Ravenswood Operations, LLC
38-54 Vernon Blvd.
Long Island City, NY 11101

To: Analysis Group Inc. ("AG")

Paul Hibbard, paul.hibbard@analysisgroup.com ; Todd Schatzki, todd.schatzki@analysisgroup.com ; Charles Wu, Charles.wu@analysisgroup.com ; Daniel Stuart, Daniel.stuart@analysisgroup.com

1898 and Co. ("1898")

Matthew Lind, matthew.lind@1898andco.com; Chad Swope, chad.swope@1898andco.com; Kieran McInerney, kieran.mcinerney@1898andco.com

New York Independent System Operator ("NYISO") c/o ztsmith@nyiso.com and gbissell@nyiso.com

From: Ravenswood Operations, LLC

Date: June 28, 2024

RE: Comments on Consultants' Draft Report

Summary

Ravenswood Operations, LLC ("Ravenswood") provides the following comments and concerns with respect to aspects of the *Independent Consultant Study to Establish New York ICAP Demand Curve Parameters for the 2025/2026 through 2028/2029 Capability Years – Initial Draft Report* (the "Draft Report") prepared by AG and 1898 (collectively, the "Consultants") for this Demand Curve Reset ("DCR") process. As the NYISO has extensively documented, the failure to effectively manage the transition from existing, needed dispatchable resources will put system reliability at significant risk and thus the system's transition requires careful consideration with respect to how reliability will be maintained.[1] The DCR process is the fundamental tool to guide that transition by determining what peaking unit will provide that reliability, and what the cost of that reliability resource will be. During the transition, volatile changes to market signals will not provide investors the confidence necessary to dedicate their funds to participate in NYISO markets. Therefore, changes to market signals during this transition thus need to be measured, purposeful and coordinated to prevent unintended reliability consequences caused by insufficient investment in reliability resources.

Ravenswood's Comments derive from these central tenets. As provided in more detail below, Ravenswood provides the following comments on the Draft Report:

- Similar to Demand Response, short duration Battery Energy Storage Systems ("BESS"), especially 2-hour BESS, are not a resource that can adequately maintain reliability, and thus, cannot be used as the Proxy Unit.
- The weighted average cost of capital ("WACC") ascribed to all proposed proxy unit technologies is too low once more recent changes in economics and risks are accounted for and the Draft Report must be revised accordingly.

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[1] See 2021-2040 System & Resource Outlook, New York Independent System Operator, Inc. (Sept. 22, 2022) ("2021 System Study") at 5–8 (establishing as a key takeaway that generator additions, including dispatchable, non-renewable resources, and generator retirements must be staged carefully to ensure an orderly transition to the new system and developing substantial, incremental generation during both peak capacity and normal operating conditions will be required to meet major demand growth produced by State's progressive economic development and electrification mandates). https://www.nyiso.com/documents/20142/32663964/2021-2040_System_Resource_Outlook_Report_DRAFT_v15_ESPWG_Clean.pdf/99fb4cbf-ed93-f32e-9acf-ecb6a0cf4841.

- Developers cannot realize 100% of an Investment Tax Credit ("ITC") benefit. The Consultants' calculation of such benefit is incorrect and must be corrected in the Draft Report.
- As noted in comments filed by the Independent Power Producers of New York ("IPPNY"), Ravenswood agrees that the assumptions by the Consultants' with respect to the transmission and electrical interconnection costs, availability of RTM Spinning Reserve Awards, Fixed O&M costs, sales and recording tax exemptions, site leasing costs, and full-time employee costs for a simple cycle gas turbine and BESS are incorrect and must be revised in the Draft Report.

Based on the comments provided, Ravenswood requests that the final report account for the issues raised by Ravenswood herein.

<u>Selection of the Proxy Unit</u>

The NYISO has established in numerous reports that implementation of the State's public policy initiatives governed by statutory mandate and environmental regulation is driving unprecedented transmission system and supply changes. The resultant reliability needs, and the resources required to meet those needs, require a coordinated and measured transition that includes the proper incentives to make substantial investments in both maintaining needed existing facilities and developing new, dispatchable resources. The NYISO's 2023 Outlook Report demonstrates system capacity must grow 300% to meet the Climate Leadership and Community Protection Act ("CLCPA") mandates.[2] To support reliability given the future resource composition

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[2] *See* Climate Leadership and Community Protection Act, (codified as Ch. 106, L. 2019) (hereinafter, "CLCPA"); *see also* New York Independent System Operator, Inc., "2023 System and Resource Outlook Report" (Draft – June 20, 2024 Business Issues Committee, approved at June 20, 2024 meeting and pending Management Committee discussion and action at June 27, 2024 meeting) (hereinafter, "2023

on the system driven by these mandates, the resources necessary to meet reliability requirements must be available under both peak and normal operating conditions. Therefore, market signals, both now and throughout the transition, must be sufficient to support ongoing investments in such reliability resources.

The NYISO is responsible for selecting the technology that constitutes an eligible peaking plant within the meaning of the Services Tariff. To be eligible to be deemed a Proxy Unit, the NYISO tariff states, "For purposes of [the DCR process], *a peaking unit* is defined as the unit with technology that results in the lowest fixed costs and highest variable costs among all other units' technology *that are economically viable*, and a peaking plant is defined as the number of units (whether one or more) that constitute the scale identified in the periodic review."[3] These tariff provisions define the threshold requirement that a technology must be capable of meeting New York's reliability needs before it can serve as the Proxy Unit in each Locality.

Prior proposals to use Demand Response resources as the Proxy Unit were rejected because Demand Response could not provide the necessary services to meet the system's reliability needs.[4] With respect to short duration BESS, the NYISO's own analysis in its reliability studies as well as in its additional study work performed in its

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Outlook"), available at https://www.nyiso.com/documents/20142/45283393/04%20Draft%20Report_2023-2042_System_Resource_Outlook.pdf/eab942f5-5e65-8e3a-f6c9-a2580adcdb11.

[3] NYISO Services Tariff Section 5.14.1.2.2 (emphasis added).

[4] See *New York Independent* System *Operator, Inc.,* 134 FERC ¶ 61,058 (2011) at PP 25, 37 (finding demand response ineligible due to limitations inherent in technology); Docket No. ER11-2224, *New York Independent* System *Operator, Inc.,* Tariff Revisions to Implement Revised ICAP Demand Curves for Capability Years 2011/2012, 2012/2013 and 2013/2014 (November 30, 2010) at 6 (establishing Demand Side Resource technology generally did not have ability to respond to longer deployments under then present market design); see also 2014 DCRP FERC Order at P 60 (finding to be an eligible proxy plant that is deemed economically viable, technology "must be physically able to supply capacity to the market" as the first prerequisite).

role serving the New York State Reliability Council ("NYSRC"), have shown that the Transmission Security related reliability needs identified persist for several hours and that short duration BESS cannot be utilized effectively given the nature of these needs and the operating capability of this technology. BESS are thus similar to Demand Response because their duration of availability is not sufficient to sustain load over the long peak period and are therefore not always dispatchable when needed to meet peak loads.

Moreover, while theoretically, several short duration BESS could be installed to meet the extended peak duration need, doing so would cause the aggregate costs to multiply to levels that would exceed the costs of other technologies. Accordingly, BESS should not be selected as the Proxy Unit.

In addition, as reflected in the NYISO's reliability planning process, reliability needs derive both from the failure to meet the requirement of no more than one Loss of Load Event in ten years and the failure to ensure that Localities have sufficient capacity to avoid Transmission Security violations. To ensure the market addresses the needs reflected in the NYISO's complementary planning processes, the resource chosen to be the Proxy Unit in each Capacity Locality must be capable of meeting both needs. BESS cannot meet both the resource adequacy requirements *and* Transmission Security duration requirements that comprise the NYISO reliability requirements because the Transmission Security duration requirements exceed the BESS duration capability.

Pivotal to the determinations that must be made in the DCR process, the need to meet Transmission Security requirements is not simply an academic planning exercise. These needs are real and, in fact, already are manifesting themselves requiring short term reliability responses in New York City, the most constrained part of the NYISO system and the area with the highest loads. Pertinent here, the NYISO's Q2 2023 STAR Report identified a deficit in meeting Zone J transmission security requirements as large as 446 megawatts ("MW") in New York City for a duration of *nine hours* beginning in the summer of 2025.[5] On November 20, 2023, the NYISO utilized its expressly established authority under the Peaker Rule to retain the Gowanus 2 & 3 and Narrows 1 & 2 peakers in New York City to address the Transmission Security reliability need.[6] Investments must be made to bring permanent solutions on line *before* the temporary solution is no longer able to remain in service. Those investments require price signals now, in order to be developed in time.[7]

Likewise, according to the NYSRC Wind Lull Study in 2023, resources must be able to operate for the longer periods of time to respond to lulls in the wind and provide the necessary complement to wind generation.[8] Limited duration resources, such as short duration BESS, cannot meet these needs and should not be selected as the Proxy Unit.

As noted previously, for a technology to be an eligible peaking plant, the NYISO must, as a threshold matter, determine that it can operate for a sufficient duration to meet peak conditions. Fundamental to ensuring system reliability, both FERC and the

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[5] *Short-Term Assessment of Reliability: 2023 Quarter 2*, NYISO (July 14, 2023) (hereinafter, Q2 2023 STAR Report"), at 5 (emphasis added), https://www.nyiso.com/documents/20142/16004172/2023-Q2-STAR-Report-Final.pdf/5671e9f7-e996-653a-6a0e-9e12d2e41740.
[6] *Short-Term Reliability Process Report: 2025 Near-Term Reliability Need*, NYISO (Nov. 20, 2023), https://www.nyiso.com/documents/20142/15930753/2023-Q2-Short-Term-Reliability-Process-Report.pdf/ccb826e3-e31d-157d-89a0-d2d11f600699.
[7] *Id.*
[8] Add cite to NYSRC Wind Lull Study 2023

New York Public Service Commission ("NYPSC") have safeguarded this core precept in orders.

As noted *supra,* FERC has held operational restrictions preclude resources from being eligible to be ICAP Demand Curve proxy units and, under analogous circumstances, confirmed the NYISO's limited look-ahead capability, forecast uncertainty, and the inability to utilize a resource when it would be most valuable all must be considered.[9] Likewise, the NYPSC recognized these very inherent limitations in its Order Establishing Updated Energy Storage Goal and Deployment Policy issued just last week after a thorough, multi-year vetting process that included a roadmap and, subsequently, a revised and then a later updated roadmap. Specifically, the PSC stated that bulk solicitations are expected to attract energy storage durations ranging from four to eight hours, "with the Roadmap recognizing the value that energy storage with an 8-hour or more duration adds in maintaining reliability and integrating large amounts of renewable energy in later years."[10] Finding that implementation of CLCPA mandates requires longer duration storage facilities to be a core component of the system, the PSC directed NYSERDA to secure predefined levels of longer duration storage in its

[9] See Docket No. ER19-2276, New York Independent System Operator, Inc. FPA Section 205 Filing (June 27, 2019) at 80 (specifying forecast uncertainty, limited look-ahead capability and the inability to effectively use 2-hour BESS when they would be most valuable all drive need to limit reliance on resource); *New York Independent System Operator, Inc.,* 170 FERC ¶ 61,033 (2020) at PP 84, 117 (finding appropriate use of GE Energy Study, as modified, to address limitations inherent in 2-hour BESS technology); see also 2014 DCRP FERC Order at P 60 (reaffirming past precedent that NYISO Board determination of economically viability is a matter of judgment based on facts and circumstances specific to technology at issue).

[10] Case 18-E-0130, *In the Matter of Energy Storage Deployment Program*, Order Establishing Updated Energy Storage Goal and Deployment Policy (June 20, 2024) at 27.

ESR-based, bulk system solicitations. 2-hour ESRs were consigned solely to residential applications.[11]

Further, the Hochul Administration recently announced funding through NYSERDA solicitations for BESS with durations from 10 to 100 hours. ESR solicitations issued to date also have recognized the limitations inherent in this technology as a capacity resource.[12] Setting the ICAP Demand Curves based on short duration BESS, by definition, will ensure that the market will never be able to respond to these identified duration needs and continued programmatic incentive payments will be required to support their development.

Irrefutably, reliability remains paramount as the CLCPA mandates are implemented. Short duration BESS are not an eligible peaking plant and cannot be selected by the NYISO as the proxy unit for any capacity Locality in this reset process.

Weighted Average Cost of Capital

The WACC developed by the Consultants to date for all technologies is unrealistic because it understates the cost of capital required to develop supply resources in the New York market on a merchant single asset financed basis. Further, using the same financial parameters for all Proxy Units, including different duration BESS, is

[11] *See* Case 18-E-0130, *supra*, New York Department of Public Service Staff and New York State Research and Development Authority, "New York's 6 GW Energy Storage Roadmap: Policy Options for Continued Growth in Energy Storage" (dated December 28, 2022) at 99. Notably, the associated Final Supplemental Generic Environmental Impact Statement filed on December 14, 2023 in the ESR proceeding accordingly tracked the same scope limited to 4-Hour and 8-Hour BESS units in assessing the environmental impacts of the State's proposed action. *See* Case 18-E-0130, *supra,* Industrial Economics, Incorporated prepared for New York Department of Public Service Staff and New York State Research and Development Authority, "Final Supplemental Generic Environmental Impact Statement" (dated December 14, 2023) at 5-10..

[12] For example, Con Edison solicitations have required proposals for 4-hour ESRs with their associated CRIS capability as capacity resources. Other operational limitations also have been recognized truncating the services that could be offered by these resources, such as requiring cycling to be limited to once per day with an overall limitation on the total number of cycles per year.

unreasonable due to documented core differences in the risks of having a reasonable opportunity to recover a return on and of invested capital associated with each technology. Analysis conducted in 2018 by the LS Power Group ("LS Power"), and more recently by Alpha Generation as reflected in IPPNY's comments, indicate that the Consultants' WACC is too low.

In 2018, Joseph D. Esteves, Chief Financial Officer and Co-Head of Private Equity for LS Power Development, LLC, a member of the LS Power Group ("LS Power"), and the general partner and manager of LS Power Associates, L.P., testified before FERC on the after-tax WACC ("ATWACC") being proposed by the Brattle Group for use in PJM at the time. As explained in his affidavit (the "Esteves Affidavit," provided as Attachment A hereto), Mr. Esteves' analysis shows that "an ATWACC of 10.2%, which is more consistent with the capital structure, the sources of funds, and the underlying operating risks"[13] of developing the PJM Reference Unit, was appropriate *in 2018*. Well established, changes in the capital markets and regulatory environment since 2018, including the documented, unprecedented post-COVID extreme impacts on, *inter alia,* inflation, interest rates and supply chain disruptions, irrefutably have concomitantly caused a significant increase in these levels as Ravenswood has experienced in developing new projects and maintaining its existing Ravenswood Facility fleet. In 2018, Mr. Esteves demonstrated the following:

> **Debt/Equity Ratio;** As demonstrated by Mr. Esteves, "a debt to capital ratio of approximately 30% would be appropriate"[14] for PJM at the time, given publicly available information on debt quantum levels of "nearly $8 billion of nonrecourse project financing has been raised for new power

[13] Page 4 of Esteves Affidavit
[14] Page 15 of Esteves Affidavit

plant construction in PJM."[15]

Cost of Debt: The information presented by Mr. Esteves regarding then-recent acquisitions demonstrates that "acquisitions of portfolios of existing merchant peaking facilities in PJM have been financed in the bank market at a 3.0% to 3.5% margin over the London Interbank Offer Rate ("LIBOR")."[16] Based on this information, Mr. Esteves estimates that 6.75% was an appropriate cost of debt in PJM in 2018.[17]

Cost of Equity: Based on the market in PJM at the time, Mr. Esteves concluded that an "unlevered beta of 1.0 seems at least appropriate and may potentially be even too conservative for a merchant [] project." [18] He also notes that, "the overall equity market had a ROE of 15.82% in 2018, and has remained in the low to mid-teens range since the 2014 Quadrennial Review."[19]

The factors that supported an ATWACC of 10.2% in PJM in 2018 are even more pervasive in NYISO in 2024. Globally, the cost of debt has increased over this time frame. Specifically, while it collapsed during the onset of COVID in early 2020, US 10-year treasury rates have risen steadily since the end of 2020 and are now higher than they have been at any point since their collapse during the Housing Crisis in 2007. Even applying a 3.5% margin to the Secured Overnight Financing Rate results in a cost of debt greater than 9%. With this increase in the cost of debt, the returns demanded by equity have increased. Furthermore, infrastructure projects are competing for investment dollars with industries that did not even exist five years ago, driving ROE expectations even higher.

The risks associated with developing energy projects are also far greater now than they were in 2018 in light of the unpredictable, escalating costs borne by the industry

[15] Page 13 of Esteves Affidavit
[16] Page 19 of Esteves Affidavit
[17] Page 21 of Esteves Affidavit
[18] Page 24 of Esteves Affidavit
[19] Page 24 of Esteves Affidavit

and are directly affecting the costs both to develop new facilities and the costs to maintain existing facilities alike. Inflation and supply chain limitations have had a significant impact on the risk associated with the development of energy infrastructure across the board, including major supply projects. Most recently, these factors drove termination of all offshore wind renewable energy credit ("OREC") contracts and nearly all renewable energy credit ("REC") contracts awarded since the inception of the NYPSC's Clean Energy Standard Program. These risks are further evidenced by the higher REC and OREC strike prices required for awards in the 2023 round of Tier 1 land-based and offshore renewable facility solicitations, outcomes that were competitively derived and were awarded to projects in advanced stages of development. Indeed, inflation adjustment mechanisms have been a core component of NYSERDA Tier 1 solicitations since 2022.[20] Recognizing the significant impact inflation has had operating, maintaining, and developing energy infrastructure in New York State, the NYPSC has already approved significant rate increases for National Grid, New York State Electric & Gas, Rochester Gas and Electric, and Central Hudson Gas & Electric and both National Grid and Central Hudson have returned to the NYPSC with new rate cases seeking additional recovery. These increased risks will drive up the financing costs for energy infrastructure projects as compared to investments that are less subject to inflationary pressure and supply chain shocks.

The changes made to the NYISO capacity market also significantly increase the risk of developing energy projects in New York in 2024 compared to developing such

[20] NYSERDA's RFIs for both the land-based and offshore solicitations for 2024 included a series of inquiries clearly designed to refine this mechanism to effectively address inflation factors given their primary effect on contract termination. (*See, e.g.,* New York Energy Research and Development Authority, Offshore Wind Program – Request for Information OSWRFI24-1 (released April 23, 2024) at 11.

projects in PJM in 2018. In his testimony, Mr. Esteves noted "that project lenders determine the debt capacity of a facility not necessarily by some standard debt to capital ratio but rather by the cash flow projected to be earned by the project, primarily from RPM's capacity market revenues, with little to zero credit given to any energy revenue."[21] This means that debt will be sized and priced based on lenders' comfort with a specific project's debt-service-coverage ratio ("DSCR").

Providing an exclusion from the buyer-side mitigation rules for CLCPA technologies drive up risk, and thus, cost.[22] Likewise, the introduction of resource-specific and annually changing Capacity Accreditation Factors ("CAFs") in the Capacity Market means that the capacity revenues that are so important for financing are at significantly higher risk than they were in previous Demand Curve Reset cycles, a fact particularly true of 2-Hour ESRs as well-documented by studies conducted to date.

As Paul Hibbard, of the Analysis Group, noted during the June 13, 2024 ICAP/MIWG/PRLWG meeting, "there isn't sufficient information" to forecast CAFs four years out. Yet, contrary to the apparent conclusion in the Draft Report that the absence of an historical trend documenting determinative results prevents addressing this risk, such uncertainty is the very dynamic that drives the need to incorporate these

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[21] Page 15 of Esteves Affidavit

[22] *See, e.g., New York Independent System Operator, Inc.*, 122 FERC ¶ 61,064 (2008) at P 60 (holding pending buyer-side mitigation rules would address risk that generators would be unable to recover their full costs because of persistent expected capacity caused by uneconomic entry); *New York Independent System Operator, Inc.*, 146 FERC ¶ 61,043 (2014) at P 126 (finding buyer-side market power mitigation measures could reasonably be relied upon to manage regulatory risk factor); *see also*, FERC Docket ER22-772, *New York Independent System Operator, Inc.*, "Excluding Certain Resources from the "Buyer-Side" Capacity Market Power Mitigation Measures, Adopting a Marginal Capacity Accreditation Market Design, and Enhancing Capacity Reference Point Price Translation" (dated January 5, 2022) at 5 (noting elimination of buyer side market power rules in line with CLCPA mandates would "create new risk factors that will affect the estimated gross costs of the peaking unit used in future ICAP Demand Curve resets" and establishing Demand Curve consultants would be required to take such risks into account).

significant risks in the financial assumptions for the 2-Hour ESR proxy unit in each Locality. Neither lenders nor equity investors will have a known track record to base forecasts for 2-Hour ESR CAFs throughout the 13-and-15-year amortization periods being assumed by the Analysis Group. In the face of this uncertainty, lenders and equity investors will need to price capacity market revenue risk into their DSCRs, debt rates, debt sizing, and equity returns. And this analysis will be done at the time of financing, so the very fact of potentially significantly declining CAFs for a specific resource is enough to significantly impact financing. Again, the need to capture this risk is particularly critical for 2-Hour ESRs where the studies to date have all trended in the same direction reflecting precipitous CAF drop-offs directly due to the fact that this resource's very short duration prevents it from effectively meeting reliability needs as the peak period shifts.

As further outlined in IPPNY's Comments, the risks associated with the Consultants' assumptions with respect to CAFs, Net E&AS Revenues, Cost of Debt, Deviations from Day-Ahead Scheduling, Buyer Side Mitigation, and State Sales Tax Abatements result in a WACC as applied to all technology types that is too optimistic. Therefore, the final report must correct for these deficiencies accordingly.

Investment Tax Credits

Although the Draft Report included an Investment Tax Credit (ITC) for BESS Capital Costs of 30% in all zones, it used incorrect assumptions to calculate its impact. Specifically, in the calculations in the Draft Report, the Consultants assume a 30% ITC under the Inflation Reduction Act ("IRA") for all BESS units based on (a) applied to all engineering, procurement, construction, and owner costs; (b) would be monetized during the construction period, before the project has any revenues; and (c) would be monetized without any discount. The assumptions set forth in the Draft Report, however, do not accurately capture how the Internal Revenue Service ("IRS") or financial markets treat ITCs.

Not all engineering, procurement, construction, and owner costs associated with BESS development are eligible for the ITC. The IRS provides specific guidance on what is and is not covered by the ITC. For example, in the OSW context, Ravenswood estimates that approximately 10% of engineering, procurement, construction, and owner costs are ITC eligible ESRs will face limitations as well.

Moreover, ITCs are not created until a project goes into service and can only be used to offset federal tax payments. A project that has not yet begun operations will not be able to reduce its costs via ITC, as assumed by the Consultants. This timing increases the project costs compared to Consultants'.

Finally, given that BESS projects typically have relatively low federal tax burdens as compared to the potential size of the ITCs, such a project is most likely to monetize its ITCs via a tax equity transaction with an entity with a higher tax exposure. While the IRA permits the transfer of tax credits to allow for them to be monetized most efficiently, projects incur both risks and costs to do so. In addition to significant legal and tax consultant costs associated with such a transfer, ITCs must be monetized at a discount, *i.e.,* projects are not able to monetize 100% of the ITC value. For a recent project, Ravenswood estimates that it would be able to monetize approximately 90% of the "face value" of ITCs associated with a large-scale energy project.

The Consultants should update the model and reduce the ITC-associated contributions to the Gross CONE of the Proxy Unit in each Locality to accurately reflect how a BESS project will qualify for, realize, and monetize ITCs as noted above in the final report.

Conclusion

Based on the Ravenswood's comments, Ravenswood requests that the final report account for the issues raised by Ravenswood herein.

James D'Andrea

James D'Andrea, Esq.
Jim.dandrea@riselight.com
General Counsel
Ravenswood Operations, LLC
One Court Square
25-01 Jackson Avenue, Floor 18
Long Island City, NY 11101
(917) 364-3138