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MEMORANDUM

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TO: NEPOOL Transmission Committee

FROM: Eric Runge, Margaret Czepiel and Teresa Chen (NEPOOL Counsel)

DATE: August 8, 2023

RE: Summary of FERC Order No. 2023 on Improvements to Generator Interconnection Procedures and Agreements

On July 28, 2023, the Federal Energy Regulatory Commission (“FERC” or the “Commission”) issued Order No. 2023, a final rule reforming its *pro forma* Large and Small Generator Interconnection Procedures and Agreements to ensure that “interconnection customers are able to interconnect to the transmission system in a reliable, efficient, transparent, and timely manner” (“Order No. 2023” or the “Final Rule”).¹ Transmission providers are to submit compliance filings within 90 days of the publication date of this Final Rule in the *Federal Register*. As of the date of this memo, the Final Rule has not yet been published in the *Federal Register*.²

NEPOOL counsel previously reported on this rulemaking proceeding when the Commission published the Notice of Proposed Rulemaking (“NOPR”) in June 2022. The Final Rule adopted most of the reforms proposed in the NOPR, with exceptions in some areas. NEPOOL counsel will work with NEPOOL Participants and ISO-NE to address the compliance and Tariff revisions called for by the Final Rule. We expect to give a brief presentation on Order No. 2023 at the August 22 Transmission Committee meeting.

This memorandum provides a high-level summary of the Final Rule, which is a 1480 page document with appendices and concurrences.

The key highlights of the Final Rule include:

- Implementation of a first-ready, first-served cluster study process that requires transmission providers to receive and study interconnection requests in clusters;

¹ *Improvements to Generator Interconnection Procedures and Agreements*, Order No. 2023, 184 FERC ¶ 61,051 (2023) (“Order No. 2023” or “Order”). The Final Rule is available here: <https://www.ferc.gov/media/e-1-order-2023-rm22-14-000>.

² We expect that at least some of the RTO/ISOs will request an extension of this deadline in order to allow for adequate stakeholder input.

- Development of clusters based on sub-groups (including geographic sub-groups) at transmission provider’s discretion;
- Provisions for transitional serial studies and transitional cluster studies for existing interconnection customers;
- Elimination of the first-come, first-served serial interconnection process, except for those generators already in the interconnection queue under transition provisions;
- New requirements for transmission providers to publicly post available information pertaining to interconnection, including a heatmap showing the transmission system with transfer simulated from each point of interconnection and incremental capacity at each point of interconnection;
- Increase of the financial obligations and readiness requirements for interconnection customers looking to join, and proceed through, an interconnection queue;
- Increase and standardization of study deposits required to be paid by interconnection customers;
- Interconnection customers must provide evidence of 90% site control for the generating facility at the time of submission of the interconnection request and evidence of 100% site control at the time of execution of the facilities study agreement;
- Elimination of the option to provide a deposit in lieu of site control demonstration except in limited circumstances;
- Increase and standardization of financial commercial readiness deposits based on assigned network upgrade costs, but no requirements for non-financial commercial readiness demonstration, such as through providing evidence of offtake agreements or other commercial contractual arrangements;
- Imposition of penalties for withdrawing from the queue increasing in cost based on the stage of the interconnection process, with higher penalties later in the process;
- Interconnection customers currently in the queue can: (1) take part in a transitional serial study comprised of a facilities study; (2) take part in a transitional cluster study comprised of a cluster system impact study and individual facilities studies; or (3) withdraw from the queue without penalty;
- Elimination of the “reasonable efforts” standard and imposition of penalties for study delays;
- Establishment of a standard affected system study process and *pro forma* Affected System Study Agreement and *pro forma* Affected System Facilities Construction Agreement;
- Reforms to allow greater technological flexibility in the interconnection process including for co-located and battery storage resources.

If you have any questions about this memo or its subject matter, please contact Eric Runge, ekrunge@daypitney.com, 617-378-1284.

I. Final Rule

A. Reforms to Implement a First-Ready, First-Served Cluster Study Process

1. Interconnection Information Access

To address the lack of information available to interconnection customers prior to entering into the interconnection queue, the Commission revised the *pro forma* Large Generator Interconnection Procedures (“LGIP”) to require transmission providers to publicly post available information pertaining to generator interconnection (i.e., public interconnection information or a heatmap).³ Transmission providers are to update the heatmap within 30 calendar days after the completion of each cluster study and cluster restudy⁴ and provide the following information as outputs at each point of interconnection: (1) the distribution factor; (2) the MW impact (based on the proposed project size and the distribution factor); (3) the percentage impact on each impacted transmission facility (based on the MW values of the proposed project and the facility rating); (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.⁵

2. First-Ready, First-Served Cluster Study Process

The Commission adopted the proposal to revise the *pro forma* LGIP and Large Generator Interconnection Agreement (“LGIA”) to make cluster studies the required interconnection study method and replace the serial interconnection study process with a first-ready, first-served cluster study process.⁶

Under this new process, interconnection customers must submit an interconnection request during the cluster request window—an annual, 45-calendar day period with the start date to be

³ *Id.* at P 135. The Commission did not adopt proposed modification to the *pro forma* LGIP to require transmission providers to offer an informational interconnection study for prospective interconnection customers, noting that such requirement could divert the transmission provider’s resources away from the cluster studies that are required in this Final Rule and undermine the benefits of those reforms that seek to reduce interconnection study delays, costs, and burden. *Id.* at P 89.

⁴ Such heatmaps must be calculated under N-1 conditions and studied based on the power flow model of the transmission system with the transfer simulated from each point of interconnection to the whole transmission provider’s footprint (to approximate NRIS), and with the incremental capacity at each point of interconnection decremented by the existing and queued generation at that location (based on the existing or requested interconnection service limit of such generation). *Id.*

⁵ *Id.*

⁶ *Id.* at P 177.

determined by each transmission provider.⁷ To initiate an interconnection request, the interconnection customer must submit:

- (1) the applicable study deposit amount (discussed below);
- (2) an application and fee;
- (3) demonstration of no less than ninety (90%) site control unless an exception (discussed below) applies;
- (4) the generating facility's capacity (MW);
- (5) if applicable (for electric storage resources), the requested operating assumptions that reflect proposed charging behavior and a description of control technologies;
- (6) a commercial readiness deposit equal to two times the study deposit;
- (7) a point of interconnection; and
- (8) whether the interconnection request is for Network Resource Interconnection Service ("NRIS") or Energy Resource Interconnection Service ("ERIS").⁸

If an interconnection customer receives an interconnection request deficiency notice, the customer must provide the requested information within 10 business days of receiving the notice but no later than the close of the cluster request window.⁹ Transmission providers should assign queue positions based on the date and time of receipt of a valid interconnection request, but all interconnection customers that submit interconnection requests within a cluster request window must be considered equally queued;¹⁰ and complete all cluster studies within 150-calendar days cluster study deadline.¹¹

Under the Final Rule, transmission providers are neither required to conduct cluster studies in subgroups of interconnection customers based on areas of geographic and electric relevance, nor adopt provisions governing how cluster subgroup areas should be formed. Transmission providers are permitted to use subgroups in their cluster study process at their discretion.¹² Per the revised Section 4.2 of the LGIP, the governing principle for cluster formation is that "Interconnection Studies performed within the Cluster Study Process shall be conducted in such a manner to ensure the efficient implementation of the applicable regional transmission expansion plan in light of the Transmission System's capabilities at the time of each study and consistent with Good Utility Practice."

⁷ *Id.* at P 223; LGIP at 3.4.1

⁸ LGIP at 3.4.2. The commercial operation date reflected in the initial interconnection request shall be used in calculating the permissible "fewer than 3 year" extension until the interconnection customer executes (or requests to be filed unexecuted) the LGIA. After such time, the date in the LGIA will be the date from which the up to three cumulative years is calculated. Order at PP 293-94.

⁹ *Id.*

¹⁰ *Id.* at P 278.

¹¹ *Id.* at P 324.

¹² *Id.* at P 363.

Following the close of the cluster request window, the transmission provider begins a customer engagement window of 60 calendar days.¹³ During this period, transmission providers must post the details of each interconnection request for that cluster on OASIS within 10 business days from the close of the cluster request window, so that interconnection customers may assess the composition of the cluster and make informed decisions moving forward with their interconnection requests.¹⁴ In addition, transmission providers must hold a scoping meeting with all interconnection customers whose interconnection requests were received in the cluster request window.¹⁵ During the customer engagement window, an interconnection customer may withdraw its interconnection request without penalty.¹⁶

3. Allocation of Cluster Study Costs

The Commission revised section 13.3 (Obligation for Study Costs) of the *pro forma* LGIP to allow each transmission provider to propose its own study cost allocation ratio for allocating the shared costs of cluster studies between a per capita basis and pro rata by MW, provided that: between 10% and 50% of study costs must be allocated on a per capita basis, with the remainder (between 90% and 50%) allocated pro rata by MW. Under this revised provision, a transmission provider may propose to retain its existing study cost allocation ratio if it falls within this range and meets the requirements of this Final Rule.¹⁷

4. Allocation of Cluster Network Upgrade Costs

For network upgrades identified as part of the cluster study, costs of system network upgrades for all interconnection customers must be initially allocated within a cluster using a Proportional Impact Method. Additionally:

- Costs of network upgrades located at substations must be initially allocated equally among each generating facility interconnecting to the same substation (i.e., on a per capita basis);¹⁸
- Costs of shared transmission provider's interconnection facilities must be directly assigned to interconnection customers on a per capita basis;¹⁹
- Interconnection customers that share interconnection facilities may choose a different cost sharing arrangement upon mutual agreement;²⁰ and

¹³ *Id.* at P 232.

¹⁴ *Id.*

¹⁵ *Id.* at P 245.

¹⁶ *Id.* at P 232. The transmission provider will not post detailed information about interconnection requests proceeding or withdrawing until all interconnection requests successfully meet their milestone requirements to proceed, withdraw, or fail to cure their breach within the specific cure period. *Id.* at P 237.

¹⁷ *Id.* at P 416.

¹⁸ *Id.* at P 453.

¹⁹ *Id.* at P 454.

²⁰ *Id.*

- The Commission declined to adopt the NOPR proposal to implement shared network upgrades between interconnection customers in an earlier cluster and interconnection customers in a subsequent cluster.²¹

5. Increased Financial Commitments and Readiness Requirements

To go along with the first-ready, first-served approach the Commission adopted reforms to discourage speculative interconnection requests and to allow transmission providers to focus on viable interconnection requests. These reforms include (1) increased study deposits, (2) demonstration of site control, (3) commercial readiness, and (4) withdrawal penalties.

Study Deposits. Interconnection customers must pay, and transmission providers must collect, study depositions upon entry into the cluster study process:²²

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

These study deposits will be collected only once upon entry into the cluster (as described above) and not before each new phase of the cluster process (i.e., cluster study, cluster re-study and facilities study) as proposed in the NOPR. The amount of the initial study deposit will be calculated using the tiered approach proposed in the NOPR based on the proposed MW size of the generating facility, as shown in the chart above.²³ Costs will be trued up and any excess deposit refunded once the interconnection customer executes the LGIA or requests filing of an unexecuted LGIA or withdraws from the queue.²⁴

Site Control. The Commission revised the definition of site control in the *pro forma* LGIP, now the definition of site control states that site control may be demonstrated by documentation establishing: (1) ownership of, a leasehold interest in, or a right to develop a site of sufficient size to construct and operate the Generating Facility; (2) an option to purchase or acquire a leasehold site of sufficient size to construct and operate the Generating Facility; or (3) any other documentation that clearly demonstrates the right of Interconnection Customer to exclusively occupy a site of sufficient size to construct and operate the Generating Facility to place more

²¹ *Id.* at P 486.

²² *Id.* at PP 502, 503.

²³ *Id.*

²⁴ *Id.* at 504.

stringent site control requirements to cut down on speculative, non-viable projects from entering the interconnection queue.²⁵

In addition, to prevent multiple interconnection customers from leasing the same site in order to remain in the interconnection queue the Commission adopted revisions to require interconnection customer to demonstrate the exclusive land right to develop, construct, operate, and maintain its generating facility²⁶ or, where facilities are co-located, to demonstrate a shared land use right to develop, construct, operate, and maintain co-located facilities.²⁷ This revision would require at least an exclusive option to lease the site.

Finally, as noted above, interconnection customers must provide evidence of 90% site control for the generating facility at the time of submission of the interconnection request and, pursuant to revised sections 8.1 and 11.3 of the *pro forma* LGIP, provide evidence of 100% site control for the generating facility at the time of execution of the facilities study agreement and when executing, or requesting the unexecuted filing of, the LGIA.²⁸

Deposit in Lieu of Site Control. The Commission (1) eliminated the option to provide a deposit in lieu of site control demonstration except in limited circumstances where an interconnection customer demonstrates a regulatory limitation to obtaining site control; (2) eliminated the option to post \$250,000 of non-refundable security in lieu of site control at LGIA execution; and (3) required that interconnection customers that could not demonstrate the requisite level of site control at the relevant milestone of the interconnection process (i.e., 90% for the cluster study and cluster restudy, and 100% for the interconnection facilities study and when executing, or requesting the unexecuted filing of, the LGIA) have their interconnection request deemed withdrawn and potentially be subject to withdrawal penalties under certain circumstances.²⁹

The Commission noted that “regulatory limitation” may be demonstrated through: (1) a signed affidavit from an officer of the company indicating that site control is unobtainable due to regulatory limitations as such term is defined by the transmission provider; and (2) documentation sufficiently describing and explaining the source and effects of such regulatory limitations, including a description of any conditions that must be met to satisfy the regulatory limitations and the anticipated time by which the interconnection customer expects to satisfy the regulatory

²⁵ *Id.* at P 584.

²⁶ The adopted definition of site control permits an interconnection customer to demonstrate site control with lease options, instead of executed leases, provided that the interconnection customer is the exclusive holder of such a lease option(s). *Id.* at P 586.

²⁷ *Id.* at P 585. When a generating facility is co-located with one or more generating facilities on the same site and behind the same point of interconnection, site control must be demonstrated by a contract or other agreement that allows for shared land use for all generating facilities that are co-located that meet the provisions of the site control definition. *Id.* at P 586.

²⁸ *Id.* at P 594.

²⁹ *Id.* at P 595.

restrictions.³⁰ Furthermore, transmission providers required to define regulatory limitations relevant to their service territory, to publicly post the definition, and to provide a narrative description of how they define regulatory limitations as part of their compliance filings.³¹

Commercial Readiness. The total amount of an interconnection customer's commercial readiness deposit held by the transmission provider will increase as the interconnection process proceeds, as described below. The Commission noted that this approach will encourage interconnection customers not ready to proceed through the interconnection process—or whose projects become commercially non-viable during the interconnection process—to withdraw earlier in the process, thereby lessening the incidence of late-stage withdrawals that result in delays and restudies.³² Note that the Final Rule does not require a non-financial commercial readiness demonstration, such as through providing evidence of offtake agreements or other commercial contractual arrangements.³³

Commercial Readiness Deposit. The initial commercial readiness deposit will be two times the study deposit to enter the cluster study.³⁴ The subsequent commercial readiness deposits (i.e., the second and third commercial readiness deposits) are to be based on assigned network upgrade costs once those are estimated.³⁵ Once estimates of network upgrade costs are available, the commercial readiness deposits equate to increasing percentages of the interconnection customer's identified network upgrade cost assignment. The Commission adopted a deposit structure where:

- the commercial readiness deposit to enter the cluster restudy is the amount required to bring the total amount of the interconnection customer's commercial readiness deposit to 5% of the interconnection customer's network upgrade cost assignment identified in the cluster study; and
- the commercial readiness deposit to enter the facilities study is the amount required to bring the total amount of the interconnection customer's commercial readiness deposit to 10% of the interconnection customer's network upgrade cost assignment identified in the cluster study or restudy, as applicable.³⁶

LGIA Deposit. Interconnection customers are required to provide a deposit that will increase the total commercial readiness deposit paid to be equal to 20% of the estimated network upgrade costs identified in the LGIA.³⁷ The deposit must be submitted when returning the LGIA to the transmission provider or within 10 business days of the interconnection customer requesting

³⁰ *Id.* at P 606.

³¹ *Id.*

³² *Id.* at P 691.

³³ *Id.* at 690-702

³⁴ *Id.* at P 692.

³⁵ *Id.* at P 693.

³⁶ *Id.*

³⁷ *Id.* at P 714.

that the LGIA be filed unexecuted at the Commission.³⁸ Of note, interconnection customers that request a transmission provider to file an unexecuted LGIA are still required to submit deposits, evidence of site control, and milestone progress data within 10 business days after the date of the filing of the unexecuted LGIA with the Commission.³⁹ The LGIA deposit will be used as part of the security the interconnection customer must provide for the construction of network upgrades and transmission provider's interconnection facilities.⁴⁰ Transmission providers must draft Appendix B (Milestones) of the interconnection customer's LGIA to clearly explain and estimate at which point of construction the interconnection customer's LGIA deposit will be depleted, and the interconnection customer must provide additional financial security.⁴¹ This deposit could be refunded, subjected to the withdrawal penalties described below.⁴²

Withdrawal Penalties. The Commission adopted the proposal to impose withdrawal penalties on interconnection customers for withdrawing from the interconnection queue, absent qualification for one of the limited exemptions.⁴³

The withdrawal penalties will be applied to an interconnection customer if: (1) the interconnection customer withdraws its interconnection request at any point in the interconnection process; (2) the interconnection customer's interconnection request has been deemed withdrawn by the transmission provider at any point in the interconnection process; or (3) the interconnection customer's generating facility does not reach commercial operation (such as when an interconnection customer's LGIA is terminated prior to reaching commercial operation).⁴⁴ A transmission provider must assess a withdrawal penalty only if the withdrawal has a material impact on the cost or timing of any interconnection requests with an equal or lower queue position.⁴⁵ If the transmission provider determines that the impact of the withdrawal is immaterial, the transmission provider must not assess a withdrawal penalty.⁴⁶

Exemptions from Penalty. Interconnection customer will be exempt from paying a withdrawal penalty if (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

³⁸ *Id.*

³⁹ *Id.*

⁴⁰ *Id.* at P 716.

⁴¹ *Id.* at P 718.

⁴² *Id.* at P 716.

⁴³ *Id.* at P 780.

⁴⁴ *Id.* at P 782.

⁴⁵ *Id.* at P 783.

⁴⁶ *Id.*

report, or (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.⁴⁷

Calculation of Penalty. Unless an interconnection customer qualifies for one of the stated exemptions above, the transmission provider must assess a withdrawal penalty on an interconnection customer with a proposed generating facility that does not reach commercial operation; such penalty shall be based either on the actual study costs or on a percentage of the interconnection customer's assigned network upgrade costs, depending on what phase the interconnection customer withdraws its interconnection request.⁴⁸ 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.⁴⁹

The penalty structure is set forth in the following chart:

Phase Withdrawal	of	Total Penalty (if greater than study deposit)	Withdrawal
Initial Cluster Study		2 times study costs	
Cluster Restudy		5% of network upgrade costs	
Facilities Study		10% of network upgrade costs	

⁴⁷ *Id.* at P 783.

⁴⁸ *Id.* at P 791.

⁴⁹ *Id.*

Phase of Withdrawal	Total Withdrawal Penalty (if greater than study deposit)
After Execution of, or After the Request to File Unexecuted, the LGIA	20% of network upgrade costs

Use of Funds. If interconnection customers withdraw and are subject to withdrawal penalties, the transmission provider must use the withdrawal penalty funds as follows: (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.⁵⁰

6. Transition Process

To transition to the first-ready, first-served cluster study process adopted by this Final Rule from the first-come, first-serve serial study process, transmission providers must offer existing interconnection customers up to three transition options, depending on which phase of the serial study process their interconnection requests are in: (1) a transitional serial study comprised of a facilities study (i.e., a transitional serial interconnection facilities study), (2) a transitional cluster study comprised of a clustered system impact study and individual facilities studies, or (3) withdrawal from the interconnection queue without penalty.⁵¹ There are detailed provisions for the transitional cluster study, including timing, deposits and site control requirements, in Section 5.1.1.2 of the revised LGIP.

Opt-in. Any interconnection customer that has been tendered a facilities study agreement as of 30 calendar days after the filing date of the transmission provider’s initial filing to comply with this final rule (even if it has not yet executed that agreement) may opt to proceed with a transitional serial study or withdraw its interconnection request without penalty. Any interconnection customer that has an assigned queue position as of 30 calendar days after the filing date of the transmission provider’s initial filing to comply with this final rule may opt to proceed with a transitional cluster study or withdraw its interconnection request without penalty.⁵² Furthermore, interconnection customers electing a transitional study, regardless of whether they select the transitional serial study or the transitional cluster study, are required to demonstrate

⁵⁰ *Id.* at PP 798. Additional details on withdrawal penalty dispersion at PP 802-808.

⁵¹ *Id.* at P 855. The transitional study withdrawal penalty is equal to nine times the study cost. *Id.* at P 860.

⁵² *Id.* at P 865.

100% site control for their proposed generating facilities and are subject to penalties for withdrawal.⁵³

B. Reforms to Increase the Speed of Interconnection Queue Processing

1. Elimination of the Reasonable Efforts Standards

The Commission eliminated the reasonable efforts standard used for interconnection study deadlines set forth in the *pro forma* LGIP to incentivize transmission providers to meet study deadlines.⁵⁴ In its place, the Commission imposes study delay penalties on the transmission provider, if the studies are delayed past the tariff-specified deadline.⁵⁵ Penalty amounts vary depending on the when the study delay occurs:

Phase of Delay	Daily Penalty
Cluster Study Stage	\$1,000/day
Cluster Restudy	\$2,000/day
Affected System Study	\$2,000/day
Facility Study	\$2,500/day

To balance the harms of interconnection study delays with the need to encourage timely completion of interconnection studies without being overly punitive, the Commission provided a number of safeguards to the transmission provider, which include (1) a transition period where no study delay penalties will be assessed; (2) a 10-business day grace period where no study delay penalties will be assessed; (3) an option to extend a study's deadline by 30 days upon agreement by the transmission provider and all interconnection customers; (4) caps on study delay penalties; and (5) the opportunity for transmission providers to appeal delay penalties.⁵⁶ Given the opportunity to appeal, the Commission declined to exempt transmission providers from study delay penalties in circumstances where *force majeure* applies.⁵⁷

Transmission providers are required to distribute study delay penalties on a *pro rata* basis per interconnection request to the interconnection customers and affected system interconnection customers that did not withdraw, or were not deemed withdrawn, from the interconnection queue before the study deadline.⁵⁸ To ensure that customers do not bear the costs associated with study delay penalties, non-RTO/ISO and RTO/ISO transmission owners are prohibited from recovering

⁵³ *Id.* at P. 870.

⁵⁴ *Id.* at P 973.

⁵⁵ *Id.*

⁵⁶ *Id.* at PP 973, 987, 979, 981, 982, 984. Penalties are capped 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. *Id.* at P 984.

⁵⁷ *Id.* at P 1003.

⁵⁸ *Id.* at P 990.

the costs of the delay penalties through transmission rates.⁵⁹ RTOs/ISOs may submit a section 205 filings to propose a default structure for recovering study delay penalties and/or submit a section 205 filing to recover the costs of specific study delay penalties.⁶⁰ Similarly, transmission providers are prohibited from recovering study delay penalty costs from interconnection customers even if the delays were cause by the interconnection customers, instead that would represent a potentially compelling basis for a good cause waiver request from the transmission provider of the study delay penalties.⁶¹

2. Affected Systems

The Commission adopted the NOPR proposal to establish an affected system study process in the *pro forma* LGIP to prevent the use of *ad hoc* approaches that may create unjust, unreasonable, and unduly discriminatory or preferential treatment to interconnection customers.⁶²

Affected System Study Process. Transmission providers must notify the affected system operator of a potential affected system impact caused by the interconnection request within 10 business days of the trigger event.⁶³ Following the notification, the affected system transmission provider has 20 business days to respond in writing whether it plans to conduct an affected system study. If the affected transmission provider intends to conduct an affected system study, the affected transmission provider must share a non-binding good faith estimate of the cost and schedule to complete the affected system study within 15 business days after it notifies the interconnection customer of its intent to conduct a study.⁶⁴

Within 10 business days of sharing the study schedule, transmission providers are required to provide the affected system study agreement⁶⁵ to the interconnection customer.⁶⁶ The Commission adopted a true-up of the affected system study deposit and actual cost of the affected

⁵⁹ *Id.* at P 994.

⁶⁰ *Id.*

⁶¹ *Id.* at P 993.

⁶² *Id.* at P 1110,

⁶³ *Id.* at P 1120; section 3.6.1 of the *pro forma* LGIP.

⁶⁴ *Id.* at P 1120. If the interconnection customer does not receive its affected system study results before the deadline for LGIA execution, or to request that the LGIA be filed unexecuted, the host transmission provider must delay the deadline for the interconnection customer to finalize the LGIA, or request to file an unexecuted LGIA for 30 calendar days. If delaying the execution of the LGIA will result in a material impact on the cost or timing of an equal or lower queued interconnection customer, the transmission provider must notify the interconnection customer and set the new deadline to execute the LGIA, or request to submit an unexecuted LGIA, for 30 calendar days after such notice is provided. Interconnection customers may negotiate to extend the deadline to execute the LGIA, or request to file unexecuted LGIA, to await an affected system report as long as the delay will not have a material impact on an equal or lower queued customer. *Id.* at PP 1123-25.

⁶⁵ The Commission's new *pro forma* Affected System Study Agreement is Appendix 9 of the LGIP.

⁶⁶ *Id.* at P 1154.

system study and noted that the difference between these amounts must be detailed in an invoice and paid by or refunded to the affected system interconnection customer within 30 calendar days of receipt of invoice.⁶⁷ An interconnection customer's failure to pay the difference between the amounts will result in a loss of its queue position.⁶⁸

The affected system study will consider the base case and higher-queued generating facilities on the affected system transmission provider's transmission system and will include power flow, stability, and short circuit analysis.⁶⁹ Affected system transmission providers are required to study all affected system interconnection requests using ERIS modeling standards.⁷⁰ The study will also provide a list of affected system network upgrades required to support a proposed interconnection, a nonbinding good faith cost estimate, and a non-binding good faith estimated time to construct.⁷¹

The affected transmission system provider must present to the affected system interconnection customer an affected system facilities construction agreement⁷² within 30 calendar days of providing the affected systems study report.⁷³ Upon receipt of the affected system facilities construction agreement, the interconnection customer has ten days to either execute the agreement

⁶⁷ *Id.* at P 1157.

⁶⁸ *Id.* Finally, if the affected system interconnection customer does not provide all required technical data when it receives the affected system study agreement, the affected system transmission provider shall notify the affected system interconnection customer of the deficiency within five business days of receipt of the agreement. The affected interconnection customer then has 10 business days to cure any deficiencies, if the deficiencies are not a failure to deliver the agreement or the deposit. *Id.* at P 1158.

⁶⁹ *Id.*

⁷⁰ *Id.* at P 1276; section 9.7 to the *pro forma* LGIP. The Commission refused to include an acknowledgement in the *pro forma* LGIP that an affected system transmission provider may submit a section 205 filing to request to study an affected system interconnection customer using NRIS on a case-by-case basis. The use of the ERIS is just and reasonable so long as the transmission provider has no obligation to ensure deliverability for an affected system interconnection customer that has obtained NRIS on its host system. *Id.*

⁷¹ *Id.* at P 1120; section 3.6.1 of the *pro forma* LGIP. The Commission noted that transmission providers may conduct system impact studies, facilities studies, or any other relevant studies as part of its affected system studies. *Id.* at P 1162.

⁷² The *pro forma* affected system facilities construction agreement in Appendix 11 of the *pro forma* LGIP. The Commission also adopts a *pro forma* multiparty affected system facilities construction agreement. In the agreement, the Commission establish that default by one affected system interconnection customer does not allow a non-defaulting affected system interconnection customer to terminate the agreement; instead, the transmission provider may remove the defaulting party from the agreement. The Commission also adopted multiparty cure procedures whereby the non-breaching parties may cure the other affected system interconnection customer's breach. *Id.* at PP 1233-34.

⁷³ *Id.* at P 1165; sections 9.8 and 9.10 of the *pro forma* LGIP.

or have the affected system transmission provider file an unexecuted agreement with the Commission.⁷⁴

If a restudy is necessary, the affected system transmission provider has 30-calendar days to notify the affected system interconnection customer. The maximum 60-calendar day restudy period for any affected system restudies.⁷⁵

Pro Forma Affected System Facilities Construction Agreement. An affected system interconnection customer may suspend work required under the affected system facilities construction agreement for up to three years.⁷⁶ If an affected system interconnection customer defaults, the customer will be responsible for any additional expenses incurred by the affected system transmission provider associated with the construction and installation of the affected system network upgrades.⁷⁷

Furthermore, parties to the agreement may agree to a repayment schedule for all applicable costs associated with affected system network upgrades.⁷⁸ Complete repayment should not exceed 20 years from the commercial operation date of the affected system interconnection customer's generating facility.⁷⁹

Affected System Cost Allocation. The costs of affected system network upgrades are to be allocated using a proportional impact method.⁸⁰

Affected System Queue Position. Transmission provider must assign an affected system queue position to affected system interconnection customers requiring an affected system study, with the affected system queue position will be determined based on the date of the execution of the affected system study agreement. The affected system queue position shall be higher queued than any cluster that has not yet received its cluster study report and shall be lower queued than any cluster that has already received its cluster study report.⁸¹ An affected system queue interconnection customer may lose their affected system queue position if the affected system interconnection customer fails to:

- execute the affected system study agreement or request it be filed unexecuted;
- execute the affected system facilities construction agreement or request it be filed unexecuted;

⁷⁴ *Id.* An interconnection customer may request to file the affected system facilities construction agreement unexecuted to provide an opportunity to dispute or negotiate terms of the agreement.

⁷⁵ *Id.* at P 117; section 9.1 of the *pro forma* LGIP.

⁷⁶ *Id.* at P 1241.

⁷⁷ *Id.*

⁷⁸ *Id.* at P 1247.

⁷⁹ *Id.*

⁸⁰ *Id.* at P 1149; section 9.9 of the *pro forma* LGIP.

⁸¹ *Id.* at P 1138.

- provide the affected system study deposit; or
- pay undisputed affected system study true-up costs in a timely manner.⁸²

3. Optional Resource Solicitation Study

The Commission declined to adopt the NOPR proposal requiring transmission providers to allow resource planning entities to initiate an optional resource solicitation study.⁸³ The Commission found that the record does not support a requirement for a “one size fits all” approach for coordinating state-level resource planning with the interconnection process. Moreover, this one size fits all approach could also divert transmission provider resources and lead to delays in the interconnection queue.⁸⁴

C. Reforms to Incorporate Technological Advancements into the Interconnection Process

1. Increasing Flexibility in the Generator Interconnection Process

Co-Located Generating Facilities Behind One Point of Interconnection with Shared Interconnection Requests. Transmission providers must 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.⁸⁵ However, interconnection customers are not required to share a single interconnection request for multiple generating facilities located on the same site, instead customers have the option to submit separate interconnection requests to have each device studied separately.⁸⁶ When an interconnection customer chooses to submit a single interconnection request for multiple generating facilities, the generating facilities must be located on the same site in order to reduce complexity for the transmission provider.⁸⁷

Revisions to the Material Modification Process to Require Consideration of Generating Facility Additions. Transmission providers are now only required to evaluate whether a request to add a generating facility to an existing interconnection request is material if it is submitted before the interconnection customer returns the executed facilities study agreement to the transmission provider. Once an executed facilities study agreement is returned, the transmission provider may decide to automatically treat requests to add a generating facility to an existing interconnection request as material modifications without review.⁸⁸ Additionally:

⁸² *Id.* at P 1148.

⁸³ *Id.* at P 1322.

⁸⁴ *Id.*

⁸⁵ *Id.* at P 1346.

⁸⁶ *Id.* at PP 1351-52.

⁸⁷ *Id.* 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. *Id.* at P 1355.

⁸⁸ *Id.* at P 1409.

- The Commission clarified that interconnection customer must provide evidence of the required site control when submitting the modification request to the transmission provider.⁸⁹ The requirements for site control that the interconnection customer must adhere to may depend on the timing of the request for the modification as well as the technology type of the requested additional generating facility.⁹⁰
- In the case of 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.⁹¹
- Prior to the return of the cluster study agreement from the transmission provider to the interconnection customer, a decrease of up to 60% of electrical output (MW) must not be considered a material modification.⁹²
- Prior to the return of the executed interconnection facilities study, an additional 15% decrease of electrical output of the proposed project must not be considered a material modification if the change occurred either through a decrease in plant size (MW) or a decrease in interconnection service level accomplished by applying transmission provider-approved injection-limiting equipment.⁹³

Availability of Surplus Interconnection Service. Transmission providers must 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.⁹⁴ The Commission clarified that if the LGIA of the original interconnection request is suspended, then any submitted requests for surplus interconnection service are also suspended, and new requests for surplus interconnection service may not be submitted, until after the suspension is lifted.⁹⁵ If the original LGIA is terminated, including for exceeding the three-year suspension period (pursuant to pro forma LGIA article 5.16), any related surplus interconnection service allowed as a result of the original LGIA will be terminated because surplus interconnection service is dependent upon the underlying interconnection service used by existing generating facilities.⁹⁶

⁸⁹ *Id.* at P 1413.

⁹⁰ *Id.*

⁹¹ *Id.* at P 1415.

⁹² *Id.* at P 1417.

⁹³ *Id.* The Commission declines to adopt firm guidelines that transmission providers will follow to determine what constitutes a material modification when a request to add a generating facility to an existing interconnection request involves adding co-located generating facilities. *Id.* at P 1419.

⁹⁴ *Id.* at P 1436; section 3.3.1 of the *pro forma* LGIP.

⁹⁵ *Id.* at P 1440.

⁹⁶ *Id.*

Operating Assumptions for Interconnection Studies. Transmission providers, at the request of the interconnection customer, are to (1) use operating assumptions that reflect the proposed charging behavior of an electric storage resource; (2) allow interconnection customers to resubmit their operating assumptions if the transmission provider finds the originally proposed operating assumptions are in conflict with good utility practice⁹⁷; and (3) allow the transmission provider to require the interconnection customer to install additional control technologies.⁹⁸ See Section I.A.2 for a list of must be included in interconnection request.

If a transmission provider finds an interconnection customer's proposed operating assumptions to be in conflict with good utility practice, the transmission provider must provide the interconnection customer with a clear explanation in writing 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.⁹⁹

2. Incorporating Alternative Transmission Technologies into the Generator Interconnection Process

Consideration of the Enumerated Alternative Transmission Technologies in Interconnection Studies upon Request of the Interconnection Customer. The Commission adopted revision to the *pro forma* LGIP and SGIP to require transmission providers to evaluate the following enumerated list of alternative transmission technologies: static synchronous compensators, static VAR compensators, advanced power flow control devices, transmission switching, synchronous condensers, voltage source converters, advanced conductors, and tower lifting during any study of generator interconnection process without any request from a customer.¹⁰⁰

Transmission providers are to evaluate each alternative transmission technology enumerated above 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.¹⁰¹ Transmission providers are also to include in cluster study

⁹⁷ The Commission also added article 17.2 to the *pro forma* LGIA to describe a violation of operating assumptions for generating facilities, including for an electric storage resource and Appendix H to the *pro forma* LGIA as the location for the interconnection customer to memorialize its operating assumptions. If the owner of the generating facility fails to operate the generating facility in accordance with its operating assumptions, as memorialized in Appendix H, the transmission provider may pursue termination of the LGIA through the breach and cure provisions found in article 17 of the *pro forma* LGIA. *Id.* at P 1521.

⁹⁸ *Id.* at P 1511, section 3.1.2 of the *pro forma* LGIP,

⁹⁹ *Id.*

¹⁰⁰ *Id.* at P 1578; section 7.3 of the *pro forma* LGIP, and sections 3.3.6 and 3.4.10 of the *pro forma* SGIP.

¹⁰¹ *Id.*

reports, an explanation of the results of the evaluation of the enumerated alternative transmission technologies for feasibility, cost, and time savings as an alternative to a traditional network upgrade.¹⁰² Additionally, transmission providers—consistent with good utility practice, applicable reliability standards, and other applicable regulatory requirements — have the sole discretion to determine whether a particular technology in the enumerated list of alternative transmission technologies is appropriate and reliable as a network upgrade, or not, for a given cluster.¹⁰³

Finally, the Commission clarified that transmission providers are not precluded from studying a technology that is not included in the enumerated list of alternative transmission technologies¹⁰⁴ and that the study process for small generating facilities in the *pro forma* SGIP remains a serial process and costs for evaluating the enumerated alternative transmission technologies must be allocated to the small generator interconnection request being studied.¹⁰⁵

3. Modeling and Performance Requirements for Non-Synchronous Generating Facilities

Modeling Requirements. The Commission revised Attachment A to Appendix 1 of the *pro forma* LGIP and Attachment 2 of the *pro forma* SGIP to require each interconnection customer requesting to interconnect a non-synchronous generating facility to submit to the transmission provider:

- (1) a validated user-defined RMS positive sequence dynamic model;
- (2) an appropriately parameterized generic library RMS positive sequence dynamic model, including a model block diagram of the inverter control system and plant control system, that corresponds to a model listed in a new table of acceptable models or a model otherwise approved by WECC; and
- (3) a validated EMT model, if the transmission provider performs an EMT study as part of the interconnection study process.¹⁰⁶

Ride-Through Requirements & Applicability. The Commission adopted, with modifications, the NOPR proposal to revise article 9.7.3 of the *pro forma* LGIA and article 1.5.7 of the *pro forma* SGIA to establish “ride through”¹⁰⁷ requirements during abnormal frequency conditions and voltage conditions within the “no trip zone” defined by NERC Reliability Standard

¹⁰² *Id.* at P 1587. If a transmission provider evaluates the enumerated alternative transmission technologies as required herein and, in its sole discretion, determines not to use any enumerated alternative transmission technologies as an alternative to a traditional network upgrade, the transmission provider has complied with this final rule, including tariffs filed pursuant to this Final Rule. *Id.*

¹⁰³ *Id.* at P 1589.

¹⁰⁴ *Id.* at P 1600.

¹⁰⁵ *Id.* at P 1603.

¹⁰⁶ *Id.* at P 1659.

¹⁰⁷ The term “ride through” is defined as the ability of the large and small generating facility to stay connected to and synchronized with the transmission system during system disturbances within a range of under-frequency and over-frequency condition and under-voltage and over-voltage conditions. *Id.* at PP 1685, 1718.

PRC-024-3 or successor mandatory ride through reliability standards.¹⁰⁸ The Commission modified the proposed requirements to acknowledge the physical limitations of newly interconnecting non-synchronous generating facilities. Specifically, during such scenarios, the Commission now requires that a non-synchronous generating facility ensure that, within any physical limitations of the generating facility, it configures or sets their facility to ride through disturbances and continue to support system reliability.¹⁰⁹

The Final Rule also required that all newly interconnecting large generating facilities provide frequency and voltage ride through capability consistent with any standards and guidelines that are applied to other generating facilities in the balancing authority area on a comparable basis.¹¹⁰ The Commission noted that by adopting this reform, the Commission is now able to address the existing gap in the applicability of ride through requirements for large generating facilities with a capacity above 20 MW and with a gross plant/facility aggregate nameplate rating 75 MVA or less.¹¹¹

II. Compliance

Each transmission provider must submit compliance filings within 90 days of the publication of this Final Rule in the *Federal Register*.¹¹² On compliance, transmission providers may propose deviations from the requirements adopted in this final rule—including deviations seeking to minimize interference with ongoing transition plans—and demonstrate how those deviations satisfy the standards discussed above, which the Commission will consider on a case-by-case basis.¹¹³ Consistent with precedent, the Commission will continue to apply the “consistent with or superior to” standard when considering proposals from non-RTO/ISO transmission providers to deviate from the requirements of the Final Rule; to use the “independent entity variation” standard when considering such proposals from RTOs/ISOs; and to allow non-RTO/ISO transmission providers to use the “regional differences” rationale to seek variations made in response to established reliability requirements.¹¹⁴

III. Concurring Opinions

Commissioners Danly, Clements and Christie filed concurring opinions with Order No. 2023. Commissioner Danly wrote separately to note his misgivings for this type of broad rulemaking, his preference for individual filings from utilities under Section 205 of the FPA, to encourage use of the independent entity variation and the consistent with or superior to standard

¹⁰⁸ *Id.* at P 1711.

¹⁰⁹ *Id.* at P 1717.

¹¹⁰ *Id.* at P 1733.

¹¹¹ *Id.*

¹¹² *Id.* at P 1762.

¹¹³ *Id.* at P 1765.

¹¹⁴ *Id.* at P 1764.

for variations from the final rule, and to note that he will thoroughly review any requests for rehearing.¹¹⁵

Commissioner Clements wrote separately to note that further reforms would be necessary to solve the “grid infrastructure crisis” facing the country.¹¹⁶ Clements discussed two categories of further solutions that she described as “meriting further discussion: (1) deeper reforms to get at some of the fundamental challenges with the interconnection processes; and (2) additional nuts and bolts changes that could enhance the effectiveness of a variety of interconnection processes.”¹¹⁷ For the first, Clements suggests that further improvements could include: (1) linking the interconnection process to proactive transmission system planning; (2) in applicable regions, aligning the interconnection process more closely with competitive resource solicitations; and (3) transitioning to a “focused” interconnection process or a “connect and manage” approach for all energy-only resources. For the second, Clements has more specific solutions not proposed in the NOPR or adopted in Order 2023. These include: (1) further refine study assumptions by clarifying ERIS and NRIS assumptions and providing more accurate assumptions regarding injection of energy by resources; (2) use automation to facilitate more efficient interconnection; (3) reduce delay and cost overruns in network upgrade construction; and (4) address challenges faced by projects serving Tribes and Tribal communities.

Finally, Commissioner Christie issued a concurring opinion providing his input on several specific topics in the NOPR. Notably, Christie writes to discuss the importance of not mandating the use of a specific GET unless the transmission provider determines it would work from a real-world applicability standpoint.¹¹⁸ Christie also expresses concern that the study delay penalties on RTOs/ISOs and the costs of transmission provider heatmaps used as a tool for interconnection customers will be inappropriately allocated to consumers even though both appear to provide much more of a benefit to generation developers than consumers.¹¹⁹

¹¹⁵ Order, Danly Concurrence at P 2, 3, 4.

¹¹⁶ Order, Clements Concurrence at P 1, 3.

¹¹⁷ *Id.* at P 6.

¹¹⁸ *Id.* at P 12.

¹¹⁹ *Id.* at P 16.