Attachment III

UNITED STATES OF AMERICA BEFORE THE FEDERAL ENERGY REGULATORY COMMISSION

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New York Independent System Operator, Inc.

Docket No. ER24-___-000

AFFIDAVIT OF THINH T. NGUYEN

Mr. Thinh T. Nguyen declares:

1. I have personal knowledge of the facts and opinions herein and if called to testify could and would testify competently hereto.

A. Purpose of this Affidavit

2. I submit this affidavit in support of NYISO's compliance filing in response to Order No. 2023. The purpose of this affidavit is to detail the steps that the NYISO must perform in its interconnection studies and the development of the NYISO's proposed Cluster Study timeframes for performing such work, to provide information regarding historical study costs, to provide information on the necessity of incorporating the Small Generator Procedures into the new Standard Interconnection Procedures, and to explain why permitting modifications during a Cluster Study could have material impacts on cost and timing of the Cluster Study.

B. Background and Introduction

- My name is Thinh T. Nguyen. I am the Senior Manager of Interconnection Projects for the New York Independent System Operator ("NYISO"). My business address is 10 Krey Boulevard, Rensselaer, NY 12144.
- 4. I have held this position since March 2018. Prior to that, I was the Manager of Interconnection Projects for the NYISO since November 2015. I also have held other positions at the NYISO including Supervisor of System Modeling team, TCC Senior Market Operation Engineer, Senior Planning Engineer, and Planning Engineer since the inception of the NYISO in November 1999. Prior to the NYISO, I held a Planning Engineer position with the NYISO's predecessor, the New York Power Pool, for over a

year and an Instruments and Controls Electrical Engineer position with Westinghouse Machinery Apparatus Operation for more than two years. I also received a Master of Engineering from the Rensselaer Polytechnic Institute, a Master of Business Administration from the College of St. Rose, and a Bachelor of Science in Electrical Power Engineering from the Rensselaer Polytechnic Institute.

- 5. One of my primary responsibilities as the Senior Manager of Interconnection Projects at the NYISO is to ensure that the interconnection studies evaluate the reliability impacts on the New York State Transmission System of proposed interconnections of generation, load, or transmission facility development or expansion projects. Under the NYISO interconnection procedures, Interconnection Customers who propose to interconnect to the New York State Transmission System must notify the NYISO of their proposals by submitting an Interconnection Request. This includes providing project information and modeling data. The NYISO evaluates proposed projects through various technical studies to analyze the project-specific impacts to the New York State Transmission System, to identify upgrades in order for the proposed projects to reliably interconnect the transmission system, and to appropriately allocate the costs of upgrades to proposed projects based on their impact. Another responsibility as the Senior Manager of Interconnection Projects at the NYISO is to oversee the overall completion of studies from start to finish. I have direct knowledge of the time, effort, and costs it takes to complete the interconnection studies.
- 6. Based on this experience, I am aware of the efforts and time required to complete the interconnection studies to ensure reliability and to determine cost responsibility for projects seeking to connect to the New York State Transmission System. I am also aware of the need to incorporate Small Generators into the Standard Interconnection Procedures, and the need to use the proper operating assumptions when studying projects for interconnection. I am also aware of the potential pitfalls that may arise that could derail study timelines, such as permitting modifications during the study process. Lastly, I am aware of the billing associated with interconnection studies and the actual costs associated with conducting the interconnection studies.

C. Creation of the Cluster Study Timeframe

- 7. The NYISO has undertaken an extensive review of its current Interconnection Process, including its Class Year Study process prior to Order No. 2023 in an effort to streamline the process while maintaining reliability. This review led to the NYISO's Cluster Study Process, which is being filed in compliance with Order No. 2023. The NYISO's proposed timeframe for the Cluster Study Process is generally consistent with the overall timeframe established in Order No. 2023 and is substantially shorter than the duration for developers to complete the NYISO's existing Class Year Study process.
- 8. The NYISO has two decades of experience in conducting cluster studies. However, based on this experience, the study deadlines in Order No. 2023 do not align with the timeframes for conducting cluster studies. For example, the amount of time it takes to complete the Class Year Study is dependent on the number of projects in the Class Year, and the complexity of the system upgrades needed to accommodate the proposed projects. For example, Class Year 2019 had a total of 38 projects seeking Energy Resource Interconnection Service ("ERIS") and Capacity Resource Interconnection Service ("CRIS"), and it took the NYISO 18 months to complete the clustered study. Class Year 2021 had a total of 54 projects seeking ERIS and CRIS, and it took the NYISO 22 months to complete the study.
- 9. The Class Year Study involves several key tasks that must be completed. Table 1 below details these key tasks. It is important to note that the Class Year tasks are not completed serially. The NYISO works on many of these tasks in parallel, while some tasks are dependent on the completion of others.

Task	
No.	Task Description
	Build (a) Class Year steady-state, short circuit, and stability base cases
	(ATBA [pre-project] /ATRA [post-project] cases) for ERIS, (b) Class
	Year deliverability base cases (ATBA-D and ATRA-D cases) for
1	CRIS (NRIS), and (c) create auxiliary study files
	Perform Part 1 Design Studies: (a) review and, if necessary, re-create
2	the conceptual breaker-level one-line diagram to accommodate a

Table 1: Task List Table for Class Year Studies

	group of projects that are sharing the same POI including scenarios	
	where projects could reject their cost allocations, (b) perform the	
	physical feasibility assessment and, if necessary, re-create the	
	conceptual breaker one-line diagram, and (c) provide upgrade cost and	
	construction timing estimation	
Part 2 Studies – All tasks described below		
	Create ATBA/ATRA transfer cases and perform the thermal and	
	voltage transfer limit analyses, and if applicable, identify and design	
	System Upgrade Facilities ("SUF") including cost and construction	
3	timing estimation	
	Perform bus flow analysis, and, if applicable, identify and design SUF	
4	including cost and construction timing estimation	
	Perform short circuit analysis including individual breaker analysis.	
	and, if applicable, identify and design SUF including cost and	
5	construction timing estimation	
	Perform steady-state analysis (N-0, N-1, N-1-1, and N-1-1-0) and, if	
	applicable, include the PAR impact analysis, the voltage deviation	
	analysis, the reactive power capability analysis, extreme contingency	
	assessment, and, if applicable, identify and design SUF including cost	
6	and construction timing estimation	
	Perform local stability analysis and, if applicable, include the stability	
	transfer analysis. If applicable, identify and design SUF including	
7	cost and construction timing estimation	
	Perform NPCC/NYSRC A-10 (BPS) Testing – build applicable	
	stability and steady-state test base cases to conduct the analysis and	
	if applicable identify and design SUF including cost and construction	
8	timing estimation	
9	Perform sub-synchronous torsional interaction screening analysis	
	Deliverability assessment: CRIS transfer at different location (if	
	applicable). Highway "no harm" test. Highway "net capacity" test.	
	Other Interface "no harm" test, and Byway, and, if applicable, identify	
	and design System Deliverability Upgrades ("SDU") including cost	
10	and construction timing estimation	
11	Perform headroom calculation and cost allocations	
12	Complete Part 1 Design Studies	
	Complete Part 2 Studies – all applicable analytical assessments	
13	described above	
14	Complete Draft MIS Report – ERIS report	
	Complete Draft NYISO Deliverability Interconnection Standard (DIS)	
15	Report – CRIS/NRIS report	
16	Present Draft Reports to stakeholders	
17	Present Draft Report to stakeholder Operating Committee	
18	Decision Period	
	Revise reports based on SUF/SDU cost allocation	
19	acceptance/rejection from Interconnection Customers	

	Reiterate the Decision Period until all projects accept or all projects
20	reject their SUF/SDU cost allocations

- 10. The NYISO developed the Cluster Study Process timeframe through an extensive review of its existing study process steps (shown in Figure 1), including determining where it could remove duplicative efforts and where study elements could be performed earlier in the process or in parallel with other process steps to minimize the overall duration of the process. In addition, the NYISO had detailed discussions with the New York Transmission Owners concerning their shared study responsibilities and presented the study timeframes to Stakeholders throughout the development of the NYISO's Cluster Study Process. The NYISO's Cluster Study Process will include the following phases: (i) an Application Window, (ii) a Customer Engagement Window, (iii) a Phase 1 Entry Decision Period, (iv) a Phase 1 Study, (v) a Phase 2 Entry Decision Period, (vi) a Phase 2 Study, and (vii) a Final Decision Period. The NYISO proposes a timeframe for the overall Cluster Study Process of approximately 596 days from its commencement of the Application Window to its presentation of the Cluster Study Report at the conclusion of the Cluster Study for its Operating Committee's approval. The resulting timeframe is based on a reasonably anticipated number of Interconnection Requests and CRIS-Only Requests being submitted for a given Cluster.
- 11. One of the major improvements that the NYISO made as part of its review of its interconnection process was to remove duplicative work and narrowed the scope of its individual System Reliability Impact Study ("SRIS") to the absolute minimum analyses required without limiting the analyses critical to evaluating reliability impacts of proposed interconnections. In reducing the scope of the SRIS, the SRISs were able to be completed with an average time of 74 days rather than with an average time of 357 days. The NYISO saw that requiring developers to complete an individual SRIS prior to entering the Class Year Study added, on average, an additional 268 days to the overall process for a project.

D. Necessity of Incorporating Small Generators into the Standard Interconnection Procedures

- 12. The NYISO has a separate interconnection process to study Small Generators. The NYISO's existing Small Generator Interconnection Procedures already include prior independent entity variations accepted by the Commission to align the assessment of Small Generating Facilities in certain cases with the NYISO's overall Class Year Study structure. Small Generating Facilities for which non-Local System Upgrade Facilities are identified are required to enter the Class Year Study to complete the interconnection process in place of individual facilities studies. In addition, Small Generating Facilities seeking Capacity Resource Interconnection Service are required with limited exceptions to either enter a Class Year Study or a separate Expedited Deliverability Study to obtain their requested CRIS rights. However, these alignments are not sufficient to address the broader complications that arise from the NYISO having to maintain and implement separate interconnection procedures. The requirement that the NYISO administer different process rules, studies, timeframes, and agreements and address misalignments between the processes, impedes its reform effort and establishes needless complexities for Market Participants and developers.
- 13. On average, it takes approximately 1,000 days to complete the interconnection study process for Small Generators, from the submission of an Interconnection Request to the Facilities Study report. The NYISO's Cluster Study Process timeframe is approximately 596 days from the opening of the Application Window to the completion of the Cluster Study. Incorporating the Small Generators into the streamlined Cluster Study Process would allow for Small Generators to benefit from the efficiencies from this new process and provide Cluster Study Projects in a given Cluster Study with more accurate upgrade costs because they will be studied together.
- 14. Based on the NYISO's proposed timeframe for the Cluster Study Process, the NYISO expects that many Small Generating Facilities proceeding through the new process will complete the process either no longer than or faster than the timeframe for completing the overall process under the current Small Generator Interconnection Procedures. This

is particularly true for those Small Generating Facilities that would otherwise have to wait to enter into the next available Cluster Study Process under the NYISO's existing rules because non-Local System Upgrade Facilities were identified in the small generator process.

E. Energy Storage Operating Assumptions in the Cluster Study

- 15. The NYISO is requesting an independent entity variation to the Order No. 2023 energy storage operating assumptions requirements and proposes alternative reforms that achieve the Commission's objectives and is tailored to the NYISO's unique market and planning framework. The Order No. 2023 approach for addressing this issue would require limitations on the offering behavior and withdrawal schedules of electric storage resources that conflict with the NYISO's market rules for Energy Storage Resources ("ESRs"), which allow ESRs to offer flexibly in all hours. However, the NYISO already has operating procedures in place that will in many cases mitigate developer's concerns, and the NYISO proposes to expand the application of these existing measures with supporting tariff language to reduce the need for upgrades on the New York State Transmission System for electric storage resources, wind, and solar projects.
- 16. The NYISO currently minimizes the need for upgrades for proposed interconnections of all resource types, including electric storage resources, to much of the New York State Transmission System through the use of its NYISO Minimum Interconnection Standard. Under this standard, the NYISO only requires upgrades if adverse reliability impacts cannot be mitigated through normal operating procedures, including the redispatch of resources to address identified reliability impacts. This approach recognizes that in actual operations, the NYISO market systems will dispatch generation in a manner that avoids thermal overloads on NYISO-secured transmission facilities. In interconnection studies, the NYISO simulates what will happen in operations through redispatch consistent with normal operating procedures. The NYISO performs this assessment for *all* interconnecting projects; it does not require a specific request or designation by the developer. This permitted redispatch in studies

under the NYISO Minimum Interconnection Standard applies to interconnections impacting transmission facilities that are secured (1) in the NYISO's market models – its Business Management System ("BMS"), or (2) by the New York Transmission Owners for the purpose of planning study purposes. These existing requirements already achieve the Commission's objectives by reducing the need for upgrades for electric storage resources interconnecting in New York. By applying the Minimum Interconnection Standard, the NYISO avoids restricting ESR operating flexibility and avoids the need to prohibit most or all withdrawals by ESRs on-peak.

17. Currently, the NYISO Minimum Interconnection Standard, and normal operating procedures, may not permit redispatch in studies for interconnections impacting transmission facilities that are not secured by the NYISO or are not secured by New York Transmission Owners for planning study purposes.

F. Study Deposit and Commercial Readiness Deposit Amounts

- 18. The NYISO is proposing to adopt Order No. 2023's study deposit requirements with limited variations. One variation is to modify the study deposit amount for the first rung to \$100,000. This amount is consistent with current study deposits for facilities participating in the Class Year Study and consistent with study deposits for Small Generating Facilities for their facilities study.
- 19. Order No. 2023 does not establish a set dollar amount for the study deposit for the Affected System Study. The NYISO proposes to require a \$100,000 study deposit. This amount is reasonable given the scope of the Affected System Study, which is a consolidated system impact and facilities study. For comparison, the combined study deposits for the system impact study and facilities study under the NYISO's existing rules adds up to \$220,000.
- 20. The NYISO is requesting an independent entity variation to adopt commercial readiness deposit requirements that align with its distinct study structure and its existing upgrade security rules. The NYISO is proposing to calculate Readiness Deposit 1 as \$4,000/MW. This is consistent with the NYISO's current methodology for calculating

deposits in lieu of regulatory milestones for entry into the Class Year Study, which are 100,000 + 33,000/MW.

- 21. The NYISO is proposing to calculate Readiness Deposit 2 as the greater of: (i) the Readiness Deposit 1 amount for the Cluster Study Project, and (ii) 20% of the cost estimate for the subset of upgrades determined in the Phase 1 Study Connecting Transmission Owner's Attachment Facilities, Distribution Upgrades, and Local System Upgrade Facilities for the Cluster Study Project. The 20% figure represents a reasonable threshold for proceeding in the NYISO's process. In New York, the local upgrades and attachment facilities identified in the Phase 1 Study will in most cases constitute the largest amount of each Interconnection Customer's interconnection facility costs, and an Interconnection Customer's willingness to provide a deposit of 20% of these costs provides some certainty as to the project's ability to move forward into Phase 2 and its ability at the end of Phase 2 to provide the full security required to proceed to an interconnection agreement.
- 22. The NYISO is proposing to retain in the Cluster Study Process its existing requirement that at the conclusion of the study process the Interconnection Customer post security to the applicable Transmission Owner in the full amount (100%) of its estimated costs allocated in the study process. The NYISO's full security requirement is an integral component of the NYISO's interconnection process. An Interconnection Customer's posting of this security establishes its project as a firm project, which project and related upgrades are included in the base case relied upon for subsequent interconnection studies. This mechanism is a unique element of the NYISO's process that enables the NYISO to avoid costly and time and resource intensive restudies in the event the project later withdraws. Subsequent projects and future system development rely on the inclusion of these facilities, backed up by this security. In the event the Interconnection Customer withdraws, the Transmission Owner which system is subject to the upgrade may make use of the forfeited security if the upgrade has to be constructed because other projects are relying on it.

G. Modifications

- 23. The NYISO proposes to specify that, as with its existing Class Year Study rules, a developer may not request to modify the project information that it proposed in its Interconnection Request or CRIS-Only Request until the Cluster Study is complete. As with the Class Year Study, permitting such modifications would require the NYISO to repeatedly update the modeling and base cases used for the performance of the study. In my experience, evaluation of project modifications mid-study and the subsequent updates required to modeling and base cases often creates significant delays. When that occurs in a clustered study, it adversely impacts the other projects in the cluster whose studies are delayed pending required base case updates. As a result, such modifications necessarily have a material impact on the cost or timing of other Interconnection Requests in that Cluster Study and are therefore Material Modifications.
- 24. This concludes my affidavit.

ATTESTATION

I am the witness identified in the foregoing affidavit. I have read the affidavit and am familiar with its contents. I verify under penalty of perjury that the foregoing is true and correct.

AMAN Thinh Nguyen

April 30, 2024