New York ISO
Independent System Operator

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November 29, 2024

Submitted Electronically

Honorable Debbie-Anne A. Reese, Secretary
Federal Energy Regulatory Commission
888 First Street N.E.
Washington, D.C. 20426

Re: Docket No. ER25-___-000, *New York Independent System Operator, Inc.*; 2025-2029 ICAP Demand Curve Reset Proposal

Dear Secretary Reese:

In accordance with Section 205 of the Federal Power Act,[1] Part 35 of the regulations of the Federal Energy Regulatory Commission ("Commission"), and Section 5.14.1.2.2 of the New York Independent System Operator, Inc. ("NYISO") Market Administration and Control Area Services Tariff ("Services Tariff"), the NYISO submits the proposed Installed Capacity ("ICAP") Demand Curves for the 2025-2026 Capability Year.[2] The NYISO also proposes the methodologies and inputs for use in conducting annual updates to determine the ICAP Demand Curves for the 2026-2027, 2027-2028, and 2028-2029 Capability Years.

The ICAP Demand Curves, as well the annual update methodologies and inputs, proposed herein are the result of the extensive periodic review process required by Section 5.14.1.2.2 of the Services Tariff. This quadrennial review process is commonly referred to as the "ICAP Demand Curve reset" or "DCR." Given the period covered by this periodic review, the NYISO refers to this as the "2025-2029 DCR."[3]

The NYISO conducted the DCR in compliance with the requirements of the Services Tariff. The NYISO carefully considered stakeholder input throughout the DCR and made multiple changes and refinements in response thereto. The proposal made in this filing is well supported, consistent with the requirements of the Services Tariff, adheres to Commission precedent, and should be found to be just and reasonable.

The NYISO respectfully requests: (i) issuance of an order on or before January 28, 2025 (*i.e.*, 60 days after filing) accepting this proposal; and (ii) an effective date of January 29, 2025

[1] 16 U.S.C. § 824d.

[2] Capitalized terms not otherwise defined herein shall have the meaning specified in the Services Tariff.

[3] References to "reset period" herein means the period of Capability Years for which ICAP Demand Curves resulting from the methodologies and inputs established during each DCR remain in effect. For example, the reset period covered by this DCR encompasses the 2025-2026 through 2028-2029 Capability Years.

for the tariff revisions proposed herein (*i.e.*, the day following the end of the statutory 60-day notice period).

I. List of Documents Submitted

The NYISO submits the following with this filing letter:

1. A clean version of the proposed revisions to the Services Tariff ("Attachment I");

2. A blacklined version of the proposed revisions to the Services Tariff ("Attachment II");

3. An Affidavit from Paul J. Hibbard, Dr. Todd Schatzki, Joseph Cavicchi, Charles Wu, and Dr. Daniel Stuart of Analysis Group, Inc., including a report titled *Independent Consultant Study to Establish New York ICAP Demand Curve Parameters for the 2025-2026 through 2028-2029 Capability Years: Final Report (Updated Version)* dated October 2, 2024 ("Attachment III");

4. An Affidavit from Chad W. Swope, Kieran McInerney, and Matthew Lind of 1898 & Co. ("Attachment IV");

5. An Affidavit from Zachary T. Smith of the NYISO including a report titled *Proposed NYISO Installed Capacity Demand Curves for the 2025-2026 Capability Year and Annual Update Methodology and Inputs for the 2026-2027, 2027-2028, and 2028-2029 Capability Years: Final Report (Updated)* dated October 2024 ("Attachment V"); and

6. An Affidavit from Aaron D. Markham of the NYISO ("Attachment VI").

II. Background

Every four years, the NYISO and its stakeholders undertake a comprehensive review to determine the necessary inputs and assumptions for developing the ICAP Demand Curves for the four-year period covered by the DCR.

The NYISO develops ICAP Demand Curves based on the estimated cost to construct and operate a hypothetical new capacity supply resource in various locations throughout New York (*i.e.*, a "peaking unit" or "peaking plant").[4] This cost is offset by an estimate of the potential

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[4] Throughout this filing, the NYISO utilizes the terms "peaking plant" and "peaking unit" interchangeably to refer to the technology option required by the Services Tariff to serve as the basis for each ICAP Demand Curve. Services Tariff § 5.14.1.2.2 refers to the hypothetical new capacity supply resource as a "peaking plant." The Services Tariff defines a "peaking unit" to mean "the unit with technology that results in the lowest fixed costs and highest variable costs among all other units' technology that are economically viable." The Services Tariff defines a "peaking plant" to mean "the number of units (whether one or more) that constitute the scale identified in the [DCR]." The Services

revenues the hypothetical resource could earn from participating in the NYISO-administered Energy and Ancillary Services ("EAS") markets.[5] The resulting net value determines the revenue the hypothetical resource would need to receive from the capacity market to obtain sufficient revenues to support market entry under the system conditions specified for use in the DCR. Specifically, for the purposes of the DCR and establishment of the ICAP Demand Curves, the costs and estimated revenues of each peaking plant are not determined based on current market conditions. Instead, the Services Tariff requires that such costs and revenues be estimated under market conditions in which the available capacity is equal to the applicable minimum Installed Capacity requirement plus the MW value of the peaking plant (referred to herein as the "tariff-prescribed level of excess conditions").[6] This requirement is designed to ensure that the ICAP Demand Curves are established at a level that should provide sufficient revenues to cover the costs of a peaking plant when market entry by such facility is required to maintain resource adequacy.

In February and March 2023, the NYISO collaborated with stakeholders on the development of a request for proposals to select an independent consultant to assist with conducting the 2025-2029 DCR.[7] The NYISO issued the request for proposals in March 2023. After review of the proposals submitted, the NYISO selected Analysis Group, Inc. ("AG") to serve as the independent consultant for the 2025-2029 DCR.[8] Consistent with past DCRs, AG subcontracted with an engineering consultant to assist in the development of certain aspects of the scope of work. For the 2025-2029 DCR, AG subcontracted with 1898 & Co. 1898 & Co. primarily assisted AG with the assessment of potential technologies to serve as the hypothetical peaking plant used in the establishment of each ICAP Demand Curve, as well as the costs to construct, own and operate such peaking plant technology options. AG, together with 1898 & Co., are hereinafter referred to collectively as the "Independent Consultant."

The Independent Consultant commenced discussions with stakeholders in August 2023 and continued discussions with stakeholders at the Installed Capacity Working Group ("ICAPWG") over the course of the following 13 months to inform its final report and recommendations for the 2025-2029 DCR. Stakeholders provided input on the Independent Consultant's assumptions, methodologies, analysis, and preliminary results. The Independent Consultant also received input from the independent Market Monitoring Unit ("MMU") throughout the DCR.

Tariff refers to the levelized cost to construct a peaking plant in each location as the "peaking plant gross cost."

[5] The Services Tariff refers to the estimate of potential energy market revenue earnings for a peaking plant as the "net Energy and Ancillary Services revenue offset." *See* Services Tariff § 5.14.1.2.2.

[6] Services Tariff § 5.14.1.2.2. For purposes of the 2025-2029 DCR, the specified system conditions are determined based on the NYCA Minimum Installed Capacity Requirement and the applicable Locational Minimum Installed Capacity Requirements established for the 2024-2025 Capability Year.

[7] Services Tariff § 5.14.1.2.2.4.1.

[8] Services Tariff § 5.14.1.2.2.4.2.

Based on its analysis and consideration of the feedback received from stakeholders and the MMU, the Independent Consultant issued its draft report for the 2025-2029 DCR on June 7, 2024 with a subsequent updated version issued on June 17, 2024.[9] The Independent Consultant reviewed its draft report at the June 13, 2024 ICAPWG meeting. Stakeholders submitted written comments in response to the draft report.[10]

After consideration of the feedback received, the Independent Consultant issued an interim version of its final report for the 2025-2029 DCR on July 29, 2024. This interim version reflected the Independent Consultant's updated recommendations on inputs, assumptions, and methodologies for the 2025-2029 DCR, as well as updated preliminary results.[11] The Independent Consultant issued the updated version of its final report on September 19, 2024 with a subsequent version reflecting certain technical corrections issued on October 2, 2024.[12] The updated version reflected the Independent Consultant's recommended ICAP Demand Curves for the 2025-2026 Capability Year using the tariff-prescribed three-year historical data period applicable for such ICAP Demand Curves (*i.e.*, September 1, 2021 through August 31, 2024).[13]

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[9] Services Tariff § 5.14.1.2.2.4.3. The Independent Consultant's draft report provided results and recommendations, including preliminary values for the 2025-2026 Capability Year ICAP Demand Curves using the historical data period from September 1, 2020 through August 31, 2023. The Independent Consultant noted that: (1) all preliminary results and recommendations remained subject to change; and (2) the calculated values for the 2025-2026 Capability Year ICAP Demand Curves would be updated in the Independent Consultant's final report to reflect the historical data period prescribed by the tariff for use in establishing such curves (*i.e.*, September 1, 2021 through August 31, 2024). The Independent Consultant's updated draft report is available at: https://www.nyiso.com/documents/20142/45393991/Analysis-Group-2025-2029-DCR-Draft-Report-Revised%20-redline.pdf.

[10] Services Tariff §§ 5.14.1.2.2.4.4 and 5.14.2.2.2.4.5. Comments submitted in response to the Independent Consultant's draft report are available at: https://www.nyiso.com/installed-capacity-market. From this page, the comments can be obtained by navigating through the following content sections: "Reference Documents"→"2025-2029 Demand Curve Reset"→"Stakeholder Comments"→"The Consultant's Draft Report."

[11] The historical data period utilized in calculating preliminary values for the 2025-2026 Capability Year ICAP Demand Curves continued to reflect the period from September 1, 2020 through August 31, 2023. The Independent Consultant noted that an updated version of its final report would be issued using the required three-year historical period (*i.e.*, September 1, 2021 through August 31, 2024) to calculate the Independent Consultant's recommended ICAP Demand Curves for the 2025-2026 Capability Year. The Independent Consultant's interim final report is available at: https://www.nyiso.com/documents/20142/46168401/AG-1898-2025-2029-DCR-Interim-Final-Report.pdf.

[12] Services Tariff § 5.14.1.2.2.4.6.

[13] The updated version of the Independent Consultant's final report is included as Exhibit F of the *Affidavit of Paul J. Hibbard, Dr. Todd Schatzki, Joseph Cavicchi, Charles Wu, and Dr. Daniel Stuart* attached hereto as Attachment III ("AG Affidavit"). The accompanying *Affidavit of Chad W. Swope, Kieran McInerney, and Matthew Lind* from 1898 & Co. is included as Attachment IV to this filing ("1898 & Co. Affidavit").

Based on consideration of stakeholder and MMU feedback throughout the DCR, the Independent Consultant's draft report, and comments submitted in response to the Independent Consultant's draft report, NYISO staff issued its draft recommendations for the 2025-2029 DCR on July 29, 2024.[14] NYISO staff reviewed its draft recommendations at the August 1, 2024 ICAPWG meeting. Stakeholders and the MMU submitted written comments in response to NYISO staff's draft recommendations.[15]

After consideration of the feedback provided, NYISO staff issued an interim version of its final recommendations on September 5, 2024 that reflected certain changes in inputs, assumptions, and methodologies in response to feedback on its draft recommendations.[16] NYISO staff issued its updated final recommendations on September 19, 2024 with a subsequent version reflecting certain technical corrections issued on October 2, 2024.[17] At the September 10, 2024 and September 24, 2024 ICAPWG meetings, NYISO staff reviewed its interim final and final recommendations, respectively, and highlighted aspects that differed from the Independent Consultant's final report and/or NYISO staff's draft recommendations. These changes included: (1) application of sales tax to the maintenance and operating costs for the lithium-ion battery energy storage system ("BESS") technology options; (2) updates to the methodology for estimating the net EAS revenue offset values for the BESS technology options to maintain sufficient stored energy to meet day-ahead schedules during the Peak Load Window; (3) revising the assumed interconnections for the BESS technology options to reflect lower

[14] Services Tariff § 5.14.1.2.2.4.7. Consistent with the Independent Consultant's draft report, NYISO staff's draft recommendations included preliminary results and recommendations, including preliminary values for the 2025-2026 Capability Year ICAP Demand Curves using historical data for the period from September 1, 2020 through August 31, 2023. NYISO staff noted that the recommendations and results set forth in its draft recommendations were preliminary and subject to change. NYISO staff also noted that updated values for the 2025-2026 Capability Year ICAP Demand Curves using data for the period from September 1, 2021 through August 31, 2024 would be included in its final recommendations. NYISO staff's draft recommendations are available at: https://www.nyiso.com/documents/20142/45393991/NYISO-Staff-Draft-DCR-Recommendations.pdf.

[15] Services Tariff §§ 5.14.1.2.2.4.7 and 5.14.1.2.2.4.5. Comments submitted in response to NYISO staff's draft recommendations are available at: https://www.nyiso.com/installed-capacity-market. From this page, the comments can be obtained by navigating through the following content sections: "Reference Documents"→"2025-2029 Demand Curve Reset"→"Stakeholder Comments"→"NYISO Staff's Draft Recommendations."

[16] Consistent with its draft recommendations, NYISO staff's interim final recommendations included preliminary results and recommendations, including preliminary values for the 2025-2026 Capability Year ICAP Demand Curves using historical data for the period from September 1, 2020 through August 31, 2023. NYISO staff noted that the recommendations and results set forth in its interim final recommendations were preliminary and subject to change. NYISO staff also noted that updated values for the 2025-2026 Capability Year ICAP Demand Curves using data for the period from September 1, 2021 through August 31, 2024 would be included in its final recommendations. NYISO staff's interim final recommendations are available at: https://www.nyiso.com/documents/20142/46168401/NYISO-Staff-DCR-Interim-Final-Report.pdf.

[17] Services Tariff § 5.14.1.2.2.4.8. NYISO staff's final recommendations are included as Exhibit B of the *Affidavit of Zachary T. Smith* attached hereto as Attachment V ("Smith Affidavit").

voltage interconnections (*i.e.*, 115 kV or 138 kV depending on location); (4) inclusion of land lease payment costs for the full duration of the assumed development and construction period for all peaking plant technology options; and (5) revising the derating factor used as part of translating ICAP Demand Curves to Unforced Capacity ("UCAP") terms for the BESS technology options to a value of 2.5%.[18]

Following issuance of NYISO staff's final recommendations, stakeholders submitted written comments to the NYISO Board of Directors ("Board") regarding the recommendations for the 2025-2029 DCR.[19] Stakeholders also participated in oral presentations before the Board on October 14, 2024.[20] After due consideration of: (1) stakeholder comments throughout the DCR, including those provided in writing and orally in response to NYISO staff's final recommendations; (2) comments provided by the MMU throughout the DCR; (3) the Independent Consultant's final report; and (4) NYISO staff's final recommendations, the Board directed NYISO staff to file the results for the 2025-2029 DCR as proposed herein. The Board-approved proposal reflects adoption of NYISO staff's final recommendations subject to incorporation of the following changes: (1) removing the connecting electric transmission line (commonly referred to as the "generator lead") costs from the determination of the federal investment tax credit ("ITC") benefit value for the BESS technology options; (2) removing the assumed sales tax exemption for initial installation and construction labor costs for the BESS technology options related to qualifying as a capital improvement; and (3) reducing the realized value of the accelerated depreciation benefits for the BESS technology options to account for the cost of monetizing benefits in excess of tax liabilities for a given year (*i.e.*, reducing the realized value of the excess accelerated depreciation benefits by the same 8% reduction assumed for monetizing the ITC benefits).[21]

As further described herein, the NYISO proposes to use a 2-hour BESS unit in establishing each of the ICAP Demand Curves for the 2025-2029 reset period. The 2-hour BESS unit replaces the H-class frame turbines that the Commission approved for the last reset (*i.e.*, the

[18] NYISO, *2024-2029 ICAP Demand Curve Reset: NYISO Staff Interim Final Recommendations* (presented at the September 10, 2024 ICAPWG meeting), available at: https://www.nyiso.com/documents/20142/46865072/2025-2029%20DCR%20-%20Interim%20Final%20Staff%20Recommendations%2009102024%20ICAPWG.pdf; and NYISO, *2025-2029 ICAP Demand Curve Reset (DCR): NYISO Staff Final Recommendations* (presented at the September 24, 2024 ICAPWG meeting), available at: https://www.nyiso.com/documents/20142/47124364/2025-2029%20DCR%20-%20Final%20Staff%20Recommendations%2009242024%20ICAPWG.pdf.

[19] Services Tariff § 5.14.1.2.2.4.9. Stakeholder comments submitted to the Board are available at: https://www.nyiso.com/installed-capacity-market. From this page, the comments can be obtained by navigating through the following content sections: "Reference Documents"→"2025-2029 Demand Curve Reset"→"Stakeholder Comments"→"Comments to the NYISO BOD."

[20] Services Tariff § 5.14.1.2.2.4.10.

[21] Smith Affidavit at ¶ 11 and 26-29, Exhibit A and Exhibit B.

2021-2025 DCR).[22] For the New York Control Area ("NYCA") and G-J Locality ICAP Demand Curves, the NYISO assessed more than one generic site location for a potential peaking plant. In these cases, the NYISO proposes selection of the location that results in the lowest reference point price for each ICAP Demand Curve.[23] Based on the Board-approved results of the DCR proposed herein, the NYISO proposes use of a peaking plant located within: (1) Load Zone F for the NYCA ICAP Demand Curve; and (2) the Dutchess County portion of Load Zone G for the G-J Locality ICAP Demand Curve.[24]

The DCR serves as a forum for thoroughly vetting proposed methodologies, inputs and assumptions used in establishing the ICAP Demand Curves. The collaborative nature of this open and transparent process helps to reduce the scope of disputed issues. However, consensus among divergent stakeholder interests was not achieved on all aspects of the 2025-2029 DCR. The NYISO anticipates that the following disputed matters are likely to be raised in this proceeding: (1) the eligibility and selection of a 2-hour BESS unit to serve as the peaking plant technology; (2) the assumed cost of debt and cost of equity used in translating the up-front capital costs of developing and owning the BESS technology options into an annual levelized value; (3) the assumed mortgage recording tax exemption for all peaking plant technology options; (4) the estimated cost of a lower voltage interconnection for the BESS technology options in Load Zone J; (5) the absence of a cost offset for the BESS technology options to account for potential out-of-market incentives available from the energy storage procurement program recently approved by the New York State Public Service Commission ("NYSPSC"); (6) the assumed amortization period used in translating the up-front capital costs of developing and owning the fossil-fired frame turbine technology options into an annual levelized value; and (7) the derivation of cost component weighting factors for use in calculating the composite escalation rates used to adjust the annualized gross cost of new entry ("CONE") values as part of the tariff-prescribed annual update process to determine the ICAP Demand Curves for years two through four of the reset period.

III. Peaking Plant Technology and Capital Costs

Section 5.14.1.2.2 of the Services Tariff defines the peaking unit as the "technology that results in the lowest fixed costs and highest variable costs among all other units' technology that are economically viable." The "peaking unit" construct arises from a 2005 Commission directive that eliminated prior tariff provisions requiring the demand curves to be based on the costs and estimated revenues of a gas turbine.[25] In directing use of a technology agnostic

[22] *New York Independent System Operator, Inc.*, 175 FERC ¶ 61,012 (2021) ("2021-2025 DCR Initial Order")

[23] 2021-2025 DCR Initial Order at P 8 and 19.

[24] If the inputs and assumptions for any of these locations were changed, the proposed location for the peaking plant used in determining the NYCA and/or G-J Locality ICAP Demand Curve may also need to be revised.

[25] *New York Independent System Operator, Inc.*, 113 FERC ¶ 61,271 at P 11-12 (2005) ("2005 DCR Process Order").

construct, the Commission intended to provide flexibility and permit use of different technologies over time based on changes in conditions and circumstances.[26] In fact, in requiring use of this construct, the Commission noted that "[i]t is entirely possible, due to future advancements in technology, that gas turbines may not be the preferred type of unit to use in the future resets of the NYISO ICAP Demand Curves."[27]

The Commission has established only one minimum eligibility criterion for assessing whether a particular technology is economically viable. Specifically, the Commission has held that to be economically viable a technology must, at a minimum, be capable of supplying capacity in the NYISO-administered capacity market.[28] The Commission has further held that beyond this criterion, economic viability determinations are a matter of judgment that is informed by the consideration of multiple factors.[29] These factors include: (i) the availability of the technology to most market participants; (ii) existence of sufficient operating experience to demonstrate that the technology is proven and reliable; (iii) whether the technology is dispatchable and capable of being cycled to provide peaking service; and (iv) the ability to achieve compliance with applicable environmental requirements and other regulatory requirements.[30]

The Commission has also recognized that the peaking plant design for each ICAP Demand Curve must be capable of being replicated.[31] As such, the peaking plant design should not represent a least possible cost design that may support only the construction of a single facility. Establishing the ICAP Demand Curves purely based on a least possible cost design is likely to result in providing price signals that could sustain only the development of, at best, a single facility. If, however, system conditions dictated a need to develop more than one peaking plant during a given reset period, such a market design would likely fail its objective of supporting new entry when needed and could require reliance on out-of-market action to ensure sufficient capacity supply to maintain resource adequacy in New York.

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[26] *Id.*

[27] *Id.* at P 11.

[28] *New York Independent System Operator, Inc.*, 146 FERC ¶ 61,043 at P 60 (2014) ("2014-2017 DCR Order").

[29] *See, e.g., New York Independent System Operator, Inc.*, 125 FERC ¶ 61,299 at P 20 (2008) ("2008-2011 DCR Rehearing Order"); *New York Independent System Operator, Inc.*, 134 FERC ¶ 61,058 at P 37 (2011) ("2011-2014 DCR Order"); 2014-2017 DCR Order at P 60; and *New York Independent System Operator, Inc.*, 158 FERC ¶ 61,028 at P 18 (2017) ("2017-2021 DCR Order").

[30] *Id.* The Independent Consultant applied these factors in this DCR to guide determinations regarding the appropriate technology and plant design to use in establishing each ICAP Demand Curve. *See, e.g.*, AG Affidavit at Exhibit F, pp. 13-23 ("Independent Consultant Report"); and 1898 & Co. Affidavit at ¶ 14; and Smith Affidavit at Exhibit B, pp. 7-11 ("NYISO Staff Recommendations").

[31] 2017-2021 DCR Order at P 19 and 65.

The 2025-2029 DCR is the first reset following the implementation of the NYISO's capacity accreditation construct.[32] The implementation of the capacity accreditation framework impacts the assessment of the technology options evaluated for this reset. The various technology options have differing Capacity Accreditation Factor ("CAF") values. This can produce material differences in the resulting demand curves when considered on a UCAP basis.[33] Accordingly, it is important to consider the potential resulting UCAP demand curves in assessing the various technology options being evaluated. Failure to properly account for CAF values and their impact on the resulting UCAP demand curves used in conducting the monthly spot market auctions could result in selection of an incorrect peaking plant technology. This could undermine the resulting effectiveness of the demand curves at producing appropriate price signals regarding the value of capacity for maintaining New York's resource adequacy requirements. As a result, the selection of the appropriate technology option for the 2025-2029 DCR is designed to represent the technology that minimizes the cost of procuring UCAP.[34]

The NYISO carefully evaluated the above-described considerations, as well as the views of all stakeholders and the MMU, in determining the peaking plant designs proposed herein. The NYISO's proposal has been calibrated to produce ICAP Demand Curves that provide appropriate price signals regarding the value of capacity in each capacity region, while simultaneously ensuring that the curves can provide the needed revenues to elicit new market entry when required to ensure that resource adequacy in New York is maintained.

Although various gas turbine designs have been used to establish the ICAP Demand Curves since their inception, the confluence of economic, regulatory, and other factors indicate that a change in technology is warranted for this reset.[35] As described herein, a 2-hour BESS unit is the appropriate technology option representing the "lowest fixed, and highest variable costs" among the viable technology options assessed for the 2025-2029 DCR.

A. Peaking Plant Technology

Consistent with prior DCRs, the Independent Consultant developed information for a

[32] Docket No. ER22-772-000, *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 (January 5, 2022); and *New York Independent System Operator, Inc.*, 179 FERC ¶ 61,102 (2022) ("Capacity Accreditation Order").

[33] The NYISO's capacity market is designed to ensure that there is sufficient generating capacity available to maintain resource adequacy. The product bought and sold in the capacity market is called UCAP. UCAP represents the amount of ICAP that is available at a particular time; it is the amount of ICAP available, adjusted for periods that resources are not available to supply ICAP due to forced outages or other limitations on the operating capability of a resource.

[34] Independent Consultant Report at 113-114 and 120; AG Affidavit at ¶ 40 and 61; NYISO Staff Recommendations at 45-46; and Smith Affidavit at ¶ 17.

[35] 2005 DCR Process Order at P 11.

variety of potential peaking plant technology options.[36] The Independent Consultant produced results for the various technology options in Load Zone C, Load Zone F, Load Zone G (Dutchess County), Load Zone G (Rockland County), Load Zone J ("New York City" or "NYC"), and Load Zone K ("Long Island" or "LI").

The technology options evaluated included various gas turbine designs, such as frame turbines, aeroderivative turbines, and reciprocating engines. The Independent Consultant also evaluated battery energy storage technology options. Battery energy storage technologies were also evaluated in the 2021-2025 DCR but not recommended for selection as the peaking plant in any location because the H-class frame turbine represented a lower cost, viable technology option for the last reset.[37] For informational purposes only, the Independent Consultant also considered the potential for retrofitting a frame turbine to subsequently operate solely by burning hydrogen as a proxy for a potential "zero-emissions" design for compliance with the requirement of New York's Climate Leadership and Community Protection Act ("CLCPA") that 100% of New York load to be served by zero-emissions resources by 2040.[38]

As described below, based upon the results of its economic viability screening, the Independent Consultant identified the following options as viable candidate technologies to evaluate for the 2025-2029 DCR:

- H-class fossil-fired frame turbine (~325 MW);
- J-class fossil-fired frame turbine (~400 MW);
- 2-hour lithium-ion battery storage (200 MW, 400 MWh discharge capability);
- 4-hour lithium-ion battery storage (200 MW, 800 MWh discharge capability);
- 6-hour lithium-ion battery storage (200 MW, 1,200 MWh discharge capability); and
- 8-hour lithium-ion battery storage (200 MW, 1,600 MWh discharge capability).

1. <u>Economic Viability Assessment</u>

<u>*Fossil-Fired Simple Cycle Gas Turbine ("SCGT") Options*</u>

For fossil-fired gas turbine options, the evaluation assessed various turbine designs and types (*e.g.*, frame turbines, aeroderivative units, and reciprocating engines).[39] These technologies have been found to be economically viable in past resets with one or more types being selected in each reset to serve as the appropriate peaking plant technology for establishing the ICAP Demand Curves.

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[36] Independent Consultant Report at 13-23; AG Affidavit at ¶ 56-75; 1898 & Co. Affidavit at ¶ 15-21; NYISO Staff Recommendations at 7-11; and Smith Affidavit at ¶ 12-13.

[37] Docket No. ER21-502-000, *New York Independent System Operator, Inc.*, 2021-2025 ICAP Demand Curve Reset Proposal at 9 (November 30, 2024); and NYISO Staff Recommendations at 9.

[38] Chapter 106 of the Laws of the State of New York of 2019.

[39] Independent Consultant Report at 14-18; 1898 & Co. Affidavit at ¶ 19 and 24-25; NYISO Staff Recommendations at 10-11; and Smith Affidavit at ¶ 13.

Based on a preliminary, high-level cost screening, the Independent Consultant eliminated aeroderivative units and reciprocating engines because their fixed costs significantly exceed the fixed costs of frame turbines. Therefore, these options would not satisfy the overarching requirement to have the "lowest fixed costs" in comparison to other viable technology options.[40] As a result, the Independent Consultant identified two frame turbine options for evaluation – a frame turbine model that is capable of operating without selective catalytic reduction ("SCR") emissions control technology (*i.e.*, H-class frame turbine represented by the GE 7HA.02 unit) and a newer, more efficient frame turbine that would require SCR emissions control technology in all locations (*i.e.*, J-class frame turbine represented by the GE 7HA.03 unit).[41]

BESS Unit Options

With respect to its evaluation of BESS units, the Independent Consultant initially reviewed various battery chemistry types and durations. Noting that lithium-ion technology is the most commercially mature battery storage technology that is readily available in the market at this time, the Independent Consultant recommended utilization of the lithium-ion as the representative BESS unit technology for the 2025-2029 DCR.[42] Rather than select a particular manufacturer or chemistry, the Independent Consultant developed cost estimates for battery storage that are representative of the three most commonly utilized lithium-ion chemistry options (*i.e.*, lithium nickel manganese cobalt oxide, lithium iron phosphate, and lithium nickel cobalt aluminum oxide).[43] For purposes of evaluating BESS units, the Independent Consultant used a purpose-built enclosure design to reflect current market trends for constructing such facilities.[44]

The Independent Consultant determined that the BESS units satisfied all applicable economic viability screening factors.[45] With respect to the screening factors, lithium-ion battery storage was found to be economically viable because the technology is widely available to

[40] Independent Consultant Report at 15-18; AG Affidavit at ¶ 59; 1898 & Co. Affidavit at ¶ 24; and NYISO Staff Recommendations at 10-11.

[41] Independent Consultant Report at 17-18; 1898 & Co. Affidavit at ¶ 24-25 and 30; NYISO Staff Recommendations at 10-11; and Smith Affidavit at ¶ 13. The Independent Consultant and NYISO recommend consideration of a dual-fuel GE 7HA.03 with SCR emissions controls as the representative fossil-frame turbine technology option in all locations, except for Load Zone K. For Load Zone K, the deliverability assessment conducted by the NYISO identified that the GE 7HA.03 unit would incur substantial deliverability costs while the smaller sized GE 7HA.02 unit would not. As a result, the Independent Consultant and the NYISO recommend a dual-fuel GE 7HA.02 with SCR emissions controls as the representative fossil-fired frame turbine option for Load Zone K.

[42] Independent Consultant Report at 18-20; AG Affidavit at ¶ 60; 1898 & Co. Affidavit at ¶ 15-18; and NYISO Staff Recommendations at 8-9.

[43] Independent Consultant Report at 19-20; 1898 & Co. Affidavit at ¶ 22 and 27; and NYISO Staff Recommendations at 8-9.

[44] Independent Consultant Report at 20; and 1898 & Co. Affidavit at ¶ 22.

[45] Independent Consultant Report at 19-20; AG Affidavit at ¶ 38, 59-60 and 62; 1898 & Co. Affidavit at ¶ 15-16; NYISO Staff Recommendations at 8-9; and Smith Affidavit at ¶ 13.

developers. The Independent Consultant also identified that more than 10,000 MWh of lithium-ion battery storage capability is currently operating in the U.S. with varying energy discharge durations ranging from 1-hour to 8-hours. The Independent Consultant noted that battery storage is a highly flexible technology that can be economically dispatched. The Independent Consultant further noted that battery storage has the technical capability to be cycled to permit the discharge of stored energy during peak periods. The determination that a BESS unit is an economically viable technology candidate is consistent with the same finding last reset.

Consistent with the 2021-2025 DCR, the Independent Consultant evaluated BESS units with energy discharge durations of 4, 6, and 8 hours. For purposes of the 2025-2029 DCR, however, the Independent Consultant broadened the consideration to include a 2-hour BESS unit.[46] The 2-hour BESS unit was added to the evaluation following initial development of preliminary costs for the other technology options to, in part, address a concern that the failure to evaluate a 2-hour BESS unit could result in omitting evaluation of a viable technology option representing the "lowest fixed costs" among all other viable options.[47] In broadening the BESS unit options to include a 2-hour duration, the Independent Consultant confirmed that such option was economically viable based on the screening analysis described above for the BESS units.[48] Consistent with the Commission's requirement that a technology must, at a minimum, be able to supply capacity in the NYISO-administered markets, the Independent Consultant also noted that a 2-hour BESS unit is an eligible capacity supply resource for the NYISO's capacity market.[49]

Retrofit of SCGT to Zero-Emissions Operating Design

The Independent Consultant also conducted a limited review of the potential costs to retrofit a frame turbine to a "zero-emissions" operating design for compliance with the CLCPA requirement that 100% of load be served by zero-emissions resources by 2040.[50] To conduct this assessment, the Independent Consultant evaluated the cost to convert to burning hydrogen starting in 2040 as a proxy for a potential zero-emissions fuel option.

The Independent Consultant determined that, even if a zero-emissions design option were a viable technology candidate (which, as described below, was not found to be true for this DCR), it would be highly uneconomic compared to other viable technology options for the 2025-2029 DCR. The Independent Consultant estimated that the total cost to retrofit a frame turbine to operate solely on hydrogen, including the cost of storing sufficient hydrogen onsite to support

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[46] AG Affidavit at ¶ 59; 1898 & Co. Affidavit at ¶ 16; and NYISO Staff Recommendations at 9.

[47] AG Affidavit at ¶ 59; and NYISO Staff Recommendations at 9.

[48] AG Affidavit at ¶ 59; 1898 & Co. Affidavit at ¶ 16; NYISO Staff Recommendations at 9; and Smith Affidavit at ¶ 13.

[49] NYISO Staff Recommendations at 9; and Smith Affidavit at ¶ 13.

[50] Independent Consultant Report at 20-23; AG Affidavit at ¶ 41; 1898 & Co. Affidavit at ¶ 20-21; NYISO Staff Recommendations at 11; and Smith Affidavit at ¶ 25.

operations, could exceed $2 billion.[51] The Independent Consultant also identified that the site acreage requirements to facilitate onsite hydrogen storage present significant concerns regarding whether such a facility could feasibly be constructed in New York, especially in downstate population centers such as New York City and Long Island. Notably, the Independent Consultant estimated that a site between 60-70 acres would be required to accommodate onsite storage and compression of hydrogen.[52]

The Independent Consultant determined that such a technology option was not economically viable for the 2025-2029 DCR because it failed multiple screening factors.[53] For example, there is currently no commercial operating experience for a frame turbine operating on 100% hydrogen fuel. Additionally, such a design cannot demonstrate compliance with existing requirements because the NYSPSC has not established rules for eligibility of fuels, resources, or other technology options to qualify as a zero-emissions resource pursuant to the CLCPA. The NYSPSC initiated a proceeding to develop such rules.[54] To date, however, the NYSPSC has not issued any final rulings to establish such eligibility requirements.

In opposing the NYISO's proposal to establish the ICAP Demand Curves for the 2025-2029 DCR using a 2-hour BESS unit as the appropriate peaking plant technology, the MMU recommends use of a fossil-fired frame turbine with a 20-year amortization period under the presumption such option would continue operating in an alternative zero-emission compliant manner after 2039.[55] Notably, the MMU's proposal does not include consideration of any retrofit costs for converting to a zero-emission operating design beginning in 2040 or any impact that such alternative operating design may have on the estimated revenue earnings of such a plant.

The MMU's proposal is not viable and fails to comply with the requirements of the Services Tariff and Commission precedent.[56] The conditions for this reset are unchanged from the 2021-2025 DCR. Although the NYSPSC is actively considering potential rules to address the CLCPA's 2040 zero-emission energy requirement, the NYSPSC has yet to establish rules to define the eligibility of fuel options, technologies, emission controls, and/or other options to

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[51] Independent Consultant Report at 21-22; AG Affidavit at ¶ 118; 1898 & Co. Affidavit at ¶ 21; and NYISO Staff Recommendations at 11.

[52] Independent Consultant Report at 22; 1898 & Co. Affidavit at ¶ 21; and NYISO Staff Recommendations at 11.

[53] Independent Consultant Report at 20-21; AG Affidavit at ¶ 118; 1898 & Co. Affidavit at ¶ 20-21; NYISO Staff Recommendations at 11; and Smith Affidavit at ¶ 25.

[54] *See, e.g.*, NYSPSC Case 15-E-0302, *Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Program and a Clean Energy Standard*, Order Initiating Process Regarding Zero Emissions Target (May 18, 2023); and NYSPSC Case 15-E-0302, *supra*, Department of Public Service Staff Proposed Definitions of Key Terms in PSL §66-p (November 4, 2024).

[55] NYISO Staff Recommendations at Appendix A, pp. 9-13.

[56] Smith Affidavit at ¶ 24-25.

qualify as a CLCPA-compliant zero-emissions resource.[57] Absent such rules, the MMU's proposed alternative is unable to demonstrate compliance with applicable regulatory requirements and, therefore, is not a viable technology option. Furthermore, even if such rules existed, the Independent Consultant determined that retrofitting to operate solely on hydrogen – a likely retrofit option – is not viable because no unit currently has commercial operating experience on 100% hydrogen. As a result, such a design is not currently a proven technology option. The ICAP Demand Curves have never been established using a technology that is unproven.[58] The Commission has held that "[s]imply put, it is difficult to assert that a peaking plant … is economically viable when it has not been operated …."[59]

The United States Court of Appeals for the District of Columbia Circuit and the Commission determined in the last reset that absent zero-emission resource eligibility rules, it was reasonable for the NYISO to reduce the amortization period for a fossil-only resource to align with the 2040 zero-emission electricity mandate imposed by the CLCPA.[60] Given that circumstances have not changed, the NYISO has proposed to again align the amortization period for a fossil-only resource with the CLCPA's zero-emission electricity mandate, resulting in an assumed amortization period of 13 years for the 2025-2029 DCR.[61] The MMU's proposal to utilize a 20-year amortization period for a fossil-only option disregards precedent and the absence of any change in circumstances that would warrant a different outcome.

Lastly, even if the MMU's proposed alternative were viable, such alternative fails to comply with the requirements of the Services Tariff. Section 5.14.1.2.2 of the Services Tariff mandates that each DCR:

> assess: (i) the current localized levelized embedded cost of a peaking plant in each NYCA Locality, the Rest of State, and any New Capacity Zone, to meet minimum requirements … and (ii) the likely projected annual Energy and Ancillary Services revenues of the peaking plant … net of the costs of producing such Energy and Ancillary Services ….

[57] *See, e.g.*, NYSPSC Case 15-E-0302, *supra*, Order Initiating Process Regarding Zero Emissions Target (May 18, 2023); and NYSPSC Case 15-E-0302, *supra*, Department of Public Service Staff Proposed Definitions of Key Terms in PSL §66-p (November 4, 2024).

[58] *See, e.g.*, 2017-2021 DCR Order at P 28.

[59] *Id*.

[60] Case 23-1192, *New York State Public Service Commission v. Federal Energy Regulatory Commission*, On Petitions for Review or Orders of the Federal Energy Regulatory Commission at 9-13 (D.C. Cir. June 14, 2024); *New York Independent System Operator, Inc.*, 183 FERC ¶ 61,130 at P 31-37 (2023) ("2021-2025 DCR Second Remand Order"); and *New York Independent System Operator, Inc.*, 185 FERC ¶ 61,010 at P 30-47 (2023) ("2021-2025 DCR Second Remand Rehearing Order").

[61] Independent Consultant Report at 59-60; AG Affidavit at ¶ 41 and 117-120; NYISO Staff Recommendations at 27-28; and Smith Affidavit at ¶ 24.

The MMU's proposed alternative violates these fundamental requirements. The MMU's alternative technology design does not include any estimate of the potential costs to retrofit an existing fossil-only resource to a zero-emission compliant design. As identified by the assessment conducted for this reset, the magnitude of such retrofit costs could exceed $2 billion.[62] To comply with the Services Tariff, the estimated costs for such a retrofit must be accounted for in determining the gross CONE for any such technology option. The MMU also fails to account for any impact on the estimated EAS revenues resulting from converting to a zero-emission compliant design. The MMU's proposed alternative simply retains the revenue earning capability based on the operations of a fossil-only technology without any attempt to address the actual costs of operating in an alternative design mode. Again, such omission violates the express requirements of the Services Tariff.

As demonstrated by the foregoing, the technology alternative recommended by the MMU is not economically viable at this time and fails to comply with the express requirements of the Services Tariff. Consequently, the Commission should not adopt the MMU's proposal.

2. Recommended Peaking Plant Technology

Based on the results of the 2025-2029 DCR, as proposed herein, a 2-hour BESS unit was identified as the appropriate peaking plant technology option for establishing the ICAP Demand Curves in all capacity regions for this reset period. The results determined that a 2-hour BESS unit represents the "lowest fixed, and highest variable cost" technology option among the viable options evaluated for each ICAP Demand Curve. Considering the potential UCAP-based demand curves that may result from the selection of a 2-hour BESS unit also demonstrates that a 2-hour BESS unit represents the technology option that produces the lowest cost to procure UCAP. As a result, a 2-hour BESS unit is the technology option that complies with the requirements of the Services Tariff to serve as the basis for determining the ICAP Demand Curves for the 2025-2029 reset period.

Certain stakeholders objected to the consideration of a 2-hour BESS unit and questioned its eligibility to serve as a peaking plant technology. Such stakeholders raised concerns including: (1) the capability of a 2-hour BESS unit to meet peak demand needs; (2) the impacts of future CAF values for a 2-hour BESS unit including implications for future resets; (3) the need to meet transmission security based reliability needs; (4) the impact of future declines in the cost of BESS units; and (5) the capability of demand curves based on a 2-hour BESS unit to support retention of existing resources. As demonstrated below, such claims are unwarranted. The NYISO carefully considered the concerns raised by stakeholders and the MMU in concluding that a 2-hour BESS unit qualifies as an economically viable technology option that is capable of supporting New York's resource adequacy requirements.

Unless otherwise noted, the remainder of this filing letter addresses matters based on the recommendation to use a 2-hour BESS unit as the peaking plant technology to establish the

[62] Independent Consultant Report at 20-23; AG Affidavit at ¶ 118; 1898 & Co. Affidavit at ¶ 21; and NYISO Staff Recommendations at 11.

ICAP Demand Curves in all capacity regions for the 2025-2029 reset period. Details regarding the consideration of all other technology options evaluated during the 2025-2029 DCR, recommendations regarding each technology option, and resulting ICAP Demand Curves for each alternative technology are addressed in the Independent Consultant Report, NYISO Staff Recommendations, and the accompanying affidavits submitted as part of this filing.

Capability to Meet Peak Needs

Certain stakeholders claimed that due to its limited duration, a 2-hour BESS unit is unable to provide peaking service and, thus, fails to satisfy the applicable economic viability screening factors used for the DCR. The peaking plant is an incremental addition of capacity supply to the system to ensure adequate capacity supply to meet New York's resource adequacy requirements. The reset process does not require the NYISO to postulate a system consisting solely of the peaking plant technology nor does it require that the single peaking plant be designed such that it would be capable of meeting all potential resource adequacy needs that may arise in New York regardless of the magnitude or potential duration of such needs.

As recognized by the Commission, a critical aspect of viability is that the peaking plant technology design must be replicable.[63] Such replicability ensures that, if a resource adequacy need arises in New York that is larger than the capability of single peaking plant addition, the capacity market will maintain the necessary price signals reflecting the continued need for additional capacity supply.[64] This requirement also ensures that if resource adequacy needs arise in New York on multiple occasions during a given four-year reset period, the ICAP Demand Curves are designed to provide adequate price signals to incentivize capacity supply additions in response to each such need.

BESS units are highly flexible and fast responding assets that are capable of being dispatched by system operators during periods of peak system needs.[65] In combination with the underlying resource fleet, the incremental addition of a 2-hour BESS unit is readily capable of assisting to serve needs during peak system conditions.[66] Notably, the operating capability of a 2-hour BESS unit also provides flexibility in how the asset is operated in real-time to respond to system needs.[67] Such flexibility enables system operators to schedule injections from 2-hour BESS units over consecutive hours to assist in meeting longer-duration peak needs or non-consecutive hours to assist with meeting shorter duration peaks.[68]

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[63] 2017-2021 DCR Order at P 65.

[64] Smith Affidavit at ¶ 14.

[65] AG Affidavit at ¶ 97; 1898 & Co. Affidavit at ¶ 16; NYISO Staff Recommendations at 9-10 and 59-60; Smith Affidavit at ¶ 14; and *Affidavit of Aaron D. Markham* attached hereto as Attachment VI at ¶ 6-7 ("Markham Affidavit").

[66] Smith Affidavit at ¶ 14; and Markham Affidavit at ¶ 11.

[67] NYISO Staff Recommendations at 9-10 and 59-60; and Markham Affidavit at ¶ 7.

[68] Markham Affidavit at ¶ 7.

Certain stakeholders posited that to be viable, a technology should be capable of meeting an arbitrary 3.6-hour minimum duration requirement. Notably, such a requirement is not a reliability requirement established by the North American Electric Reliability Corporation, Northeast Power Coordinating Council, Inc., or New York State Reliability Council, L.LC. ("NYSRC") nor is such a minimum duration requirement established as an operating requirement for capacity suppliers in the Services Tariff. As such, the Commission should reject such claims.

This arbitrary durational need is derived from certain comments submitted by the NYSRC in a NYSPSC proceeding regarding the targeted level of future energy storage capacity for New York.[69] In its comments, the NYSRC noted that, based on the results of the 2023-2024 NYCA Installed Reserve Margin ("IRM") study, the modeled system reflected an average duration for each loss of load event identified in the study of "roughly 3.6 hours."[70] The NYSRC provided this information merely as a datapoint for the NYSPSC's consideration. Importantly, the NYSRC did not claim this value as being an enforceable reliability rule, propose that this value establish a new reliability requirement for capacity supply resources in New York, nor recommend that the NYSPSC adopt such value as a duration requirement for energy storage projects. This 3.6-hour duration value is also not a requirement set forth in the NYISO's tariffs nor has the NYISO proposed the adoption of any such requirement.

The Commission has previously determined that arbitrary eligibility and operating requirements not specified in the Services Tariff are irrelevant to assessing the economic viability of a technology to potentially serve as a peaking plant. For example, in the 2014-2017 DCR, certain supplier representatives argued that a frame turbine unit without emissions controls was ineligible to serve as a peaking plant because it did not meet certain alleged eligibility requirements not specified in the Services Tariff. The Commission held that "we find that this argument is irrelevant as to the question of what the proxy unit technology should be because there is no such requirement in the Services Tariff."[71] The Commission has also consistently determined that each DCR must limit consideration to existing rules and requirements and cannot base decisions on speculation as to potential future rules and requirements.[72] Given the absence of any existing reliability rule or tariff-based requirement, consideration of any 3.6-hour duration criterion should be rejected by the Commission.

Even if there were a basis in the Services Tariff or precedent to consider an appropriate "durational criterion," doing so would not be a reason to reject use of a 2-hour BESS unit for this

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[69] NYSPSC Case 18-E-0130, *In the Matter of Energy Storage Deployment Program*, Comments Submitted on Behalf of the New York State Reliability Council (March 17, 2023) ("NYSRC Storage Comments").

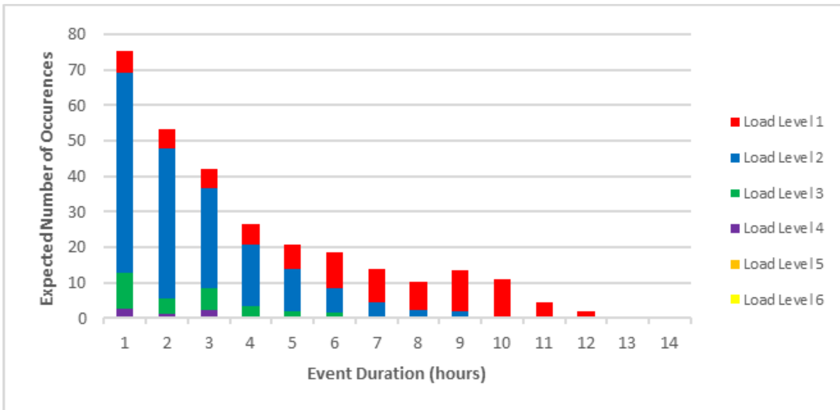
[70] NYSRC Storage Comments at 3.

[71] 2014-2017 DCR Order at P 76.

[72] *See, e.g.*, 2014-2017 DCR Order at P 74; 2017-2021 DCR Order at P 61; 2021-2025 DCR Initial Order at P 161; *New York Independent System Operator, Inc.*, 181 FERC ¶ 61,227 at P 27 (2022) ("2021-2025 DCR First Remand Order"); 2021-2025 DCR Second Remand Order at P 33; and 2021-2025 DCR Second Remand Rehearing Order at P 31.

reset. The NYISO carefully considered the durational capability of 2-hour BESS units. In fact, the NYISO analyzed the loss of load events reflected in the model resulting from the most recently completed IRM study (*i.e.*, the 2024-2025 IRM study).[73] As depicted in the figure below, the NYCA system reflects a significant percentage of 1-hour and 2-hour duration events that could be met by a 2-hour BESS unit.[74]

Distribution of Loss of Load Events (2024-2025 Capability Year)



Notably, in actual system operations, a 2-hour BESS unit is not limited to operating for only 2 hours. If needed to help maintain system reliability in real-time, a 2-hour BESS unit can be operated at a reduced output level for longer durations.[75]

Certain stakeholders also claimed that the Commission has previously determined that shorter duration resources are ineligible to serve as a peaking plant technology option. These claims rely on a flawed interpretation of the prior consideration of demand response as a potential peaking plant technology. In the 2011-2014 DCR, the NYISO recommended that demand response not be considered as a potential peaking plant technology.[76] In making such recommendation, the NYISO identified various factors that required evaluation before additional consideration of demand response could be warranted, including the structure of the NYISO's demand response programs and limitations on the mandatory response requirements of demand response pursuant to such programs. The NYISO, however, committed to further explore these

[73] NYISO Staff Recommendations at 59-60. The NYISO's evaluation is based on the system model from the 2024-2025 IRM study that was used for determining the current Locational Minimum Installed Capacity Requirements for the G-J Locality, NYC, and LI.

[74] NYISO Staff Recommendations at 59-60; and Markham Affidavit at ¶ 6-7.

[75] NYISO Staff Recommendations at 60; and Markham Affidavit at ¶ 7. For example, the assumed 200 MW unit could provide 100 MW of capability for 4 hours or 50 MW for 8 hours to assist in meeting longer duration system needs that may arise in real-time operations.

[76] Docket No. ER11-2224-000, *New York Independent System Operator, Inc.*, Tariff Revisions to Implement Revised ICAP Demand Curves for Capability Years 2011/2012, 2012/2013 and 2013/2014 at 6 (November 30, 2010); and 2011-2014 DCR Order at P 37.

issues and renew its consideration of demand response as a potential peaking plant technology option in the 2014-2017 DCR. The Commission merely noted these considerations while stating:

> We note that NYISO states that it will consider the use of demand resource technology in the next demand curve reset cycle contingent upon better definition of the process for identifying technology types, and the methodology and a means to quantifying the fixed and variable costs associated with those technologies.[77]

Contrary to claims of certain stakeholders, the Commission's mere acknowledgement of factors identified by the NYISO did not constitute a prohibition against considering demand response due to limitations on the duration of the mandatory response requirements for such resources. The NYISO conducted a further evaluation of demand response during the 2014-2017 DCR and concluded that demand response was not appropriate to consider as a potential peaking plant technology because of the inability to determine a representative cost for such technology that could be used for purposes of establishing the ICAP Demand Curves at that time.[78] Contrary to the allegations of certain stakeholders, the actual rationale for recommending demand response not be considered as a potential peaking plant technology related solely to the inability to identify a reasonable, representative cost for such resource type and not any limitations on the durational requirements of such resources.

As demonstrated by the foregoing, the NYISO carefully considered the durational aspects of a 2-hour BESS unit and appropriately determined that the technology was economically viable. This determination recognized the highly flexible nature of a BESS unit and the ability to dispatch its stored energy during peak periods. Thus, a 2-hour BESS unit satisfies the applicable economic viability screening factors and has the capability to contribute to meeting the needs of the system.[79]

CAF Considerations

Certain stakeholders and the MMU claimed that future CAF values for a 2-hour BESS unit will only decline from current values and will precipitously decline toward zero over the course of the 2025-2029 reset period. As a result, such parties contended that the NYISO has failed to account for the adverse impacts of such precipitous CAF declines. These parties further alleged that, had the NYISO appropriately accounted for future CAF declines, a 2-hour BESS unit would not represent the lowest fixed cost technology option for this reset.

[77] 2011-2014 DCR Order at P 37.

[78] Docket No. ER14-500-000, *New York Independent System Operator, Inc.*, Proposed Tariff Revisions to Implement Revised ICAP Demand Curves and a New ICAP Demand Curve for Capability Years 2014/2015, 2015/2016 and 2016/2017 and Request for Partial Phase-In and for Any Necessary Tariff Waivers at 16-18 (November 27, 2013); and 2014-2017 DCR Order at P 18.

[79] Markham Affidavit at ¶ 7-11.

a. Overview of CAFs

The capability of a 2-hour BESS unit to assist in meeting New York's resource adequacy needs are explicitly captured in its capacity market revenue earning capability.[80] CAFs represent the incremental amount of load that can be supplied by an individual resource (expressed as a percentage of each resource's ICAP). CAFs are determined based on the improvement in the NYCA system's reliability expressed in terms of an improvement in the loss of load expectation ("LOLE") resulting from the addition of an incremental unit of a particular capacity resource type compared to the LOLE improvement resulting from the addition of "perfect capacity" (*i.e.*, capability that is fully available around-the-clock). As a result, the CAF values assigned to a 2-hour BESS unit accurately represent its reliability contributions to the system.

b. NYISO's Assessment of Future CAF Values

The NYISO carefully considered the potential impact of future CAF values for a 2-hour BESS unit. To assess such impacts, the NYISO evaluated various potential future system conditions for New York.[81] The future conditions assessed represented a range of potential resource mix changes from current system conditions to an aggressive buildout of the renewable and energy storage fleet that could timely achieve the CLCPA's requirement that 70% of New York's electricity requirements be met by qualifying renewable resources by 2030. The NYISO's assessment highlighted the uncertainty in forecasting future CAF values for 2-hour BESS units due to the interrelated and interactive nature of various factors such as the magnitude, timing and types of renewable resources and energy storage added to the system, improvements in the resource adequacy modeling to better represent the operating capabilities of various resource types, changes in the transmission topology, and changes in New York's load requirements. Resulting CAF values for potential future system conditions are highly influenced by the assumptions regarding these factors. In fact, the NYISO's assessment identified that depending on the actual future system conditions that may arise in New York, annual CAF values for 2-hour BESS units have the potential to either decrease or increase through 2030.[82]

Notably, the possibility for CAF values to increase in the near-term is further supported by recent preliminary information developed by the NYISO regarding potential CAF values for next year (*i.e.*, the 2025-2026 Capability Year).[83] This assessment identified the prospect for material increases to the current CAF values assigned to 2-hour resources. The identified

[80] NYISO Staff Recommendations at 9-10 and 45-46; and Smith Affidavit at ¶ 16 and 18.

[81] NYISO Staff Recommendations at 61-63; and Smith Affidavit at ¶ 18-21.

[82] NYISO Staff Recommendations at 62-63; and Smith Affidavit at ¶ 20.

[83] NYISO, *2025-2026 Capability Year Informational Capacity Accreditation Factors* (presented at the October 7, 2024 ICAPWG meeting), available at: https://www.nyiso.com/documents/20142/47364758/2025-2026%20Informational%20CAFs_ICAPWG_10.07.2024_Final.pdf; and NYISO, *Informational Capacity Accreditation Factors for the 2025-2026 Capability Year* (October 16, 2024), available at: https://www.nyiso.com/documents/20142/40365917/Informational-CAFs-for-the-2025-2026-Capability-Year.pdf.

increase in 2-hour resource CAF values was driven primarily by the increasing deployment of behind-the-meter solar resources impacting the NYCA system's net load and resulting reliability risk profile, as well as improvements to more accurately capture the operating capability of demand response and duration-limited resources. It is important to note that these are preliminary results. The final CAF values for the 2025-2026 Capability Year will not be finalized until the first calendar quarter of 2025 and are required to be published by the NYISO on or before March 1, 2025.

The future scenario with the most aggressive near-term buildout of incremental renewable resources and energy storage capacity identified the largest magnitude reduction in CAF values for 2-hour resources by 2030. However, even in this case, the potential CAF values for a 2-hour BESS unit demonstrate that it is likely to remain the technology that minimizes the cost to procure UCAP in New York for the duration of this reset.[84] Any potential for changes in the relative economics of 2-hour BESS units and the other technology options evaluated in this reset that may arise toward the latter portion of the reset period should be reevaluated during the next DCR (*i.e.*, the 2029-2033 DCR) when a comprehensive assessment of updated technology options and costs are developed.[85]

Importantly, however, the likelihood of achieving the resource mix changes contemplated by this sensitivity case is questionable. Due to a variety of economic and other factors that have arisen in recent years, clean energy generation development in New York has encountered difficulties resulting in delayed deployment of new clean energy capacity to meet the requirements of the CLCPA. In fact, a recent draft biennial report issued by the New York State Department of Public Service ("NYSDPS") and the New York State Energy Research and Development Authority ("NYSERDA") highlighted a myriad of factors resulting in less incremental clean energy capacity additions than previously anticipated and the challenges presented in timely achieving the CLCPA's 70% renewable energy requirement by 2030.[86]

c. <u>MMU's Assessment of Future CAF Values</u>

The MMU also estimated potential future CAF values for 2-hour BESS units.[87] Notably, unlike the NYISO's assessment of potential future CAF values, the MMU's assessment was conducted using its own proprietary software, as well as the selection of its own assumed future system conditions (*i.e.*, high levels of incremental energy storage capacity coupled with delayed renewable resource development and restrictive winter fuel availability constraints for existing fossil-fired generation).[88]

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[84] Smith Affidavit at ¶ 20.

[85] NYISO Staff Recommendations at 61-63.

[86] NYSPSC Case 15-E-0302, *Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Program and a Clean Energy Standard*, Draft Clean Energy Standard Biennial Review at 53-59 (July 1, 2024).

[87] NYISO Staff Recommendations at Appendix A, pp. 3-7.

[88] Smith Affidavit at ¶ 20.

In contrast, the NYISO's assessment was conducted using a range of potential future system conditions for New York that were developed as part of various planning studies in collaboration with stakeholders. The NYISO's assessment also used the General Electric Multi-Area Reliability Simulation ("MARS") software program utilized to calculate the actual CAF values used in the NYISO capacity market.[89]

d. Consideration of CAF Variability Risk

The NYISO and the Independent Consultant carefully evaluated the above-described factors in determining the appropriate means to account for future CAF variability faced by 2-hour BESS units. As further described in Section V below, the Independent Consultant considered a range of market and technology-specific risks faced by each of the technology options evaluated for this reset when establishing the appropriate weighted average cost of capital ("WACC") required to finance the development of each such technology option in New York.[90]

For BESS units, the various risks considered by the Independent Consultant included the relatively early stage of technological development compared to more mature technologies like gas turbines, potential for future improvements in operational performance, risks of future EAS revenue earnings, and CAFs.[91] With respect to the potential impact of future CAF values, the Independent Consultant noted that:

> Going forward, CAFs will vary each year depending on the mix of resources in the system, load profiles and other factors. As the demand curves used in conducting the NYISO's monthly spot auctions are expressed on a UCAP rather than ICAP basis, CAF changes for the peaking plant technology used to establish each curve would lead to shifts in the demand curve and clearing price that would tend to offset the effect of any future declines in the CAFs for such peaking plant technology during the four-year period of this reset. Thus, the financial risk of CAF changes for the 2025-2029 DCR reset period is mitigated for the peaking plant technology selected to establish each demand curve. Under certain circumstances, changes in CAFs can affect future capacity market revenue streams. In particular, if the peaking plant technology were to change in a future reset to a technology that experienced CAF changes uncorrelated with batteries (e.g., the CAFs of a potential future peaking plant technology remained fixed while the prior CAFs of the technology previously utilized to set the curves declined), then future CAF values beyond the four-year period of

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[89] NYISO Staff Recommendations at 61-63.

[90] Independent Consultant Report at 58-59 and 62-65; AG Affidavit at ¶ 48, 114-115 and 124-129; and NYISO Staff Recommendations at 25-27.

[91] Independent Consultant Report at 63-64; and AG Affidavit at ¶ 126-127.

> this reset could reduce the future revenue earnings of a battery. However, future CAF values are unknown given potential temporal and geographic variations in the expansion of, for example, battery storage technology and intermittent renewables in New York, which could tend to have countervailing impacts on battery storage CAFs depending on the timing, magnitude, and types of future resource additions.[92]

Based on its consideration of the market and technology-specific risks faced by BESS units in New York, the Independent Consultant recommended the cost of debt ("COD") and cost of equity ("COE") values for the BESS unit options be set at values representing a 50 basis point increase relative to the values recommended for the fossil-fired frame turbines.[93] The higher values are intended to account for the relative higher risk posed by BESS units for this reset compared to a fossil-fired frame turbine.

The NYISO also considered the implications of the current procedures for translating the ICAP Demand Curve to a UCAP basis for use in conducting the monthly spot market auctions.[94] The current procedures to establish the UCAP-based demand curves used in the monthly spot market auctions ensure continued revenue sufficiency of a 2-hour BESS unit during the reset period regardless of the actual changes in CAF values experienced. The translation of the ICAP Demand Curves to a UCAP basis expressly incorporates the applicable CAF values of the selected peaking plant technology. As a result, any changes in the CAF values for a 2-hour BESS unit during the 2025-2029 reset period will be reflected in the resulting UCAP-based curves and ensure that such curves continue to provide revenue sufficiency for the 2-hour BESS unit under the system conditions prescribed by the tariff for establishing the curves.[95]

The NYISO agrees that the recommended financial parameters are the appropriate means for considering and addressing the relative risk posed by each of the technology options evaluated as part of this reset.[96] Based on consideration of the factors described above, the NYISO agrees that the risk posed by future CAF uncertainty for the BESS units is reasonably accounted for through the recommended 50 basis point adders to both the COE and COD values for the BESS unit options.

e. Future Reset Outcome Risks

Opposing stakeholders and the MMU extended the argument regarding their alleged certainty of future CAF value declines to suggest that such declines will result in the selection of

[92] Independent Consultant Report at 64.

[93] Independent Consultant Report at 65-68; AG Affidavit at ¶ 48-50, 129, 134 and 138; and NYISO Staff Recommendations at 25-27.

[94] NYISO Staff Recommendations at 61; and Smith Affidavit at ¶ 21.

[95] *Id*.

[96] NYISO Staff Recommendations at 25-27; and Smith Affidavit at ¶ 19.

a different technology in the next (or other near-term future) reset. The parties then claimed that such an outcome will prevent a 2-hour BESS unit for recovering its required revenue over the assumed amortization period. As a result, these parties contended that, if the NYISO had properly accounted for this risk, a 2-hour BESS unit would no longer be the lowest fixed cost technology option for this reset.

The NYISO and the Independent Consultant considered the nature of the quadrennial DCR and the potential that each future reset could result in the identification of a technology other than the currently effective peaking plant to serve as the appropriate basis for determining the ICAP Demand Curves.[97] This risk, which is inherent to the periodic nature of the DCR, is not new nor specific to the NYISO's proposal to use a 2-hour BESS unit as the peaking plant technology for the 2025-2029 reset period. The peaking plant technology is always subject to change with each DCR and has changed over time. In the 2008-2011 DCR, the NYISO replaced the LM6000 aeroderivative turbine used to establish the New York City and Long Island ICAP Demand Curves with a LMS100 aeroderivative turbine.[98] The NYISO subsequently replaced the LMS100 unit with a F-class frame turbine with SCR emission controls for the 2014-2017 DCR.[99] For the 2021-2025 DCR, the NYISO replaced the F-class frame turbine with a H-class frame turbine as the basis for all of the ICAP Demand Curves.[100] This is a known market risk that is part of New York's capacity market design and use of the ICAP Demand Curves. As such, this market risk was properly evaluated in establishing the WACC values for each of the technology option.

Claims regarding the need for adjustments to the cost of 2-hour BESS units based on the potential outcomes of future resets do not provide a credible basis for adjustment. The actual outcome of future resets cannot be predicted at this time as it is impossible to accurately forecast the factors that will determine such future results, including the eligible technology options to be assessed in each future reset, the relative gross and net costs of each such technology option, and the potential impact of future CAF values on the assessment of each technology's comparative cost for procuring UCAP. The inability to accurately forecast future reset outcomes supports the NYISO's proposed approach to account for the nature of the DCR as a market specific risk that all developers and asset owners must consider when investing in New York.

Moreover, the potential for the peaking plant technology to change from one reset to the next does not conclusively determine that a prior peaking plant technology is no longer economic. Depending on changes in conditions from one reset to the next, it is possible that the selection of a new technology in the next reset could still produce a net cost of new entry ("Net CONE") value that exceeds that of the prior anchoring technology. As it relates to the BESS unit options, to the extent that the peaking plant technology remains a BESS unit in a future reset but

[97] Independent Consultant Report at 64-65; and NYISO Staff Recommendations at 4 and 61-63.

[98] *New York Independent System Operator, Inc.*, 122 FERC ¶ 61,064 at P 23-25 (2008) ("2008-2011 DCR Order").

[99] 2014-2017 DCR Order at P 57-60.

[100] 2021-2025 DCR Initial Order at P 19

represents a longer duration option due to differences in CAF values between shorter and longer duration options, such a change does not definitively determine that the shorter duration option will be uneconomic. Notably, a shorter duration BESS unit could alter its future capacity market participation and effectively derate its capacity quantity to participate as a longer duration resource (*e.g.*, a 200 MW, 2-hour BESS unit could revise its going forward participation to be a 100 MW, 4-hour resource) and capture the additional capacity revenues associated with the CAF value for a longer duration. Depending on the difference in CAF values between shorter and longer duration BESS units, such altered participation may facilitate continued revenue sufficiency for such unit despite no longer serving as the peaking plant technology for establishing the ICAP Demand Curves.

Contrary to the claims of certain stakeholders and the MMU, the NYISO's evaluation demonstrated that future CAF values may increase or decrease in the near term.[101] Moreover, the NYISO's assessment demonstrated that claimed certainty of precipitous CAF declines for 2-hour BESS units are unsubstantiated.[102] By assessing a variety of potential future system conditions for New York, the NYISO also demonstrated that future CAF values are highly dependent on a variety of factors that cannot be forecasted with precision at this time. Despite claims to the contrary, the NYISO has not ignored the risk of future CAF variability. Instead, this risk (including proper recognition that it is not unidirectional or of known magnitude) was carefully considered by the Independent Consultant and the NYISO. The risk of future CAF variability and uncertainty was explicitly accounted for in establishing higher WACC values for the BESS unit options relative to the fossil-fired frame turbines. Such higher values represent the relative increase in risk posed by investment in a BESS unit in New York compared to a fossil-fired frame turbine for this reset.

f. NYSDPS Recommended Collaring Mechanism

Although it expressed support for the NYISO's recommendation to establish the ICAP Demand Curves for the 2025-2029 reset period using a 2-hour BESS unit, the NYSDPS expressed concerns during the DCR that the annual variability in CAF values could present unnecessary volatility in the resulting UCAP-based demand curves and associated spot market auction clearing prices paid by Load Serving Entities ("LSEs") providing service to New York electricity customers. In response to such concerns, the NYSDPS recommended that the NYISO implement a "collaring mechanism" that would operate to constrain the allowable year-to-year changes in the reference point prices of the demand curves. Such a recommendation is beyond the scope of the DCR and, if warranted, should instead be considered through the NYISO's normal stakeholder shared governance process. The Commission has consistently held that broader market design changes like the NYSDPS' proposal are outside the scope of the DCR.[103] Accordingly, the Commission should reject any such proposal as beyond the scope of this filing.

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[101] NYISO Staff Recommendations at 61-63; and Smith Affidavit at ¶ 20.

[102] Smith Affidavit at ¶ 20.

[103] *See*, *e.g.*, 2011-2014 DCR Order at P 166; and 2017-2021 DCR Order at P 94 and 186.

Consideration of Transmission Security Needs

Certain stakeholders alleged that a 2-hour BESS unit is ineligible to serve as a peaking plant technology option because it cannot resolve longer-duration transmission security needs. Such stakeholders noted that the NYISO's short-term reliability planning process has identified transmission security needs within Load Zone J beginning in summer 2025 with durations of up to nine hours.[104]

The current NYISO-administered capacity market is designed to address New York's resource adequacy needs and not transmission security.[105] Claims that a peaking plant technology option must be capable of resolving both resource adequacy and transmission security needs in New York is not consistent with the current market design. Thus, consideration of a technology's capability to assist in resolving transmission security needs is irrelevant to the assessment of a technology's economic viability and seeks to impose eligibility requirements on technology options that are not specified in the Services Tariff. As previously noted, the Commission has held that seeking to declare technology options ineligible for consideration in the DCR based on requirements not imposed by the NYISO's tariff is inappropriate.[106]

The current capacity market is designed to ensure that LSEs serving New York electricity customers procure sufficient capacity to maintain resource adequacy in New York, not transmission security.[107] As described in the tariff, the capacity market and associated auctions are designed to procure enough capacity to satisfy the established annual minimum capacity requirements.[108] The annual minimum capacity requirements are derived from an annual peak load forecast determined by the NYISO and the annual statewide IRM established by the NYSRC. The IRM establishes an additional quantity of capacity above New York's forecasted peak needs that is required to ensure maintenance of the resource adequacy reliability criterion to not exceed a LOLE of greater than 0.1 loss of load event days per year.[109]

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[104] *See* NYISO, *Short-Term Assessment of Reliability: 2023 Quarter 2* at 29 (July 14, 2023), available at: https://www.nyiso.com/documents/20142/16004172/2023-Q2-STAR-Report-Final.pdf.

[105] Smith Affidavit at ¶ 15-16.

[106] 2014-2017 DCR Order at P 76.

[107] NYISO Staff Recommendations at 9-10; and Smith Affidavit at ¶ 15.

[108] *See, e.g.*, Services Tariff §§ 5.10 and 5.13.1.

[109] *See*, *e.g.*, NYSRC, *Reliability Rules & Compliance* Manual at Resource Adequacy Reliability Rule A1, Sections B.R.1 and B.R.1.1 (Version 47, June 14, 2024), available at: https://www.nysrc.org/wp-content/uploads/2024/07/RRC-Manual-V47-final-7-2-24.pdf; NYSRC, *Policy 5-18: Procedure for Establishing New York Control Area Installed Capacity Requirements and the Installed Reserve Margin (IRM)* at 7, Section 3.1 (June 14, 2024), available at: https://www.nysrc.org/wp-content/uploads/2024/06/NYSRC-Policy-5-18-06_14_24-Final.pdf.

The Commission has consistently recognized that the current capacity market is designed to ensure resource adequacy in New York.[110] The Commission has held that "[t]he ICAP market is specifically designed to ensure sufficient capacity to satisfy the statewide IRM, which itself is calculated to ensure that the 0.1 days/year LOLE reliability standard is met."[111] The Commission has also described the purpose of the capacity market as follows "the basic purpose of the capacity market: ensuring resource adequacy at just and reasonable rates."[112]

Despite claims to the contrary during the DCR, stakeholders that alleged the peaking plant technology options must be capable of resolving transmission security needs have expressly acknowledged in pleadings to the Commission that the purpose of the current capacity market design is to maintain resource adequacy in New York.[113] For example, in a 2013 complaint proceeding before the Commission the complainant, Independent Power Producers of New York, Inc. ("IPPNY"), and other supplier representatives clearly expressed their understanding that the NYISO's current capacity market is designed to address resource adequacy and does not value transmission security. The proceeding related to certain reliability support service agreements between two New York generation facilities and certain New York electric utilities. The agreements arose from certain local transmission security issues identified by the utilities when assessing the potential reliability impacts of the generators' intentions to deactivate. The complaint sought remedial action to address alleged capacity market impacts of the agreements.

IPPNY's complaint in that proceeding included an affidavit submitted by Mark D. Younger. In his affidavit, Mr. Younger stated that "[t]he purpose of the capacity market is to ensure that the NYISO procures capacity to meet the NYISO's resource adequacy requirements."[114] Mr. Younger also noted that:

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[110] *See, e.g.*, *New York Independent System Operator, Inc.*, 105 FERC ¶ 61,108 at P 42 (2003); *New York Independent System Operator, Inc.*, 118 FERC ¶ 61,182 at P 2 (2007); *New York Independent System Operator, Inc.*, 122 FERC ¶ 61,211 at P 2 (2008); *New York Independent System Operator, Inc.*, 165 FERC ¶ 61,011 at P 72 (2018); *New York Independent System Operator, Inc.*, 170 FERC ¶ 61,051 at P 34 (2020); and *New York Independent System Operator, Inc.*, 179 FERC ¶ 61,102 at P 41 (2022).

[111] *New York Independent System Operator, Inc.*, 165 FERC ¶ 61,011 at P 72 (2018) (footnote omitted).

[112] *New York Independent System Operator, Inc.*, 179 FERC ¶ 61,102 at P 41 (2022).

[113] *See, e.g., Independent Power Producers of New York, Inc. v New York Independent System Operator, Inc.*, 150 FERC ¶ 61,214 at P 53 (2015); Docket No. EL13-62-000, *Independent Power Producers of New York, Inc. v New York Independent System Operator, Inc.*, Complaint Requesting Fast Track Processing of the Independent Power Producers of New York, Inc. at Attachment B, *Affidavit of Mark D. Younger* at ¶ 72 and 90 (May 10, 2013); and Docket No. EL13-62-000, *supra*, Comments of TC Ravenswood, LLC at *Affidavit of Roy J. Shanker Ph.D.* at ¶ 16 (May 30, 2013).

[114] Docket No. EL13-62-000, *supra*, Complaint Requesting Fast Track Processing of the Independent Power Producers of New York, Inc. at Attachment B, *Affidavit of Mark D. Younger* at ¶ 72 (May 10, 2013).

> Moreover, further exacerbating this situation, it is my understanding that the reliability need that these units are being retained to address is the result of a transmission security review based upon an N-1-1 reliability standard. The NYISO does not send any price signals on the need to meet N-1-1 reliability standards …. Consequently, the reliability standard that is being applied here to the retention of the units is not reflected anywhere in the NYISO's market pricing.[115]

Additionally, an affidavit submitted by Dr. Roy J. Shanker on behalf of TC Ravenswood, LLC, which filed comments in support of the IPPNY complaint, explained that:

> Under the NYISO market design, the capacity market addresses adequacy issues. The explicit requirements for "anchoring" the demand curve for the RTO and localities is based upon adequacy targets (installed reserve margin or locality requirements). The capacity market is not intended to address or compensate for short-term contingency related reliability/security requirements.[116]

The current capacity market design only indirectly considers certain aspects of transmission security.[117] Specifically, in determining locational capacity requirements, the NYISO uses transmission security limit ("TSL") floor values as a lower limit on the allowable locational capacity requirement values.[118] The TSL floor values; however, are not intended to expressly solve for transmission security needs. Instead, the TSL floor values seek to ensure that the resource adequacy based locational requirements are not established at levels that assume reliance on power transfer levels into a transmission-constrained locality that would exceed limits on such importing transfers.[119]

The NYISO acknowledges the growing importance of transmission security in New York and has commenced what is expected to be a multi-year collaborative process with its stakeholders to evaluate (and, if warranted, develop) potential enhancements to its current capacity market to more expressly value resource contributions to transmission security.[120] It is unclear, at this time, what the results of this collaborative effort will be or the potential impact thereof on the ICAP Demand Curves. Consistent with the Commission's long-standing

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[115] Docket No. EL13-62-000, *supra*, Complaint Requesting Fast Track Processing of the Independent Power Producers of New York, Inc. at Attachment B, *Affidavit of Mark D. Younger* at ¶ 90 (May 10, 2013).

[116] Docket No. EL13-62-000, *supra*, Comments of TC Ravenswood, LLC at *Affidavit of Roy J. Shanker Ph.D.* at ¶ 16 (May 30, 2013).

[117] Smith Affidavit at ¶ 16.

[118] *See* Services Tariff § 5.11.4.

[119] Smith Affidavit at ¶ 16.

[120] NYISO Staff Recommendations at 10; and Smith Affidavit at ¶ 17.

prohibition on speculating as to potential future rules and requirements, any future capacity market enhancements for valuing transmission security should be assessed in a future reset.[121] Commission precedent is also clear that the NYISO's mere consideration of potential future enhancements to account for transmission security contributions does not mean that existing rules are unjust or unreasonable.

Although the current capacity market is not designed to expressly provide price signals regarding the value of resources toward meeting New York's transmission security needs, claims by certain stakeholders that a 2-hour BESS unit is unable to assist in meeting longer duration system needs are inaccurate. The peaking plant is intended to represent an incremental addition of capacity supply to the underlying resource fleet when needed to maintain resource adequacy in New York. As a component of the resource fleet, a 2-hour BESS unit can supply services to assist with meeting the needs of the system.[122] The NYISO-administered markets leverage the aggregate capability of all resources to maintain reliability in New York.[123] Notably, 2-hour BESS units provide flexibility to operate at reduced output levels for longer periods, if needed to assist system operators in meeting the real-time needs of the system.[124]

Capability to Support Retention of Existing Resources

Certain stakeholders alleged that the use of a 2-hour BESS unit as the peaking plant technology will result in ICAP Demand Curves that are unable to support retention of existing resources in New York. Thus, these stakeholders claimed that selection of a 2-hour BESS unit is not appropriate.

The Commission has stated that the overarching objective of the capacity market is to attract new and retain existing capacity supply resources, as appropriate, to support reliability by meeting New York's resource adequacy requirements.[125] Thus, the ICAP Demand Curves should be designed to provide a reasonable opportunity for new and existing resources *necessary for reliability* to earn adequate revenues to enter or remain in the market. This does not equate to retention of all existing resources regardless of market conditions. Thus, assessing capacity price signals under conditions of excess greater than the applicable minimum capacity requirements is not dispositive of the relative capability of the curves to produce price signals to facilitate retention of the resources needed to maintain resource adequacy.

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[121] *See, e.g.*, 2014-2017 DCR Order at P 74; 2017-2021 DCR Order at P 61; 2021-2025 DCR Initial Order at P 161; 2021-2025 DCR First Remand Order at P 27; 2021-2025 DCR Second Remand Order at P 33; and 2021-2025 DCR Second Remand Rehearing Order at P 31.

[122] NYISO Staff Recommendations at 59-61; Markham Affidavit at ¶ 11; and Smith Affidavit at ¶ 14.

[123] Markham Affidavit at ¶ 11.

[124] NYISO Staff Recommendations at 60; and Markham Affidavit at ¶ 7.

[125] *See, e.g.*, New *York Independent System Operator, Inc.*, 118 FERC ¶ 61,182 at P 17 (2007).

Although the NYISO has appropriately identified and highlighted concerns with the trend of thinning capacity excess margins in New York,[126] the capacity market has cleared with material levels of excess beyond the applicable minimum capacity requirements. In fact, since 2019, the quantity of capacity cleared in the monthly spot market auctions has ranged from approximately 4% to 12% beyond the statewide minimum capacity requirement with excess ranges of approximately 8% to 15% in the G-J Locality and roughly 2.5% to 18% in New York City relative to the applicable locational minimum capacity requirements.

The tariff requirements for establishing the ICAP Demand Curves mandate the selection of the technology that represents the "lowest fixed, and highest variable costs" among all other viable technology options.[127] In the NYISO's competitive wholesale market construct, the evolution of the peaking plant technology used to establish the ICAP Demand Curves can result in economic pressures on existing less efficient and higher cost technologies. To the extent that the spot market auction clearing prices in combination with other factors (*e.g.*, environmental and regulatory requirements) result in deactivation of less economic and/or less efficient resources, the ICAP Demand Curves are designed to respond with price signals that reflect such reductions in capacity supply and seek to incent the introduction of incremental capacity supply options as necessary to maintain resource adequacy in New York.

The NYISO assessed the potential impact on spot market auction clearing prices resulting solely from the establishment of demand curves based on a 2-hour BESS unit. Based on the currently effective CAF values and minimum capacity requirements for the 2024-2025 Capability Year, all else equal, establishing demand curves based on a 2-hour BESS unit alone would not be expected to cause a reduction in spot market auction clearing prices in any capacity region below those experienced over the past five years.[128] Considering the preliminary 2025-2026 Capability Year CAF values published in October 2024,[129] a similar assessment based on the currently effective minimum capacity requirements confirmed that, all else equal, establishing demand curves based on a 2-hour BESS unit alone would not be expected to cause a reduction in New York City spot market auction clearing prices below those experienced over

[126] *See*, *e.g.*, NYISO, *2023-2032 Comprehensive Reliability Plan* at 46-47 (November 28, 2023), available at: https://www.nyiso.com/documents/20142/2248481/2023-2032-Comprehensive-Reliability-Plan.pdf.

[127] Services Tariff § 5.14.1.2.2.

[128] NYISO Staff Recommendations at 61.

[129] The preliminary values identified the potential for a material increase in the CAF values for a 2-hour BESS unit next year. *See* NYISO, *2025-2026 Capability Year Informational Capacity Accreditation Factors* (presented at the October 7, 2024 ICAPWG meeting), available at: https://www.nyiso.com/documents/20142/47364758/2025-2026%20Informational%20CAFs_ICAPWG_10.07.2024_Final.pdf; and NYISO, *Informational Capacity Accreditation Factors for the 2025-2026 Capability Year* (October 16, 2024), available at: https://www.nyiso.com/documents/20142/40365917/Informational-CAFs-for-the-2025-2026-Capability-Year.pdf.

the past five years.[130] Assessing the potential impact in New York City is important because it is the capacity region currently experiencing the lowest levels of excess capacity, and, as recognized by Section 215 of the Federal Power Act, presents unique and complex reliability considerations.[131] The assessment focused on the past five years because this period has not exhibited material quantities of resource deactivations driven solely by economics. The NYISO also acknowledges that changes in various factors beyond the demand curves will impact future spot market auction clearing prices, including changes in the IRM, Locational Minimum Installed Capacity Requirements, and applicable minimum capacity procurement requirements. However, the impact of these factors on spot market auction clearing prices arises regardless of the peaking plant technology selected to anchor each demand curve.

The NYISO recognizes that a multitude of factors impact generator deactivation decisions, including current and forecasted market revenues, environmental and regulatory requirements/policies, as well as capital expenditure needs. Notably, generation resources have not provided any data to demonstrate actual revenue sufficiency issues with respect to the proposal to establish demand curves using a 2-hour BESS unit as the peaking plant technology for the 2025-2029 reset period. Rather than providing actual data, certain stakeholders relied on generic estimates of potential going forward costs, such as those presented by the MMU in its annual State of the Market reports.

Reliance on more generic estimates of going forward costs is not dispositive of the conditions faced by each individual generator. In fact, the MMU expressly caveats the revenue sufficiency assessment contained in its most recent State of the Market Report by noting:

> There is considerable uncertainty regarding the actual price level at which an existing unit owner would choose to retire or mothball. The decision to retire and the actual [going forward costs] depend on a range of factors including whether the units are under long-term contracts, the age and condition of the individual unit, the level of incremental capital and/or maintenance expenditure required to continue operations, the value of its interconnection rights and [Capacity Resource Interconnection Service] rights, and the owner's expectations of future market prices.[132]

The NYISO carefully considered the potential impacts of establishing demand curves using a 2-hour BESS unit on the appropriateness of the resulting pricing outcomes, compliance

[130] The supplemental analysis, however, identified that, all else equal, establishing demand curves based on a 2-hour BESS unit could potentially result in spot market auction clearing prices in the rest of state capacity region that are lower than those experienced over the past five years after accounting for the potential increase in next year's CAF values for a 2-hour BESS unit.

[131] 16 U.S.C. § 824o.

[132] Potomac Economics Ltd., *2023 State of the Market Report for the New York ISO Markets* at 6 (May 2024), available at: https://www.nyiso.com/documents/20142/2223763/2023-State-of-the-Market-Report.pdf.

with tariff requirements, and adherence to Commission precedent. No stakeholder demonstrated that the proposed results of the 2025-2029 DCR would cause an inability to attract and retain the resources needed to maintain resource adequacy in New York.

Consideration of Future Cost Declines for BESS Units

Certain stakeholders contended that BESS units are forecasted to experience significant cost declines over the coming years. These stakeholders alleged that such cost declines will result in a 2-hour BESS unit deployed during this reset period experiencing material market revenue declines over time due to the introduction of more efficient and less expensive BESS projects in the future. As a result, such stakeholders claimed that an explicit upward adjustment to the cost of a 2-hour BESS unit is required to account for such future revenue declines. These stakeholders also alleged that if such an explicit adjustment were included, a 2-hour BESS unit would no longer represent the lowest fixed cost technology option for the 2025-2029 DCR.

The NYISO is required to conduct the DCR every four years to ensure that the ICAP Demand Curves appropriately evolve over time to account for changes in conditions between resets, including changes in the costs for peaking plant technology options. The Commission should not adopt arguments advocating for the use of speculative data to require unwarranted upward adjustments to estimated costs for the BESS unit options.

Long-term projections of potential cost declines for BESS projects do not provide a credible basis for further adjustment to the estimated costs of the BESS unit options for this reset. Such long-term projections are developed based on the forecasted potential for technological improvements to reduce the costs of a particular technology over time. For less mature technologies, such as BESS units, these forecasts often estimate that technological advancement will place material downward pressure on costs over time until the technology matures. However, such long-term projections may significantly overestimate potential cost declines.

In fact, despite projections for significant cost declines in future BESS project costs, a recent analysis conducted by NYSDPS and NYSERDA identified that costs had instead increased significantly over the past five years.[133] The analysis, published in March 2024, identified that BESS project costs had increased by approximately 40% compared to cost projections developed for a prior analysis conducted in 2021.[134] Additionally, the March 2024 analysis served as an update to a prior analysis released in December 2022. During this roughly one-year period alone, the analysis identified that the cost of utility-scale BESS projects increased by approximately 20%.[135]

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[133] NYSPSC Case 18-E-0130, *supra*, New York's 6 GW Energy Storage Roadmap: Policy Options for Continued Growth in Energy Storage (March 15, 2024) ("2024 Storage Roadmap").

[134] 2024 Storage Roadmap at 71-72.

[135] 2024 Storage Roadmap at 59; and NYSPSC Case 18-E-0130, *supra*, New York's 6 GW Energy Storage Roadmap: Policy Options for Continued Growth in Energy Storage at 64 (December 28, 2022) ("2022 Storage Roadmap"). The "high estimate" to procure 3,000 MW of utility-scale energy

The Commission has consistently held that a key purpose of conducting DCRs at regular intervals is to accurately capture changes in conditions over time.[136] Future resets are the appropriate forum for capturing actual changes in technology costs over time. For the 2025-2029 DCR, the potential risk for technological advancements to place downward pressure on future revenue earnings for the BESS unit options has been appropriately accounted for in determining the WACC values for the peaking plant technology options evaluated.[137] In describing the risks considered in developing the appropriate WACC values for the BESS unit options, the Independent Consultant noted that:

> battery storage faces market performance risks. One such risk arises because battery storage is still a relatively early-stage technology likely to experience further improvements in operational performance, particularly cycling energy losses. Thus, the first wave of battery storage plants to operate in New York may be less competitive than battery units that enter the market at a later date with more advanced and/or efficient technologies. This potential reduced competitiveness may translate into lower expected net revenues over time, particularly toward the end of the assumed life of the asset. These technology effects are more significant for battery technologies, given their early state of technological development, compared to the fossil peaking plant technology options.[138]

As demonstrated by the foregoing, the risk of potential future technological advancement to impact market revenue earnings of the BESS unit options has been carefully considered and addressed in a reasonable manner that avoids the potential for undue reliance on speculative projections of potential future outcomes. The Commission should reject any claims advocating for additional adjustments to address such considerations.

B. Peaking Plant Costs

The Services Tariff requires that the DCR assess "the localized levelized embedded cost

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storage increased from approximately $1.19 billion to $1.42 billion in the approximately one year period between the publishing of the initial analysis and the updated assessment. The "low estimate" for such cost increased from approximately $474 million in the 2022 Storage Roadmap to approximately $701 million in the 2024 Storage Roadmap. The approximately 20% increase is derived from the change in the "high estimate" for the two assessments.

[136] 2014-2017 DCR Order at P 74; 2017-2021 DCR Order at P 61; and 2021-2025 DCR First Remand Order at P 27.

[137] Independent Consultant Report at 62-64; AG Affidavit at ¶ 126; and NYISO Staff Recommendations at 25-27.

[138] Independent Consultant Report at 64.

of a peaking plant" used in establishing each ICAP Demand Curve.[139] The Independent Consultant conducted a rigorous evaluation to develop estimates of the capital investments costs to construct the peaking plant technology design options evaluated for the 2025-2029 DCR.[140] The Independent Consultant also developed estimates of the fixed operations and maintenance ("O&M") and variable O&M costs associated with the ongoing operation of each such peaking plant technology option.[141] The Independent Consultant developed the cost estimates based on 1898 & Co.'s experience as a contractor, engineering design firm, and consultant in the power generation and energy storage industries. 1898 & Co.'s experience includes work related to both power generation and energy storage projects in New York.[142]

For the BESS unit options, the Independent Consultant assumed use of purpose-built enclosures consistent with current industry trends for BESS projects.[143] The BESS unit options are also designed to comply with applicable requirements, including, for Load Zone J, the fire safety requirements established for BESS units by the New York City Fire Department.[144] The cost estimates for the BESS unit options account for performance degradation of the lithium-ion batteries over time through the inclusion of upfront overbuild and future augmentation to maintain the full output capability of the facilities throughout the assumed amortization period.[145]

The Independent Consultant developed the cost estimates based on a generic site in each location evaluated.[146] For all locations other than Load Zone J, the Independent Consultant assumed use of a generic greenfield site.[147] For Load Zone J, the Independent Consultant assumed use of a brownfield site.[148] The Load Zone J cost estimate also includes an assumed

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[139] Services Tariff § 5.14.1.2.2.

[140] Independent Consultant Report at 23-57; Smith Affidavit at Exhibit A; AG Affidavit at ¶ 27-36; 1898 & Co. Affidavit at ¶ 13 and 22-33; and NYISO Staff Recommendations at 11-24.

[141] Independent Consultant Final Report at 47-54; Smith Affidavit at Exhibit A; 1898 & Co. Affidavit at ¶ 32, 39, 42 and 43-44; and NYISO Staff Recommendations at 22-24.

[142] 1898 & Co. Affidavit at ¶ 27.

[143] Independent Consultant Report at 20 and 38; 1898 & Co. Affidavit at ¶ 22; and NYISO Staff Recommendations at 20.

[144] 1898 & Co. Affidavit at ¶ 22; and NYISO Staff Recommendations at 20.

[145] Independent Consultant Report at 20, 38-40, 48 and 53-54; 1898 & Co. Affidavit at ¶ 32 and 39; and NYISO Staff Recommendations at 20.

[146] Independent Consultant Report at 36-39; AG Affidavit at ¶ 58; 1898 & Co. Affidavit at ¶ 13; and NYISO Staff Recommendations at 19. The Independent Consultant developed cost estimates for generic sites within the following locations for each ICAP Demand Curve: (1) Load Zones C and F for the NYCA ICAP Demand Curve; (2) Load Zone G (Dutchess County) and Load Zone G (Rockland County) for the G-J Locality ICAP Demand Curve; (3) Load Zone J for the NYC ICAP Demand Curve; and (4) Load Zone K for the LI ICAP Demand Curve.

[147] Independent Consultant Report at 36; and NYISO Staff Recommendations at 19.

[148] *Id*.

need to raise the existing site elevation by four feet to comply with floodplain zoning requirements implemented following Hurricane Sandy.[149]

The NYISO has reviewed the Independent Consultant's cost estimates and considered stakeholder feedback. The NYISO proposes to adopt the cost estimates developed by the Independent Consultant, subject to the following changes: (1) reducing the assumed value of the ITC benefit for the BESS unit options to remove the costs related to their generator leads; and (2) removing the sales tax exemption for the BESS unit options based on the projects qualifying as capital investments under New York tax law.[150]

The following sections provide an overview of the cost estimates developed by the Independent Consultant for the BESS unit options. These sections also address certain concerns raised by stakeholders, and certain changes to such cost estimates directed by the Board for inclusion in this filing.

1. Capital Investment Costs

The capital investment costs include the installed cost of the peaking plant, owner's costs, and financing during construction. The installed cost estimates reflect use of an engineering, procurement, and construction ("EPC") contract.[151] EPC cost estimates were prepared for a generic site in each location evaluated and do not include preliminary engineering or development activities. Direct costs covered by the EPC cost estimates include labor, materials, engineered equipment, subcontracts, and construction equipment.[152] The EPC cost estimates also include certain indirect costs such as construction management, engineering, startup activities, warranty, and other general administrative expenses.[153] The EPC cost estimates include a 10% contingency applied to all direct and indirect project costs to account for uncertainties, as well as a 10% EPC contractor fee applied to all direct and indirect costs.[154]

For the BESS unit options, the Independent Consultant assumed use of a purpose-built enclosure design.[155] However, because there are many original equipment manufacturers and integrators competing in the energy storage project space and their supporting information for project cost estimates is typically proprietary, the cost estimates developed by the Independent

[149] Independent Consultant Report at 37; and NYISO Staff Recommendations at 19.

[150] NYISO Staff Recommendations at 18-24; and Smith Affidavit at ¶ 11, 26-28 and Exhibit A.

[151] Independent Consultant Report at 36, 40-41; Smith Affidavit at Exhibit A; 1898 & Co. Affidavit at ¶ 26-33; and NYISO Staff Recommendations at 19.

[152] Independent Consultant Report at 40-41; 1898 & Co. Affidavit at ¶ 26-28; and NYISO Staff Recommendations at 19.

[153] *Id*.

[154] Independent Consultant Report at 40.

[155] Independent Consultant Report at 20 and 38; 1898 & Co. Affidavit at ¶ 22; and NYISO Staff Recommendations at 20.

Consultant are not intended to represent a specific product or manufacturer.[156] Instead, the cost estimates for the BESS unit options are intended to be representative of current market pricing for such projects based on data as of the second calendar quarter of 2024.[157]

2. Owner's Costs

The owner's costs consist of various categories of costs, including development activities, project management oversight, project engineering, permitting, legal fees, and financing during construction.[158] The owner's cost includes the costs for electric interconnection.[159] Owner's costs also include: (1) an assumed cost of 0.45% applied to all EPC costs and electric interconnection costs for builder's risk insurance; and (2) a 5% owner's contingency applied to all EPC and owner's costs.[160]

Electric Interconnection

The electrical interconnection cost estimates include all necessary costs required to satisfy the Minimum Interconnection Standard.[161] For locations other than Load Zone J, these costs include an assumed three-mile, overhead generator lead between the plant's switchyard and the point of interconnection ("POI").[162] For Load Zone J, the assumed electric interconnection consists of a one-mile, underground interconnecting transmission line between the plant's switchyard and POI.[163] The Independent Consultant assumed that plant switchyards use air insulated switchgear ("AIS") in all locations, except Load Zone J. For Load Zone J, the

[156] Independent Consultant Report at 38; 1898 & Co. Affidavit at ¶ 22 and 27; and NYISO Staff Recommendations at 19.

[157] Independent Consultant Report at 41; 1898 & Co. Affidavit at ¶ 22 and 27; and NYISO Staff Recommendations at 19.

[158] Independent Consultant Report at 41-43; Smith Affidavit at Exhibit A; 1898 & Co. Affidavit at ¶ 29-31; and NYISO Staff Recommendations at 19-20. For Load Zone J, the peaking plant design assumes use of municipal water supply. The cost of a water line to the project to connect to the municipal system is included in the owner's cost. For all other locations, the Independent Consultant assumed that the proposed peaking plants obtain water supply from an onsite well. The cost for such onsite well is included as part of the EPC cost estimate. *See* Independent Consultant Report at 44.

[159] Independent Consultant Report at 43-44; 1898 & Co. Affidavit at ¶ 22-23, 26 and 29-30; and NYISO Staff Recommendations at 19-20. The electric interconnection cost is intended to reflect an "all-in" estimate that includes development, engineering, permitting, procurement, equipment/materials, and construction. *See* Independent Consultant Report at 44; and 1898 & Co. Affidavit at ¶ 29.

[160] Independent Consultant Report at 42.

[161] Independent Consultant Report at 43-44; and Smith Affidavit at Exhibit A. These costs include developer attachment facilities, system upgrade facilities, and connecting transmission owner attachment facilities. The estimated cost of the generator step-up transformer is included in the EPC cost estimate.

[162] Independent Consultant Report at 43.

[163] *Id*.

Independent Consultant assumed the peaking plant's switchyard would include gas insulated switchgear ("GIS").[164]

The NYISO conducted an assessment to determine whether any of the proposed peaking plants would incur System Deliverability Upgrade ("SDU") costs to obtain Capacity Resource Interconnection Service ("CRIS").[165] The assessment concluded that the BESS unit options for each location could be constructed without a need to incur SDU costs.[166]

For the BESS unit options, the Independent Consultant assumed a lower voltage interconnection (*i.e.*, 115 kV or 138 kV depending on location).[167] Based on a review of interconnection request data for similarly size energy storage projects in New York, the NYISO identified that a lower voltage interconnection was more representative of the interconnection voltage likely to be pursued for a 200 MW BESS project.[168]

Certain stakeholders raised concerns regarding the estimated costs for a 138 kV interconnection of the BESS unit options for Load Zone J. Specifically, such stakeholders claimed that the "transmission line and electrical interconnection" component of the 138 kV interconnection appeared excessive because it was greater than the initial 345 kV estimate for such cost component. As further described below, the Independent Consultant has carefully considered this feedback and confirmed the accuracy of the 138 kV interconnection cost estimate developed for Load Zone J.[169] Accordingly, the Commission should approve the NYISO's proposed electric interconnection cost estimates as reasonable for the BESS unit options in Load Zone J.

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[164] Independent Consultant Report at 43-44; and NYISO Staff Recommendations at 19

[165] NYISO Staff Recommendations at 18; and Independent Consultant Report at 43. As required by the Commission, the NYISO conducted the deliverability assessment under the tariff-prescribed level of excess conditions used for the DCR. *See*, *e.g.*, 2011-2014 DCR Order at P 53.

[166] NYISO Final Recommendations at 18; Independent Consultant Final Report at 43; and 1898 & Co. Affidavit at ¶ 30. For the fossil-fired frame turbine options, all options were found to be deliverable in all locations without the need to incur SDU costs, except for the GE 7HA.03 unit for Load Zone K. Due to the magnitude of the SDU costs that would be required, the smaller-sized GE 7HA.02, which was found to be deliverable in Load Zone K without incurring SDU costs, was identified as the lowest fixed cost representative fossil-fired frame turbine option for Load Zone K. *See* NYISO Staff Recommendations at 18; Independent Consultant Report at 43; AG Affidavit at ¶ 42; and 1898 & Co. Affidavit at ¶ 30.

[167] Independent Consultant Report at 43-44; and NYISO Staff Recommendations at 19-20.

[168] NYISO Staff Recommendations at 19-20. The Independent Consultant also developed initial electric interconnection cost estimates for the BESS unit options assuming a 345 kV interconnection in all locations other than Load Zone K. For Load Zone K, the initial cost estimates assumed a 138 kV interconnection.

[169] 1898 & Co. Affidavit at ¶ 23.

For Load Zone J, the revised assumption of a lower voltage interconnection produced a reduction in the total interconnection costs of approximately $4.6 million compared to the initially estimated costs for a 345 kV interconnection.[170] The reduction in cost was primarily the result of significant reductions in the assumed switchyard costs for a 138 kV interconnection.[171] The reduction in switchyard costs was partially offset by an increase in the cable costs for a lower voltage interconnection. A one-mile underground generator lead is assumed for Load Zone J regardless of the voltage level.[172] The cable cost for a lower voltage connection is greater than a higher voltage connection due to the need to transmit the same total output capability (*i.e.*, 200 MW) using lower voltage cables. This results in a higher current to transmit the same quantity of power, thereby requiring additional cable material than a higher voltage interconnection.[173] For above-ground generator leads, the increase in cable material costs is offset by reduced costs for the transmission tower structures required to support the cables.[174] However, such offsetting cost reductions are not available for Load Zone J due to the assumed underground installation.[175]

3. <u>Fixed O&M</u>

Fixed O&M costs generally address fixed plant expenses not affected by the operation of the plant.[176] Fixed O&M consists of two components: (1) fixed plant expenses (*e.g.*, plant staff labor, routine maintenance, safety equipment, building and grounds maintenance, and administrative and general expenses); and (2) fixed non-operating expenses (*e.g.*, site leasing costs, property taxes, and insurance).[177]

For the BESS unit options, the fixed O&M costs account for routine O&M for the project equipment, extended warranties, as well as capacity and performance guarantees for the BESS unit equipment, allowances for asset and energy management and auxiliar power costs, and a contingency fund for inverter replacement or repair beyond the common extended warranty period.[178]

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[170] *Id*.

[171] *Id*.

[172] Independent Consultant Report at 43; and 1898 & Co. Affidavit at ¶ 23.

[173] 1898 & Co. Affidavit at ¶ 23.

[174] *Id*.

[175] *Id*.

[176] Independent Consultant Report at 47-52; and NYISO Staff Recommendations at 23-24.

[177] Independent Consultant Report at 47-52; 1898 & Co. Affidavit at ¶ 32; and NYISO Staff Recommendations at 23.

[178] Independent Consultant Report at 47-48; and 1898 & Co. Affidavit at ¶ 32.

Acknowledging that BESS projects utilize a variety of staffing options, the Independent Consultant did not specify an assumed staffing level for the BESS unit options.[179] Some BESS project owners prefer to self-perform maintenance, asset management, and energy management activities, while others may elect to rely on third party arrangements for such activities.[180] To recognize this diversity of project management practices, the Independent Consultant specified an allowance for the costs of ongoing operation, maintenance, and asset management. This allowance is intended to accommodate either self-performance of the ongoing project management by employees of the asset owner or an arrangement by the BESS project owner with a third party to provide such services.[181]

There is also a component of future augmentation costs allocated to fixed O&M.[182] Augmentation refers to the addition of new batteries to a BESS project at intervals over the assumed life of the project. Degradation of the BESS unit equipment is impacted by both time and cycling.[183] As a result, the Independent Consultant allocated the future augmentation costs among a "fixed" component (accounted for in the fixed O&M costs) and a "variable" component (accounted for in the variable O&M costs).[184]

Property Taxes

The property tax treatment for the proposed peaking plants varies by location.[185] For all locations, the BESS unit options qualify for an as-of-right 15-year tax abatement pursuant to New York State Real Property Tax law.[186] For the balance of the assumed 20-year amortization period, the recommended property tax rate assumes the BESS unit options in locations other than

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[179] Independent Consultant Report at 47-48; AG Affidavit at ¶ 112; and 1898 & Co. Affidavit at ¶ 32 and 43-44.

[180] 1898 & Co. Affidavit at ¶ 44.

[181] Independent Consultant Report at 47-48; AG Affidavit at ¶ 112; and 1898 & Co. Affidavit at ¶ 44.

[182] Independent Consultant Report at 20 and 48; AG Affidavit at ¶ 39; and 1898 & Co. Affidavit at ¶ 32.

[183] Independent Consultant Report at 20 and 48; and 1898 & Co. Affidavit at ¶ 32.

[184] Independent Consultant Report at 20 and 48; AG Affidavit at ¶ 39 and 122; and 1898 & Co. Affidavit at ¶ 32.

[185] Independent Consultant Report at 50-52; AG Affidavit at ¶ 107-109; and NYISO Staff Recommendations at 28-30.

[186] New York Real Property Tax Law § 487. For the fossil-fired frame turbine options, New York Real Property Tax Law § 489-BBBBBB(3)(b-1), as recently extended by Chapter 332 of the Laws of the State of New York of 2024, provides an as-of-right 15-year abatement for the fossil-fired frame turbine option in Load Zone J. For Load Zone J, this abatement covers the entirety of the assumed 13-year amortization period for the fossil-fired frame turbine option. This abatement, however, is limited to the fossil-fired frame turbine option in Load Zone J. For all other locations, the NYISO assumes that the fossil-fired frame turbine options will pay tax rates based on entering into a payment in lieu of taxes agreement, as further discussed herein, for the full duration of the assumed 13-year amortization period.

Load Zone J will enter into a payment in lieu of taxes ("PILOT") agreement with a local industrial development agency/authority ("IDA").[187] Since the 2014-2017 DCR, the Commission has consistently approved the use of reduced tax rates for the peaking plant technology options based on PILOT agreements.[188] Although discretionary, the Commission has repeatedly accepted the use of PILOT agreements because they are generally available to generation projects in New York and have a demonstrated history of being granted to such projects.[189] The NYISO's assumption regarding PILOT agreements is therefore distinguishable from other impermissibly speculative assumptions discussed elsewhere in this filing letter.

For the last five years of the assumed 20-year amortization period in locations other than New York City, the Independent Consultant assumed a property tax rate of 0.6% through entering into a PILOT agreement.[190] The Independent Consultant developed this rate based on a review of PILOT payment data for ten gas-fired generators and four energy storage projects in various locations through New York outside of New York City.[191]

For Load Zone J, the Independent Consultant recognized the as-of-right 15-year tax abatement for BESS units pursuant to Section 487 of the New York State Real Property Tax law. For the last five years of the assumed 20-year amortization period, the Independent Consultant assumed that the BESS unit options in Load Zone J will be subject to a property tax rate of 4.77%.[192]

Land Lease Costs

Consistent with the methodology used for the past three resets, the Independent Consultant initially derived the assumed land lease costs by escalating the values from the last reset.[193] The Independent Consultant compared the resulting escalated values to the observed range of lease values for each location based on publicly available data and supplemental information provided by stakeholders. This review identified that the escalated values were reasonable and within the range of the values identified by the supplemental analysis for all

[187] Independent Consultant Report at 50; AG Affidavit at ¶ 107; and NYISO Staff Recommendations at 29.

[188] 2014-2017 DCR Order at P 94; 2017-2021 DCR Order at P 117; and 2021-2025 DCR Initial Order at P 19 and 72.

[189] *See, e.g.*, 2014-2017 DCR Order at P 94; and 2017-2021 DCR Order at P 117.

[190] Independent Consultant Report at 50; AG Affidavit at ¶ 107; and NYISO Staff Recommendations at 29.

[191] *Id*. After adjusting for inflation, the Independent Consultant observed adjusted PILOT rates for the gas-fired generation facilities ranging from 0.15% to 5.63% with a median rate of 0.67%, and a range of 0.03% to 1.92% with a median rate of 0.21% for the energy storage projects.

[192] Independent Consultant Report at 51; AG Affidavit at ¶ 108; NYISO Staff Recommendations at 28-29.

[193] Independent Consultant Report at 48-49; 1898 & Co. Affidavit at ¶ 33; and NYISO Staff Recommendations at 23-24.

locations, except Load Zone J.[194] As a result of its supplemental assessment, the Independent Consultant used the escalated cost values of: (1) $26,000 per acre-year for Load Zones C, F, G (Dutchess County), and G (Rockland County); and (2) $30,000 per acre-year for Load Zone K.[195]

For Load Zone J, the Independent Consultant observed that land lease costs had experienced an increase in value that exceeded the inflation-based adjustment.[196] To determine an appropriate lease rate for Load Zone J, the Independent Consultant used data from a stakeholder-provided report on recent commercial property sales in New York City.[197] The Independent Consultant used the data in the study to identify appropriately zoned properties greater than four acres without existing building structures and located within three miles of an existing substation in Load Zone J. The Independent Consultant converted the reported sales prices of such properties to an assumed lease rate using an assumed capitalization rate of 5.9%.[198] Based on the results of this analysis, the Independent Consultant assumed a least rate value of the $717,000 per acre-year for Load Zone J, which represents the average of the assumed lease values for the qualifying properties evaluated.[199]

For the BESS unit options, the appropriate land lease rates are applied for the duration of 20-year amortization period and were also included for all months of the assumed construction and development period for the projects.[200] Consistent with the Commission-approved assumptions for prior DCRs, the appliable lease rate is assumed to include any required contribution by the lessee to property taxes on the underlying property as may be required the lessor.[201] The Independent Consultant assumed a 2-hour BESS unit would require a six acre site in Load Zone J, a nine acre site in Load Zone K, and a ten acre site in Load Zones C, F, G (Dutchess County), and G (Rockland County).[202] The Independent Consultant also assumed a 30-month construction and development period for a 2-hour BESS unit in all locations.[203]

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[194] Independent Consultant Report at 48-49; 1898 & Co. Affidavit at ¶ 33 and 42; and NYISO Staff Recommendations at 23-24.

[195] Independent Consultant Report at 49.

[196] Independent Consultant Report at 48-49; 1898 & Co. Affidavit at ¶ 33 and 42; and NYISO Staff Recommendations at 23-24.

[197] *Id*.

[198] Independent Consultant Report at 48; and 1898 & Co. Affidavit at ¶ 42.

[199] Independent Consultant Report at 48-49; 1898 & Co. Affidavit at ¶ 42; and NYISO Staff Recommendations at 23-24.

[200] Independent Consultant Report at 41-42 and 48-49; and NYISO Staff Recommendations at 23-24.

[201] Independent Consultant Report at 54, fn. 29 and 31; and NYISO Staff Recommendations at 24.

[202] Independent Consultant Report at 49.

[203] Independent Consultant Report at 42.

4. Mortgage Recording Taxes

New York State imposes certain mortgage recording taxes that may be applicable to the debt financing required to construct and operate the peaking plant technology options. Consistent with the treatment of reduced property taxes through PILOT agreements, the Independent Consultant assumed that the peaking plant technology options in all locations would avail themselves of the mortgage recording tax exemptions available from IDAs.[204] Under New York law, however, IDAs are not authorized to provide exemptions for the transportation district component of the mortgage recording taxes.[205] Accordingly, the Independent Consultant included the applicable mortgage recording tax rate of 0.3% of the debt financed in Load Zones G (Dutchess County), G (Rockland County), J and K, and 0.25% of the debt financed in Load Zones C and F.[206]

Consistent with Commission-accepted use of PILOT agreements,[207] the Independent Consultant identified generation projects throughout New York that have been granted mortgage recording tax exemptions from IDAs. Based on publicly available data, the Independent Consultant identified 17 generation projects throughout New York that have been awarded mortgage recording tax exemptions by IDAs.[208] Projects awarded mortgage recording tax exemptions by IDAs include fossil-fired generators, energy storage projects, and renewable generators.[209]

Certain stakeholders contended that Commission precedent on a discretionary tax abatement program in New York City prohibits the assumed mortgage recording tax exemptions for the peaking plant technologies. The assumed mortgage recording tax exemptions are consistent with the Commission's precedent on using PILOT agreements to obtain property tax reductions and distinguishable from the New York City tax abatement program previously disallowed by the Commission because of changed circumstances.

In the 2011-2014 DCR, the NYISO initially proposed to include a tax abatement for the proposed peaking plant in Load Zone J under a new, discretionary program that had recently

[204] Independent Consultant Report at 52; AG Affidavit at ¶ 110; and NYISO Staff Recommendations at 30.

[205] New York State Tax Law § 253(2); and AG Affidavit at ¶ 111. The Independent Consultant assumed that the following transportation district component of the mortgage recording taxes would apply to the debt financed by the peaking plant technology options evaluated for the 2025-2029 DCR: (1) the Central New York Regional Transportation District for Load Zone C; (2) the Capital District Transportation Authority for Load Zone F; and (3) the Metropolitan Commuter Transportation District for Load Zones G, J, and K.

[206] Independent Consultant Report at 52; AG Affidavit at ¶ 111; and NYISO Staff Recommendations at 30.

[207] *See, e.g.*, 2014-2017 DCR Order at P 94; and 2017-2021 DCR Order at P 117.

[208] AG Affidavit at ¶ 110.

[209] *Id*.

been established by the New York City Industrial Development Authority.[210] This new program was established following the expiration of a statutory, as-of-right abatement. The discretionary abatement had not been granted to any generation projects in New York City and there were questions regarding whether the proposed peaking plant could satisfy certain of the eligibility criteria for the discretionary program.[211] As noted above, consistent with Commission precedent on assuming reduced property tax rates through PILOT agreements, the assumption of mortgage recording tax exemptions from arrangements with IDAs is supported by historical evidence that such exemptions are generally available to generation projects in New York and have been awarded to fossil generation facilities and energy storage projects. Accordingly, the Commission should accept this assumption as reasonable and reject false claims that it violates Commission precedent.

Certain stakeholders also alleged that the BESS unit options cannot qualify for benefits from an IDA because the Independent Consultant has assumed that the projects do not have any full-time employees. Thus, these stakeholders claimed the BESS projects cannot meet employment requirements that may be established by IDAs as a qualification to receive benefits. Such claims rest on a flawed interpretation of the assumptions developed by the Independent Consultant for the BESS unit options. The Independent Consultant acknowledged diversity in the market regarding the approach taken by BESS project owners for ongoing project maintenance.[212] Noting that some project owners utilize third party contractors to provide ongoing project management services, while others prefer to self-perform such services, the Independent Consultant elected to assume a specified dollar value allowance to address the costs of such ongoing maintenance.[213] Accordingly, the assumed allowance permits a BESS project owner to utilize its own employees to provide such services, facilitating the ability to meet any employment requirements that may be imposed by an IDA to receive benefits.[214] The Commission should reject claims to the contrary as a fundamental misinterpretation of the assumptions developed by the Independent Consultant.

5. Sales Tax

Unlike the fossil-fired frame turbine options, the BESS unit options are not granted an express exemption from sales tax in New York.[215] As a result, the Independent Consultant assumed the BESS unit options would be subject to sales tax on equipment and material costs.[216] The Independent Consultant initially assumed that the BESS unit options could potentially

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[210] 2011-2014 DCR Order at P 65-67.

[211] *Id*. at P 88-90.

[212] Independent Consultant Report at 47-48; and 1898 & Co. Affidavit at ¶ 44.

[213] *Id*.

[214] AG Affidavit at ¶ 112; and 1898 & Co. Affidavit at ¶ 44.

[215] Independent Consultant Report at 42; and 1898 & Co. Affidavit at ¶ 38.

[216] Independent Consultant Report at 42; and 1898 & Co. Affidavit at ¶ 38-40.

qualify as capital improvements providing a sales tax exemption on the initial installation and labor costs for the projects.[217]

Certain stakeholders alleged that assuming the BESS unit options could qualify as capital improvements is unwarranted. These stakeholders noted that, because the BESS unit options are assumed to be constructed on leased property, New York applies a rebuttable presumption against qualification as a capital improvement. Based on its consideration of stakeholder feedback and additional due diligence, the Board directed the NYISO to revise this assumption, and, instead, assume that the BESS unit options would not likely qualify as capital improvements for sale tax exemption purposes.[218] The Board's decision was informed by: (1) New York's general presumption that leasehold improvements do not qualify as capital improvements; (2) the fact that BESS projects in New York are subject to certain existing requirements to develop decommissioning plans that include requirements for removal of the project facilities from the project site upon decommissioning;[219] and (3) the likelihood that similar removal requirements may be incorporated in the leases executed by the BESS projects.[220]

6. Federal Investment Tax Credit

The Independent Consultant assumed that the BESS unit options would qualify for a 30% federal ITC. The Independent Consultant's recommended treatment of the ITC for the BESS unit options was based on its prior project experience, as well as its confidential communications with tax consultants and advisors with experience in ITC-related matters.[221] The Independent Consultant carefully assessed the BESS project costs to identify the percentage of costs eligible for the ITC, as well as reductions in the realized benefit to the BESS project owner in leveraging a third party transaction to monetize the value of the ITC.[222] Based on its experience, the Independent Consultant identified that an 8% reduction in the realized value of the ITC provides a reasonable estimate of the cost to leverage a third party transaction to monetize the ITC.[223]

[217] Independent Consultant Report at 42; and 1898 & Co. Affidavit at ¶ 40.

[218] Smith Affidavit at ¶ 28 and Exhibit A; and 1898 & Co. Affidavit at ¶ 40-41.

[219] *See, e.g.*, New York State Uniform Fire Prevention and Building Code § 1206.9.3; and NYSERDA, *Battery Energy Storage Systems – Key Considerations for Local Governments: Decommissioning and End-of-Life Considerations* at 15-17 (June 16, 2021), available at: https://www.nyserda.ny.gov/-/media/Project/Nyserda/Files/Programs/Clean-Energy-Siting/Decommissioning-and-End-of-Life-Considerations.pdf.

[220] Smith Affidavit at ¶ 28.

[221] Independent Consultant Report at 44-45; 1898 & Co. Affidavit at ¶ 35; and NYISO Staff Recommendations at 21.

[222] *Id*.

[223] Independent Consultant Report at 44-45; and AG Affidavit at ¶ 51.

The Independent Consultant initially included the cost associated with the generator leads as part of the eligible basis for the ITC.[224] Certain stakeholders opposed this assumption noting that based on Internal Revenue Service ("IRS") guidance that the generator leads should be excluded from costs eligible for the ITC.[225] After careful consideration of stakeholder feedback and additional due diligence, the Board directed a change in this assumption.[226] The Board concluded that it appeared more reasonable to assume that the IRS would classify the generators leads as "transmission/distribution equipment" that is not eligible for the ITC. The Board's decision was informed by IRS guidance and a review of the purpose and function of the generators leads considering such guidance.[227] Accordingly, the Board directed that the ITC benefits for the BESS unit options be revised to exclude the generator lead costs from the eligible basis of the benefit.[228]

7. Variable O&M

Variable O&M costs relate to the operation of each peaking plant and the production of electricity.[229] These costs include routine equipment maintenance, water usage, water treatment, water disposal, and other consumables.

For the BESS unit options, the variable O&M costs include the "variable" component identified by the Independent Consultant for future augmentation to maintain the full discharge capability of the projects over the duration of the assumed 20-year amortization period in response to battery degradation over time.[230] Sales tax is included in the augmentation-related material purchases and labor.[231]

The variable O&M costs and operational and performance specifications for the proposed peaking plants are utilized in estimating the potential revenues such plants could earn from participation in the NYISO-administered EAS markets.

IV. Net Energy and Ancillary Services Revenue Estimates

The Services Tariff requires that the DCR assess the likely net EAS revenues that a

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[224] 1898 & Co. Affidavit at ¶ 35-36.

[225] 1898 & Co. Affidavit at ¶ 36.

[226] Smith Affidavit at ¶ 27 and Exhibit A; and 1898 & Co. Affidavit at ¶ 37.

[227] Smith Affidavit at ¶ 27.

[228] Smith Affidavit at ¶ 27 and Exhibit A.

[229] Independent Consultant Report at 52-54; Smith Affidavit at Exhibit A; and NYISO Staff Recommendations at 22-23.

[230] Independent Consultant Report at 53-54; AG Affidavit at ¶ 39 and 122; 1898 & Co. Affidavit at ¶ 32; and NYISO Staff Recommendations at 22-23.

[231] Independent Consultant Repot at 53-54; and 1898 & Co. Affidavit at ¶ 39.

peaking plant could potentially earn from participation in the NYISO-administered markets.[232] The estimated net EAS revenues serve as an offset to the estimated cost to construct and operate a peaking plant. The resulting net value determines the revenue a peaking plant would need to receive from the capacity market to obtain sufficient revenues to support market entry under the tariff-prescribed level of excess conditions.

The estimated net EAS revenues are determined using historical data.[233] The NYISO uses the most recent three years of historical market prices and fuel and other variable operating costs, along with the operating characteristics of the peaking plant, to estimate the potential revenue earnings for each peaking plant. This approach assumes that the estimated average annual net EAS revenues a peaking plant could have earned over the most recent three-year period provides a reasonable estimate of forward-looking expectations.[234] The NYISO updates these estimates pursuant to the tariff-prescribed annual updating procedures to ensure that the ICAP Demand Curves incorporate changes in market outcomes over time.[235]

Beginning with this reset, the NYISO implemented enhancements to the estimating of net EAS revenues to permit the use of real-time interval pricing if warranted based on the consideration of the operating capabilities of a particular peaking plant technology option.[236] For the 2025-2059 DCR, the Independent Consultant recommended the use of real-time interval prices in estimating net EAS revenues for the BESS unit options.[237] The recommendation to use interval prices in real-time appropriately reflects the rapid response capability of BESS units and provides a more accurate reflection of the real-time revenue earning opportunities available to BESS units.[238] For the fossil-fired frame turbine options, the Independent Consultant recommended retaining use of hourly real-time prices, consistent with the past two resets.[239]

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[232] Services Tariff § 5.14.1.2.2.

[233] *See* Services Tariff § 5.14.1.2.2.2; Docket No. ER16-1751-000, *New York Independent System Operator, Inc.*, Proposed Services Tariff Revisions to Implement Enhancements to the Periodic Reviews of the ICAP Demand Curves at 5-7 (May 20, 2016) ("DCR Process Enhancements Filing"); and *New York Independent System Operator, Inc.*, 156 FERC ¶ 61,039 at P 16 (2016) ("DCR Process Enhancements Order").

[234] AG Affidavit at ¶ 76.

[235] *See, e.g.*, DCR Process Enhancements Order at P 27; and 2017-2021 DCR Order at P 166.

[236] Docket No. ER24-2015-000, *New York Independent System Operator, Inc.*, Proposed Market Revenue Offset Enhancements for the Installed Capacity Demand Curves (May 15, 2024); and Docket No. ER24-2015-000, *supra*, Letter Order (July 11, 2024).

[237] Independent Consultant Report at 81 and 84; AG Affidavit at ¶ 47; and NYISO Staff Recommendations at 33-34.

[238] Independent Consultant Report at 84; AG Affidavit at ¶ 97; and NYISO Staff Recommendations at 34.

[239] Independent Consultant Report at 76; and AG Affidavit at ¶ 47.

A. Net EAS Model

The Services Tariff requires the development of a model to determine the net EAS revenues estimates for each peaking plant.[240] This model is commonly referred to as the "Net EAS Model." The Independent Consultant, in collaboration with stakeholders, the NYISO and the MMU, developed separate Net EAS Models for the BESS unit options and the fossil-fired frame turbine options.[241]

The model for the fossil-fired frame turbines is essentially the same as the Net EAS Model approved by the Commission for the 2021-2025 DCR subject to certain changes to the gas pricing assumptions for Load Zone C, Load Zone G (Rockland County), and Load Zone J.[242] The remainder of this section addresses the Net EAS Model for the BESS unit options.

The NYISO proposes to adopt the Net EAS Models developed by the Independent Consultant.[243] The final Net EAS Models developed during the DCR are posted on the NYISO website and publicly available to all interested parties.[244] The NYISO used the models in determining the 2025-2026 Capability Year ICAP Demand Curves proposed herein. Subject to updating certain data inputs as required by the tariff prescribed annual updates, the Net EAS Models remain fixed for the duration of the reset period.[245] The NYISO will use the applicable model in conducting the annual updates to determine the ICAP Demand Curves for the 2026-2027 through 2028-2029 Capability Years.

1. Overview of BESS Unit Net EAS Model

The Net EAS Model determines the estimated annual net EAS revenues each peaking plant could potentially earn based on 36 months of historical data on market prices and variable costs.[246] The Net EAS Model is designed to account for the differences of a BESS unit's participation in the NYISO-administered markets. The model operates in two steps: (1)

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[240] Services Tariff § 5.14.1.2.2.2.

[241] Independent Consultant Report at 75-112; AG Affidavit at ¶ 77-105; and NYISO Staff Recommendations at 30-43.

[242] Independent Consultant Report at 76-81 and 92-106; AG Affidavit at ¶ 78-92; and NYISO Staff Recommendations at 37-42.

[243] NYISO Staff Recommendations at 37-38.

[244] Services Tariff § 5.14.1.2.2.2. The Net EAS Model for the BESS unit options is contained within a zip folder titled "Net EAS Battery Model September 2024 (Updated)" and the Net EAS Model for the fossil-fired frame turbine options is contained within a zip folder titled "Net EAS Fossil Model September 2024 (Updated)." Both models are available at: https://www.nyiso.com/installed-capacity-market. From this page, the models can be obtained by navigating through the following content sections: "Reference Documents"→"2025-2029 Demand Curve Reset"→"Final Report (Updated)."

[245] Services Tariff § 5.14.1.2.2.2.

[246] Independent Consultant Report at 81-93 and 106-109; AG Affidavit at ¶ 76; and NYISO Staff Recommendations at 31-37 and 42-43.

determining the revenue maximizing schedules for the BESS unit options in the Day-Ahead Market ("DAM"); and (2) evaluating additional revenue earning opportunities through potential real-time deviations from the previously determined DAM schedule by evaluating Real-Time Dispatch ("RTD") interval prices.

The model accounts for the discharge capability of each BESS unit (in MWh), the amount of stored energy that remains for the unit at the end of each day, as well as round-trip efficiency losses. The BESS units can provide energy and reserves. Based on the rapid response rates for BESS units, the model assumes the units can provide spinning reserves. Energy dispatch is based on economics as further described below. Reserves schedules are also based economics and consideration of the stored energy of the unit. A BESS unit can receive reserve schedules if it has at least one hour of stored energy and is not scheduled to discharge energy for such hour. Consistent with current market rules, a BESS unit can also receive a reserves schedule during periods of active charging because the unit could forgo charging to provide reserves. As a result, when charging, a BESS unit can provide a quantity of reserves equal to its stored energy (assuming it has at least one hour of stored energy), plus its withdrawals for active charging.

For the DAM, the model commits the BESS units using "hour-pairs" in which charging and discharging schedules are assigned simultaneously.[247] Over the course of the 24-hour period for each operating day, the model will assign the BESS unit to discharge energy during hours when the DAM prices for the relevant location are highest and charge the unit when energy prices for such location are lowest. The model begins by assigning an hour-pair consisting of a schedule to discharge energy during the hour in which DAM prices for the location are the highest and assigning an associated charging schedule during the hour in which DAM prices for the location are the lowest for the day. The model continues assigning such hour-pairs until there are no more such pairings for the operating day that would be profitable or if the unit would otherwise be assigned an infeasible schedule (*e.g.*, being assigned to discharge energy without sufficient stored energy to meet such discharge schedule). The model also includes logic to require the BESS units to take positions to achieve 200 MW of stored energy at the end of each day. This logic facilitates the capability for a unit to provide reserves overnight at its nameplate capacity.

In real-time, the model assesses additional revenue earning opportunities that can arise through deviations from the previously determined DAM schedules.[248] To assess such opportunities, the model evaluates the actual RTD prices for each interval and uses the previously determined DAM prices as a "proxy" for real-time prices in all future intervals. This logic presents a reasonable operating strategy for a BESS unit because the NYISO publishes DAM schedules and prices the day prior to the operating day. The real-time logic does not imply "perfect foresight" due to the use of DAM prices as an estimate of future real-time prices.

[247] Independent Consultant Report at 81-84; AG Affidavit at ¶ 93-96; and NYISO Staff Recommendations at 31-33.

[248] Independent Consultant Report at 84-89; AG Affidavit at ¶ 97-103; and NYISO Staff Recommendations at 33-36.

Although potential real-time deviations are evaluated using DAM prices for all future real-time intervals, the settlement for any such deviations is based on the actual RTD intervals prices. This can result in differences between expected revenues assumed by the model in determining real-time dispatch decisions and the actual revenues (or potential loss) realized from such real-time deviations.

The real-time logic also uses a "hurdle rate" to account for uncertainty in future real-time prices.[249] The hurdle rates essentially reflect an opportunity cost of a BESS unit having a limited amount of stored energy and a general risk premium associated with a decision to discharge in advance of unknown future real-time prices that may provide greater revenue earning opportunities. The potential profit from a real-time deviation must exceed the applicable hurdle rate to be considered by the model. For each real-time interval, the model evaluates, in consideration of the applicable hurdle rate, whether the actual RTD price for that interval is high enough to trigger real-time discharging or low enough to trigger real-time charging. The Independent Consultant determined the hurdle rates dynamically to maximize the resulting real-time profits. Seasonal hurdle rates (*i.e.*, "summer" [June through August], "winter" [January and February], and "shoulder" [all remaining months]) were established using the three-year historical data period for the 2025-2026 Capability Year ICAP Demand Curves (*i.e.*, September 2021 through August 2024). These hurdle rate values will remain fixed for the duration of the reset period.

Real-time deviations affect a unit's level of storage energy and may impact the ability to fulfill previously determined DAM schedules.[250] As a result, the model will buy out of previously scheduled DAM energy and reserve positions that become physically infeasible due to real-time deviations. The real-time logic also restricts a BESS unit from taking positions in real-time that would prevent the unit from having sufficient stored energy to fulfill its previously determined DAM positions during the Peak Load Window. For purposes of the 2025-2059 DCR, the model uses the currently effective Peak Load Window for the 2024-2025 Capability Year (*i.e.*, hour beginning ["HB"] 1:00 p.m. through HB 8:00 p.m. for May through October and HB 4:00 p.m. through 9:00 p.m. for November through April).

B. Level of Excess Adjustment Factors

The Services Tariff mandates that net EAS revenue estimates for each peaking plant reflect the tariff-prescribed level of excess conditions.[251] Consistent with the methodology approved by the Commission for the past three resets, the NYISO proposes to account for this

[249] Independent Consultant Report at 84-85 and 88-90; AG Affidavit at ¶ 102; and NYISO Staff Recommendations at 34-35.

[250] Independent Consultant Report at 85-86; AG Affidavit at ¶ 103; and NYISO Staff Recommendations at 35.

[251] Services Tariff §§ 5.14.1.2.2 and 5.14.1.2.2.2.

requirement by using level of excess adjustment factors ("LOE-AFs").[252] The Net EAS Model multiplies historical energy and reserve prices by the relevant LOE-AF values to approximate market outcomes under the tariff-prescribed level of excess conditions.[253]

The LOE-AF values are determined using production cost modeling simulations to determine projected wholesale energy prices based on current (or "as found") system conditions and prices under system conditions that reflect the tariff-prescribed level of excess conditions.[254] The LOE-AF values are determined by dividing the projected prices under the tariff-prescribed level of excess conditions by the projected prices under "as found" system conditions.[255]

The LOE-AFs were calculated by averaging DAM prices for each month by Load Zone and period. For the 2025-2029 DCR, the Independent Consultant also weighted DAM prices by the relative frequency that each month and year combination is utilized as an input in estimating net EAS revenues over the four-year reset period.[256]

C. Voltage Support Service Revenue Adder

The net EAS revenues, as determined by the Net EAS Model, are adjusted by an adder to reflect expected revenues for Ancillary Services not accounted for in the model.[257] Consistent with the past two resets, this adder accounts for likely voltage support service ("VSS") revenues.[258]

For the 2025-2029 DCR, the NYISO proposes to determine the annual value of the VSS adder formulaically based on the compensation structure described in Rate Schedule 2 of the Services Tariff.[259] This compensation structure provides an annual payment for VSS equal to the tariff specified compensation rate multiplied by the sum of a supplier's lagging reactive power capability ("MVAr") and the absolute value of the supplier's leading MVAr capability.[260] The

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[252] 2014-2017 DCR Order at P 2 and 165; 2017-2021 DCR Order at P 163; and 2021-2025 DCR Initial Order at P 19 and 98.

[253] Independent Consultant Report at 107-109 and Appendix C; AG Affidavit at ¶ 82-84 and 104; and NYISO Staff Recommendations at 42-43.

[254] Independent Consultant Report at 107; AG Affidavit at ¶ 83; and NYISO Staff Recommendations at 42.

[255] Independent Consultant Report at 107-108; AG Affidavit at ¶ 83; and NYISO Staff Recommendations at 42.

[256] Independent Consultant Report at 108; AG Affidavit at ¶ 84; and NYISO Staff Recommendations at 42.

[257] Services Tariff § 5.14.1.2.2.2.

[258] Independent Consultant Report at 92-93; and NYISO Staff Recommendations at 36-38.

[259] Services Tariff § 15.2; Independent Consultant Report at 92-93; AG Affidavit at ¶ 86-88 and 105; and NYISO Staff Recommendations at 36-38.

[260] Services Tariff § 15.2.2.

value of the VSS adder would be adjusted annually as part of the annual updates to account for the VSS compensation rate in effect at the time of each such annual update.

The Independent Consultant determined that the lagging MVAr capability of the BESS unit options is 124 MVAr and their leading MVAr capability is -124 MVAr. Based on the currently effective VSS compensation rate of $3,307.31 per MVAr-year, the applicable VSS adder for the BESS unit options for the 2025-2026 Capability Year is $4.10/kW-year.[261]

The NYISO acknowledges that the Commission's recently issued Order No. 904 directs certain changes to the compensation for reactive power.[262] Thus, the required compliance plan in response to Order No. 904 is likely to impact the assumed VSS compensation described herein. However, the timing and structure of the NYISO's compliance plan is unknown at this time. As part of its compliance plan in response to Order No. 904, the NYISO will need to address the implication of any changes to its VSS program and related compensation on the VSS adder proposed herein. The NYISO's compliance plan will also need to address the timing to implement any required changes to the VSS adder described herein, as well as any resulting adjustment to the ICAP Demand Curves.

D. Consideration of State Clean Energy Incentives for BESS Units

During the DCR, the NYSDPS recommended the inclusion of an additional offset for the BESS unit options to account for potential incentives available through the new energy storage procurement program recently approved by the NYSPSC.[263] As described herein, the circumstances related to this program are virtually indistinguishable from a discretionary tax abatement program that the Commission determined was not appropriate to consider for the

[261] Independent Consultant Report at 93; AG Affidavit at ¶ 105; and NYISO Staff Recommendations at 36.

[262] *Compensation for Reactive Power Within the Standard Power Factor Range*, 189 FERC ¶ 61,034 (2024) ("Order No. 904").

[263] NYSPSC Case 18-E-0130, *supra*, Order Establishing Updated Energy Storage Goal and Deployment Policy (issued and effective June 20, 2024). The NYSPSC directed the implementation of a new utility-scale (or bulk) energy storage procurement program administered by NYSERDA that would provide compensation to competitively selected energy storage projects using an "index storage credit" or "ISC" mechanism. In response to procurement solicitations issued by NYSERDA, interested energy storage project developers would bid a "strike price" which reflects the developer's estimated revenue requirements for a new energy storage project. For projects selected to receive ISC awards, the strike price is then compared to a "reference price" which would be calculated using price indices to represent a project's anticipated revenue earnings from participation in the NYISO-administered wholesale energy and capacity markets. The compensation to a selected project would be equal to the value determined by subtracting the reference price from the project's accepted strike price. If a project's strike price exceeds the reference price, NYSERDA would pay the difference to the project. If, however, the strike price is less than the reference price, NYSERDA would either charge the difference to the project or utilize such negative balance to offset future payment obligations to the project.

DCR.[264] Adhering to this precedent, the NYISO has not proposed to include any revenue offset for the BESS unit options for potential incentives that could be available through the NYSPSC's new energy storage procurement program.

The conditions attendant to the NYSPSC's new energy storage procurement program are nearly identical to the discretionary tax abatement program for New York City that the Commission determined was not appropriate to consider in the 2011-2014 DCR.[265] Like that program, the NYSPSC's energy storage procurement program is discretionary and does not have any historical record from which to determine the likelihood for the BESS unit options to receive benefits or the potential value of such benefits. These factors are consistent with those the Commission previously held disqualified consideration of the discretionary tax abatement program for New York City.[266]

The NYSPSC's energy storage program is also temporary with the NYSPSC only approving three procurements over the coming years. NYSERDA's implementation plan proposes to conduct one procurement each in 2025, 2026, and 2027.[267] As a result, the NYSPSC's program will expire prior to the end of the four year period covered by this reset.

Additionally, the NYSPSC's energy storage procurement program is not designed to provide potential incentives to 2-hour BESS projects. The program implementation plan recently submitted by the program administrator, NYSERDA, specifically provides that NYSERDA will only consider energy storage projects with durations of four or more hours.[268] As a result, a 2-hour BESS unit is not eligible for the receipt of incentives under the NYSPSC's new energy storage procurement program.

As demonstrated by the foregoing, the NYSPSC's recently developed energy storage procurement program presents conditions that are indistinguishable from a prior discretionary incentive program that the Commission determined was inappropriate to consider for the DCR.[269] Consistent with precedent, the Commission should accept as reasonable the NYISO's proposal to exclude consideration of any potential incentives that may be available through the NYSPSC's new energy storage procurement program.

V. ICAP Demand Curve Parameters

The key parameters necessary for establishing the ICAP Demand Curves are: (i) the maximum allowable price of capacity; (ii) the reference point price; and (iii) the point at which

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[264] 2011-2014 DCR Order at P 65-67 and 88-90.

[265] *Id.*

[266] 2011-2014 DCR Order at P 88-90.

[267] NYSPSC Case 18-E-0130, *supra*, NYSERDA Bulk Energy Storage Implementation Plan Proposal at 13 (October 18, 2024) ("NYSERDA Bulk Storage Plan").

[268] NYSERDA Bulk Storage Plan at 3.

[269] 2011-2014 DCR Order at P 65-67 and 88-90.

the price of capacity declines to zero (commonly referred to as the "zero-crossing point").

A. Levelized Fixed Charge and Financial Parameters

The Services Tariff requires that the DCR assess "the current localized levelized embedded cost of a peaking plant" for each ICAP Demand Curve.[270] This requires the translation of the estimated up-front capital investment costs for each peaking plant, including property tax and insurance, into an annualized level. Among other factors, such as depreciation, this translation accounts for: (i) the assumed WACC required by a developer of the peaking plant to recover its up-front investments costs, plus a reasonable return on that investment; (ii) the term in years over which the developer is assumed to recover its up-front investment costs (commonly referred to as the "amortization period"); and (iii) the applicable tax rates. The WACC is derived from a series of financial parameters related to the development of the peaking plant, including the COE, the COD, and the capital structure for the project (as reflected in the ratio of debt to equity ["D/E ratio"]).[271]

The Independent Consultant developed the parameters necessary to translate the up-front investment costs of the peaking plant for each ICAP Demand Curve into an annualized level based on an assessment of relevant data and information, as well as its reasoned judgment and experience.[272] The Independent Consultant designed the parameters to reflect the particular financial risks faced by a developer given the nature of the peaking plant and the New York electricity market context.[273] The Independent Consultant selected the parameters in an integrated fashion due to the interrelationship of the various parameters.[274]

Certain stakeholders alleged that the recommended WACC for a 2-hour BESS unit fails to fully consider the risks attendant to investing in such a project in New York. These stakeholders claimed that the Independent Consultant has failed to adequately consider factors such as future declines in CAF values, future uncertainty of market revenues, the incremental risk of a stand-alone project finance structure, and the risks of future technological improvement to erode future revenue earnings of a BESS project deployed during this reset period. As demonstrated below, the Independent Consultant did evaluate and consider these and other market and technology-specific risks in developing the recommended WACC for 2-hour BESS projects. Accordingly, the Commission should reject claims to the contrary and approve the recommended WACC as a reasonable and appropriate value based on a careful consideration of

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[270] Services Tariff § 5.14.1.2.2.

[271] Independent Consultant Report at 57-74 and Appendix B; AG Affidavit at ¶ 113; and NYISO Staff Recommendations at 24-28.

[272] Independent Consultant Report at 57-70; AG Affidavit at ¶ 114-115 and 124-129; and NYISO Staff Recommendations at 24-27.

[273] Independent Consultant Report at 57-59 and 62-65; AG Affidavit at ¶ 114-115 and 124-125; and NYISO Staff Recommendations at 24-27.

[274] Independent Consultant Report at 58-59; AG Affidavit at ¶ 114 and 124; and NYISO Staff Recommendations at 25.

information available at this time and the risks attendant to investing in a new BESS project in New York.

The Independent Consultant carefully considered the risk attendant to investing in a 2-hour BESS unit in New York when establishing an appropriate and reasonable WACC.[275] The proposed WACC for a 2-hour BESS unit accounts for both market and technology-specific risks.

From the general market risk perspective, the recommended WACC for a 2-hour BESS unit accounts for risks attendant to investment in new supply resources in New York, such as uncertainties related to future market outcomes, future changes in energy and peak demand, and the potential impacts of future topology and resource changes.[276] The Independent Consultant also accounted for certain market risks specific to investing in BESS projects. Given the relatively early stage of BESS unit technologies, the Independent Consultant acknowledged the need to consider the potential for technological advancements to improve the performance of future BESS projects and adversely impact the relative competitiveness of near-term BESS unit investments.[277] Additionally, BESS units are impacted by certain physical performance risks including wear and tear of system components, uncertainty of future market dispatch outcomes, and the potential for experiencing a variety of operational modes and uses in response to changing system needs as the ongoing transition to a clean energy system in New York unfolds over the coming decades.[278]

The Independent Consultant also accounted for the risks presented by uncertainty in future CAF values for a 2-hour BESS unit.[279] The Independent Consultant noted the inability to accurately forecast future CAF values due to their dependence on a variety of inter-related factors including the timing and magnitude of deploying new renewable and energy storage resources, changes in energy demand, changes in system topology, and ongoing improvements to resource adequacy modeling constructs to more accurately capture the operating capability of various resource types. These factors could produce year-to-year increases or decreases in CAF values for a 2-hour BESS unit. Thus, although magnitude and directionality of future CAF values are not predictable with reasonable certainty, the likelihood for year-to-year changes in such values presents a risk of uncertainty that is accounted for by the Independent Consultant.

The primary source of data to inform the financial parameters developed by the Independent Consultant is derived from publicly traded independent power producer ("IPP") entities. However, the Independent Consultant also considered a variety of additional data sources.[280] Such additional information included estimated WACCs for publicly traded

[275] Independent Consultant Report at 58-59 and 62-65; AG Affidavit at ¶ 48, 126-127 and 129; and NYISO Staff Recommendations at 25-27.

[276] Independent Consultant Report at 58-59; and AG Affidavit at ¶ 114-115 and 126-127.

[277] Independent Consultant Report at 64; and AG Affidavit at ¶ 126.

[278] *Id.*

[279] Independent Consultant Report at 64-65 and AG Affidavit at ¶ 48 and 126-127.

[280] Independent Consultant Report 58-59 and 62-63; and AG Affidavit at ¶ 114-115 and 125.

companies developed by financial analysts and independent assessments of capital costs for merchant generation project developments.[281] Consideration of such independent assessments provided information on the appropriate WACC for various corporate financing structures, including stand-alone project finance. Accordingly, the Independent Consultant specifically acknowledged the potential need for adjustments from the information solely derived from publicly traded IPPs, including the need to account for stand-alone project-specific risk factors which tend to result in the need for a higher WACC.[282] The higher WACC for a new merchant generation project can arise from the fact that publicly-traded IPPs have portfolios of assets that operate to balance and mitigate the risks of a single project, thus reducing the overall WACC required at the company level.

Certain stakeholders contended that the data used by the Independent Consultant did not properly reflect financing costs faced by merchant generation developers. Specifically, these stakeholders cited certain recent debt financings undertaken by generation facilities that exhibited debt costs ranging from 9% to 9.5%.[283] Based on this information, these stakeholders claimed that COD values developed by the Independent Consultant were materially understated. The Independent Consultant considered this information; however, it did not provide a reasonable basis for adjustment to recommended WACC values. The information cited did not provide any public information on other elements of the financings at issue. Importantly, public information was not available on the capital structures associated with such financings. The cost of debt is directly affected by the capital structure associated therewith. Absent this information, the Independent Consultant was unable to verify whether the cited debt costs were relevant for the assumed capital structure used in developing the WACC values.[284]

Certain stakeholders also alleged that the Independent Consultant should have developed differing WACC values for the shorter and longer duration BESS unit options evaluated for this reset. These stakeholders contended that such an approach would have resulted in a higher WACC value for a 2-hour BESS unit. The Independent Consultant carefully considered this feedback and concluded that duration-specific WACC values were unnecessary at this time.[285] The recommended WACC reflects the risks attendant to investing in a 2-hour BESS unit. Contrary to the assumptions of certain stakeholders, the Independent Consultant noted that if duration-specific WACC values were to be developed, which it does not concede is necessary for this reset, such an approach would lead to downward adjustment of WACC values for longer duration BESS units.[286] Such an approach would not result in upward adjustment to the recommended WACC value for a 2-hour BESS unit. Any resulting change to the WACC values of longer duration BESS units, if pursued, would not, however, produce a change in the

[281] Independent Consultant Report at 62-63; and AG Affidavit at ¶ 125.

[282] Independent Consultant Report at 63; and AG Affidavit at ¶ 114-115 and 124-125.

[283] AG Affidavit at ¶ 133.

[284] *Id*.

[285] Independent Consultant Report at 64-65; and AG Affidavit at ¶ 127.

[286] *Id*.

recommended peaking plant technology because the longer duration BESS units would remain substantially more costly than a 2-hour BESS unit.[287]

Other stakeholders contended that the data relied on by the Independent Consultant does not account for actions taken by the Federal Reserve to reduce the short-term federal funds interest rate in September 2024 and November 2024. The recent reductions in short-term rates are not directly transferrable to the longer-term rates considered by the Independent Consultant in assessing the appropriate COD and COE values underlying the WACC.[288] Moreover, the Federal Reserve's intention to reduce short-term rates in September with likely future reductions to follow was known to the market well in advance of September. Thus, the market data relied on by the Independent Consultant through August 2024 would have factored in market awareness and expectations of the upcoming rate reductions implemented by the Federal Reserve.[289] In fact, the Independent Consultant has reviewed market data since the Federal Reserve's short-term interest rate reduction in September 2024. More recent data does not reflect substantial differences from the data available through August 2024 and does not support the need for any downward adjustment to the recommended WACC for a 2-hour BESS unit.[290]

Based on the comprehensive assessment conducted by the Independent Consultant that appropriately considered a wide range of market and technology specific risks attendant to investing in a 2-hour BESS unit, the NYISO proposes to adopt the financial parameter values recommended by the Independent Consultant.[291] The Independent Consultant's recommended WACC for a 2-hour BESS unit is 10.49%.[292] The Independent Consultant calculated the recommended WACC for a 2-hour BESS unit based on the following assumptions: (1) COE of 14.5%; (2) COD of 7.2%; and (3) D/E ratio of 55/45.[293]

1. Cost of Equity

The NYISO proposes to adopt the Independent Consultant's recommended COE of 14.5% for a 2-hour BESS unit.[294] The Independent Consultant determined the proposed COE based on consideration of various data sources and information reflecting different potential

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[287] *Id.*

[288] AG Affidavit at ¶ 132.

[289] *Id.*

[290] *Id.*

[291] NYISO Staff Recommendations at 25-28.

[292] Independent Consultant Report at 69-70; AG Affidavit at ¶ 50 and 144; and NYISO Staff Recommendations at 25.

[293] Independent Consultant Report at 62-70 and Appendix B; AG Affidavit at ¶ 124-146; and NYISO Staff Recommendations at 25-28.

[294] Independent Consultant Report at 67-68 and Appendix B; AG Affidavit at ¶ 135-138; and NYISO Staff Recommendations at 25-26.

financing structures for developing a new peaking plant.[295]

The Independent Consultant primarily relied on estimated COE values of publicly traded IPPs computed using the capital asset pricing model ("CAPM"). This analysis identified COE values ranging from 9.57% to 15.90%.[296] The Independent Consultant also considered COE values recently approved by the Commission as part of similar capacity market valuations in neighboring markets. These values ranged from 12.8% to 13.8%.[297]

The asset portfolios of the IPPs used for the CAPM evaluation include a wide range of assets and risk profiles. Accordingly, the Independent Consultant acknowledged that corporate-level COE values for these companies may not fully account for the risk of developing a new merchant generation project in New York.[298] As a result, the COE value recommended for a 2-hour BESS unit represents a value toward the higher end of the range identified.

The recommended COE value for a 2-hour BESS unit is also 50 basis points higher than the value recommended for the fossil-fired frame turbines evaluated for this reset. The higher value for a 2-hour BESS unit is intended to reflect the higher risk presented by investment in such a project.[299]

The recommended 14.5% value reflects a balance between the range of values observed for IPPs and stand-alone project considerations.[300] As a result, the Commission should accept that this value is a reasonable estimate.

2. Cost of Debt

The Independent Consultant recommended use of a 7.2% COD value for a 2-hour BESS unit. The NYISO proposes to adopt this recommendation as a reasonable and appropriate value based on the analysis conducted by the Independent Consultant.[301]

The Independent Consultant based its recommended value on market data regarding debt costs for issuances by generic B, BB, and BBB rated entities, as well as debt costs incurred by

[295] Independent Consultant Report at 58-59, 62-65, 67-68 and Appendix B; and AG Affidavit at ¶ 114-115 and 124-125.

[296] Independent Consultant Report at 67; and AG Affidavit at ¶ 135 and 138.

[297] Independent Consultant Report at 68 and Appendix B; and AG Affidavit at ¶ 136.

[298] Independent Consultant Report at 58-59 and 62-63; and AG Affidavit at ¶ 137.

[299] Independent Consultant Report at 62-65 and 68; and AG Affidavit at ¶ 138.

[300] Independent Consultant Report at 68; and AG Affidavit at ¶ 138.

[301] Independent Consultant Report at 65-66 and Appendix B; AG Affidavit at ¶ 130-134; and NYISO Staff Recommendations at 25-27.

the same IPPs used to inform the appropriate COE values.[302] The Independent Consultant observed that, based on data through August 2024, the current debt costs for generic corporate rated debt was 5.45% for BBB rated debt issuances, 6.08% for BB rated debt issuances, and 7.16% for B rated debt issuances.[303] Based on available information for the IPPs evaluated, the Independent Consultant identified a range of debt costs from 5.43% to 6.32%.[304]

As previously noted, the IPPs evaluated may not be fully representative of the costs faced by stand-alone projects due to their diversified portfolios that can tend to balance and mitigate individual project-specific risks when evaluated from a corporate level.[305] Based on consideration of the COD values observed and the specific risks posed by investing in a 2-hour BESS unit in New York, the Independent Consultant recommended a COD value of 7.20%.[306] This value is relatively consistent with the debt costs currently faced by B-rated entities. Compared to the recommended COD value for the fossil-fired frame turbine options evaluated for the 2025-2029 DCR, the value for a 2-hour BESS unit is 50 basis points higher. This higher value is intended to reflect the higher overall risk attendant to investing in a 2-hour BESS project.[307]

Selecting a more conservative cost of debt value at the high end of the observed range of values is consistent with approach previously accepted by the Commission for the DCR. The Commission has observed that selecting a COD value at the high end of observed values "is consistent with the greater risk posed by a single peaking plant, in comparison to an independent power producing company."[308] Based on the foregoing considerations, the recommended 7.2% COD value is reasonable for a 2-hour BESS unit and should be approved by the Commission.

3. Debt-to-Equity Ratio

The NYISO proposes to adopt the Independent Consultant's recommended D/E ratio of 55/45 for this reset.[309] This represents continuation of the same D/E ratio the Commission has approved for the last two resets.[310]

[302] Independent Consultant Report at 65-66 and Appendix B; AG Affidavit at ¶ 130-131; and NYISO Staff Recommendations at 26-27.

[303] Independent Consultant Report at 65-66; and AG Affidavit at ¶ 131.

[304] Independent Consultant Report at 65 and Appendix B; and AG Affidavit at ¶ 130.

[305] Independent Consultant Report at 58-59 and 62-63; and AG Affidavit at ¶ 134.

[306] Independent Consultant Report at 66; AG Affidavit at ¶ 134; and NYISO Staff Recommendations at 25.

[307] AG Affidavit at ¶ 134.

[308] 2017-2021 DCR Order at P 180; and 2021-2025 DCR Initial Order at P 148.

[309] Independent Consultant Report at 68-69; AG Affidavit at ¶ 139-141; and NYISO Staff Recommendations at 25 and 27.

[310] 2017-2021 DCR at P 179 and 181; and 2021-2025 DCR Initial Orde at P 19 and 148.

The recommended D/E ratio recognizes that the appropriate capital structure for a project can vary depending on consideration of several factors, including the nature and certainty of expected project revenue streams, the structure of a project's financing, and the nature of the capital supporting investment in the project.[311] The Independent Consultant considered various potential capital structures that could reasonably support the development of a new peaking plant in New York when it formulated this recommendation.[312]

The Independent Consultant also assessed corporate level capital structures for certain of the IPPs used in the evaluations to inform the appropriate COE and COD values.[313] The review identified debt shares over the past five years that align with the 55% value recommended for this reset. The recommended D/E ratio is also consistent with the assumed capital structure approved by the Commission as part of similar capacity market valuations in neighboring markets.[314]

The Independent Consultant's recommended D/E ratio represents a reasonable balancing of various considerations as informed by the range of potential capital structures observed. The recommended ratio is aligned with debt leverage observed at the corporate level by IPPs, as well as the assumed capital structures approved by the Commission for use in similar capacity market valuations.

4. Amortization Period

The amortization period represents the term (in years) over which a merchant investor expects to recover its upfront capital costs to develop a new peaking plant in New York, together with a reasonable return on such investment. The NYISO proposes to adopt the 20-year amortization period recommended by the Independent Consultant for BESS projects.[315]

Since the 2014-2017 DCR, the Commission has approved use of a 20-year amortization period as an appropriate measure for the DCR absent other considerations that may warrant a shorter period. The Commission has also acknowledged that the expected physical life of the peaking plant technology may exceed this assumption because the amortization period, in part, incorporates consideration of various risks associated with investing in the selected peaking plant technology.[316]

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[311] Independent Consultant Final Report at 68; and AG Affidavit at ¶ 139; and NYISO Staff Recommendations at 27.

[312] AG Affidavit at ¶ 139.

[313] Independent Consultant Report at 68-69; and AG Affidavit at ¶ 141.

[314] Independent Consultant Report at 69 and Appendix B; and AG Affidavit at ¶ 141.

[315] Independent Consultant Report at 59-61; AG Affidavit at ¶ 116 and 121-123; and NYISO Staff Recommendations at 27-28.

[316] *See, e.g.*, 2014-2017 DCR Order at P 117-118; 2021-2025 DCR First Remand Order at P 29; 2021-2025 DCR Second Remand Order at P 36; and 2021-2025 DCR Second Remand Rehearing Order at P 5.

A 15-year amortization period was used for BESS units when first considered as a potential peaking unit technology option in the last reset. This reduced period accounted for the relative newness of the technology and limited operating history available at such time.[317] Since the last reset, there has been a significant growth in BESS unit development and operation in the U.S.[318] This development provides far greater information demonstrating the expected performance capability of lithium-ion batteries. Based on this increased operating experience, energy storage equipment manufacturers now commonly provide 20-year warranties for their systems.[319] This provides evidence that equipment manufacturers are now confident that current lithium-ion battery storage systems are capable of operating for at least 20 years. In addition, to ensure the continued operability of the BESS unit options for the assumed 20-year amortization period, augmentation and replacement costs are incorporated to maintain their full output capability throughout this period.[320]

Based on the consideration of all these factors, the use of a 20-year amortization period for a 2-hour BESS unit is appropriate and reasonable for the 2025-2029 DCR.

5. <u>Accelerated Depreciation Benefits</u>

Translation of the up-front investment costs of the peaking plant into an annualized level also accounts for the asset depreciation schedule and resulting benefits from accelerated depreciation.[321] Pursuant to the modified accelerated cost recovery system ("MACRS"), BESS projects qualify for a five-year depreciation schedule.[322] The Independent Consultant has accounted for this accelerated depreciation and associated tax benefits as part of determining the annualized cost level to construct and own the BESS unit options evaluated for this reset.[323]

Certain stakeholders raised concerns regarding the assumptions for recognizing the accelerated depreciation benefits for the BESS unit options. These stakeholders noted that if a BESS project does not have sufficient stand-alone tax liabilities to absorb the full value of the accelerated depreciation benefit, the project owner would need to seek an arrangement with a third party to monetize any excess benefits in the same year they arise or carry such benefits forward as deferred assets to be used against future year tax liabilities at a reduced rate.

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[317] Independent Consultant Report at 61-62; AG Affidavit at ¶ 123; and NYISO Staff Recommendations at 27-28.

[318] *Id*.

[319] Independent Consultant Report at 61; AG Affidavit at ¶ 122; and NYISO Staff Recommendations at 27.

[320] Independent Consultant Report at 20, 38-40, 48 and 53-54; AG Affidavit at ¶ 122; and NYISO Staff Recommendations at 20.

[321] Independent Consultant Report at 70-73; and AG Affidavit at ¶ 147.

[322] Independent Consultant Report at 71; and AG Affidavit at ¶ 51 and 148.

[323] Independent Consultant Report at 71-73; and AG Affidavit at ¶ 147-148.

Various options may be available to allow a BESS project to monetize the full value of its accelerated depreciation benefits in the same year they are accrued even if such benefits exceed the project's tax liabilities in such year. For example, the project could be part of a portfolio of assets under the umbrella of a holding company and leverage corporate level tax liabilities of such holding company to fully monetize the project-specific accelerated depreciation benefits. Alternatively, a BESS project could leverage a third party arrangement to fully monetize such benefits as they are accrued.[324] However, like monetizing ITC benefits, leveraging a third party relationship is likely to reduce the level of the benefit realized by the project. After careful consideration of stakeholder feedback, the Board directed that the assumed realization of any accelerated depreciation benefits in excess of a BESS project's tax liabilities be reduced to account for the potential need to leverage a third party arrangement.[325]

Consistent with the level of reduction applied to the realized benefit of the ITC, the NYISO proposes to reduce any excess accelerated depreciation benefits accrued for a given year by 8% to account for the potential cost of using a third party relationship to fully monetize such benefits.[326] This change is intended to provide for better alignment with the stand-alone project considerations used to inform development of the recommended financial parameters.

B. Reference Point Price

The reference point price is determined, in part, by subtracting the relevant net EAS revenue estimate for a peaking plant from the levelized embedded cost value of the same plant, producing the Net CONE value. The NYISO uses the ICAP Demand Curves in the monthly ICAP Spot Market Auctions. Therefore, the NYISO must translate the annual Net CONE values into monthly values for use in the auctions.

As required by the Services Tariff, the NYISO calculated the resulting reference point prices for each ICAP Demand Curve for the 2025-2026 Capability Year.[327] Beginning with the 2025-2026 Capability Year, the NYISO will implement enhancements to its determination of the ICAP Demand Curve parameters.[328] These enhancements provide for the establishment of seasonal ICAP Demand Curves that account for relative seasonal reliability risks. The reference point prices calculated for the 2025-2026 Capability Year reflect these enhancements. As a result, the NYISO has calculated separate curves for the 2025 Summer Capability Period and the 2025-2026 Winter Capability Period with corresponding reference point prices for each seasonal curve. These calculations account for the requirements that the seasonal reference point prices:

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[324] AG Affidavit at ¶ 51 and 148.

[325] Smith Affidavit at ¶ 29 and Exhibit A; and AG Affidavit at ¶ 51 and 149.

[326] *Id*.

[327] Independent Consultant Report at 113-114 and 117-120; AG Affidavit at ¶ 25 and 54; NYISO Staff Recommendations at 43-50; and Smith Affidavit at ¶ 11 and Exhibit A.

[328] Docket No. ER24-701-000, *New York Independent System Operator, Inc.*, Proposed Installed Capacity Demand Curve Enhancements (December 19, 2023); and Docket No. ER24-701-000, *supra*, Letter Order (February 15, 2024).

(1) reflect the tariff-prescribed level of excess conditions; (2) account for seasonal differences in capacity availability; and (3) account for seasonal reliability risks.[329]

The resulting calculations for the 2025-2026 Capability Year are contained in a spreadsheet developed by the Independent Consultant and posted on the NYISO's website (the spreadsheet is commonly referred to as the "Demand Curve Model").[330] This spreadsheet includes the data inputs and calculations necessary to determine: (1) the levelized annual cost to construct each peaking plant; (2) the annual Net CONE value for each peaking plant; and (3) translation of the annual Net CONE value for each peaking plant into seasonal monthly reference point prices. The NYISO will use the spreadsheet model to perform these calculations as part of the tariff-prescribed annual updates to determine the ICAP Demands Curves for the 2026-2027 through 2028-2029 Capability Years.

C. Maximum Clearing Price

The Services Tariff establishes the maximum allowable price of capacity for each ICAP Demand Curve at a value equal to 1.5 multiplied by the localized levelized embedded cost of each peaking plant (as translated into seasonal monthly values).[331] The calculations for the 2025-2026 Capability Year reflect the enhancements to determine seasonal ICAP Demand Curves and provide for alignment with the enhancements to the calculation of seasonal reference point prices.[332]

D. Zero-Crossing Points

The Services Tariff requires that each DCR assess the zero-crossing point values of the ICAP Demand Curves.[333] Consistent with the prior DCRs, the NYISO did not identify a need

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[329] *See* Services Tariff §§ 5.14.1.2.2 and 5.14.1.2.2.3; Independent Consultant Report at 113-120; AG Affidavit at ¶ 25; NYISO Staff Recommendations at 43-50; and Smith Affidavit at ¶ 11 and Exhibit A.

[330] The Demand Curve Model related to the NYISO's proposal is an excel file titled "Demand Curve Model November 2024" available at: https://www.nyiso.com/installed-capacity-market. From this page, the model can be obtained by navigating through the following content sections: "Reference Documents"→"2025-2029 Demand Curve Reset"→"FERC Filing"

[331] Services Tariff §§ 5.14.1.2 and 5.14.1.2.2.3.

[332] *See* Docket No. ER24-701-000, *supra*, Proposed Installed Capacity Demand Curve Enhancements (December 19, 2023); and Docket No. ER24-701-000, *supra*, Letter Order (February 15, 2024). The methodology for calculating the maximum clearing prices for the 2025-2026 Capability Year ICAP Demand Curve will also be utilized in performing these calculations as part of the tariff-prescribed annual update process to determine the ICAP Demand Curves for the 2026-2027 through 2028-2029 Capability Years.

[333] Services Tariff § 5.14.1.2.2.

for revising such values at this time. As a result, the NYISO proposes to retain the current zero-crossing point values for the 2025-2029 DCR.[334]

The current zero-crossing point values are as follows: (1) 112% of the applicable minimum capacity requirement for the NYCA ICAP Demand Curve; (2) 115% of the applicable minimum capacity requirement for the G-J Locality ICAP Demand Curve; (3) 118% of the applicable minimum capacity requirement for the NYC ICAP Demand Curve; and (4) 118% of the applicable minimum capacity requirement for the LI ICAP Demand Curve.[335]

VI. Annual Update Process

The Services Tariff requires that each DCR develop: (1) the proposed ICAP Demand Curves for the first Capability Year covered by the reset period; and (2) the methodologies, inputs, and assumptions used in determining the ICAP Demand Curves for the remaining three Capability Years covered by the reset period pursuant to the tariff-prescribed annual update procedures.[336]

The annual update process consists of updates to the following parameters each year: (i) adjusting the levelized localized embedded cost of the peaking plant for each ICAP Demand Curve based on a composite escalation factor;[337] (ii) determining new net EAS revenue estimates for each peaking plant using updated variable cost and market price information;[338] (iii) determining updated seasonal capacity availability values and seasonal reliability risk values;[339] and (iv) determining the revised values of the ICAP Demand Curves utilizing the updated values described above.[340] The Services Tariff requires that the NYISO post the results of annual updates to its website on or before November 30th of the calendar year prior to the commencement of the Capability Year for which the updated ICAP Demand Curves apply.[341]

A. Annual Update of Peaking Plant Costs

The levelized localized embedded cost of each peaking plant is updated annually using a

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[334] Independent Consultant Report at 115; and NYISO Staff Recommendations at 49.

[335] *See* 2021-2025 DCR Initial Order at P 5 and 19; Independent Consultant Report at 115; AG Affidavit at ¶ 52; and NYISO Staff Recommendations at 49.

[336] *See* Services Tariff § 5.14.1.2.2; DCR Process Enhancement Filing at 9-16; and DCR Process Enhancements Order at P 27 and 29-30.

[337] Services Tariff § 5.14.1.2.2.1.

[338] Services Tariff § 5.14.1.2.2.2.

[339] Services Tariff § 5.14.1.2.2.3.

[340] *Id.*

[341] Services Tariff § 5.14.1.2.2. For example, the updated ICAP Demand Curves for the 2026-2027 Capability Year will be posted to the NYISO's website on or before November 30, 2025.

statewide, technology specific composite escalation factor.[342] The composite escalation factor measures the cost-weighted average change over time of certain inflation indices that relate to the costs of building a peaking plant. The costs of each peaking plant are broken down into the following four components to derive the technology specific weighting factors applicable to each component: (1) changes in construction material costs ("materials component"); (2) changes in turbine generator or storage battery costs ("turbine component" or "storage battery component");[343] (3) changes in labor costs ("labor component"); and (4) changes in the general cost of goods and services ("general component").

The table below identifies the proposed data sources and weighting factors for a 2-hour BESS unit.[344] Consistent with the past two resets, the weighting factors for each peaking plant technology were determined by the categorization of the EPC costs for each technology into the four tariff-required cost component categories.[345]

Cost Component	Index Value	Data Interval	Weighting Factor (2-Hour BESS Unit)
Labor	BLS Quarterly Census of Employment and Wages, New York - Statewide, NAICS 2371 Utility System Construction, Private, All Establishment Sizes, Average Annual Pay	Annual	15%
Materials	BLS Producer Price Index for Commodities, Not Seasonally Adjusted, Intermediate Demand by Commodity Type (ID6), Materials and Components for Construction (12)	Monthly	11%
Storage Battery	BLS Producer Price Index for Commodities, Not Seasonally Adjusted, Machinery and Equipment (11), Storage Batteries (Excluding Lead Acid) Including Parts for All Storage Batteries	Monthly	62%
General	Bureau of Economic Analysis: Gross Domestic Product Implicit Price Deflator, Seasonally Adjusted	Quarterly	12%

[342] *See* Services Tariff § 5.14.1.2.2.1; and Docket No. ER20-1049-000, *New York Independent System Operator, Inc*., Proposed Enhancements to the ICAP Demand Curve Annual Update Procedures (February 21, 2020); and Docket No. ER20-1049-000, *supra*, Letter Order (April 3, 2020).

[343] In the case of the SCGT options, this component is referred to as the "turbine component." For the BESS unit options, this component is referred to as the "storage battery component."

[344] Independent Consultant Report at 126-127 and 129; and NYISO Staff Recommendations at 53-55.

[345] Independent Consultant Report at 127; AG Affidavit at ¶ 151-153; and 1898 & Co. Affidavit at ¶ 45-47.

Certain stakeholders raised concerns during the DCR regarding the methodology for adjusting the levelized localized embedded cost of each peaking plant as part of the annual updates. These stakeholders noted that the methodology did not appear to fully capture the cost escalation observed with respect to the fossil-fired frame turbines that served as the peaking plant technology for the 2021-2025 DCR.

The Independent Consultant assessed these concerns, noting that attempts to simply compare the escalated values resulting from the annual update for the 2024-2025 Capability Year to the values determined for the fossil-fired frame turbines as part of this reset does not provide an appropriate or accurate measure of relative differences in costs.[346] This is due to the fact that such a comparison does not adjust for changes in assumptions from one reset to the next that have material impacts on the resulting cost estimates.[347] Based on its assessment, the Independent Consultant concluded that the current methodology for annually updating the levelized localized embedded cost of each peaking plant does not present a systematic bias to the potential for the annual updates to either overestimate or underestimate peaking plant technology cost values that would be derived from the comprehensive assessment undertaken during a DCR.[348] As a result, the Independent Consultant did not recommend any changes to such methodology at this time.[349]

Notably, stakeholders did not propose or identify any specific recommended changes to the current annual update methodology. Consistent with precedent, the Commission should reject any requests to direct changes to the annual update process as beyond the scope of this filing.[350] If warranted, any proposals to revise the current annual update process should instead be considered through the NYISO's normal stakeholder shared governance process.

Certain stakeholders raised concerns regarding the determination of the cost component weighting factors based solely on the categorization of the EPC costs for each peaking plant technology option. These stakeholders contended that the weighting factors should be based on the categorization of the total project costs. The weighting factors have been determined using the categorization of EPC costs for the past two resets because the EPC costs provide a reasonable representation of the relative costs to construct each peaking plant, as considered from the perspective of the four tariff-prescribed cost categories.[351] This is, in part, because the

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[346] AG Affidavit at ¶ 156-157; and AG, *NYISO 2025-2029 ICAP Demand Curve Reset (DCR): Annual Updating of ICAP Demand Curve Parameters* (presented at the August 22, 2024 ICAPWG meeting), available at: https://www.nyiso.com/documents/20142/46549955/2025-2029%20DCR%20-%20AG%20Presentation%2008222024%20ICAPWG.pdf ("AG Gross CONE Adjustment Presentation").

[347] AG Affidavit at ¶ 156; and AG Gross CONE Adjustment Process Presentation at 4-5.

[348] AG Affidavit at ¶ 156; and AG Gross CONE Adjustment Process Presentation at 6.

[349] AG Affidavit at ¶ 157; and AG Gross CONE Adjustment Process Presentation at 6.

[350] *See*, *e.g.*, 2011-2014 DCR Order at P 166; and 2017-2021 DCR Order at P 94 and 186.

[351] AG Affidavit at ¶ 153-154.

EPC costs represent the largest share of the total project costs.[352] For example, for the 2-hour BESS units, the EPC costs represent, on average, approximately 65% of the total project costs across all locations evaluated for this reset.[353]

The Independent Consultant also assessed the potential impacts of determining the weighting factors based on the categorization of total project costs. Although such an alternative methodology would result in changes in the weighting factors assigned to each cost component, the resulting impact on the composite escalation rate for a 2-hour BESS unit was limited.[354] For a 2-hour BESS unit, the primary change observed in weighting factors was a reduction in the value for the "storage battery component" and a corresponding increase in the value for the "general component."[355] Despite the changes in the weighting factors, the composite escalation rate using the applicable index data available as of August 31, 2024 was 1.55% for a 2-hour BESS unit based on weightings derived from total project costs compared to 1.08% for weightings derived from EPC costs.[356]

Certain stakeholders also raised concerns regarding the categorization of certain BESS unit equipment costs.[357] These stakeholders alleged that assignment of costs to the "storage battery component" is excessive and should be reduced through a more granular allocation of costs, including the separation of battery enclosure subcomponents such as inverters and medium voltage transformers. The Independent Consultant categorized costs consistent with the structure of typical cost estimates for purpose-built enclosures utilized as the design basis for the BESS projects.[358] These cost estimates do not include a granular breakout of pricing for component parts or subassemblies of the battery enclosure product.[359] As a result, the more granular cost breakout sought by certain stakeholders is not feasible given the market pricing structure for the battery enclosure products.[360]

Section 5.14.1.2.2.4.11 of the Services Tariff requires that the NYISO calculate and report the most recent, unweighted 12-month percentage change for the "general component."

[352] AG Affidavit at ¶ 153.

[353] *See* Smith Affidavit at Exhibit A. EPC costs represent approximately 67% of total project costs for a 2-hour BESS unit for all locations other than Load Zone J where EPC costs represent approximately 56% of total project costs.

[354] AG Affidavit at ¶ 154-155.

[355] *Id*. For a 2-hour BESS unit, the weighting factors using the alternative cost categorization of total project costs are as follows: (1) 17% for the labor component; (2) 14% for the materials component; (3) 42% for the storage battery component; and (4) 27% for the general component.

[356] AG Affidavit at ¶ 155.

[357] 1898 & Co. Affidavit at ¶ 47.

[358] *Id*.

[359] 1898 & Co. Affidavit at ¶ 27 and 47.

[360] 1898 & Co. Affidavit at ¶ 47.

The 12-month percentage change in the general component using finalized data published by the applicable index as of October 1, 2024 is 2.58%.

B. Annual Update of Net EAS Revenue Projections

The NYISO refreshes the net EAS revenue projections for each peaking plant as part of the annual update process. The Services Tariff requires that the NYISO utilize the same Net EAS Model used to determine the net EAS revenue projections for the 2025-2026 Capability Year, updating the model to replace the oldest 12-month period in the underlying dataset with the most recent 12-month period ending in August.[361]

The table below summarizes the proposed data inputs and assumptions for the 2025-2029 DCR.[362]

	Data Input Value/Source			
Factor	**NYCA**	**G-J Locality**	**NYC**	**LI**
Net EAS Model	The Net EAS Model is contained within a zip folder titled "Net EAS Battery Model September 2024 (Updated)" available at: https://www.nyiso.com/installed-capacity-market. From this page, the models can be obtained by navigating through the following content sections: "Reference Documents"→"2025-2029 Demand Curve Reset"→"Final Report (Updated)."			
Peaking Plant	2-hour BESS unit	2-hour BESS unit	2-hour BESS unit	2-hour BESS unit
Location	Load Zone F	Load Zone G (Dutchess County)	Load Zone J	Load Zone K
Net Output	*See* Smith Affidavit at Exhibit A			
Energy Prices (day-ahead and real-time)	This data is publicly available on the NYISO website			
Operating Reserves Prices (day-ahead and real-time)	This data is publicly available on the NYISO website			
Seasonal Hurdle Rates ($/MWh)	*See* Table 43 of Independent Consultant Report			
Level of Excess Adjustment Factors	*See* Independent Consultant Report at Appendix C (Table 1)			

[361] Services Tariff § 5.14.1.2.2.2. For example, for the annual update to determine ICAP Demand Curve values for the 2026-2027 Capability Year, the net EAS revenue projections will be based on cost and pricing data for the period from September 1, 2022 through August 31, 2025.

[362] Independent Consultant Report at 128 and 130-131; and NYISO Staff Recommendations at 5 and 59-64. In certain circumstances, these factors represent a value that will remain fixed for the four-year reset period. In other instances, these factors indicate a data source that will be used for determining applicable market price or cost information used by the model.

	Data Input Value/Source			
Factor	**NYCA**	**G-J Locality**	**NYC**	**LI**
VSS Adder ($/kW-yr.)[363]	Determined via formula: VSS compensation rate * (leading MVAr + abs(lagging MVAr))	Determined via formula: VSS compensation rate * (leading MVAr + abs(lagging MVAr))	Determined via formula: VSS compensation rate * (leading MVAr + abs(lagging MVAr))	Determined via formula: VSS compensation rate * (leading MVAr + abs(lagging MVAr))
Peaking plant Variable Operating and Maintenance Costs	*See* Smith Affidavit at Exhibit A			
NYISO Rate Schedule 1 Charges for Injection Billing Units	This data is publicly available on the NYISO website			

C. Annual Update of ICAP Demand Curve Parameters

The NYISO will utilize the updated levelized embedded cost values and annual net EAS revenue projections to derive the updated values of the ICAP Demand Curves.[364] Consistent with the enhancements beginning with the 2025-2026 Capability Year, this will result in the calculation of seasonal ICAP Demand Curves for each Capability Year.[365]

The seasonal reference point prices are set based on the seasonal allocation of the annual Net CONE value for each peaking plant, translated into monthly seasonal values that account for seasonal differences in capacity availability, seasonal reliability risks, and the tariff-prescribed level of excess conditions.[366] Calculations of the seasonal reference point values will use annually updated seasonal capacity availability values and seasonal reliability risks. The applicable capacity ratings for each peaking plant used in calculating the reference point prices were determined during the DCR and will remain fixed for the reset period.

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[363] As further described in Section IV.C, the NYISO's compliance plan in response to Order No. 904 will need to address the implication of any changes to its VSS program and related compensation on the VSS adder proposed herein. The NYISO's compliance plan will also need to address the timing to implement any required changes to the VSS adder described herein, as well as any resulting adjustment to the ICAP Demand Curves.

[364] Services Tariff § 5.14.1.2.2.3.

[365] *See* Docket No. ER24-701-000, *supra*, Proposed Installed Capacity Demand Curve Enhancements (December 19, 2023); and Docket No. ER24-701-000, *supra*, Letter Order (February 15, 2024).

[366] Services Tariff § 5.14.1.2.2.3; Independent Consultant Report at 125 and 131; and NYISO Staff Recommendations at 53 and 58.

The maximum value of each seasonal ICAP Demand Curve is set at an amount equal to the monthly value of the updated levelized embedded cost for the applicable peaking plant, multiplied by 1.5.[367]

For the 2025-2029 DCR, the NYISO proposes continued use of the currently effective zero-crossing point values for each ICAP Demand Curve.

The table below summarizes the proposed data inputs for calculating the ICAP Demand Curve parameters for the 2025-2029 DCR.[368]

		Data Input Value			
Factor	**Type of Value**	**NYCA**	**G-J Locality**	**NYC**	**LI**
ICAP Demand Curve Parameter Values					
Zero-crossing point	Fixed for Reset Period	112%	115%	118%	118%
Reference Point Price Calculation					
Peaking Plant Net Output (ICAP MW)	Fixed for Reset Period	200	200	200	200
Peaking Plant Net Output Summer Capability Period (ICAP MW)	Fixed for Reset Period	200	200	200	200
Peaking Plant Net Output Winter Capability Period (ICAP MW)	Fixed for Reset Period	200	200	200	200
Level of Excess	Fixed for Reset Period	100.5%	101.6%	102.2%	103.8%
Seasonal Capacity Availability Values	Updated Annually	These values are updated annually and will be publicly available on the NYISO website			
Seasonal Reliability Risk	Updated Annually	These values are updated annually based on the preliminary base case for the IRM study covering the Capability Year for which the seasonal ICAP Demand Curves apply			

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[367] As further described in Section V.C, the calculation of the seasonal maximum values reflects updates to align with the enhancements to the calculation of seasonal reference point prices.

[368] Independent Consultant Report at 117; NYISO Staff Recommendations at 48 and 58; and Smith Affidavit at Exhibit A.

VII. Description of Proposed Tariff Revisions

The NYISO proposes to revise the table in Section 5.14.1.2 of the Services Tariff to: (1) include the proposed parameters of the seasonal ICAP Demand Curves for the 2025-2026 Capability Year, as well as the timing for the posting of seasonal ICAP Demand Curves for the 2026-2027 through 2028-2029 Capability Years that will be determined as part of the annual update process; and (2) remove data entries for the 2020-2021, 2021-2022, 2022-2023, and 2023-2024 Capability Years that are no longer relevant. The NYISO also proposes to revise the portion of Section 5.14.1.2.2.3 that identifies the applicable gross cost and net EAS offset values used in determining the ICAP Demand Curves for the first year of this reset period (*i.e.*, the applicable values for the 2025-2026 Capability Year).

In addition, the NYISO proposes to remove obsolete tariff language that is no longer relevant because it addresses the procedures for resets prior to the 2017-2021 DCR, as well as circumstances specific to the 2020-2021 Winter Capability Period and the 2023-2024 Capability Year.

VIII. Effective Date

The NYISO respectfully requests that the Commission issue an order on or before January 28, 2025 (*i.e.*, 60 days after filing) accepting: (1) the proposed 2025-2026 Capability Year ICAP Demand Curves; and (2) the annual update methodologies and inputs to determine the ICAP Demand Curves for the 2026-2027, 2027-2028, and 2028-2029 Capability Years. The NYISO also requests an effective date of January 29, 2025 for the tariff revisions proposed herein (*i.e.*, the day following the end of the statutory 60-day notice period).

The timing for Commission action in response to the proposed results for the 2025-2029 DCR is critically important to: (i) the NYISO's administration of the ICAP market for the upcoming 2025 Summer Capability Period (*i.e.*, the first Capability Period to which the NYISO's proposed ICAP Demand Curves apply); and (ii) provide marketplace certainty as to the ICAP Demand Curves that will apply beginning with the 2025 Summer Capability Period. The NYISO's processes and procedures to begin preparation for the 2025 Summer Capability Period ICAP auctions commence in February 2025. The NYISO needs certainty with respect to the ICAP Demand Curves that will apply for the 2025-2026 Capability Year to facilitate timely completion of its auction-related administrative duties.

The Services Tariff requires the NYISO to conduct the Capability Period Auction for the 2025 Summer Capability Period no later than 30 days prior to May 1, 2025.[369] The NYISO is currently scheduled to begin accepting bids and offers for the 2025 Summer Capability Period Auction on March 27, 2025. The Capability Period Auction is a two-sided auction that does not directly utilize the ICAP Demand Curves. Instead, clearing prices in the Capability Period Auction are based on voluntary offers to purchase and sell capacity for the six-month duration of the 2025 Summer Capability Period. Although the Capability Period Auction does not expressly

[369] Services Tariff § 2.3 (definition of "Capability Period Auction").

utilize the ICAP Demand Curves, the ICAP Demand Curves provide critical information to sellers and purchasers of capacity that may seek to participate in the Capability Period Auction. Market Participants utilize the ICAP Demand Curves to inform projections regarding the expected value of capacity. The absence of clarity regarding the ICAP Demand Curves that will apply for the 2025-2026 Capability Year hampers the ability to develop reasonable projections as to the expected values of capacity for the 2025 Summer Capability Period. Any such uncertainty could adversely impact participation and/or the pricing outcomes of the Capability Period Auction. In addition to adversely impacting ICAP auctions, any such uncertainty regarding the ICAP Demand Curves applicable for the 2025-2026 Capability Year could have similar adverse impacts on bilateral market activity.

The NYISO typically provides all necessary information to the marketplace related to administration of the capacity market for a particular Capability Period approximately two weeks prior to the conduct of the Capability Period Auction. This includes determination of the respective capacity requirements for each LSE, as well as inputting the applicable ICAP Demand Curves into the NYISO's automated market system and auction software. The finalization of the ICAP Demand Curves used in administering the ICAP auctions also includes the translation of the ICAP Demand Curves to UCAP terms as required by Section 5.14.1.2.2.4 of the Services Tariff. Thus, timely action by the Commission is necessary for the NYISO to complete all required actions to properly administer the ICAP market for the upcoming 2025 Summer Capability Period.

IX. Stakeholder Process

The NYISO conducted the 2025-2029 DCR in accordance with the requirements of Section 5.14.1.2.2 of the Services Tariff. Pursuant to Section 5.14.1.2.2.4.11 of the Services Tariff, this filing represents the results of the 2025-2029 DCR approved by the Board for filing with the Commission. The proposal includes: (1) the ICAP Demand Curves for the 2025-2026 Capability Year; and (2) the methodologies and inputs to be used in conducting the tariff-prescribed annual updates to determine the ICAP Demand Curves for the 2026-2027, 2027-2028, and 2028-2029 Capability Years.

X. Correspondence

Please direct all communications and service in this proceeding to:

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*Person designated for receipt of service.

XI. Service

A complete copy of this filing will be posted on the NYISO's website at www.nyiso.com. The NYISO will send an electronic link to this filing to the official representative of each of its customers, and each participant on its stakeholder committees. The NYISO will also send an electronic copy of this filing to the New York State Public Service Commission and the New Jersey Board of Public Utilities.

XII. Conclusion

The NYISO respectfully requests that the Commission: (i) issue an order accepting the results of the 2025-2029 DCR, as proposed herein, on or before January 28, 2025 (*i.e.*, 60 days after filing); and (ii) establish an effective date of January 29, 2025 for the proposed tariff revisions (*i.e.*, the day following the end of the statutory 60-day notice period).

Respectfully submitted,

/s/ Garrett E. Bissell
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