR at P 53.

¹⁴ *Id.* at P 55.

¹⁵ Final Rule at P 177.

¹⁶ *Id.*

¹⁷ *Id.* at P 200.

¹⁸ *Id.* at P 203.

¹⁹ *Id.* at P 223.

²⁰ *Id.*

²¹ *Id.* at P 245.

²² *Id.* at P 259.

²³ *Id.* at P 277.

²⁴ *Id.*

²⁵ NOPR at P 82.

²⁶ *Id.* at P 83.

²⁷ Final Rule at P 416.

²⁸ *Id.* at P 401 (*citing* NOPR P 82).

²⁹ *Id.* at P 417.

³⁰ *Id.*

³¹ *Id.*

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³² NOPR at P 88, n.150.

³³ Id. at P 88.

³⁴ Final Rule at P 453.

³⁵ Id. at P 457.

³⁶ Id. at P 458.

³⁷ Id.

³⁸ Id. at P 458, n.918.

³⁹ Id. at n. 919.

⁴⁰ Id. at P 458, n. 917.

⁴¹ NOPR at PP 97-99. Specifically, if a customer in a later cluster directly connects to either (1) a network upgrade has been in service for less than five years or (2) a substation that is the terminus of a network upgrade that has been in service for less than five years, then FERC proposed to designate that network upgrade as a "shared network upgrade." Id. at P 98.

⁴² Id.

⁴³ Final Rule at P 487.

⁴⁴ Id. at P 486.

⁴⁵ Id. at P 488.

⁴⁶ Id. at P 502.

⁴⁷ Id. at PP 503-506.

⁴⁸ Id. at PP 509, 584.

⁴⁹ Id. at P 585.

⁵⁰ Id. at P 594.

⁵¹ Id. at P 602.

⁵² Id. at P 586.

⁵³ Id. at P 618.

⁵⁴ Id. at P 693.

⁵⁵ Id. at P 714.

⁵⁶ Id. at P 791, see chart included.

⁵⁷ Id. at P 793.

⁵⁸ Id. at P 811.

⁵⁹ Id. at P 784.

⁶⁰ Id. at P 798.

⁶¹ Id. at PP 856-57.

⁶² Id. at P 855.

⁶³ Id. at P 860.

⁶⁴ Id. at P 856.

⁶⁵ Id. at P 855.

⁶⁶ Id. at P 865.

⁶⁷ Id. at P 855.

⁶⁸ Id. at P 865.

⁶⁹ Id. at P 866.

⁷⁰ Id. at P 870.

⁷¹ Id.

⁷² Standardization of Generator Interconnection Agreements and Procedures, 104 FERC ¶ 61,103, at PP 67-69 (2003) (Order No. 2003).

⁷³ *Reform of Generator Interconnection Procedures and Agreements*, 163 FERC ¶ 61,043, at P 323 (2018) (Order No. 845).

⁷⁴ NOPR at PP 168-73.

⁷⁵ Final Rule at P 962.

⁷⁶ Id. at P 966.

⁷⁷ Id.

⁷⁸ Id. at P 973.

⁷⁹ Id. at PP 974-75.

⁸⁰ Id. at P 979. This includes any transitional cluster study cycle, but not transitional serial studies.

⁸¹ Id. at P 981.

⁸² Id. at P 982.

⁸³ Id. at P 984.

⁸⁴ Id.

⁸⁵ Id. at P 987.

⁸⁶ Id.

⁸⁷ Id. at P 990.

⁸⁸ Id. at P 992.

⁸⁹ Id. at P 994.

⁹⁰ Id. at P 995.

⁹¹ Id. at P 1002.

⁹² Id. at P 1003.

⁹³ For example, this issue was discussed in the Joint Federal-State Task Force on Electric Transmission, Technical Conference, held on May 6, 2022, as part of Docket No. AD21-15-000.

⁹⁴ Final Rule at P 1276.

⁹⁵ Id.

⁹⁶ Id. at PP 1277-78.

⁹⁷ Id. at P 1322.

⁹⁸ Id. at P 1322.

⁹⁹ Id. at P 1322.

¹⁰⁰ Id. at P 1323.

¹⁰¹ Id. at P 1346.

¹⁰² Id. at P 1354.

¹⁰³ Id. at P 1349.

¹⁰⁴ Id. at P 1350.

¹⁰⁵ Id. at PP 1406, 1409 and 1411.

¹⁰⁶ Id. at P 1413.

¹⁰⁷ Id. at P 1436.

¹⁰⁸ Id. at P 1509.

¹⁰⁹ Id. at P 1511.

¹¹⁰ Id. at P 1583.

¹¹¹ Id. at P 1578.

¹¹² Id. at P 1578.

¹¹³ Id. at P 1580.

¹¹⁴ Id. at P 1581.

¹¹⁵ Id. at P 1582.

¹¹⁶ Id. at PP 1661-62, 1712, and 1733.

¹¹⁷ Id. at PP 1661-62.

¹¹⁸ Id. at P 1662.

¹¹⁹ Id. at P 1659.

¹²⁰ Id. at P 1660.

¹²¹ Id. at P 1663.

¹²² Id. at P 1712.

¹²³ Id. at P 1711.

¹²⁴ Id. at P 1716.

¹²⁵ Id. at P 1711.

¹²⁶ Id. at P 1717.

¹²⁷ Id. at P 1733.

¹²⁸ Id. at P 1733.

¹²⁹ Id. at n.914.

¹³⁰ Id. at P 487.

¹³¹ *Bldg. for the Future Through Elec. Reg'l Transmission Plan. & Cost Allocation & Generator Interconnection*, 87 FR 26504 (May 4, 2022), 179 FERC ¶ 61,028 (2022).