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Via E-mail

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Mr. Zachary Smith
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Re: 2-hour Battery Reference Price Analysis

Gentlemen:

The NYISO retained The Analysis Group (AG) and 1898 Co. (1898) as the Consultants for the 2025-2029 Demand Curve Reset Period process (DCRP) to examine the costs for eligible technologies, calculate the net cost of new entry (Net CONE) for such technologies and recommend the proxy plant to be chosen for each Locality in the NYISO's capacity market. AG presented preliminary reference point prices for the following four technologies at the May 20 Installed Capacity Working Group meeting: a 2-hour battery energy storage system (BESS), a 4-hour BESS, a simple cycle gas turbine (SCGT) (GE 7HA.03) with a 13-year amortization period and a SCGT using the same model with a 20-year amortization period and no Net EAS revenue assumed after 2040.[1]

Notably, a 2-hour BESS was not identified in the Scope of Work for this DCRP and, prior to this meeting, it was not discussed as a potential proxy unit option at all.[2] IPPNY strongly opposes the selection of a 2-hour BESS as the proxy unit in any Locality because the limitations of its

[1] While not addressed herein, for all the reasons provided during the May 20th meeting, the last technology option also must be eliminated. Retrofit costs required to operate post-2040 cannot simply be "recast" as variable costs and, as 1898 data has demonstrated, these fixed costs are so high that further review of the fossil fuel GT & retrofit option designated in the Scope of Work is no longer warranted. IPPNY reserves its right to comment on this option in the future should it nevertheless continue to be advanced.

[2] Indeed, because it was not previously designated in this process which began back in September and was not considered until the May 20 meeting, AG specified the 2-hour BESS costs were "high level estimates." In addition, both AG and 1898 emphasized a number of times during the meeting that the Gross CONE costs for the 2-hour BESS had not yet been compiled, and thus, the preliminary reference prices for this unit were at least one level of review behind the other technologies. In addition, how capacity, energy and ancillary service capabilities of resources will change as the system evolves has not been discussed or considered in a fulsome manner.

operating capabilities, including its very limited duration, raise significant reliability and modeling concerns that prohibit its consideration.

Section 5.14.1.2.2 of the NYISO's Services Tariff specifies, "For purposes of [the DCRP 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." (emphasis added). By tariff, the NYISO's selection of the peaking plant and the calculation of its reference price thus requires two discrete determinations: (i) confirmation that a technology constitutes an eligible peaking plant technology; and, only if (i) can be met (ii) delineation and quantification of the factors specific to that technology, set accurately, supporting its economic viability.

For the technology to be an eligible peaking plant that meets the first requirement, the NYISO must determine that it is capable of operating for a sufficient duration to meet peak conditions. Likewise, determining whether a technology is economically viable requires more than producing theoretical costs and calculations. The technology must actually be capable of being developed (which, among other things, means it must be able to be financed on a merchant basis) in New York. The Consultants are charged with calculating the numbers in the first instance. The NYISO guides the process for the second stage to ensure a proxy unit is selected in each Locality that will generate an adequate market signal to meet the system's reliability needs over the long term.[3]

As FERC has long held, that price signal must be sufficient to retain existing and attract new resources needed to preserve reliability. The DCRP, applied correctly, produces that result.

Because it cannot meet the DCRP mechanism's two-part test, however, a 2-hour BESS does neither.

Notably, precedent in past NYISO DCRP FERC proceedings confirms that a technology cannot be deemed an eligible technology when its operating parameters do not accommodate deployment for a sufficient duration or when it cannot support reliable operations.[4] Likewise, the NYISO's limited look-ahead capability, forecast uncertainty, and the inability to utilize a resource when it would be most valuable must be considered when defining the function a resource can serve in the NYISO's markets – factors that have been affirmed by FERC.[5] It is further notable

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[3] *See New York Independent System Operator, Inc.*, 146 FERC ¶ 61,043 (2014) ("2014 DCRP FERC Order") at P 29 (finding NYISO Board ultimately tasked to determine proxy unit technology).

[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).

[5] *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).

that a 2-hour BESS is particularly ill-suited in the context of meeting transmission security requirements, a deterministic assessment and a significant consideration when assessing the ability to meet day-to-day system needs. Yet all of the reliability needs that the NYISO has found since its 2020 Reliability Needs Assessment result from transmission security assessment violations, varying in duration from 11 to 15 hours. The inability of the 2-hour BESS to meet transmission security assessment requirements further demonstrates it cannot be deemed an eligible peaking plant technology. ESR solicitations issued to date also have recognized the limitations inherent in this technology as a capacity resource.[6]

Only once it is determined to be an eligible peaking plant can the economic factors be measured. Should the Consultants nevertheless continue to review the economic factors specific to this technology notwithstanding the foregoing, the Services Tariff requires the economic viability of the resource be meaningfully determined. To do so, the Consultants' calculations must recognize the risks inherent in the proposed technologies. Initially, it must be recognized that the purpose and structure of the Capacity Accreditation Factor (CAF) fundamentally differ from considerations specific to determining whether a technology can be designated the proxy peaking plant in a DCRP; the two cannot be conflated.

Specifically, in contrast to the full scope of considerations that must be considered to designate the proxy unit in the DCRP context, the CAF is a subpart of that analysis, a component of the overall Demand Curve design that will indisputably affect a unit's revenue stream. Risk associated with the CAF, thus, must be reflected in the technology's financial parameters.[7] The NYISO produced the first CAFs in late February and the CAF value for all resources will be updated each year by March 1 to set the Demand Curves to be in effect for the upcoming Capability Year. Notably, given its inherent design and concomitant operational limitations, the CAF calculated for a 2-hour BESS in this first cycle is already relatively low from the outset compared to the other potential peaking units studied.

Additionally, AG must at least qualitatively address the fact that the 2-hour BESS will have a precipitously decreasing CAF as the system transitions to more intermittent and non-dispatchable resources. With such a short duration, the technology is incapable of responding to even a small change in the peak load duration period thereby driving a certain reduction to its CAF. The exact timing and percentage decline do not need to be calculated. Rather, the fact that it will occur must be addressed. Investors will ascribe a higher risk premium to this technology, and thus, the financial parameters used for the 2-hour BESS must be revised to be increased accordingly. The answer to this problem is not a floor or ceiling on the CAF limits or reference prices for this DCRP – a mechanism that eviscerates the purpose of the CAF and

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[6] 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. It is further notable that the revised Energy Storage Roadmap issued by DPS Staff and NYSERDA just two months ago and currently pending before the NYPSC based the analyses on 4-hour and 8-hour ESRs with the associated recognition that, over time, the system will require longer duration ESRs to meet CLCPA mandates as it transforms. (*See* NYPSC Case 18-E-0130, *In the Matter of Energy Storage Deployment Program*, "New York's 6 GW Energy Storage Roadmap: Policy Options for Continued Growth in Energy Storage" (issued March 15, 2024) at 65.) The associated Final Supplemental Generic Environmental Impact Statement filed on December 14, 2023 in that proceeding accordingly tracked the same scope in assessing the environmental impacts of the State's proposed action.

[7] During the May 20 Meeting, AG stated that it had not yet varied any of the financial parameters by technology. As set forth herein, differentiating the financial parameters for at least the 2-hour BESS technology is indisputably required to accurately reflect its Net CONE.

would lock CAF levels that exceed the actual reliability value of this resource; the answer is an adequate reflection of CAF forecasts and volatility into the assessment for this technology.

Relatedly, given the operational limitations of the 2-hour BESS, it is also the case that the CAF for this technology will drop off more significantly than for other peaking technologies. This is consistent with the 2-hour BESS CAF having the greatest variability in the estimates that the NYISO has provided for all CAFs to date – analyses that, by virtue of having used different base case assumptions, revealed the sensitivity to system change driven directly by this technology's capabilities. It is thus highly likely that the decline in its CAF rating will outstrip the impact of its lower fixed costs on the reference price calculation well within the 20-year amortization period AG has set for the unit. Because the resource will no longer be designated as the peaking plant, it is unlikely it will be able to recover its investment, a fact that investors will also consider in risk premiums.

Moreover, a 2-hour BESS will exacerbate a problem inherent in the modeling of Net CONE for batteries due to the failure of real time uses of the battery that deviate from day-ahead schedules to be taken into account for its impact on the unit's derating factor. If a battery lacks sufficient energy to meet its hourly day ahead commitment at the beginning of any hour during the peak load window for which it has been scheduled for energy or reserves, this will affect its derate factor the following year. This will reduce the amount of UCAP the unit will be qualified to sell. The shorter the duration of the battery, the greater the potential that real-time decisions to deviate from the day-ahead schedule will result in such a derate given the likelihood that a battery is likely to receive 10 min reserve schedules for most hours during the peak load window.

Given the grid in transition period we are in to meet CLCPA mandates and the State's overall climate change public policy mandates, implementation of the DCRP in accordance with its parameters is critical to produce the adequate price signals its structure drives. Deviating from these parameters to designate a 2-hour BESS will threaten the economics of resources that currently provide the necessary reliability services.

There are currently many large resources throughout the State that provide critical reliability services and rely almost exclusively on the ICAP market for substantial revenues.[8] Price signals based on a 2-hour BESS will indicate a market with ample excess capacity and may force dispatchable resources to exit. When the NYISO is faced with the exit of these now uneconomic dispatchable resources, especially in areas of load growth, they will be faced with limited choices. One particularly unpalatable choice long disfavored by FERC will be the need for reliability must-run agreements.[9]

Based on the foregoing, the NYISO should eliminate the 2-hour BESS from consideration as the peaking reference unit due to the inherent limitations of its technology. However, should the unit continue to be theoretically considered as of this point in the DCRP process for informational purposes, AG must incorporate salient considerations addressed herein into the assumptions

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[8] As reflected in the Potomac Economics 2023 State of the Market Report, the Going Forward Costs for generation on Long Island and the Lower Hudson Valley are estimated to be higher than revenues for the period from 2021-2023. Absent adequate price signals, existing units forced to retire could only economically be replaced by 2-hour BESS. (*See* Potomac Economics, 2023 State of the Market Report (May 2024) at 5, A-208 through A-209).

[9] *New York Independent System Operator, Inc.,* 150 FERC ¶ 61,116 (2015) at P 2 (emphasizing "that RMR agreements should be of a limited duration so as to not perpetuate out-of-market solutions that have the potential, if not undertaken in an open and transparent manner, to undermine price formation").

used for this technology thereby adjusting the reference price point for the 2-hour BESS accordingly to ensure it reflects the Net CONE of a proxy plant in each Locality.

Respectfully submitted,

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