

190 FERC ¶ 61,051
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Mark C. Christie, Chairman;
Willie L. Phillips, David Rosner
and Lindsay S. See.

New York Independent System Operator, Inc.

Docket No. ER25-596-000

ORDER ACCEPTING TARIFF REVISIONS

(Issued January 28, 2025)

1. On November 29, 2024, New York Independent System Operator, Inc. (NYISO) filed, pursuant to section 205 of the Federal Power Act (FPA)¹ and Part 35 of the Commission’s regulations,² revisions to its Market Administration and Control Area Services Tariff (Services Tariff).³ The proposed revisions to section 5.14.1.2.2 of the Services Tariff define the demand curves in the Installed Capacity (ICAP) Market for the 2025/2026 Capability Year.⁴ The proposed revisions also identify the methodologies and inputs to be used for subsequent annual updates to the ICAP Demand Curves⁵ for the

¹ 16 U.S.C. § 824(d).

² 18 C.F.R. pt. 35 (2024).

³ NYISO, NYISO Tariffs, NYISO Market Administration and Control Area Services Tariff (Services Tariff), § 5.14 (MST Installed Capacity Spot Market Auction and Installed Capacity Supplier Deficiencies) (43.0.0), § 5.14.1.2.2 (Periodic Reviews of ICAP Demand Curves Applicable Beginning with the 2017/2018 Capability Year).

⁴ Capitalized terms not defined herein shall have the meaning set forth in the NYISO Services Tariff. NYISO’s Capability Year consists of the Summer Capability Period (May 1 through October 31) and the Winter Capability Period (November 1 through April 30).

⁵ The Services Tariff defines “ICAP Demand Curve” as: “A series of prices which decline until reaching zero as the amount of Installed Capacity increases.” NYISO, NYISO Tariffs, Services Tariff, § 2.9 (Definitions – I) (32.0.0). The quadrennial process by which the ICAP Demand Curve is established for the next four years is referred to as the Demand Curve reset (DCR).

2026/2027, 2027/2028, and 2028/2029 Capability Years (2025-2029 DCR). In this order, we accept NYISO's proposed revisions to its Services Tariff, effective January 29, 2025, as requested.

I. Background

2. The Services Tariff requires NYISO to determine the amount of ICAP, in megawatts (MW), that each Load Serving Entity (LSE) must acquire to ensure that adequate resources are available to meet projected load, taking into account reliability contingencies.⁶ NYISO oversees an auction process that determines the amount and price of ICAP that each LSE must acquire using administratively established, downward-sloping ICAP Demand Curves. Each year, the New York State Reliability Council, L.L.C. (NYSRC), determines the total amount of ICAP required for the entire NYISO control area (i.e., the New York Control Area (NYCA))⁷ and NYISO separately determines the amount of ICAP required for New York City, Long Island, and the G-J Locality.⁸ As a result, there are separate ICAP Demand Curves for NYCA, New York City, Long Island, and the G-J Locality.

3. Section 5.14.1.2 of the Services Tariff requires NYISO to identify the methodologies and inputs used for determining the ICAP Demand Curves for the four Capability Years covered by the relevant ICAP Demand Curve reset process and establish the ICAP Demand Curves for the first Capability Year covered by that process.

4. The ICAP Demand Curve relies on NYISO's estimate of the net annual cost, less projected revenues, of a new hypothetical peaking plant in New York or the net "cost of new entry," referred to as Net CONE. To calculate Net CONE, the Services Tariff requires an estimate of the total lifetime cost of building and operating the hypothetical peaking plant, divided by the number of years the plant will be in operation, less the plant's expected annual net revenues from NYISO's energy and ancillary services markets.⁹

⁶ See NYISO, NYISO Tariffs, Services Tariff, § 5.10 (MST NYCA Minimum Installed Capacity Requirement) (5.0.0).

⁷ NYCA includes the entire NYISO control area.

⁸ NYCA comprises New York City (load zone J), Long Island (load zone K), the G-J Locality (load zones G, H, I, and J), and Rest of State (all other load zones, which currently includes load zones A through F).

⁹ See *Indep. Power Producers of N.Y., Inc. v. FERC*, No. 21-1166, 2022 WL 3210362, at *1 (D.C. Cir. Aug. 9, 2022).

5. Specifically, NYISO must assess “the current localized levelized embedded cost of a peaking plant,” also referred to as the gross peaking plant cost, in New York City, Long Island, the G-J Locality, Rest of State, i.e., NYCA, and, if applicable, in any new load zone, to meet minimum capacity requirements.¹⁰ Further, NYISO must assess the likely projected annual energy and ancillary services revenues of the peaking plant for the first Capability Year covered by the periodic review, net of the costs of producing such energy and ancillary services, including “the methodology and inputs for determining such projections for the four Capability Years covered by the periodic review.”¹¹ The Services Tariff provides that the costs and revenues of the selected peaking plant are reflected in Net CONE.

6. The Services Tariff provides that the periodic review shall assess (i) the appropriate shape and slope of the ICAP Demand Curves, and the associated point at which the dollar value of the ICAP Demand Curves should decline to zero; (ii) the appropriate translation of the annual net revenue requirement of the peaking plant determined from certain specified factors, into monthly values that take into account seasonal differences in the amount of capacity available in the ICAP Spot Market Auctions; and (iii) the escalation factor and inflation component of the escalation factor applied to the peaking plant gross cost.¹² This assessment of the estimated localized levelized cost per kW-month to develop a new peaking unit less net energy and ancillary services revenues in each zone is the Net CONE.

7. The Services Tariff provides that, beginning with the 2025-2029 DCR, ICAP Demand Curves will be established for each Capability Period (Winter Capability Period and Summer Capability Period) encompassed by a Capability Year.¹³ The Services Tariff details additional procedures for the ICAP Demand Curve reset process, including that the ICAP Demand Curves approved by the NYISO Board of Directors shall be filed

¹⁰ NYISO, NYISO Tariffs, Services Tariff, § 5.14 (MST Installed Capacity Spot Market Auction and Installed Capacity Supplier Deficiencies) (42.0.0), § 5.14.1.2.2 (Periodic Reviews of ICAP Demand Curves Applicable Beginning with the 2017/2018 Capability Year). In assessing the gross peaking plant cost, NYISO accounts for the Weighted Average Cost of Capital (WACC) NYISO assumes is required by a developer to recover up-front investment costs, plus a reasonable return on that investment, the term in years over which the developer is assumed to recover its up-front investment costs (amortization period), and the applicable tax rates. *See N.Y. Indep. Sys. Operator, Inc.*, 175 FERC ¶ 61,012, at P 136 (2021) (2021-2025 DCR Order).

¹¹ *Id.*

¹² *Id.*

¹³ *See* NYISO, NYISO Tariffs, Services Tariff, § 5.14.1.2.

with the Commission for incorporation into the Services Tariff.¹⁴ The Services Tariff also includes a table that NYISO updates at the time of each ICAP Demand Curve reset to revise the points on the ICAP Demand Curves, including the maximum value, zero-crossing points and reference points, for each Capability Year covered by the most recent ICAP Demand Curve reset.¹⁵

II. NYISO's Filing

8. NYISO explains that, as required by the Services Tariff, it solicited stakeholder input and selected an independent consultant for the 2025-2029 DCR.¹⁶ NYISO states that NYISO Consultant assisted with conducting the ICAP Demand Curve reset and with the development of the appropriate methodologies and inputs to establish the ICAP Demand Curves for the 2025-2029 reset period. NYISO states that this process included the assessment of potential technologies to serve as the hypothetical peaking plant used in the establishment of the ICAP Demand Curves, as well as the costs to construct, own, and operate such peaking plant options.¹⁷

9. NYISO states that the 2025-2029 DCR is the first reset following the implementation of NYISO's capacity accreditation construct,¹⁸ which affects the assessment of the technology options evaluated for this reset.¹⁹ NYISO explains that the technology options evaluated for this DCR have different capacity accreditation factors (CAF),²⁰ which can produce material differences in the resulting Unforced Capacity

¹⁴ NYISO, NYISO Tariffs, Services Tariff, § 5.14.1.2.2.4.11.

¹⁵ *Id.* § 5.14.1.2.

¹⁶ Transmittal Letter at 3. NYISO explains its independent consultant is Analysis Group, Inc. (Analysis Group), which subcontracted with 1898 & Co., part of Burns & McDonnell Engineering Company, Inc. (1898 & Co.) (collectively, NYISO Consultant). *Id.*

¹⁷ *Id.*

¹⁸ NYISO's capacity accreditation construct accredits all resource types based on their marginal contribution to power system reliability. NYISO, NYISO Tariffs, Services Tariff, § 5.12 (Requirements Applicable to Installed Capacity Suppliers) (48.0.0), § 5.12.14.2.

¹⁹ Transmittal Letter at 9 (citing *N.Y. Indep. Sys. Operator, Inc.*, 179 FERC ¶ 61,102 (2022)).

²⁰ CAFs are defined as values to "reflect the marginal reliability contribution of ICAP Suppliers within each Capacity Accreditation Resource Class toward meeting

(UCAP) demand curves for the reset period.²¹ NYISO translates the ICAP demand curves into UCAP demand curves for the purposes of conducting its monthly capacity spot auctions.²² NYISO states that the selection of the appropriate peaking plant technology for the 2025-2029 DCR represents the technology that minimizes the cost of procuring UCAP.

10. NYISO states that the following technologies were determined to be economically viable technologies and were considered as candidates for the peaking unit: H-class fossil fired gas frame turbine, J-class fossil fired gas frame turbine, and lithium-ion battery energy storage system (BESS) with 2-hour, 4-hour, 6-hour, and 8-hour durations.²³ NYISO explains that NYISO Consultant also conducted, for informational purposes only, a limited review of the potential costs to retrofit a frame turbine to operate solely by burning hydrogen as a potential “zero emissions” design for compliance with New York State’s Climate Leadership and Community Protection Act (CLCPA).²⁴ However, NYISO explains that it determined that the costs associated with retrofitting a gas turbine to burn hydrogen rendered that technology highly uneconomic compared to other technology options. NYISO clarifies that the two gas turbine options (one capable of operating without a selective catalytic reduction emission control technology, the H-class gas turbine, and one that would require this emission control technology, the J-class gas turbine) were evaluated for different load zones. NYISO Consultant evaluated the H-class gas turbine for Load Zone K (Long Island) due to the system deliverability costs that would be applicable to that zone, and the J-class gas turbine for all other zones.²⁵

NYSRC resource adequacy requirements for the upcoming Capability Year.” *See* NYISO, NYISO Tariffs, Services Tariff, § 2.3 (Definitions – C) (31.0.0).

²¹ Transmittal Letter at 9.

²² *See* NYISO, NYISO Tariffs, Services Tariff, § 5.14.1.2. NYISO explains that 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. Transmittal Letter at 9 n.33.

²³ *Id.* at 10.

²⁴ *Id.* at 10, 12.

²⁵ NYISO Consultant also explains that they assumed developers would include dual fuel capability in all zone locations. NYISO Consultant states that, among the single cycle gas turbine peaking unit options, these gas turbine technologies represent the highest variable cost, lowest fixed cost single cycle gas turbine peaking unit options that are economically viable. Transmittal Letter at 11; NYISO Filing, attach. III, Affidavit of

11. NYISO states that it selected a 2-hour lithium-ion BESS unit with 200 MW, 400 MWh discharge capability as the peaking unit technology for the 2025-2029 DCR in all capacity regions. NYISO states that the 2-hour BESS unit is the technology option that results in the “lowest fixed costs and highest variable costs” among the economically viable options evaluated during this DCR and thus fulfills the definition of a peaking unit in section 5.14.1.2.2 of the Services Tariff.²⁶ NYISO states that, consistent with the Commission’s requirement that a technology must be able to supply capacity in the NYISO-administered markets, a 2-hour BESS unit is an eligible capacity supply resource for NYISO’s capacity market.²⁷ NYISO explains that for the assessment of gross peaking plant cost for a 2-hour BESS, NYISO Consultant recommended a WACC of 10.49%, assuming a cost of equity of 14.5%, a cost of debt of 7.2%, and a debt-to-equity ratio of 55/45.²⁸

12. NYISO further proposes to revise 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;²⁹ (2) remove data entries for the 2020/2021, 2021/2022, 2022/2023, and 2023/2024 Capability Years that are no longer relevant; (3) revise the portion of section 5.14.1.2.2.3 that identifies the applicable gross cost and net energy and ancillary services 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); and (4) 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.

III. Notice of Filing and Responsive Pleadings

13. Notice of NYISO’s filing was published in the *Federal Register*, 89 Fed. Reg. 96952 (Dec. 6, 2024), with interventions and protests due on or before December 20, 2024. New York State Public Service Commission (New York Commission) filed a notice of intervention. Electric Power Supply Association (EPSA), Natural Resources Defense Council and Sustainable FERC Project, Calpine Corporation, Independent

Paul J. Hibbard, *et al.* (AG Aff.), Ex. F at 120.

²⁶ Transmittal Letter at 15.

²⁷ *Id.* at 12.

²⁸ *Id.* at 56.

²⁹ *Id.* at 68-70.

Power Producers of New York, Inc. (IPPNY), New York State Energy Research and Development Authority (NYSERDA), New York Transmission Owners (NYTO),³⁰ Shell Energy North America (U.S.), L.P., Ravenswood Operations, LLC (Ravenswood), Cross-Sound Cable Co., LLC, City of New York, Multiple Intervenors,³¹ New York Department of State, and Potomac Economics, Ltd. (Potomac Economics), each submitted a timely motion to intervene.

14. Consolidated Edison Company (Con Edison) and Orange and Rockland Utilities, Inc. (Orange and Rockland), Niagara Mohawk Power Corporation (Niagara Mohawk), NYTOs, and New York State Entities³² filed comments in support. EPSA, Ravenswood, IPPNY, and Potomac Economics, as the Market Monitoring Unit (MMU) for NYISO, filed protests. NYSERDA and Consumer Stakeholders³³ each filed a limited protest and comments.

15. On December 20, 2024, IPPNY filed an answer to NYSERDA's and Consumer Stakeholders' protests. On December 30, 2024, NYISO filed an answer to the protests. On January 10, 2025, NYTOs filed an answer to the protests. On January 14, 2025, Consumer Stakeholders filed an answer to the protests and answers.

IV. Discussion

A. Procedural Matters

16. Pursuant to Rule 214 of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.214 (2024), the notice of intervention and timely, unopposed motions to intervene serve to make the entities that filed them parties to this proceeding.

³⁰ NYTOs consist of Central Hudson Gas & Electric Corporation, Consolidated Edison Company of New York, Inc., New York Power Authority (NYPA), New York State Electric & Gas Corporation, Niagara Mohawk Power Corporation, Orange and Rockland Utilities, Inc., Power Supply Long Island, and Rochester Gas and Electric Corporation.

³¹ Multiple Intervenors is an unincorporated association of approximately 60 large industrial, commercial, and institutional energy consumers with manufacturing and other facilities located throughout New York State.

³² New York State Entities consists of the New York Commission, NYSERDA, Long Island Power Authority, NYPA, and the New York State Department of State Utility Intervention Unit.

³³ Consumer Stakeholders consist of Multiple Intervenors, City of New York, Natural Resources Defense Council, and Sustainable FERC Project.

17. Rule 213(a)(2) of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.213(a)(2) (2024), prohibits an answer to a protest or answer unless otherwise ordered by the decisional authority. We accept the answers because they have provided information that assisted us in our decision-making process.

B. Substantive Matters

18. As discussed below, we find that NYISO's proposed ICAP demand curves for the 2025/2026 Capability Year and proposed methodologies and inputs for updating the ICAP demand curves for the 2025-2029 Capability Years are just and reasonable. NYISO has demonstrated that its proposal to use a 2-hour BESS unit as the peaking unit technology for the 2025-2029 DCR in all capacity regions complies with Services Tariff's requirements, and is consistent with Commission precedent. We agree that the 2-hour BESS unit represents the "lowest fixed and highest variable cost" technology option among all other economically viable options under the DCR analyses conducted by NYISO, given the particular facts and circumstances before us.³⁴ Therefore, based on these facts and circumstances before us, we find NYISO's proposal for 2025-2029 DCR to be just and reasonable,³⁵ and accept the proposed revisions to its Services Tariff, effective January 29, 2025, as requested.

19. Multiple parties intervened and submitted responsive pleadings in this proceeding.³⁶ The following discussion addresses contested issues: (1) the peaking unit eligibility and selection; and (2) the peaking plant costs and financial parameters.

³⁴ Stated differently, while we find the selection of the 2-hour BESS unit by NYISO in its 2025-2029 DCR to be just and reasonable given the NYISO Services Tariff and the record before us, we do not find here that this selection would necessarily be just and reasonable in a future NYISO DCR or in an analysis used in a similar process in another region.

³⁵ Protesters have argued for various alternative assumptions and options that may also be just and reasonable; however, we note that the Commission need only find NYISO's proposal to be just and reasonable, and not that it is the only or even the most just and reasonable proposal. *See* 2021-2025 DCR Order, 175 FERC ¶ 61,012 at P 130, n. 203; *see also N.Y. State Pub. Serv. Comm'n v. FERC*, 104 F.4th 886, 893-94 (D.C. Cir. 2024).

³⁶ We note that as a single state RTO, NYISO's proposal impacts the capacity market in New York and the prices paid for electricity by New York's consumers. To that end, as noted above, we recognize in this order that New York State Entities support NYISO's proposal. Among New York State Entities supporting NYISO's proposal is the New York Commission which, among other New York State governmental agencies, is charged with protecting the interests of New York's energy consumers.

1. Peaking Unit Eligibility and Selection

20. NYISO states that the Services Tariff requires that the DCR review “shall assess . . . the current localized levelized embedded cost of a peaking unit in each NYCA Locality and the Rest of State” to meet minimum capacity requirements.³⁷ NYISO adds that for purposes of updating the ICAP demand curves, “a peaking unit is defined as the unit with technology that results in the lowest fixed costs and highest variable costs among all other units’ technology that are economically viable.”³⁸ NYISO states that, according to Commission precedent, an economically viable technology must, at a minimum, be capable of supplying capacity in NYISO’s capacity market.³⁹ NYISO states that the Commission has held that beyond this minimum criterion, economic viability determinations are a matter of judgment that is informed by the consideration of multiple factors.⁴⁰

21. NYISO explains that it is important to consider the UCAP demand curves used in conducting the monthly spot market auctions, and that the selection of the appropriate technology option for the 2025-2029 DCR is designed to represent the technology that minimizes the cost of UCAP. NYISO further states that after selecting the 2-hour BESS as the peaking unit, that “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.”⁴¹

a. Operating Characteristics of the 2-hour BESS Technology Option

22. NYISO states that NYISO Consultant applied the following factors in this DCR, consistent with past DCRs, to guide economic viability determinations regarding the appropriate technology and plant design: (1) the availability of the technology to most market participants; (2) the existence of sufficient operating experience to demonstrate

³⁷ Transmittal Letter at 14 (citing NYISO, Services Tariff, § 5.14.1.2.2).

³⁸ NYISO, NYISO Tariffs, Services Tariff, § 5.14.1.2.

³⁹ Transmittal Letter at 8 (citing *N.Y. Indep. Sys. Operator, Inc.*, 146 FERC ¶ 61,043, at P 60 (2014) (2014-2017 DCR Order)).

⁴⁰ *Id.* (citing *N.Y. Indep. Sys. Operator, Inc.*, 125 FERC ¶ 61,299, at P 20 (2008); *N.Y. Indep. Sys. Operator, Inc.*, 134 FERC ¶ 61,058, at P 37 (2011); 2014-2017 DCR Order, 146 FERC ¶ 61,043 at P 60; *N.Y. Indep. Sys. Operator, Inc.*, 158 FERC ¶ 61,028, at P 18 (2017) (2017-2021 DCR Order)).

⁴¹ *Id.* at 15.

that the technology is proven and reliable; (3) whether the technology is dispatchable and capable of being cycled to provide peaking service; and (4) the ability to achieve compliance with applicable environmental requirements and regulations.⁴² NYISO states that the Commission has also recognized that the peaking plant design must be capable of being replicated and as such, the peaking plant designs should not represent a least possible cost design that may support only the construction of a single facility.⁴³ NYISO states that the DCR process does not require it to assume a system consisting solely of the peaking plant technology, nor does it require that the single peaking plant be designed as capable of meeting all potential resource adequacy needs that may arise. NYISO further states that the replicability of the peaking unit ensures that if a resource adequacy need arises that is larger than the capability of a single peaking plant addition, capacity market price signals will persist until those needs are met.

23. Regarding economic viability, NYISO states that a 2-hour BESS unit is widely available to market participants and has sufficient operational history, with more than 10,000 MWh of lithium-ion battery storage capability currently operating in the U.S. with varying energy discharge ranging from 1-hour to 8-hours.⁴⁴ NYISO states that the 2-hour BESS unit is a flexible and fast-responding resource capable of being dispatched by system operators during periods of peak system needs. NYISO states that system operators can 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.⁴⁵ NYISO also explains that a 2-hour BESS unit uses lithium-ion technology and a modular, “purpose built enclosure” to be economically viable and practically constructible.⁴⁶

24. NYISO explains that the NYSRC did not propose a minimum duration requirement for energy storage projects for capacity supply resources in New York. Further, NYISO notes that there is no durational value requirement set forth in NYISO’s

⁴² *Id.* at 8, 9.

⁴³ *Id.* at 8 (citing 2017-2021 DCR Order, 158 FERC ¶ 61,028 at PP 19, 65).

⁴⁴ *Id.* at 16. NYISO Consultant further notes that, according to U.S. Energy Information Administration data, BESS implementation has “dramatically increased” from approximately 1.0 GW at the start of 2020 to 15.5 GW at the end of 2023. NYISO Consultant also states that BESS with 2-hour and 4-hour discharge durations are currently “the most common in the electric utility industry.” NYISO Filing, attach. IV, Affidavit of Chad W. Swope, et al. (1898 & Co Aff.) ¶¶ 15-16.

⁴⁵ *Id.* at 18.

⁴⁶ AG Aff. ¶ 38.

Services Tariff, and the Commission has previously held that an alleged eligibility requirement not in the Services Tariff is irrelevant to assessing the economic viability of a technology to potentially serve as a peaking unit.⁴⁷

25. NYISO asserts that even if there were a basis in the Services Tariff or precedent to consider a minimum duration requirement, it would not be a sufficient reason to reject the use of a 2-hour BESS unit. NYISO explains that in its analysis of loss of load events in the recently completed 2024-2025 Installed Reserve Margin study, 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.⁴⁸

i. Comments and Protests

26. IPPNY asserts that a 2-hour BESS is ineligible to be a peaking unit because the peaking unit must be dispatchable and provide the necessary energy and ancillary services to meet “tariff-mandated operational parameters.”⁴⁹ IPPNY states that the peaking unit must be dispatchable and provide necessary energy and ancillary services, asserting that NYISO cites to these requirements and the Commission reaffirmed them in the last DCR.⁵⁰ IPPNY argues that NYISO must assess the technology’s ability to promote system reliability.⁵¹ In support, IPPNY points to NYISO’s 2024 Reliability Needs Assessment, which identified resource adequacy violations driven by a statewide resource deficiency beginning in 2034, and to studies that identified that longer duration resources will be required to resolve these identified reliability needs.⁵² IPPNY acknowledges NYISO’s statements regarding the operational flexibility of 2-hour BESS, but asserts that the period over which BESS are exhausted cannot be overlooked. IPPNY argues that although NYISO states that the 2024-2025 Installed Reserve Margin study

⁴⁷ Transmittal Letter at 17 (citing 2014-2017 DCR Order, 146 FERC ¶ 61,043 at P 76).

⁴⁸ *Id.* at 17-18. NYISO includes a distribution of loss of load events reflected in the model utilized for determining the 2024-2025 Capability Year LCRs, which shows a downward shaping curve, going from approximately 75 expected 1-hour duration events, to 25 expected 4-hour duration events, to 0 expected 14-hour duration events. *Id.* at 18.

⁴⁹ IPPNY Protest at 7.

⁵⁰ *Id.* (citing *N.Y. Indep. Sys. Operator, Inc.*, Filing, Docket No. ER21-502-000, at 7 (filed Nov. 30, 2020)).

⁵¹ *Id.* at 8.

⁵² *Id.* at 8-9.

reflects a significant percentage of 1-hour and 2-hour duration events, the study nonetheless still shows that more than half of the loss of load events modeled are more than two hours.⁵³ IPPNY asserts that longer duration resources (e.g., 8-hour BESS) and/or simple cycle gas turbines will likely be required to resolve reliability needs.⁵⁴ IPPNY argues that NYISO does not provide a thorough analysis of the ability of a 2-hour BESS unit to meet resource adequacy-based reliability requirements.

27. IPPNY states that the ICAP demand curve is “the sole mechanism available to merchant suppliers to secure [capacity market] revenues” sufficient enough to ensure that units are built⁵⁵ and that, although NYISO states that BESS units in combination with the underlying resource fleet are “readily capable,” NYISO does not “consider the costs of the ‘underlying resource’ necessary to ensure BESS is available to serve peak load.”⁵⁶ IPPNY further argues that because Net CONE is presented in terms of \$/kW-year, operating a 200 MW, 2-hour BESS as a 50 MW, 8-hour BESS would result in a much higher Net CONE because the resource’s capability would be 50 MW rather than 200 MW.⁵⁷

28. EPSA argues that the 2-hour BESS is not a generating resource and that this technology is unreliable during periods of peak demand and of power restoration following a blackout.⁵⁸ EPSA further asserts that the 2-hour BESS technology is emerging and not economically viable, and claims that a 2-hour BESS peaking unit conflicts with the ICAP market’s role of providing adequate compensation to incentivize the investment in resources necessary to support system reliability.⁵⁹

29. NYTOs, Consumer Stakeholders, and New York State Entities assert that the 2-hour BESS satisfies the economically viable criterion in the definition of “peaking

⁵³ *Id.* at 11.

⁵⁴ *Id.* at 10. IPPNY adds that New York has narrowed eligibility for its bulk utility scale storage solicitations to energy storage resources with durations of at least four hours with preference for longer duration. *Id.* at 11.

⁵⁵ *Id.* at 6-7 (citing, e.g., *N.Y. Indep. Sys. Operator, Inc.*, 103 FERC ¶ 61,201, at PP 4, 9, 13 (2003)).

⁵⁶ *Id.* at 10.

⁵⁷ *Id.* at 10 n.25.

⁵⁸ EPSA Protest at 2.

⁵⁹ *Id.* at 2-3.

unit.”⁶⁰ NYTOs and New York State Entities state that NYISO and NYISO Consultant appropriately recognized the growing number of BESS installations in the U.S., which demonstrates that the 2-hour BESS is technologically feasible and commercially deployable.⁶¹ New York State Entities and NYTOs further note that there is currently at least one 2-hour BESS that is operational and eligible to participate in NYISO markets, including NYISO’s capacity market.⁶² New York State Entities add that several BESS projects have been awarded incentives from NYSERDA, and there are numerous BESS projects in NYISO’s interconnection queue seeking rights to sell capacity.⁶³ New York State Entities also point to Commission precedent where the Commission explicitly directed NYISO to use the term “peaking unit” in the Services Tariff rather than “gas turbine” to allow for advancements in technology and recognize that traditional gas generators may not be the only potential peaking units for evaluation in the DCR process.⁶⁴

30. NYTOs argue that IPPNY’s assertion that short-duration resources, such as the 2-hour BESS, are ineligible to serve as the peaking unit is false and misrepresents the Commission’s finding in the 2011-2014 DCR proceeding.⁶⁵ NYTOs state that the Commission accepted NYISO’s decision to not include demand response as a potential peaking unit during that DCR and did not exclude short-duration resources from consideration as a potential peaking unit in future DCRs.⁶⁶ NYTOs assert that there is no need to bar short-duration resources from serving as the peaking unit because, to the

⁶⁰ NYTOs Comments at 4; Consumer Stakeholders Comments at 9; New York State Entities Comments at 3-4.

⁶¹ NYTOs Comments at 4; New York State Entities Comments at 3-4.

⁶² New York State Entities Comments at 4; NYTOs Comments at 4 (noting Key Capture Energy, LLC’s 2-hour, 20 MW BESS project that is in service).

⁶³ New York State Entities Comments at 4.

⁶⁴ *Id.* at 2-3 (citing *N.Y. Indep. Sys. Operator, Inc.*, 113 FERC ¶ 61,271, at PP 11, 12 (2005)).

⁶⁵ NYTOs Comments at 20-21.

⁶⁶ *Id.* at 21 (citing *N.Y. Indep. Sys. Operator, Inc.*, 134 FERC ¶ 61,058 at PP 25, 37).

extent a resource is duration-limited, the capacity accreditation rules will account for that.⁶⁷

ii. Answers

31. NYISO rejects protesters' claim that the 2-hour BESS technology option must meet certain "eligibility criteria" that are not required by the Services Tariff or Commission precedent.⁶⁸ NYISO states that the Commission has held it is impermissible to engraft "requirements" that are not established in the Services Tariff in an attempt to undermine the viability of a potential technology option.⁶⁹ NYISO asserts that it has demonstrated that a 2-hour BESS satisfies the screening criteria applied in past DCRs to assess the term "economic viability" in the Services Tariff.⁷⁰ Specifically, NYISO states that it has demonstrated that a 2-hour BESS unit is: (1) a proven technology; (2) widely available to developers; (3) a highly flexible technology that can be economically dispatched; and (4) capable of being cycled to permit discharge of its stored energy during peak periods.

32. NYISO argues that, as an incremental resource addition to an underlying resource fleet, a 2-hour BESS unit provides the necessary operating capability to assist in meeting resource adequacy requirements.⁷¹ NYISO states that, under the current Services Tariff and reliability rules, there is no requirement of a minimum operating duration period that would prohibit the consideration of a 2-hour BESS unit as a technology option for setting ICAP demand curves.⁷² Additionally, NYISO points to the lack of any Commission precedent establishing a minimum durational requirement that would disqualify the consideration of a 2-hour BESS unit.⁷³

33. In response to proposals that a different peaking unit than the 2-hour BESS should be selected, NYTOs contends that such substitutes would not provide reliability benefits

⁶⁷ *Id.* at 22.

⁶⁸ NYISO Answer at 6.

⁶⁹ *Id.* at 9-10.

⁷⁰ *Id.* at 6 (citing Transmittal Letter at 11-12; AG Aff. ¶¶ 38, 59-60, 62, Ex. F at 19-20; 1898 & Co. Aff. ¶¶ 15-16; Smith Aff. at ¶ 13).

⁷¹ *Id.* at 9.

⁷² *Id.* at 10.

⁷³ *Id.*

but would increase costs relative to the 2-hour BESS. NYTOs state that protesters do not address the impact of the other technologies reviewed by NYISO on consumers nor do they identify any reliability benefits consumers would realize from selecting an alternative technology.⁷⁴ NYTOs assert that virtually all new entry for more than the last four Capability Years has been from state public policy resources (e.g., wind, solar, and storage resources) and fossil units have not been able to get new permits due to the CLCPA. NYTOs argue that it is therefore unlikely that an increase in capacity prices above the level proposed in this DCR would drive a change in the entry of new resources that would result in enhanced reliability.⁷⁵

iii. Commission Determination

34. We find that NYISO's selection of the 2-hour BESS satisfies the requirements of the Services Tariff. The Services Tariff specifies that "a peaking unit is defined as the unit with technology that results in the lowest fixed costs and highest variable costs among all other units' technology that are economically viable."⁷⁶ NYISO has determined that a 2-hour BESS is an economically viable technology by considering the same factors that it has used in determining economic viability in prior DCRs.⁷⁷ Specifically, NYISO's analysis demonstrates that the 2-hour BESS option is a proven technology that is widely available to developers, is a highly flexible technology that can be economically dispatched, is capable of being cycled to permit discharge of its stored energy during peak periods, and is capable of being replicated. For instance, NYISO has explained that the 2-hour BESS unit has sufficient operational history, noting the more than 10,000 MWh of lithium-ion battery storage currently operating in the U.S. and that this unit uses lithium-ion technology and a modular enclosure that is practically constructible.⁷⁸ Therefore, we agree with NYISO that a 2-hour BESS is an economically viable technology under the requirements of the Services Tariff and the facts and circumstances before us in this record.

35. We disagree with IPPNY's and EPSA's contention that the Services Tariff mandates specific operating parameters for peaking unit technologies to meet reliability

⁷⁴ NYTOs Answer at 3-4.

⁷⁵ *Id.* at 4 (citing NYTOs Comments at 9, tbl. 3).

⁷⁶ NYISO, NYISO Tariffs, Services Tariff, § 5.14.1.2.

⁷⁷ See *N.Y. Indep. Sys. Operator, Inc.*, 125 FERC ¶ 61,299 at P 20 (2008); *N.Y. Indep. Sys. Operator, Inc.*, 134 FERC ¶ 61,058 at P 37; 2014-2017 DCR Order, 146 FERC ¶ 61,043 at P 60; 2017-2021 DCR Order, 158 FERC ¶ 61,028 at P 18.

⁷⁸ AG Aff. ¶ 38.

needs. In support of this argument, IPPNY points to the Commission's previous acceptance of NYISO's consideration of multiple factors to determine the economic viability of different technologies. Although the Services Tariff requires that a peaking unit be economically viable, the Services Tariff does not specify a definition of economic viability. The Commission has explained that under the NYISO Services Tariff "[a]n economically viable technology must be physically able to supply capacity to the market, but other than this requirement, the Commission stated that economic viability determinations are a 'matter of judgment.'"⁷⁹ Therefore, we find that the Services Tariff does not require the peaking unit to meet the operating parameters IPPNY and EPSA contend are mandatory. Also contrary to IPPNY's argument, the Services Tariff does not contain a duration requirement for the hypothetical peaking unit.

36. We also disagree with IPPNY's claim that NYISO has not appropriately considered the resource adequacy contribution of 2-hour BESS units. As an initial matter, the Services Tariff does not specify a resource adequacy requirement for the hypothetical peaking unit selected. NYISO's Services Tariff allows limited duration resources, such as BESS units, to be eligible as capacity resources that can be used to meet NYISO's resource adequacy requirements.⁸⁰ The Commission has accepted NYISO's capacity accreditation rules as a just and reasonable methodology for valuing capacity resources.⁸¹ That methodology adjusts the capacity value of all capacity resources, including a 2-hour BESS unit, to account for their marginal contribution to resource adequacy needs.

37. According to NYISO, the purpose of the hypothetical peaking unit in the DCR process is to determine the estimated revenue a hypothetical new resource would need to recover from the capacity market so that it has sufficient revenues to support its market entry.⁸² We agree with NYISO that the DCR process is not intended to identify a single peaking unit that addresses all of NYISO's resource adequacy needs; rather, the replicability of the hypothetical peaking unit ensures capacity market price signals necessary to "elicit and support new entry necessary if and when required to ensure reliability."⁸³ We find that NYISO has demonstrated that the 2-hour BESS is replicable.

⁷⁹ 2014-2017 DCR Order, 146 FERC ¶ 61,043 at P 60.

⁸⁰ Transmittal Letter at 12 (citing Smith Aff. ¶ 13). *See* NYISO, Services Tariff, § 5.12.1 (Installed Capacity Supplier Qualification Requirements).

⁸¹ *See N.Y. Indep. Sys. Operator, Inc.*, 179 FERC ¶ 61,102.

⁸² Transmittal Letter at 2-3.

⁸³ *See* 2017-2021 DCR Order, 158 FERC ¶ 61,028 at PP 19, 65.

38. Finally, we disagree with IPPNY's arguments that NYISO did not consider the cost of the "underlying resource" and that the Net CONE should be calculated as if the peaking unit were a 50 MW 8-hour BESS, rather than a 200 MW 2-hour BESS. Although IPPNY's arguments about the cost of the "underlying resource" are unclear, NYISO's Net CONE calculation, specifically the net energy and ancillary services revenues, includes the costs of operating the 2-hour BESS. NYISO further explains that, although a 200 MW 2-hour BESS peaking unit has the operational flexibility and ability to operate at a lower output for longer duration if needed, the capacity of the unit is 200 MW and thus it is appropriate to calculate Net CONE using 200 MW.

b. Impacts of CAFs

39. NYISO explains that the implementation of the capacity accreditation framework affects the assessment of technology options for the 2025-2029 DCR as various technology options have differing CAFs, which can produce material differences in the resulting demand curves when considered on a UCAP basis.⁸⁴ NYISO states that failure to properly account for CAFs could result in selection of an incorrect peaking plant technology, which could undermine the effectiveness of the demand curves at producing appropriate price signals regarding the value of capacity for maintaining New York's resource adequacy requirements.⁸⁵

40. NYISO states that certain stakeholders and MMU argue that a 2-hour BESS would not represent the lowest fixed cost technology option for this DCR if NYISO properly assessed the costs of the technology.⁸⁶ NYISO states that these parties claim that future CAFs for a 2-hour BESS will precipitously decline over the course of the 2025-2029 DCR period and that NYISO needs to account for that. NYISO asserts that it carefully considered the potential impact of future CAFs for a 2-hour BESS unit.⁸⁷ NYISO states that it considered a range of market and technology-specific risks faced by each of the technology options evaluated for this DCR when establishing the WACC required to finance the development of each technology option in New York.⁸⁸

41. NYISO explains that there is uncertainty in forecasting future CAFs for 2-hour BESS units due to the interrelated and interactive nature of numerous factors such as the

⁸⁴ Transmittal Letter at 9, 20.

⁸⁵ *Id.* at 9.

⁸⁶ *Id.* at 19.

⁸⁷ *Id.* at 20.

⁸⁸ *Id.* at 22.

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 load requirements.⁸⁹

42. NYISO states that it evaluated potential CAFs for a range of potential future system scenarios for New York.⁹⁰ NYISO states that its assessment identified that, depending on the actual future system conditions, annual CAFs for 2-hour BESS units could either decrease or increase through 2030, demonstrating that any claims of certain, precipitous CAF declines are unsupported.⁹¹ NYISO explains that although the future scenario with the most aggressive near-term buildout of incremental renewable resources and energy storage capacity identified the largest magnitude reduction in CAFs for 2-hour BESS resources by 2030, even in this scenario the 2-hour BESS unit would still be the technology that minimizes the cost to procure UCAP for the duration of this DCR.⁹²

43. NYISO states that NYISO Consultant's consideration of the market and technology-specific risks faced by BESS units in New York resulted in their recommending cost of debt and cost of equity values for the BESS units that were 50-basis points higher than the values recommended for the gas-fired frame turbines.⁹³

⁸⁹ *Id.* at 20.

⁹⁰ *Id.* at 22. *See also* Smith Aff., Ex. B. Specifically, NYISO reviewed four scenarios: (1) the expected system for the current 2024/2025 Capability Year that was used to calculate the currently effective CAFs used for the UCAP reference point prices for this DCR; (2) the current system using the 2024/2025 Installed Reserve Margin base case with the addition of the Champlain Hudson Power Express transmission line and incremental renewables and storage additions to inform the potential trajectory of CAFs over the DCR period; (3) the draft base case for year 2030 of the 2024 Reliability Needs Assessment, which has modest incremental renewables and storage additions; and (4) a resource fleet that could meet the 70% renewable energy by 2030 requirement established by the CLCPA. Smith Aff., Ex. B at 62-63.

⁹¹ Transmittal Letter at 20. The results of the CAF sensitivity analysis (of NYISO's various scenarios) predict that Rest of State CAFs for 2-hour BESS range from 36% to 68% in Rest of State zones, and from 25% to 67% in New York City zone. Smith Aff., Ex. B.

⁹² *Id.* at 21, 25.

⁹³ *Id.* at 23.

NYISO contends that the risk posed by future CAF uncertainty for the BESS units is reasonably accounted for through the 50-basis point increase.

i. Comments and Protests

44. IPPNY and MMU argue that NYISO did not adequately consider future variability of CAFs for a 2-hour BESS, which leads to a significant underestimation of the 2-hour BESS's Net CONE.⁹⁴ MMU asserts that the CAF of a 2-hour BESS unit is "extremely likely to decline."⁹⁵ MMU asserts that the CAFs of a 2-hour BESS unit are likely to decline "as battery storage penetration increases and New York's reliability risks shift from occurring only in the summer to increasingly occurring in the winter."⁹⁶ MMU also asserts that resources with a limited duration provide fewer reliability benefits and thus will have lower CAFs than resources that can run indefinitely because reliability risks can occur over extended periods.⁹⁷

45. IPPNY argues that CAFs for a 2-hour BESS unit are much more volatile than that of longer duration resources, including longer duration BESS, and therefore have a much higher risk profile for investment.⁹⁸ MMU states that recent CAFs are based on the NYISO region having a total of 20 MW of battery storage, but much more battery storage will likely be deployed both during and after the four-year DCR period, due to New York's battery storage target and batteries' relatively shorter construction timelines, which will depress future CAF values.⁹⁹

⁹⁴ MMU Protest at 4; IPPNY Protest at 19.

⁹⁵ MMU Protest at 5.

⁹⁶ *Id.* MMU adds that as battery storage penetration increases, longer duration batteries will be needed to achieve the same marginal capacity value.

⁹⁷ *Id.*

⁹⁸ IPPNY Protest at 21, 23. IPPNY states that the preliminary 2025/2026 6- and 8-hour BESS CAF values deviated no more than 3% compared to the 2024/2025 CAF values. *Id.* at 21.

⁹⁹ MMU Protest at 6. New York has a target of 6,000 MW battery storage operating by 2030 with 1,500 MW deployed by 2025. There are 1.8 GW of battery projects that have completed a NYISO Class Year interconnection study and accepted transmission upgrade cost allocations. *Id.* See also IPPNY Protest, Ex. B, Affidavit of RJ Arsenault and Fengrong Li (Arsenault Aff.) ¶ 40.

46. MMU states that NYISO's and MMU's recent studies predict large declines in 2-hour BESS CAFs to generally below 30% in New York City by 2030, even though none of these studies assume that New York achieves the 2030 storage target.¹⁰⁰ MMU presents two projected trajectories for CAFs modeled using its proprietary resource adequacy model.¹⁰¹ In the optimistic CAF trajectory case, CAF levels drop from NYISO's preliminary 2025/2026 CAF of 65% to 11% in 2040. In the pessimistic CAF trajectory case, CAF levels drop from 65% to 2% in 2035. MMU argues that "while the direction of CAF in the next few years is unclear, NYISO has not presented any reason to doubt the widespread expectation that State-driven battery storage deployment will drive major CAF reductions during the proposed 20-year amortization period of the resource."¹⁰² MMU provides projections to support its argument that declining CAF values affect the revenues of a 2-hour BESS over 20 years, and the expectation of these declining CAFs affect revenues an investor requires over the first four years. Based on the projections, MMU argues that the Net CONE of the 2-hour BESS will quickly become higher than the Net CONE of a combustion turbine, retrofitted to meet CLCPA's 2040 zero-emission mandate, amortized over the same 20-year period. MMU thus argues that NYISO has not demonstrated the 2-hour BESS is the lowest cost peaking unit compared to MMU's proposed combustion turbine retrofit option.¹⁰³

47. NYTOs and Consumer Stakeholders argue that claims that CAFs will decline precipitously are speculative.¹⁰⁴ NYTOs point to the fact that compared to the CAFs for the 2024/2025 Capability Year, the preliminary CAFs for the 2025/2026 Capability Year

¹⁰⁰ MMU Protest at 6-7.

¹⁰¹ *Id.* at 8-9. MMU states that for the pessimistic CAF trajectory, MMU models severe winter cold snap events, resulting in lower BESS CAFs due to inability to recharge during prolonged cold events that stress the system. *Id.* at 8 n.12.

¹⁰² *Id.* at 9.

¹⁰³ *Id.* at 10-11, 22-23. While the MMU references scenarios set forth in NYISO's 2023 System & Resource Outlook that retrofitted hydrogen combustion generators would meet New York State's need for renewables and storage, it offers little additional detail concerning the proposed retrofit option. *Id.* P 20. MMU states that "[i]t is not necessary to determine at present what the specific future retrofit costs would be since it can be assumed that whatever revenues eventually become available will also be available to a [combustion turbine] built in the next four years." *Id.* at 22-23. MMU explains that this means that high costs associated with hydrogen storage are not relevant and that any impact on the combustion turbine's net energy and ancillary services revenues will be offset by changes to the Net CONE in future DCRs. *Id.* at 23.

¹⁰⁴ NYTOs Comments at 13; Consumer Stakeholders Protest at 11.

for 2-hour BESS outside of New York City and Long Island zones increased from 55% to 75%, and CAFs for 2-hour BESS in New York City and Long Island also increased by 10% and 6%, respectively.¹⁰⁵ Consumer Stakeholders similarly argue that while the preliminary 2025-2026 CAFs are not determinative, they illustrate the uncertainty and speculative nature underlying the argument advanced by other stakeholders and demonstrate why it should be rejected.¹⁰⁶ Consumer Stakeholders note that the DCR process occurs every four years to stay current with market rules, technological developments, and the changing topography of the bulk electric system, and that NYISO and NYISO Consultant have generally disfavored including speculative future market inputs in the model, such as future unknown CAFs.¹⁰⁷

ii. Answers

48. NYISO reiterates that it carefully considered the potential impact of future CAFs in selecting a 2-hour BESS to serve as the peaking plant.¹⁰⁸ NYISO explains that its evaluation recognized that future CAFs for 2-hour BESS are uncertain, cannot be precisely forecasted, and may increase or decrease over the course of the 2025-2029 DCR period. NYISO states that its assessment also acknowledged that CAFs determined for 2-hour BESS provide an appropriate measure of the technology's contribution to meeting NYISO's resource adequacy needs and will vary over time to account for changes in system conditions.

49. NYISO asserts that claims that CAFs will precipitously decline over the course of the 2025-2029 DCR period, resulting in the 2-hour BESS unit becoming uneconomic during the 20-year amortization period, are predicated on unsubstantiated certainty that future CAFs will decline. NYISO states that future CAFs are dependent upon underlying system conditions that are subject to change and that a precipitous decline in future CAFs is not certain.¹⁰⁹ NYISO asserts that, if the 2-hour BESS is selected as the peaking unit, the actual CAFs will be reflected in the demand curves used to conduct the monthly spot auctions. NYISO states that this ensures that the curves continue to provide revenue

¹⁰⁵ NYTOs Comments at 14-15; Consumer Stakeholders Protest at 11 (citing NYISO, 2025-2026 Capability Year Informational Capacity Accreditation Factors 15 (Oct. 7, 2024), https://www.nyiso.com/documents/20142/47364758/2025-2026%20Informational%20CAFs_ICAPWG_10.07.2024_Final.pdf).

¹⁰⁶ Consumer Stakeholder Protest at 11.

¹⁰⁷ *Id.* at 12.

¹⁰⁸ NYISO Answer at 14.

¹⁰⁹ *Id.* at 12-13.

adequacy for a 2-hour BESS unit if resource additions are necessary to maintain resource adequacy during the 2025-2029 DCR period.¹¹⁰

50. NYISO asserts that the uncertainty of future CAFs was appropriately considered in developing the parameters to finance investment in a new 2-hour BESS, and that the risk of uncertainty in CAFs was a driving factor in the recommendation for a higher WACC.¹¹¹ NYISO argues that the higher WACC value for the 2-hour BESS unit accounts for the uncertainty of future CAFs and the relative increased investment risk compared to a gas turbine.¹¹²

51. In response to MMU's, IPPNY's, and Ravenswood's arguments that the declining CAFs for 2-hour BESS make their selection as the peaking unit unreasonable, and that NYISO did not properly account for such risk, Consumer Stakeholders reassert that methodologies employed by NYISO mitigate the risk of revenue shortfalls and acknowledge the uncertainty of longer-term CAF trends.¹¹³ Furthermore, Consumer Stakeholders argue that protesters' arguments concerning the risk of declining CAFs for 2-hour BESS are speculative and rely on assumptions of future market conditions that may not materialize.¹¹⁴ Consumer Stakeholders state that, in contrast, NYISO's use of conservative assumptions paired with a 50-basis point adder more effectively mitigates risks and strikes an appropriate balance between sufficient price signals and the long-term uncertainty of market forecasting.

iii. Commission Determination

52. We find that NYISO has reasonably considered the impact of future CAFs in its analysis of the 2-hour BESS unit as the "technology that results in the lowest fixed costs and highest variable costs among all other units' technology that are economically viable."¹¹⁵ Given the record before us, we disagree with arguments made here that because the CAFs for the 2-hour BESS unit may decline in the future, the 2-hour BESS is not the lowest cost peaking technology option for the current DCR.¹¹⁶ NYISO's

¹¹⁰ *Id.* at 14.

¹¹¹ *Id.* at 14-15.

¹¹² *Id.* at 16-17.

¹¹³ Consumer Stakeholders Answer at 4-5.

¹¹⁴ *Id.* at 6.

¹¹⁵ NYISO, NYISO Tariffs, Services Tariff, § 5.14.1.2.

¹¹⁶ As detailed, *infra* P 77, we agree with NYISO that the combustion turbine

assessment of four potential future scenarios, which NYISO created with the same software program it uses to calculate CAFs, shows that the CAFs for 2-hour BESS units could decrease or increase during the DCR period. While MMU argues that CAF declines are likely, MMU also recognizes that the direction of CAFs for 2-hour BESS units in the next few years is unclear.¹¹⁷ Given this uncertainty as described in the record before us, we find that NYISO reasonably assessed the peaking unit technology options based on current CAFs and demonstrates that the 2-hour BESS is the lowest cost peaking technology option for the current DCR. Further, NYISO's assessment indicates that, even if CAFs decline under a scenario of very high renewables and storage deployment by 2030, the 2-hour BESS remains the technology with the lowest Net CONE.¹¹⁸ Finally, as discussed below, we agree with NYISO that increasing the WACC values for the 2-hour BESS unit by 50 basis points is a reasonable approach to account for the relatively higher investment risks, including the risk associated with declining CAFs, of the 2-hour BESS option compared to other peaking plant options.¹¹⁹

c. Consideration of Future Capacity Revenues

53. NYISO states that certain stakeholders oppose the selection of a 2-hour BESS, alleging that use of a 2-hour BESS unit will result in demand curves that are unable to support retention of the existing resources necessary for reliability and that a 2-hour BESS deployed during this DCR period will experience material capacity revenue declines due to the introduction of more efficient and less expensive BESS projects in the future.¹²⁰ NYISO explains that the ICAP demand curves are designed to provide a reasonable opportunity for new and existing resources necessary to support reliability by meeting New York's resource adequacy requirements to earn adequate revenues, not to retain all existing resources regardless of market conditions.¹²¹ NYISO asserts that the selection of the 2-hour BESS unit would not be expected to cause a reduction in spot

retrofit option is not an economically viable option, which moots MMU's argument regarding Net CONE for such a facility.

¹¹⁷ MMU Protest at 9.

¹¹⁸ Transmittal Letter at 21 (citing Smith Aff. ¶ 20).

¹¹⁹ This includes uncertainty regarding the future revenues of the 2-hour BESS unit. *See infra* P 100.

¹²⁰ Transmittal Letter at 29, 32.

¹²¹ *Id.* at 29.

market auction clearing prices in any capacity region below those experienced over the past five years.¹²²

54. NYISO states that despite prior projections of significant cost declines in future BESS project costs, a recent analysis conducted by New York State Department of Public Service (NYSDPS) and NYSERDA identified that costs had instead increased significantly over the past five years.¹²³ NYISO explains that the Commission has consistently held that a key purpose of conducting DCRs at regular intervals is to accurately capture changes in conditions over time and that future DCRs are the appropriate forum for capturing actual changes in technology costs. NYISO states that the risks for 2025-2029 are appropriately considered in the proposed WACC values.¹²⁴

i. Comments and Protests

55. IPPNY and EPSA assert that NYISO's proposed financial parameters do not adequately account for the risks in developing a 2-hour BESS and, thus, the proposed Net CONE will not provide adequate price signals to support the construction of new resources, and the retention of existing resources to maintain NYISO's system reliability over the long run.¹²⁵ According to IPPNY, 2-hour BESS costs will decline over the proposed 20-year amortization period and the Net CONE will not protect against the risk of future revenue decline.¹²⁶ Additionally, IPPNY argues that future BESS cost declines will result in ICAP market price reductions and, unless corrected, the ICAP Demand Curve price signals will be insufficient to incentivize new and needed investments.¹²⁷ IPPNY argues that there must be an upward adjustment to the Net CONE and the amortization period was not structured to match the unit's expected operational life.¹²⁸

¹²² *Id.* at 30. NYISO explains that its analysis assumes the currently effective CAF values and minimum capacity requirements for the 2024-2025 Capability Year.

¹²³ *Id.* at 32 (citing *In the Matter of Energy Storage Deployment Program*, Case 18-E-0130 (New York Commission, March 15, 2024) at 30, 71-72). The analysis identified that BESS project costs had increased by approximately 40% compared to cost projections developed for a prior analysis conducted in 2021.

¹²⁴ *Id.* at 33 (citing 2014-2017 DCR Order, 146 FERC ¶ 61,043 at P 74; 2017-2021 DCR Order, 158 FERC ¶ 61,028 at P 61; *N.Y. Indep. Sys. Operator, Inc.*, 181 FERC ¶ 61,227, at P 27 (2022)).

¹²⁵ IPPNY Protest at 13; EPSA Protest at 2.

¹²⁶ IPPNY Protest at 15-16.

¹²⁷ *Id.* at 15.

IPPNY contends that NYISO could address the risk of falling BESS costs by either decreasing the amortization period, increasing financing costs, or both, and that the Commission should reject NYISO's contentions that concerns regarding future costs are speculative.¹²⁹ Ravenswood and IPPNY argue that NYISO did not appropriately consider the risks associated with falling ICAP market prices due to the substantial reduction in costs of 2-hour BESS over NYISO's proposed 20-year amortization period.¹³⁰

56. NYTOs and Consumer Stakeholders argue that NYISO's proposed DCR would increase capacity prices in NYISO by 37% above capacity costs for the 2024-2025 capability year.¹³¹ NYTOs present estimates that, relative to the 2024/2025 capability year, capacity costs would increase by 111% if the peaking technology was a 4-hour BESS, 112% if it was gas turbine, and 143% if it was a 6-hour BESS.¹³² NYTOs argue that if NYISO were to use an economically viable peaking plant technology other than the 2-hour BESS unit, capacity costs would double the current Capability Year's capacity costs.¹³³ NYTOs state that there has not been any evidence provided that would indicate that approval of the current proposal would lead to retirement of generators, leading to reliability shortfalls.¹³⁴ NYTOs further explain that NYISO has a long-established, tariff-based generator deactivation process, which would allow NYISO to address any reliability concerns as they arise.¹³⁵

57. NYTOs contend the ICAP Demand Curves should not be based on speculation regarding whether the cost of a 2-hour BESS is likely to decrease, and thus the Commission should reject arguments that the ICAP Demand Curves must increase substantially so developers can recover a large share of their costs before prices decline

¹²⁸ *Id.* at 17-18.

¹²⁹ *Id.* at 18-19. IPPNY argues that incorporating assumptions of projected declines in BESS costs is appropriate because NYISO estimates the impact of "many future factors" in its DCR, such as future inflation levels. *Id.* at 19.

¹³⁰ Ravenswood Protest at 5; IPPNY Protest at 3.

¹³¹ NYTOs Comments at 10, Consumer Stakeholders Protest at 8.

¹³² NYTOs Comments at 7-8.

¹³³ *Id.*

¹³⁴ *Id.* at 11.

¹³⁵ *Id.* at 12.

due to the entry of more efficient competition.¹³⁶ Additionally, NYTOs argue that raising the ICAP Demand Curves based on future prices would be inconsistent with the Services Tariff, which states that ICAP Demand Curves must be based on the “current localized levelized embedded cost of a peaking plant.”¹³⁷ NYTOs also state that past DCRs have considered this issue and in each case NYISO has concluded that it would not be wise for forecasts to have a significant impact on the demand curves.¹³⁸

ii. Answers

58. NYISO contends that future price forecasts relied upon by IPPNY and Ravenswood do not provide a credible basis for modifying NYISO’s proposal, often overstate potential cost declines, and can diverge significantly from actual market prices.¹³⁹ Additionally, NYISO argues that the Services Tariff requires NYISO to estimate the current localized levelized embedded cost to construct a peaking plant in each capacity region, and not simply a relative or potentially indicative future cost value.¹⁴⁰ NYISO also argues that the proposed WACC specifically considers the relative nascent state of the BESS technology development and that future DCRs are the appropriate forum for incorporating actual changes in costs over time.¹⁴¹

59. NYTOs argue that IPPNY’s proposal to implement demand curves that would permit cost recovery on an accelerated basis is inconsistent with the Services Tariff. NYTOs explain that the ICAP demand curves are based on the current localized levelized embedded cost of a peaking plant and that long-term capital cost projections can be subject to significant error.¹⁴² Additionally, NYTOs contend that the costs of mature technologies, such as H-frame turbines, are not relatively more stable and therefore more suitable for use in the DCR than costs for newer technologies.¹⁴³ NYTOs disagree with IPPNY’s argument that NYISO’s use of inflation forecasts justifies IPPNY’s proposal to

¹³⁶ *Id.* at 22-23.

¹³⁷ *Id.* at 23 (citing NYISO, NYISO Tariffs, Services Tariff, § 5.14.1.2.2).

¹³⁸ *Id.* at 24.

¹³⁹ NYISO Answer at 21-22.

¹⁴⁰ *Id.* at 22 (citing NYISO, NYISO Tariffs, Services Tariff, § 5.14.1.2.2).

¹⁴¹ *Id.* at 22-23.

¹⁴² NYTOs Answer at 12.

¹⁴³ *Id.* at 12-13.

use forecasts of the rates at which the cost of BESS facilities will decrease. NYTOs state that the use of forecasted inflation rates in the DCR to translate the financial parameters from nominal terms into inflation-adjusted terms and the current expectations regarding future inflation rates can be easily obtained from a variety of sources and are not subject to much uncertainty. NYTOs state that, in contrast, there are enormous differences in projections of future capital costs for BESS, so choosing one projection instead of another would have an outsized effect on the ICAP demand curves.¹⁴⁴

iii. Commission Determination

60. As noted above, we find that NYISO's selection of a 2-hour BESS as the peaking unit satisfies the requirements of the Services Tariff because it is the unit with the technology that results in the lowest fixed costs and highest variable costs among the economically viable technologies. We agree with NYISO that NYISO's selection of a 2-hour BESS as the peaking unit minimizes the cost of procuring UCAP for the 2025-2029 DCR. We further agree with NYISO that the Services Tariff does not require selection of a peaking unit based on whether the ICAP demand curves established using the peaking unit will retain all existing resources and that the evidence in the record before us does not demonstrate that the 2025-2029 DCR would lead to revenue sufficiency issues that threaten resource adequacy. Based on the record before us, we disagree with protesters that the 2-hour BESS technology option will not provide adequate price signals to support the construction of new resources, and the retention of existing resources, to maintain NYISO's system reliability. For example, NYTO's analysis suggests that capacity costs could increase by 37% due to NYISO's selection of the 2-hour BESS.

61. Although IPPNY and Ravenswood state that future BESS cost declines will result in ICAP market price reductions, NYISO presents recent analysis conducted by NYSDPS and NYSERDA that finds that BESS costs have increased significantly over the past five years, contrary to prior forecasts.¹⁴⁵ Accordingly, we find that IPPNY's and Ravenswood's argument is speculative, and there is no evidence in the record for addressing the risk of such cost declines by decreasing the amortization period or increasing financing costs for BESS costs for the 2025-2029 DCR, as IPPNY requests. We agree with NYISO that the appropriate forum for capturing actual changes in technology costs over time is in the future DCR processes that will occur every four

¹⁴⁴ *Id.* at 14.

¹⁴⁵ Transmittal Letter at 32 (citing *In the Matter of Energy Storage Deployment Program*, Case 18-E-0130 (New York Commission March 15, 2024) at 30, 71-72)).

years, “so that changed circumstances, such as new regulations, can be taken into account.”¹⁴⁶

d. Transmission Security Considerations

62. NYISO defines transmission security as the ability of the electric system to withstand disturbances such as electric short circuits or unanticipated loss of system elements.¹⁴⁷ NYISO states that the capacity market is designed to address resource adequacy needs, not transmission security, and thus peaking plants do not need to be capable of resolving both concerns.¹⁴⁸ NYISO states that the Commission recognizes that the current capacity market is designed to ensure resource adequacy in New York.¹⁴⁹

63. NYISO states that, during its stakeholder process, 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. NYISO states that a technology’s capability to resolve transmission security needs is irrelevant to a technology’s economic viability, as it is not specified in the Services Tariff.¹⁵⁰ NYISO states that the Commission has previously held that seeking to declare technology options ineligible for consideration in the DCR based on requirements outside of NYISO’s tariff is inappropriate.¹⁵¹ NYISO explains that the current capacity market design only indirectly considers certain aspects of transmission security.¹⁵² NYISO states that in determining Locational Minimum Installed Capacity Requirements (LCR), NYISO uses transmission security limit (TSL) floor values as a lower limit on the allowable locational capacity requirement values. NYISO states that the TSL floor values are not intended to expressly solve for transmission security needs.

¹⁴⁶ 2014-2017 DCR Order, 146 FERC ¶ 61,043 at P 74.

¹⁴⁷ Transmittal Letter at 26 (citing NYISO, *Short-Term Assessment of Reliability: 2023 Quarter 2* 29 (July 14, 2023)).

¹⁴⁸ *Id.*

¹⁴⁹ *Id.* at 27 (quoting *N.Y. Indep. Sys. Operator, Inc.*, 165 FERC ¶ 61,011, at P 72 (2018) (“The ICAP market is specifically designed to ensure sufficient capacity to satisfy the statewide [Installed Reserve Margin], which itself is calculated to ensure that the 0.1 days/year LOLE reliability standard is met.”)).

¹⁵⁰ *Id.* at 26.

¹⁵¹ *Id.* (citing 2014-2017 DCR Order, 146 FERC ¶ 61,043 at P 76).

¹⁵² *Id.* at 28.

64. NYISO states that, separate to the instant filing, NYISO has commenced a multi-year collaborative process with its stakeholders to evaluate potential enhancements to its current capacity market to value resource contributions to transmission security.¹⁵³

i. Comments and Protests

65. MMU, IPPNY, and Ravenswood argue that the short duration of 2-hour BESS units is insufficient to respond to longer duration transmission security needs.¹⁵⁴

66. MMU argues that the problems with the selection of the 2-hour BESS are exacerbated when capacity requirements are derived from transmission security criteria.¹⁵⁵ MMU notes that the LCRs in NYISO's capacity market have been determined by NYISO's TSL methodology for at least one zone in four out of the six years since the TSLs were introduced, including for all three downstate zones in the current capability year.¹⁵⁶ MMU claims that the ICAP Demand Curves are designed to maintain supply in each zone at or above its LCR and thus the Net CONE established in this DCR will directly determine market incentives to satisfy transmission security requirements that are met through the capacity market.¹⁵⁷ Ravenswood similarly claims that when NYISO proposed to incorporate TSL into the LCR, it stated that the LCR values must ensure the final least cost solution results in capacity levels that additionally meet the transmission security import limitations of the zones.¹⁵⁸ Ravenswood concludes that this means that transmission security ensures the minimum levels of capacity that remain in each capacity zone are sufficient to maintain reliability. MMU contends that if 2-hour BESS units are built in areas where the LCRs are based on transmission security criteria, NYISO will have to increase the LCRs to account for differences between the 2-hour BESS's CAF and its contribution to transmission security needs, leading to higher costs for consumers.¹⁵⁹

¹⁵³ *Id.*

¹⁵⁴ MMU Protest at 18; IPPNY Protest at 60; Ravenswood Protest at 8-9.

¹⁵⁵ MMU Protest at 15.

¹⁵⁶ *Id.*

¹⁵⁷ *Id.*

¹⁵⁸ Ravenswood Protest at 9 (citing *N.Y. Indep. Sys. Operator, Inc.*, Filing, Docket No. ER18-1743, at 26 (filed Aug. 9, 2018)).

¹⁵⁹ MMU Protest at 15.

67. Furthermore, MMU contends that an accurate assessment of a peaking unit's cost must consider its transmission security contributions.¹⁶⁰ MMU notes that a resource's contribution to transmission security needs is not currently considered in a resource's CAF, but it affects the net supply the resource effectively provides towards meeting the system's capacity requirements.¹⁶¹ MMU alleges that NYISO's practice for resources that make limited contributions towards transmission security requirements is to increase the TSL floors (and therefore, the LCRs) to account for the resource's low contribution to transmission security.¹⁶² MMU states that the accredited UCAP of such resources can be much greater than their actual contribution to the capacity requirements and that if this is not considered in the DCR, NYISO may not select the most cost-effective peaking technology for the system.¹⁶³ MMU states that the analysis performed by NYISO and NYISO Consultant for the 2-hour BESS does not account for its limitations in addressing transmission security and thus is incomplete and not a reasonable basis to support NYISO's recommendation.¹⁶⁴

68. Consumer Stakeholders, Con Edison and Orange and Rockland, and NYTOs contend that the purpose of the ICAP market is to ensure that resource adequacy requirements are met, and not to solve for other reliability issues, including transmission security needs.¹⁶⁵

ii. Answers

69. NYISO contends that while its current procedures for determining LCRs include certain considerations related to transmission security, NYISO does not expressly value resource contributions toward meeting transmission security requirements.¹⁶⁶ NYISO

¹⁶⁰ *Id.* at 18.

¹⁶¹ *Id.* at 18-19 (quoting the description of “gross peak plant costs” in Services Tariff section 5.14.1.2.2 (“[T]he 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 capacity requirements.”)).

¹⁶² *Id.* at 19.

¹⁶³ *Id.*

¹⁶⁴ *Id.* at 20.

¹⁶⁵ Consumer Stakeholder Comments at 12-13; Con Edison and Orange and Rockland Comments at 3-4; NYTOs Comments at 15.

¹⁶⁶ NYISO Answer at 10.

argues that the intent of the current market design is to ensure that LCRs are not set based on assumed levels of power transfers into transmission constrained regions that would violate transmission security based limitations on such transfer levels. NYISO states that the capability to resolve transmission security needs is not an eligibility requirement for a technology to serve as the peaking unit under the current capacity market design, the Services Tariff, and Commission precedent.¹⁶⁷

70. NYTOs assert that the capacity market is not designed to satisfy both resource adequacy and transmission security for portions of NYISO's bulk power system.¹⁶⁸ NYTOs argue that TSL set the foundational assumption for the LCR calculations, but LCR calculations are fundamentally based upon resource adequacy, not transmission security, determinations.¹⁶⁹ Additionally, NYTOs state that the Commission's prior approval of changes to the procedure used to develop LCRs was not intended to ensure that transmission security requirements are met, but rather ensures ICAP requirements will be consistent with transmission security requirements.¹⁷⁰ Additionally, NYTOs claim that IPPNY's prior positions are not consistent with the claim that the capacity market is designed to satisfy transmission security criteria.¹⁷¹ Consumer Stakeholders similarly assert that protesters' arguments mischaracterize the purpose of the DCR process and confuse the differences between NYISO's reliability studies and NYISO's capacity market design.¹⁷²

71. According to NYTOs, changes intended to transform the ICAP market to satisfy both resource adequacy and transmission security requirements cannot be lawfully implemented without the Commission's acceptance of tariff amendments under FPA section 205.¹⁷³ Consumer Stakeholders also state that protesters' attempts to incorporate

¹⁶⁷ *Id.* at 11.

¹⁶⁸ NYTOs Answer at 5.

¹⁶⁹ *Id.* at 6.

¹⁷⁰ *Id.* at 6-7.

¹⁷¹ *Id.* at 8-10. NYTO state that in prior Commission proceedings IPPNY stated that NYISO's ICAP markets are only intended to ensure resource adequacy, which conflicts with IPPNY's suggestion now that NYISO's capacity market design is intended to ensure that transmission security requirements are met. NYTO Answer at 8-9 (citing *Indep. Power Producers of N.Y., Inc.*, Answer of Independent Power Producers of New York, Inc., Docket No. EL13-62-000, at 7 (filed June 14, 2013)).

¹⁷² Consumer Stakeholders Answer at 8.

NYISO's reliability studies and transmission security into the DCR process is beyond the scope of the requirements set in the Services Tariff.¹⁷⁴

iii. Commission Determination

72. We find that protesters' arguments about transmission security needs are misplaced. The Services Tariff does not require NYISO to consider the potential peaking unit's contribution to transmission security needs under the DCR. The Services Tariff states that the relevant minimum capacity requirement for each zone "shall be equal to the Locational Minimum Installed Capacity Requirement in effect for the year in which the independent consultant's final report [for the DCR] is issued."¹⁷⁵ Thus, the Services Tariff provides that the peaking plant costs are assessed considering the currently effective LCRs, which NYISO has done. As noted above, NYISO selected the 2-hour BESS as the peaking unit because, based on NYISO's assessment and assumptions for the costs and revenues of the economically viable technologies, it minimizes the cost of procuring UCAP.

73. We are not persuaded by MMU's assertion that NYISO should instead assess the cost of a 2-hour BESS using a hypothetical LCR that considers the low transmission security contribution of the 2-hour BESS, because MMU's argument would impose a requirement on the DCR process that is not currently present in the Services Tariff.¹⁷⁶ Moreover, NYISO states that it has commenced a multi-year collaborative process with its stakeholders to evaluate potential enhancements to its current capacity market to value resource contributions to transmission security.¹⁷⁷ We believe that the separate stakeholder process is the appropriate forum to address any potential transmission security concerns.

¹⁷³ NYTOs Answer at 10.

¹⁷⁴ Consumer Stakeholders Answer at 9.

¹⁷⁵ NYISO, NYISO Tariffs, Services Tariff, § 5.14.1.2.2.

¹⁷⁶ To the extent that MMU is arguing that transmission security is material to the question of economic viability, we find that NYISO's method of judging economic viability is a reasonable one. *See* 2014-2017 DCR Order, 146 FERC ¶ 61,043 at P 60 (noting that economic viability determinations are a "matter of judgment.").

¹⁷⁷ *Id.* at 28.

e. MMU's Proposed Alternative Peaking Unit

74. NYISO states that, for informational purposes, it conducted a limited review of the potential costs to retrofit a frame turbine to operate solely by burning hydrogen as a potential “zero emissions” design for compliance with New York State’s CLCPA.¹⁷⁸ NYISO states that it determined that the costs associated with retrofitting a gas turbine to burn hydrogen rendered it highly uneconomic compared to other technology options. NYISO further states that the hydrogen retrofit option was not economically viable for the 2025-2029 DCR because it failed multiple screening factors, including the fact that there is currently no commercial operating experience for a frame turbine operating on 100% hydrogen.¹⁷⁹

75. NYISO contends that the MMU proposal to use a retrofit turbine does not include consideration of retrofit costs, or any impact that the alternative operating design may have on the estimated revenue earnings of such a plant, but instead MMU uses the revenue earning capability based on the operation of a fossil fuel-only frame turbine.¹⁸⁰ NYISO states that, therefore, the MMU’s proposed hydrogen retrofit option does not meet the requirements of the Services Tariff to assess the current localized levelized embedded cost of the technology and the likely projected energy and ancillary services revenues, net of the costs of producing such energy and ancillary services.

i. Comments and Protests

76. MMU states that a combustion turbine that is retrofit to use a compliant fuel to meet the CLCPA zero emissions by 2040 requirement is a viable technology that NYISO should have fully considered but did not.¹⁸¹ MMU argues that a combustion turbine with a 20-year amortization is a viable choice because: (1) New York State’s zero emissions mandate under CLCPA does not preclude the selection of a 20-year combustion turbine; (2) future retrofit costs need not be evaluated explicitly in the current DCR; and (3) a combustion turbine that operates over 20 years could be permitted if needed for reliability. MMU contends that NYISO should have accepted MMU’s proposed retrofit of a combustion turbine to enable such a facility to be selected as the peaking unit by extending its life beyond the 13-year amortization period that would apply to a fossil-fuel only facility due to the 2040 CLCPA zero-emission energy mandate.¹⁸² In support,

¹⁷⁸ *Id.* at 10, 12.

¹⁷⁹ *Id.* at 13-14 (citing the 2017-2021 DCR Order, 158 FERC ¶ 61,028 at P 28).

¹⁸⁰ *Id.* at 13-15.

¹⁸¹ MMU Protest at 20-24.

¹⁸² *Id.* at 20. For the 2025-2029 DCR, NYISO proposes to again use an

MMU argues that it is unreasonable to assume that a new combustion turbine facility built in the next four years will have zero economic value after 2040 because studies have found that there will be a need for large quantities of dispatchable resources capable of operating for prolonged periods to meet resource adequacy needs.¹⁸³ MMU states that it is “extremely likely” that a generator built in the next four years will have the option of retrofitting once a zero-emission fuel becomes available.¹⁸⁴ MMU argues that the future retrofit will result in a corresponding increase in revenues, making such an option likely the lowest-cost option.

ii. Commission Determination

77. We agree with NYISO that it was reasonable to exclude the proposed hydrogen retrofit option as an economically viable option in its analysis for this DCR. Specifically, NYISO explains that a hydrogen retrofit option is not economically viable because of the lack of commercial operating experience, the lack of cost and potential revenue information, and the associated lack of demonstrated replicability.¹⁸⁵ Therefore, we find that MMU presents insufficient information to conclude that NYISO’s exclusion of the hydrogen retrofit option was unreasonable.

2. Peaking Plant Costs and Financial Parameters

78. The Services Tariff requires that the DCR process assess “the localized levelized embedded cost of a peaking unit” used in establishing each ICAP Demand Curve.¹⁸⁶ NYISO contends that NYISO Consultant conducted a rigorous evaluation to develop estimates of the capital investment costs for the peaking plant designs for each ICAP Demand Curve, as well as the associated fixed and variable operations and maintenance costs for each peaking plant.¹⁸⁷ NYISO states that for the BESS unit options, NYISO Consultant assumed the use of purpose-built enclosures consistent with current industry trends for BESS projects. NYISO adds that NYISO Consultant developed cost estimates

amortization period for fossil fuel only resources, such as gas turbines, that is aligned with the 2040 zero emission energy mandate in the CLCPA, resulting in a 13-year amortization period for such resources. Transmittal Letter at 10, 14.

¹⁸³ MMU Protest at 21.

¹⁸⁴ *Id.* at 22.

¹⁸⁵ Transmittal Letter at 13-15.

¹⁸⁶ See NYISO, NYISO Tariffs, Services Tariff, § 5.14.1.2.2.

¹⁸⁷ Transmittal Letter at 33-34.

based on a generic site in each evaluated location. NYISO states that as part of its cost estimate, it evaluates capital investment costs, owner's cost (which includes development activities, project management oversight, project engineering, permitting, legal fees, and financing during construction), fixed and variable operations and maintenance, mortgage recording taxes, sales tax, and a federal investment tax credit.¹⁸⁸

79. NYISO explains that the assessment of the “localized leveled embedded cost of a peaking unit” requires NYISO to translate the estimated up-front capital investment costs for each peaking plant into an annualized dollar amount. According to NYISO, this calculation accounts for: (1) the assumed WACC required by a developer to recover up-front investment costs, plus a reasonable return on that investment; (2) the term in years over which the developer is assumed to recover its up-front investment costs (amortization period);¹⁸⁹ and (3) the applicable tax rates. The WACC is derived from a series of financial parameters related to the development of the peaking plant, including the cost of equity, cost of debt, and the capital structure for the project.¹⁹⁰

a. Investment Tax Credit – Generator Lead Costs

80. NYISO explains that, as part of the estimates for peaking plant costs, NYISO Consultant assumed that the BESS unit options would qualify for a 30% federal investment tax credit.¹⁹¹ Initially, NYISO Consultant included the costs associated with the generator leads as part of the eligible basis for the investment tax credit.¹⁹² NYISO states that after careful consideration of stakeholder feedback and additional due diligence, the NYISO Board concluded that it appeared more reasonable to assume that the Internal Revenue Service (IRS) would classify the generators leads as “transmission/distribution equipment” that is not eligible for the investment tax credit.¹⁹³ Specifically, NYISO Consultant contends that because the generator lead is located after

¹⁸⁸ *Id.* at 35-45.

¹⁸⁹ NYISO Consultant assumed a 20-year amortization period for the 2-hour BESS. *Id.* at 59.

¹⁹⁰ *Id.* at 53.

¹⁹¹ *Id.* at 44.

¹⁹² *Id.* at 45. NYISO Consultant states that this is, in part, because the assets would be owned by the BESS projects and located prior to the point of change in ownership between the project and interconnecting transmission owner. Smith Aff. at ¶ 27.

¹⁹³ Transmittal Letter at 45.

the generator step-up transformer and does not involve any further adjustments to the voltage or other characteristics of the energy produced by the BESS prior to delivery to the transmission system, the IRS would likely deem the generator lead as “transmission/distribution equipment.”¹⁹⁴ Subsequently, the NYISO Board directed NYISO to revise the proposed 2025-2029 DCR to exclude the 2-hour BESS’s generator lead costs from the eligible basis of the investment tax credit benefit for purposes of the DCR.

i. Comments and Protests

81. Consumer Stakeholders state that the generator leads should be included in the eligible basis for the investment tax credit benefit because IRS regulations specifically provide that “[p]roperty that is an integral part of an energy property is treated as part of that energy property”¹⁹⁵ and that NYISO has failed to articulate why the generator leads are not an integral part of the energy property or how the BESS would function as a generator without the lead line interconnecting it to the system.¹⁹⁶

82. NYSERDA argues that generator leads satisfy both the “functionally interdependent” and “integral part” aspects of “energy property” as identified by investment tax credit guidance and final regulations issued by the IRS on December 12, 2024.¹⁹⁷ NYSERDA also contends that a BESS withdraws energy from the transmission system to recharge, delivering energy to a transformer and, thus, is eligible for the investment tax credit.¹⁹⁸ NYSERDA argues that generator leads are functionally distinguishable from transmission lines and that the differences are reflected in Commission Order No. 807 as well as the Services Tariff.¹⁹⁹ Additionally, NYSERDA argues that generator leads are part of interconnection facilities that have the sole purpose

¹⁹⁴ Smith Aff. at ¶ 27.

¹⁹⁵ 26 C.F.R. § 1.48-9(f)(3)(i) (2024).

¹⁹⁶ Consumer Stakeholder Comments at 27.

¹⁹⁷ NYSERDA Comments at 8 (citing Definition of Energy Property and Rules Applicable to the Energy Credit, 89 Fed. Reg. 100598 (Dec. 12, 2024)).

¹⁹⁸ *Id.* at 10.

¹⁹⁹ *Id.* at 13-15.

of connecting a generator to the transmission system and are not part of the transmission system.²⁰⁰

83. NYTOs state that they find current guidance on investment tax credit eligibility unclear and reserve all rights in the NYISO stakeholder process and under the FPA to seek alternate investment tax credit treatment of peaking unit generator leads in the future.²⁰¹

ii. Answers

84. IPPNY argues that NYISO's proposal correctly excludes generator lead cost from the peaking plant costs.²⁰² According to IPPNY, the Commission should reject NYSERDA's procedural objections because stakeholders had multiple opportunities to comment on this issue.²⁰³ IPPNY also contends that the argument that NYISO misapplied IRS guidance overlooks a consistent body of IRS authority holding that any line transporting electricity to or from the grid is classified as transmission rather than energy.²⁰⁴ For example, IPPNY states that, in December 2024, the IRS issued final regulations that continue to expressly exclude "transmission or distribution lines" from the categories of power conditioning and transfer equipment that qualify for the investment tax credit.²⁰⁵ Regarding the protesters' argument that because a storage facility must have a generator lead to operate in wholesale markets, the generator lead must be integral, IPPNY asserts that the IRS acknowledges that certain lines can be necessary for delivering electricity but states that necessity alone does not transform a generator lead line into energy property.²⁰⁶ IPPNY also argues that IRS guidance focuses on function and that the IRS has repeatedly stated that the key is whether the property

²⁰⁰ *Id.* at 14.

²⁰¹ NYTOs Comments at 25.

²⁰² IPPNY Answer at 3.

²⁰³ *Id.* at 4

²⁰⁴ *Id.* at 4-5.

²⁰⁵ *Id.* at 6 (citing 26 C.F.R. § 1.48-9(f)(3)(ii)).

²⁰⁶ *Id.*

modifies or conditions electricity before it enters the grid, which a generator lead does not.²⁰⁷

85. NYISO explains that it carefully assessed the likelihood that the generator lead would be considered as part of the eligible basis for the investment tax credit.²⁰⁸ NYISO states that it reviewed the information submitted by stakeholders and engaged tax counsel with extensive experience in investment tax credit related matters.²⁰⁹ NYISO contends that investment tax credit eligibility matters are fact-specific and could result in different opinions. NYISO states that the IRS will assess the purpose and function of interconnection and project-related equipment in determining eligibility.

86. NYISO states that the generator lead is located beyond the step-up transformer for a 2-hour BESS unit and does not involve any further adjustments to the characteristics of energy produced by the unit, stating that it serves to merely transport the final product produced by a 2-hour BESS unit to the transmission system.²¹⁰ NYISO states that, therefore, the 2-hour BESS unit generator lead is not likely to be classified as integral to the energy production function and, instead, is likely to be deemed as transmission or distribution equipment that is not eligible for the investment tax credit.²¹¹ NYISO contends that the recent IRS regulations expressly provide that power conditioning and transfer equipment, which are eligible for the investment tax credit, does not include transmission or distribution lines.²¹²

87. In response to IPPNY and NYISO's assertions that the 2-hour BESS generator lead line is not eligible to receive the investment tax credit, Consumer Stakeholders state that the use of the generator lead for a BESS' withdrawal function is crucial to how the BESS "generates" electricity.²¹³ Thus, Consumer Stakeholders posit that the generator lead is an integral part of the intended function of the energy property and should receive the investment tax credit. Consumer Stakeholders asserts that IPPNY relies on outdated IRS memoranda and notices to justify their finding that generator leads are not eligible

²⁰⁷ *Id.* at 7.

²⁰⁸ NYISO Answer at 23.

²⁰⁹ *Id.* at 24.

²¹⁰ *Id.* at 25.

²¹¹ *Id.*

²¹² *Id.* (citing 26 C.F.R. § 1.48-9(f)(3)).

²¹³ Consumer Stakeholders Answer at 11.

for the investment tax credit. Consumer Stakeholders also argue that the recent IRS regulation does not state that the generator lead for a BESS is not an integral part of the energy property, nor does the regulation adopt a definition of transmission equipment that uses the step-up transformer as the point of demarcation.²¹⁴

iii. Commission Determination

88. We find NYISO's interpretation of IRS regulations to exclude generator leads from eligibility for the investment tax credit to be reasonable for purposes of estimating peaking plant costs in its DCR. As noted by both NYISO and IPPNY, the IRS recently issued final rules to clarify the definition of energy property eligible for the investment tax credit.²¹⁵ The IRS rules provide that property that is an "integral" part of energy property eligible for the investment tax credit includes power conditioning equipment and transfer equipment used to perform the intended function of the energy property, and that power conditioning and transfer equipment does not include transmission or distribution equipment.²¹⁶ NYISO contends that because generator leads do not involve any further adjustments to the voltage or other characteristics of the energy produced prior to delivery to the transmission system, generator leads could be classified as transmission or distribution equipment but not energy property, and are thus not eligible for the investment tax credit. We thus find that NYISO has demonstrated that its proposed interpretation of the IRS' regulations is reasonable for purposes of estimating peaking plant costs in its DCR. However, we make no finding in this order on whether generator leads are eligible for the investment tax credit, as that is a fact-specific question for the IRS.

b. Cost of Equity and Cost of Debt

89. NYISO proposes to adopt a 14.5% cost of equity value for a 2-hour BESS unit for purposes of its cost estimates under its DCR analysis.²¹⁷ NYISO states that the cost of equity value was determined based on consideration of various data sources and information reflecting different potential financing structures for developing a new peaking plant, primarily relying on estimated cost of equity values from a wide range of publicly traded independent power producers.²¹⁸ NYISO also states that NYISO

²¹⁴ *Id.* at 12.

²¹⁵ Definition of Energy Property and Rules Applicable to the Energy Credit, 89 Fed. Reg. 100598 (Dec. 12, 2024).

²¹⁶ 26 C.F.R. § 1.48-9(f)(3)(ii).

²¹⁷ Transmittal Letter at 56.

Consultant acknowledged the potential need to account for stand-alone, project-specific risk factors, which tends to result in the need for a higher WACC for a single peaking plant than an independent power producer, and recommended cost of equity and cost of debt values at the higher end of the observed range of values.²¹⁹ NYISO states that selecting a more conservative cost of debt value at the high end of the observed range of values is consistent with the approach accepted by the Commission in previous DCR orders in such circumstances.²²⁰

90. NYISO further explains that the recommended cost of equity value is 50-basis points higher than the value recommended for the fossil-fired frame turbines evaluated for this DCR, reflecting the higher risk presented by investment in 2-hour BESS projects.²²¹

91. NYISO proposes to adopt a 7.2% cost of debt value for a 2-hour BESS unit for purposes of its cost estimates under its DCR analyses.²²² NYISO avers that this value is relatively consistent with the debt costs currently faced by generic B, BB, and BBB rated entities, as well as debt costs by the same publicly traded independent power producers used to inform the appropriate cost of equity values.²²³ NYISO explains that the cost of debt value is 50 basis points higher than the value recommended for the fossil-fired frame turbines evaluated for this DCR, reflecting the higher overall risk attendant to investing in a 2-hour BESS project.²²⁴

92. NYISO proposes for purposes of its cost estimates under its DCR analyses to adopt a debt-to-equity ratio of 55/45 for this DCR, which represents a continuation of the same debt-to-equity ratio the Commission has approved for the last two DCRs.²²⁵

²¹⁸ *Id.* at 57.

²¹⁹ *Id.* at 57, 58.

²²⁰ *Id.* at 58 (citing 2017-2021 DCR Order, 158 FERC ¶ 61,028 at P 180; 2021-2025 DCR Order, 175 FERC ¶ 61,012 at P 148 (finding that selecting a cost of debt value at the high end “is consistent with the greater risk posed by a single peaking plant, in comparison to an independent power producing company.”)).

²²¹ *Id.* at 57.

²²² *Id.* at 57-58.

²²³ *Id.*

²²⁴ *Id.* at 58.

NYISO explains that the debt-to-equity 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.²²⁶ NYISO avers that the proposed ratio is aligned with observed corporate level debt leverage by independent power producers, as well as the assumed capital structures approved by the Commission for use in similar capacity market valuations.

93. NYISO states that certain stakeholders allege 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. NYISO states that NYISO Consultant carefully considered the risk attendant to investing in a 2-hour BESS unit in New York, which accounts for both market and technology-specific risks.²²⁷ NYISO explains that the recommended WACC accounts for risks, such as uncertainties related to future market outcomes, future changes in energy and peak demand, and the potential impacts of future topology and resources changes.²²⁸ NYISO explains that NYISO Consultant also accounted for the risks presented by uncertainty in future CAF values for a 2-hour BESS unit.

i. Comments and Protests

94. Ravenswood contends that the cost of debt, debt-to-equity ratio, and WACC proposals are inadequate, as they reflect costs for a proxy group of large publicly traded companies, not entities most likely to develop a 2-hour BESS in New York.²²⁹ Specifically, Ravenswood and IPPNY assert that this proxy group does not adequately reflect the concerns of small new-build merchant investment.²³⁰ IPPNY asserts that, based on its consultants' confidential survey of a representative group of six investors investing in, lending to, or developing BESS projects in the U.S., "investors would require an ROE of 16%-19%, a pre-tax [cost of debt] of 8.6% , and a debt-to-capital ratio of 40%, which produces the NYISO real [after-tax] WACC . . . to finance a 2-hour BESS."²³¹ IPPNY states that the proxy group fails to represent the risk for the average

²²⁵ *Id.*

²²⁶ *Id.* at 59.

²²⁷ *Id.* at 22.

²²⁸ *Id.* at 54.

²²⁹ Ravenswood Protest at 26, 41.

²³⁰ Ravenswood Protest at 41; IPPNY Protest at 14.

2-hour BESS investor given the size, diversification, and operating history of the proxy group versus a single-asset merchant BESS project.²³²

95. MMU contends that NYISO presents no analysis or evidence as to why the proposed 50-basis point adder to the cost of equity and cost of debt is appropriate.²³³ MMU asserts that the adder is insufficient to protect against the magnitude of likely CAF reductions. IPPNY similarly asserts that NYISO could assume a much shorter amortization period (i.e., 17-18 years) and increase certain financial parameters, such as the cost of debt, to limit the potential that the decline in CAF values would not be as consequential.²³⁴ IPPNY also argues that the 2-hour BESS faces significant uncertainty for its net energy and ancillary services revenues, because the Net CONE assumes that the 2-hour BESS will primarily receive revenues from the reserves market, which is a thin market.²³⁵ IPPNY argues that, as with other risk factors, NYISO could assume a much shorter amortization period or higher financial parameters to limit the potential impact of reserve price uncertainty.

ii. Answer

96. NYISO states that its assessment accounts for both technology and market risks associated with investing in BESS projects in New York.²³⁶ NYISO explains that it considered general market risks, such as the uncertainty of future revenues and potential future changes to market rules and regulatory policies, as well as potential future changes in system topology, the resource mix, and load requirements. NYISO states that it also considered technology-specific risks, including the potential for future BESS technologies to benefit from technology advancements and uncertainty regarding future market dispatch and operating modes. NYISO states that the recommended WACC also accounts for the uncertainty of future CAFs.

97. NYISO argues that the protesters' alternative assessments include a variety of factors that result in an overstatement of the investment risks for a 2-hour BESS in New York.²³⁷ NYISO asserts that the alternative assessments lack credible analysis

²³¹ IPPNY Protest at 14 (citing Arsenault Aff. ¶ 27).

²³² *Id.*

²³³ MMU Protest at 14.

²³⁴ IPPNY Protest at 27.

²³⁵ *Id.* at 28.

²³⁶ NYISO Answer at 16.

because they rely on conclusory statements without supporting information of the observations and confidential communications relied on to support the alternative financial parameters.²³⁸ NYISO argues that the alternative assessments also exclude consideration of countervailing factors that may help to reduce or offset such risks.²³⁹ In response to claims that the debt-to-equity ratio is underestimated, NYISO Consultant states that Ravenswood and IPPNY assess financial parameters by solely accounting for downside project risks, which tends to overstate the risk profile of a project and the resulting costs to finance such a project.²⁴⁰

98. NYISO states that it has demonstrated that the proposed WACC for a 2-hour BESS unit was determined after careful consideration of both general risks related to investment in new capacity supply resources in New York, as well as specific market and technology risks associated with investment in a 2-hour BESS unit in New York.²⁴¹

iii. Commission Determination

99. Given the facts and circumstances before us, we find NYISO's proposed use of a 7.2% cost of debt and 14.5% cost of equity for the 2-hour BESS for purposes of cost estimates used to prepare and conduct its DCR analysis to be reasonable. NYISO's proposed cost of equity is based on NYISO's estimated costs of equity for public traded independent power producing companies with a wide range of assets and risk profiles. NYISO's proposed cost of debt is based on NYISO's analyses of the range of values for B-rated corporate debt and the proxy group of independent power producers. NYISO explains that the proposed cost of equity and cost of debt represent values toward the higher end of the respective identified ranges because corporate-level cost of equity and cost of debt values may not fully account for the risk of developing a new merchant generation project in New York.²⁴² In a prior DCR, the Commission held that a proposed

²³⁷ *Id.* at 17 (citing NYISO Answer, attach. I, Supplemental Affidavit of Paul J. Hibbard, Dr. Todd Schatzki, Joseph Cavicchi, Charles Wu, and Dr. Daniel Stuart (AG Supplemental Aff.) ¶¶ 3, 17-32).

²³⁸ *Id.* NYISO Consultant asserts that IPPNY recommends alternative cost of equity values based solely on discussions with certain developers and with no basis in empirical market data, in contrast to NYISO Consultant's use of estimates of cost of equity for independent power producers based on empirical market data with appropriate adjustments for specific risk factors. AG Supplemental Aff. ¶ 28.

²³⁹ NYISO Answer at 18.

²⁴⁰ AG Supplemental Aff. ¶ 32.

²⁴¹ NYISO Answer at 16.

cost of equity that exceeded the average cost of equity value for independent power producers was reasonable when it “appropriately accounts for investor risks in the New York market by considering the higher [returns on equity] for stand-alone project finance.”²⁴³ In that same prior DCR, the Commission has also held that a recommended cost of debt at the high end of observed values was appropriate when it was “consistent with the greater risk powered by a single peaking facility, in comparison to an independent power producing company.”²⁴⁴ We continue to find that this is a reasonable approach to determine the cost of equity and cost of debt estimate for a 2-hour BESS in NYISO, given the record here.²⁴⁵ Similarly, we find that the proposed debt-to-equity ratio of 55/45 for this DCR period analysis is just and reasonable. We find that the proposed debt-to-equity ratio maintains the same debt-to-equity ratio the Commission approved for the last two DCRs and is aligned with the proxy group analysis.²⁴⁶ Thus, we disagree with IPPNY’s and Ravenswood’s arguments that the proposed return on equity and debt-to-capital ratio are underestimated.

100. We find NYISO’s proposed 50-basis point risk adder to the cost of debt and cost of equity for a 2-hour BESS to be a reasonable approach to account for the higher investment risk for the 2-hour BESS unit compared to a combustion turbine. This higher investment risk is related, in part, to uncertainty related to future BESS costs and ICAP market prices, as well as CAF and potential energy and ancillary services revenue variability. As NYISO acknowledges, a 2-hour BESS may face specific market and technology risks, including uncertainties related to future market outcomes and future CAFs. The 50-basis point adder reasonably mitigates the uncertainties that may increase the investment risk for BESS.

101. It is the Commission’s role to determine, not the best method, but whether “these judgements and resultant outcomes fall within a zone of reasonableness.”²⁴⁷ We disagree with protesters who argue that explicit adjustments are required to account for potential

²⁴² Transmittal Letter at 57, 58.

²⁴³ 2017-2021 DCR Order, 158 FERC ¶ 61,028 at P 179.

²⁴⁴ *Id.* P 180.

²⁴⁵ We note as to the ratios, adders, and other inputs we find reasonable here, we find them reasonable for purposes of the cost estimates used to prepare and conduct NYISO’s DCR analysis and not for any other purposes.

²⁴⁶ 2021-2024 DCR Order, 175 FERC ¶ 61,012 at P 148; 2017-2021 DCR Order, 158 FERC ¶ 61,028 at P 180.

²⁴⁷ 2014-2017 DCR Order, 146 FERC ¶ 61,043 at P 118.

risks associated with the 2-hour BESS peaking unit. Claims that the proxy group is not reflective of the entities likely to develop a 2-hour BESS in New York are unsupported in this record. For example, we find that IPPNY's use of a confidential investor survey of six BESS developers is insufficient evidence to demonstrate that NYISO's proxy group is not just and reasonable. IPPNY does not demonstrate how its survey reflects a "representative sample" of BESS developers or provide any supporting market data to substantiate its proposed alternative financial parameter values. Additionally, claims that uncertainty regarding CAFs or energy and ancillary services revenues require higher costs of equity or debt, or a shorter amortization period, are similarly based on predictions as to the future changes of those revenues. As discussed above, we find that NYISO's 50-basis point adder to the cost of equity and cost of debt values acts to mitigate the uncertainties that may increase the investment risk for a 2-hour BESS for purposes of this DCR analysis.²⁴⁸

102. For these reasons, we conclude that NYISO has justified that its proposed cost of equity and cost of debt, with the 50-basis point risk adder, fall within a range of reasonable values.²⁴⁹

The Commission orders:

NYISO's proposed revisions to the Services Tariff are hereby accepted, effective January 29, 2025, as discussed in the body of this order.

By the Commission. Commissioner Chang is not participating.

(S E A L)

Debbie-Anne A. Reese,
Secretary.

²⁴⁸ Moreover, NYISO selected cost of equity and cost of debt values at the high end consistent with the greater risk posed by a single peaking plant, in comparison to an independent power producing company. *See, e.g.*, 2021-2025 DCR Order, 175 FERC ¶ 61,012 at P 148.

²⁴⁹ 2014-2017 DCR Order, 146 FERC ¶ 61,043 at P 118.