STATE OF NEW YORK
PUBLIC SERVICE COMMISSION

Proceeding on Motion of the Commission to Implement a Large-Scale Renewable and a Clean Energy Standard	Case 15-E-0302
In the Matter of Offshore Wind Energy	Case 18-E-0071

PETITION REGARDING ADJUSTMENT TO INDEX REC AND INDEX OREC FORMULAS FOR NEW CAPACITY ACCREDITATION RULES

Introduction

Through this Petition, the New York State Energy Research and Development Authority (NYSERDA) requests that the New York State Public Service Commission (Commission) authorize a revision to the manner in which existing and future Renewable Energy Certificate (REC) and Offshore Wind Renewable Energy Certificate (OREC) Purchase and Sale Agreements that utilize Index REC and Index OREC pricing mechanism (Index (O)REC Contracts) calculate the Reference Capacity Price (RCP). The requested revision accounts for changes to long-term capacity revenue expectations associated with revisions to the Market Administration and Control Area Services Tariff proposed by the New York Independent System Operator, Inc. (NYISO) and approved by the Federal Energy Regulatory Commission (FERC) to adopt a marginal capacity accreditation market design (the New NYISO Capacity Accreditation Rules). The proposal in this Petition, if approved, would consistently adjust the RCP formula in existing and future Index (O)REC Contracts (including those applicable to projects in operation as well as those in the development or construction phase) to represent a more flexible and resilient hedge in a manner that would be revenue neutral for the existing Index (O)REC Contracts.

Background

On July 12, 2018, the Commission issued the Offshore Wind Order, which established the Offshore Wind Standard.[1] In Appendix C of the Offshore Wind Order, the Commission defined the calculation of the Monthly OREC Price paid to the generator under an Index OREC contract to be in general concept as follows:

$$\begin{matrix} Index\ OREC \\ Strike\ Price \end{matrix} - \begin{matrix} Reference\ Energy\ Price \\ and \\ \$/MWH\ Equivalent \\ Reference\ Capacity\ Price \end{matrix} = \begin{matrix} Monthly \\ OREC \\ Price \end{matrix}$$

[1] See Case 18-E-0071, Offshore Wind Energy, Order Establishing Offshore Wind Standard and Framework for Phase 1 Procurement (issued July 12, 2018) (Offshore Wind Order).

The RCP component of the above calculation was further defined as a megawatt hour (MWh) equivalent price based on the zonal load-weighted average NYISO spot market UCAP (Unforced Capacity) prices of the included zones for the delivery month.

On January 16, 2020, the Commission issued the Index REC Order,[2] approving the use of an Index REC approach analogous to the Index OREC approach in Tier 1 Renewable Energy Standard procurements, and in its November 20, 2020 Voluntary Conversion Order, the Commission further approved the conversion of existing Tier 1 contracts with fixed REC prices to the Index REC structure.[3]

The RCP formula has been defined consistently in NYSERDA Tier 1 and offshore wind solicitations prior to 2021 as follows:

Formula 1. RCP Formula in Existing Index (O)REC Contracts

$$RCP = \frac{RUP \times UPF \times IC \times 1{,}000}{Total\ (O)RECs}$$

where:

RUP = Reference UCAP Price ($/kW-month)

UPF = UCAP Production Factor (decimal fraction)

IC = Installed Capacity of the generator (MW)

Total (O)RECs = Total amount of Tier-1 RECs or ORECs produced by the project in the subject month[4]

1,000 = kW to MW conversion factor

Proposers submitting Index REC or Index OREC offers into NYSERDA Tier 1 and offshore wind solicitations have been required to provide fixed Summer and Winter UPFs which are 1) used in NYSERDA's price evaluation of the proposals in each applicable solicitation, and 2) for Proposers who have been awarded contracts (Suppliers), included in the Index REC and Index OREC Agreements and used as an input to the RCP formula set forth above for monthly settlement over the contract tenor. Each Supplier whose contract was revised as part of NYSERDA's Voluntary Conversion (RESVCO2021) to incorporate the Index REC formula also provided UPFs that were used by NYSERDA to calculate the Index REC Strike Price offered to the Supplier. In all cases, Proposers were and are permitted to select any UPF value between 0 and 1. In accord with the Commission's Order Authorizing Offshore Wind Solicitation in 2020, the seasonal UPFs are fixed for the term of the contract.[5]

As noted above, the Proposer's selected UPFs are included in the RCP formula described above for purposes both of 1) price evaluation by NYSERDA and 2) settlement and payments over the term of the

[2] See Case 15-E-0302, Order Modifying Tier 1 Renewable Procurements (Index REC Order) (issued January 16, 2020).

[3] See Case 15-E-0302, Order Authorizing Voluntary Modification of Certain Tier 1 Agreements (Voluntary Conversion Order) (issued November 20, 2020).

[4] Some Agreements may vary in terminology. NYSERDA intends to standardize the language as part of this process.

[5] See Case No. 18-e-0071, Order Authorizing Offshore Wind Solicitation in 2020 (issued April 23, 2020).

Agreement. A lower UPF leads to a lower RCP and thus a higher (O)REC price and higher monthly payments, meaning that a proposal with lower UPFs would be evaluated less favorably in the price evaluation as it would make the project more expensive than if it had submitted higher UPFs. Conversely, a higher UPF leads to a higher RCP and thus a lower (O)REC price (and lower monthly payments) which will be more favorably assessed in price evaluation, but if during operation capacity revenue from the NYISO is not received in the quantity represented by the UPFs, this could put a Proposer at risk of a revenue shortfall. Price evaluation is purposely tied to settlement to ensure a fair evaluation of Proposals but, at the same time, the settlement mechanism is designed to be an imperfect hedge. Proposers are permitted to select and submit to NYSERDA UPFs that do not reflect the expected UCAP driving a resource's actual NYISO capacity revenues.

On May 10, 2022, FERC approved NYISO's January 2022 petition in Docket No. ER22-772 to adopt a marginal capacity accreditation market design, among other proposals.[6] This will change each resource's NYISO capacity payment methodology starting with the Capability Year that begins May 1, 2024.

Under the current NYISO market rules, applicable through April 30, 2024, the quantity of capacity eligible for capacity market revenue (known as Unforced Capacity or UCAP) for wind and solar resources is calculated based on an Available Installed Capacity (ICAP) value that is the lesser of the nameplate capacity and the Capacity Resource Interconnection Service (CRIS). Available ICAP is then multiplied by a Duration Adjustment Factor to calculate Adjusted ICAP. The Duration Adjustment Factor for Intermittent Power Resources is 100% because these resources cannot have a duration limitation.[7] For all resources, UCAP is calculated by multiplying Adjusted ICAP by a resource-specific derating factor. For Intermittent Power Resources, the resource-specific derating factor is based on the resource's actual output performance over a specified peak period as a percentage of nameplate capacity, to account for the historic availability or performance of the resource.

The New NYISO Capacity Accreditation Rules are designed to improve the validity and accuracy of capacity values from a resource adequacy perspective. Starting with the Capability Year that begins on May 1, 2024, each resource will be assigned to a Capacity Accreditation Resource Class (CARC) based on technology type and location. Each CARC will be assigned a Capacity Accreditation Factor (CAF) that determines the Adjusted ICAP for resources in that CARC. The CAF for a CARC will reflect the marginal reliability contribution of a Representative Unit and will be updated annually. A resource's Adjusted ICAP value will thus reflect the expected capacity contribution and be calculated by multiplying its Available ICAP by the applicable CAF. As is the case under the current market rules, Adjusted ICAP will then be converted to UCAP using a resource-specific derating factor. Under the new rules, resource-specific derating factors will capture only differences in availability that are specific to an individual resource and not captured in the CAF of the resource's CARC. Resource-specific derating factors will be calculated annually based on prior performance during the specified peak period.

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[6] Docket No. ER22-772-001 Order Accepting Tariff Revisions Subject To Condition

[7] An "Intermittent Power Resource" is defined in the NYISO Open Access Transmission Tariff as "[a] device for the production of electricity that is characterized by an energy source that: (1) is renewable; (2) cannot be stored by the producing device; and (3) has variability that is beyond the control of the facility owner or operator. In New York, resources that depend upon wind, or solar energy or landfill gas for their fuel have been classified as Intermittent Power Resources."

In response to the New NYISO Capacity Accreditation Rules, NYSERDA revised the RCP formula presented in ORECRFP22-1 and RESRFP22-1 to include a multiplier representing NYISO's revised resource-specific derating factor approach, as follows:

Formula 2. RCP Formula in ORECRFP22-1 and RESRFP22-1 Index (O)REC Contracts ($RCP_{UPF,22}$)

$$RCP = \frac{RUP \times UPF \times IC \times 1{,}000}{Total\ (O)RECs} \times \frac{CAF}{Average\ PLW\ Capacity\ Factor\ of\ Representative\ Unit}$$

where:

RUP = Reference UCAP Price ($/kW-month)

UPF = UCAP Production Factor (decimal fraction)

IC = Installed Capacity of the generator (MW)

Total (O)RECs = Total amount of Tier-1 RECs or ORECs produced by the project in the subject month[8]

1,000 = kW to MW conversion factor

CAF = Capacity Accreditation Factor for the resource's CARC

Average PLW Capacity Factor of Representative Unit = Capacity Factor during Capability Period Peak Load Window hours of the Representative Unit for the resource's CARC.

Proposers responding to these RFPs were required to submit seasonal UPFs between 0 and 1, consistent with existing Commission Orders.

NYSERDA issued two Requests for Information (RFI) to collect market feedback on the issues discussed herein. In the first RFI, issued on July 7, 2022 with responses due on August 4, 2022, NYSERDA described the changes to NYISO capacity market rules and the revised Reference Capacity Price formula proposed for use in ORECRFP22-2 and RESRFP22-1.[9] In the second RFI, issued on January 6, 2023 with responses due on February 17, 2023, NYSERDA described the proposed revised Reference Capacity Price formula for future RFPs, approach to revising existing contracts and contracts awarded through ORECRFP22-1 and RESRFP22-1 and default UPFs for stakeholder review.[10] NYSERDA has reviewed all responses to the RFIs and incorporated them into the proposals described below to the appropriate extent.

New RCP Formula for Future Solicitations

Proposal

The potential for the specified peak period used to calculate a resource's resource-specific derating factor to change over time results in a potential misalignment between a Supplier's fixed UPF values,

[8] Some Agreements may vary in terminology. NYSERDA intends to standardize the language as part of this process.

[9] LSRRFI22-1

[10] LSRRFI23-1

based on capacity revenue expectations at the time of bidding, and the capacity revenue a resource would reasonably be able to capture during a given settlement period. NYSERDA therefore proposes that the Commission adopt the following formula for use in future RFPs (not including ORECRFP22-1 and RESRFP22-1):

Formula 3. Proposed RCP Formula in Future Index (O)REC Contracts

$$RCP = \frac{RUP \times rUPF \times IC \times 1{,}000 \times CAF}{Total\ (O)RECs}$$

where:

RUP = Reference UCAP Price ($/kW-month) for the subject month

rUPF = Relative UCAP Production Factor (decimal fraction)

IC = Installed Capacity of the generator (MW)

Total (O)RECs = Total amount of Tier-1 RECs or ORECs produced by the project in the subject month

1,000 = kW to MW conversion factor

CAF = Capacity Accreditation Factor for the resource's CARC

Using this proposed formula, the definition of the Representative Unit and its expected performance do not need to be known at the time of bidding, because the RCP will align with the Representative Unit as it exists in the NYISO capacity market during the settlement period through use of the rUPF.

NYSERDA currently anticipates utilizing an rUPF value of 1 for all Index (O)REC Contracts, removing this as a value that Proposers would submit as part of a Proposal. However, NYSERDA also acknowledges the possibility that in the context of certain RFPs there may be circumstances that justify a more tailored rUPF value. For example, it is possible that allowing Proposers to specify their rUPF value in an offshore wind solicitation could benefit ratepayers in a manner that outweighs the additional complexity in evaluation and contract administration. Accordingly, NYSERDA requests authorization from the Commission to have the right, for each solicitation and in consultation with DPS, to either specify fixed rUPF values or allow Proposers to specify their rUPF values.

Additionally, as evidenced by the New NYISO Capacity Accreditation rules, the NYISO market and its rules may continue to evolve as the energy transition unfolds. While the proposed formula is designed to be resilient to changes in the peak load window, it is difficult to predict what other potential rule changes may unfold over the course of the long-term (O)REC contracts that NYSERDA holds with renewable energy developers. Accordingly, NYSERDA additionally requests Commission authorization to make other adjustments to the RCP formula, in consultation with DPS Staff, to align with potential future changes to NYISO market rules without the need to petition the Commission for approval if NYSERDA and DPS Staff agree that the change to the formula is reasonable.

Discussion

At the time that the Index structure was established, it was expected that Proposers would be able to reasonably predict the amount of UCAP they would be eligible for over the contract term and set UPFs

accordingly based on the desired exposure to the capacity market hedge. NYISO capacity market rules have since evolved and market conditions are expected to continue to evolve as the penetration of intermittent resources and duration-limited resources increases. For example, the Peak Load Window is expected to shift later in the day as solar penetration increases, moving it to a period of the day with less expected solar generation and therefore reducing the amount of UCAP expected to be available for solar resources. These considerations make predicting the amount of UCAP a resource will be able to achieve impractical for Proposers. Absent a change to the way UCAP is determined, this uncertainty means that Proposers may increase the risk premiums in their bid prices, which would also increase ratepayer costs.

Eliminating the need for Proposers to predict future UCAP amounts would reduce the risk associated with future variance between a resource's capacity revenue and Reference Capacity Price. The proposed revised Reference Capacity Price formula provides a more flexible and resilient hedge and is therefore expected to lower bid prices in future RFPs, although NYSERDA is not able to reasonably predict the associated reduction in ratepayer costs.

In response to the RFIs, some stakeholders suggested using the actual future UCAP values assigned to the individual resource as part of settlement. NYSERDA has not incorporated this suggestion. Using a reasonable but deliberately imperfect hedge will avoid influencing capacity market operation and undermining market incentives.

NYSERDA currently anticipates utilizing an rUPF value of 1 for all Index (O)REC Contracts in part because the implementation of the New NYISO Capacity Accreditation Rules is expected to significantly reduce the RCP for all resources, which is likely to mean that differentiation in the rUPF value would add settlement complexity without corresponding benefits to ratepayers. However, the requested flexibility described above will be important to allow NYSERDA to adapt to a dynamic market with continually evolving rules.

Uniform Approach to Revising Existing Contracts to use New RCP Formula

Proposal

NYSERDA's existing Index (O)REC Contracts include Change of Law provisions substantially similar to the following:[11]

> Changes in Law.
>
> (a) In the event that a change in Applicable Law after the Effective Date changes, or on the date such change takes effect ("Change in Law Date") will change, the price structure or methodology, settlement, zonal structure, or terminology used in either the NYISO Energy Market or NYISO Capacity Market such that the calculation of Reference Energy Price or Reference Capacity Price becomes impossible or no longer reasonably reflects the objective of providing a market-based index of energy and/or capacity prices in the Applicable Zone, in each case as they existed on the Effective Date, the Parties shall negotiate in good faith to

[11] Excerpt taken from Section 5.07 of Appendix I to ORECRFP22-1.

amend this Agreement, prospective from the Change in Law Date, to make such conforming changes as are necessary to achieve that objective.

(b) In the event that a change in Applicable Law after the Effective Date eliminates the NYISO Capacity Market entirely and without replacement, the Parties agree that the Reference Capacity Price shall be zero. In the event that a change in Applicable Law after the Effective Date replaces the NYISO Capacity Market with a new resource adequacy construct, the Parties agree to negotiate in good faith to amend this Agreement, prospective from the Change in Law Date, to make such conforming changes as are necessary to replace the current Reference Capacity Price formula with a formula that reasonably comprises an index of prices available to generators in the Applicable Zone under the new resource adequacy construct.

The Change of Law provisions are applicable to the implementation of the New NYISO Capacity Accreditation Rules because the inclusion of the CAF in the updated calculation of UCAP is expected to substantially reduce the capacity revenue of Intermittent Power Resources. As an example, the estimated summer capacity revenue, under the current NYISO rules, for a solar resource with an installed capacity of 20 MW and a Peak Load Window capacity factor of 50%, if the UCAP price is $5.00/kW-month, would be $50,000/month. Under the New NYISO Capacity Accreditation Rules, and assuming a CAF of 20% and a Representative Unit PLW capacity factor of 50%, the same resource would have estimated capacity revenue of $20,000/month, a 60% reduction. The CAF is expected to be reduced over time as penetration of intermittent resources increases, further reducing capacity revenue relative to expectations under the current NYISO rules. The purpose of the proposed adjustment to existing Index (O)REC Contracts is to align the RCP calculation with reasonable capacity market revenue expectations at the time the applicable project established its UPF. In the case of projects awarded through RFPs that included the Index (O)REC formula, this would be at the time of bidding, whereas in the case of projects that were converted from fixed to index through the voluntary conversion offer (VCO) process, this would be at the time the Supplier selected its UPF in the VCO process.

NYSERDA's portfolio currently includes 99 Index REC Contracts that have been executed or are in the process of being negotiated and four Index OREC Contracts that have been executed. Because of the number of existing Index (O)REC Contracts, and because all existing Index (O)REC Contracts contain a substantially similar Change of Law provision and were awarded on a competitive basis, NYSERDA intends to treat all Index (O)REC Contracts in a consistent manner. Responses received to the RFIs noted the importance of ensuring that the existing Index (O)REC Contracts receive comparable relief through this adjustment regardless of the UPFs selected by the Supplier at the time of VCO adjustment or bidding.

NYSERDA proposes to replace the RCP formula in the existing Index (O)REC Contracts (Formula 1) with the RCP formula proposed for future Index (O)REC Contracts (Formula 3), with an rUPF value of 1 applied for each Index (O)REC Contract.[12]

[12] An alternative to this approach could be to apply a different rUPF for each Index (O)REC Contract based on either the as-bid/VCO UPF or on new rUPFs provided by Suppliers. This alternative ultimately would not result in significantly different outcomes mathematically, and for the reasons described in Section 4, and to avoid an

If a project's UPFs, as submitted at the time of VCO or bidding, are consistent with expected resource performance, then the Index (O)REC Strike Price is representative of the project's total revenue expectation, and changing the RCP formula is expected to maintain the total revenue. Some RFI respondents stated, however, that it is not reasonable to interpret the as-bid/VCO UPFs as an indication of expected capacity market performance, because Proposers could not have anticipated at the time of selection that the as-bid/VCO UPFs would be used in this way and instead may have selected UPFs that simply represented how exposed to the capacity market hedge each project chose to be.

This indicates that setting the rUPF value to 1 for all Index (O)REC Contracts does not adequately address the impacts of the New NYISO Capacity Accreditation Rules. NYSERDA therefore proposes to adjust the Index (O)REC Strike Prices in the existing Index (O)REC Contracts using an approach that is designed to hold steady the total revenue reasonably expected to be achieved by each project in order to achieve the objectives described in the Change of Law provision.

The proposed Strike Price adjustment is designed to offset the change in expected total revenue associated with modifying the as-bid/VCO UPFs to the default UPF (as represented by the use of an rUPF value of 1 under the revised formula). This is effected by modifying the Strike Price by an amount that would maintain the Index (O)REC Contract's levelized net (O)REC cost (LNRC)[13] under the existing Index (O)REC formula prior to the New NYISO Capacity Accreditation Rules (Formula 1), had the UPF been a UPF representing reasonable performance expectations rather than the as-bid/VCO UPF.

This amount is calculated as half of the difference between the projected levelized RCP based on a "default UPF" for the applicable type of project, further discussed below, and the projected levelized RCP based on the as-bid/VCO UPF.[14] This in effect creates a 50% weighting of the selected UPF and the "default UPF" in the adjustment formula.

Formula 4. Strike Price Adjustment for Existing Index (O)REC Contracts

$$Strike\ Price_{Rev} = Strike\ Price_{Bid} + \left(0.5 \times \left(RCP_{Default} - \ RCP_{Bid}\right)\right)$$

where:

Strike Price$_{Rev}$ = Revised Strike Price after adjustment ($/MWh)

Strike Price$_{Bid}$ = Strike Price as submitted at the time of bid or as adjusted through VCO ($/MWh)

RCP$_{Bid}$ = Reference Capacity Price calculated using existing formula (Formula 1) and as-bid/VCO UPFs ($/MWh value levelized over full contract term)

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additional layer of complexity in an already complex set of modification calculations, NYSERDA proposes that all rUPFs be set at the same value of 1.

[13] The term "LNOC" is typically used in the OREC context, but to simplify terminology the term LNRC is used herein to mean either LNRC or LNOC.

[14] For a discussion of levelization, please see Section 4.4 of ORECRFP22-1 or Section 5.4 or RESRFP22-1. The same approach was applied in the evaluation (or in the case of the VCOs, offer) of existing Index (O)REC Contracts. Where RCP or CMRE values are stated as part of calculating the adjusted Strike Price, the levelized value will be used.

$RCP_{Default}$ = Reference Capacity Price calculated using existing formula (Formula 1) and default UPFs ($/MWh value levelized over full contract term)

The adjustment will reduce the Strike Prices of Suppliers whose as-bid/VCO UPFs are higher than the default UPFs and increase the Strike Prices of Suppliers whose as-bid/VCO UPFs are lower than the default UPFs. The Strike Prices for Index (O)REC Contracts with as-bid/VCO UPFs that are equal to the default UPFs would not change.

Both the RCP formula replacement and the Index (O)REC Strike Price adjustment would be effective on May 1, 2024, when the New NYISO Capacity Accreditation Rules go into effect. For projects that begin their Contract Delivery Terms prior to May 1, 2024, the current RCP formula and Index (O)REC Strike Price would remain in effect through April 30, 2024.

With respect to the default UPFs to be used in the adjustment formula for each technology, NYSERDA has calculated the average capacity factors during the current Peak Load Window hours for each season based on the P(50) 8760 profiles associated with all Tier 1 Bid Proposals submitted in response to RESRFP20-1, RESRFP21-1 and RESRFP22-1 and based on the 12x24 profiles associated with all offshore wind Proposals submitted in response to ORECRFP20-1 and ORECRFP22-1. Duplicate profiles, such as in the case of a project that submitted multiple options, were removed from the calculation to ensure that each profile was equally weighted, but if the same project has multiple profile variants associated with it, due to different configurations or submissions in different years, these proposal variants were retained as part of the calculation. Production factors were calculated for both the current 6-hour and 8-hour Peak Load Windows stated in Section 3.4(c) of Attachment J to NYISO Installed Capacity Manual. The applicable duration of the Peak Load Window is dependent on the level of penetration of resources with Energy Duration Limitations. Currently, there are less than 1,000 MW of resources with Energy Duration Limitations, the threshold for switching the Peak Load Window duration. NYSERDA expects penetration to increase beyond the threshold during the term of the Index (O)REC Contracts and therefore is proposing the use the average of the 6-hour and 8-hour values to adjust the Strike Prices. The exception to this approach is for hydroelectric resources, because of the limited number of submitted Bid Proposals to include in the calculation. For this technology, NYSERDA proposes to utilize the 5-year NERC class average Net Capacity Factor value for hydro resources under 30 MW from 2015-2019.[15]

Table 1. Proposed Default UPFs by Technology

Technology	Proposed Default UPF, Winter	Proposed Default UPF, Summer
Solar	2.1%	51.4%
Solar w/co-located storage	5.7%	56.7%
Onshore wind	41.6%	17.3%
Onshore wind w/co-located storage	44.7%	18.9%
Hydroelectric	33.6%	33.6%
Offshore wind	53.2%	34.1%

[15] Source: North American Electric Reliability Corporation, Generating Unit Statistical Brochure 4 2015-2019 – All Units Reporting, https://www.nerc.com/pa/RAPA/gads/Reports/Generating%20Unit%20Statistical%20Brochure%204%202015-2019%20-%20All%20Units%20Reporting.xlsx, Cell O102.

The resultant Strike Prices are also affected by the forecast of the Reference UCAP Price used to calculate the levelized RCP values used in the adjustment. NYSERDA proposes to utilize the respective capacity price forecasts used in evaluation for ORECRFP18-1, ORECRFP20-1, RESRFP20-1 and RESRFP21-1 projects and the capacity price forecast used to calculate Index REC Strike Prices for VCO projects. For each calculation, NYSERDA intends to use the common COD date used for evaluation for each RFP or, where applicable, the common date used for VCO conversion.

Appendices A-1 and A-2 contain the forms of contract amendment that would be applied to each Index (O)REC contract. NYSERDA believes that offering these form amendments to all Index (O)REC contract holders constitutes a fair offer in accordance with the change of law provision and does not intend to engage in further negotiations on the topic unless ordered to do so by the Commission or otherwise required by law.

The second RFI issued by NYSERDA stated the expectation that Tier 4 REC Purchase and Sale Agreements would not be affected by the New NYISO Capacity Accreditation Rules and as a result would not require an adjustment. NYSERDA has subsequently determined that an adjustment similar to that described above will be required for the Clean Path New York (CPNY) Index REC contract because the generators delivering RECs to CPNY for transmission to Zone J will also be affected by the New NYISO Capacity Accreditation Rules.

However, an adjustment to the CPNY Index REC formula will entail some further complexity in implementation beyond the formulas described in this Petition. First of all, the CPNY Index REC formula utilizes a concept of Unforced Capacity Deliverability Rights (UDRs) rather than a UPF. Secondly, CPNY's Index REC Strike Price includes both generation and transmission, and the transmission component is not expected to be affected by the New NYISO Capacity Accreditation Rules. Thirdly, as further described in Section 4.03(c) of the CPNY contract, the contract's RCP formula is conditioned on the establishment and implementation by NYISO of market rules governing internal controllable transmission lines that allow the generation resources delivered over such transmission lines to qualify to participate in the Zone J Capacity Market, and Section 4.03(c) includes further provisions that set forth how the contract may be modified depending on the nature of those rules. Such rules have not yet been finalized.

In light of the above complexities, NYSERDA believes that it would be premature to propose in this Petition an exact formulaic adjustment to the Index REC formula in the CPNY contract. Accordingly, NYSERDA requests authority to apply an adjustment to the CPNY Index REC contract substantially similar to the one described herein, tailored for purposes of that contract on a reasonable basis as determined in consultation with DPS Staff. NYSERDA proposes that this adjustment would be memorialized in an implementation plan to be filed by NYSERDA that would be subject to stakeholder comment and Commission approval.

Existing Fixed REC contracts do not have a corresponding Change of Law provision because they do not include the calculation of Reference Energy and Capacity Prices related to calculation of the Index REC formulas. NYSERDA therefore does not intend to adjust the existing Fixed REC contracts in response to the New NYISO Capacity Accreditation Rules.

Discussion

The proposed adjustment is designed to be reasonably revenue-neutral for each generating resource. Replacing capacity revenue with REC revenue will also be reasonably ratepayer-neutral for each resource, because the resources will be receiving less revenue through the ratepayer-funded capacity market. Illustrative example calculations are included in Appendix B.

The determination of default UPFs is based on the full array of submitted Proposals for the selected solicitations in order to determine a reasonable expectation for eligible UCAP under the current NYISO market rules because it captures the broadest possible market perspective on Peak Load Window performance by technology type. NYSERDA's review of UPFs relative to the corresponding P(50) 8760 profiles confirmed the characterization by some RFI respondents that the submitted UPFs were not consistently designed as a proxy for eligible UCAP. The proposed 50% weighting each on the default UPF and the submitted UPF for the purposes of calculating the Index (O)REC Strike Price adjustment therefore retains weighting of the Proposers' considerations in setting the submitted UPF values, which were included in the Strike Price calculation for VCO contracts and in selection for projects which were bid using the Index (O)REC structure. Each Proposer's specific intentions in setting their UPF values cannot be known. A 50% weighting balances these considerations. NYSERDA finds this appropriate because Proposers should not be expected to have anticipated the changes to the NYISO capacity market and ratepayers should not be subject to Proposer-specific bidding strategies that resulted in UPFs that deviated significantly from a reasonable expectation of eligible UCAP. This 50% weighting also allows for a consistent and even-handed approach to all projects, including those who selected low, medium and high UPFs.

As noted above, the changes in capacity and REC revenue are neutral for individual resources; the increase in total (O)REC payments associated with the proposed changes to the existing Index (O)REC Contracts is also offset by the reduction in the overall value of the NYISO capacity market. That is, the capacity payments to individual resources that are reduced under the New NYISO Capacity Accreditation Rules are not simply transferred to other resources but instead contribute to a reduction in total capacity payments to all resources. For example, NYISO's Consumer Impact Analysis, as presented at the December 8, 2022 ICAP Working Group meeting, found that capacity accreditation would result in $195 million to $390 million in capacity market procurement cost savings in 2030.[16] This roughly corresponds to NYSERDA's estimated increased 2030 (O)REC costs for the existing Index (O)REC Contracts of $175 million to $325 million, with allowance for impacts on future additional contracts. This estimate is based on an application of the proposed Strike Price adjustment to each of the existing Index (O)REC contracts, using the proposed default UPFs and the Proposal evaluation models for each of the RFPs or the VCO conversion model, as applicable and estimated forecasts of technology-specific CAFs. The range of estimates reflects high and low capacity price forecasts.

[16] NYISO, Capacity Accreditation: Consumer Impact Analysis, December 8, 2022, https://www.nyiso.com/documents/20142/34833356/3%2012-06-22%20ICAPWG%20Capacity%20Accreditation%20-%20Updated%20CIA%20v2%20clean.pdf/5d4a62b8-eac8-5238-65ea-75dd910bb9ba (slides 15 and 18).

Uniform Approach to Revising Contracts Awarded in 2022 Solicitations to use New RCP Formula

Proposal

The Change of Law provision in Index (O)REC Contracts awarded in the ORECRFP22-1 and RESRFP22-1 solicitations will not be triggered by the implementation of the New NYISO Capacity Accreditation Rules because those new rules are already known and have been taken into consideration in developing the RCP formula for those Index (O)REC Contracts.

However, given the issues discussed above and to optimize settlement administration, NYSERDA would prefer for all Index (O)REC Contracts, including those awarded under ORECRFP22-1 and RESRFP22-1, to use the same RCP formula. Therefore, NYSERDA proposes to offer awarded suppliers the opportunity to replace the RCP formula in the agreement (Formula 2) with Formula 3, using a rUPF value of 1, in conjunction with an adjustment to the Strike Price calculated using the following formula.

Formula 5. Strike Price Adjustment for Index (O)REC Contracts Resulting from 2022 Solicitations

$$Strike\ Price_{Rev} = Strike\ Price_{Bid} + \left(RCP_{Default,22} - \ RCP_{Bid,22}\right)$$

where:

$Strike\ Price_{Rev}$ = Revised Strike Price after adjustment ($/MWh)

$Strike\ Price_{Bid}$ = Strike Price as submitted at the time of bid ($/MWh)

$RCP_{Default,22}$ = Reference Capacity Price calculated using default UPFs and the formula in the agreements as awarded ($/MWh value levelized over full contract term)

$RCP_{Bid,22}$ = Reference Capacity Price based on as-bid UPFs and the formula in the agreements as awarded ($/MWh value levelized over full contract term)

In the case of the ORECRFP22-1 and RESRFP22-1 Index (O)REC Contracts, this would not represent the conclusion of a negotiation instituted pursuant to the Change of Law provision but would instead constitute an offer from NYSERDA that could be accepted or rejected, in a manner more akin to the VCO process. The same forms attached as Appendices A-1 and A-2 would be used.

With respect to setting the default UPFs for each technology for purposes of this adjustment, NYSERDA proposes to utilize the same values provided in Table 1. The capacity price forecasts used in the evaluation of ORECRFP22-1 and RESRFP22-1 will be used to calculate the Strike Price adjustments. For each calculation, NYSERDA intends to use the common COD date used for evaluation for each RFP.

This proposed approach will also apply to any other Index (O)REC solicitations issued prior to a Commission determination on the proposals herein. Proposers will be informed that any applicable Order will apply to their contracts.

Discussion

The proposed adjustment formula does not include the 0.5 multiplier that is included in the adjustment formula for the existing Index (O)REC Contracts because, unlike in the case of Suppliers with existing Index (O)REC Contracts, (1) Proposers in ORECRFP22-1 and RESRFP22-1 were informed before bidding, through issuance of LSRRFI23-1, how NYSERDA intended for awarded Index (O)REC Contracts to be

offered to be modified and were therefore able to select UPFs accordingly, and (2) in this case, the adjustment offer is meant only to optimize and improve the formula rather than to avoid a potential substantial decrease in revenue.

Conclusion

NYSERDA proposes that the Commission authorize a revision to the RCP formula in existing and future Index (O)REC Contracts in order to implement a more flexible and resilient hedge. The proposal in this Petition draws upon and would extend the logic of prior Commission Orders, including the Offshore Wind Order and the Index REC Order. The adjustment is in accord with the Change of Law provision in the existing Index (O)REC Contracts and is designed to preserve the financeability of the resources in light of unanticipated changes to the NYISO capacity market while not increasing aggregate ratepayer costs for capacity and (O)RECs.

Appendix A-1

Form of Amendment to Existing Tier 1 REC Purchase and Sale Agreements[NYSERDA Letterhead]

[Date], 2023

BY ELECTRONIC MAIL

[Seller Address]

SUBJECT: Modification No. [__] to Agreement No. [_____] – [Project Name]

Dear Seller:

Reference is made to Agreement No. [_____] by and between the New York State Energy Research and Development Authority ("NYSERDA") and [Name of Seller] ("Seller"), dated [Contract Date], [as amended by [Insert any Amendments]] (the "Agreement"). Effective as of the date that the New Capacity Accreditation Rules (as defined below) come into effect, which is currently scheduled to occur on May 1, 2024, the Agreement is hereby amended as follows:

1. Article 1 of the Agreement is hereby amended by inserting the following terms in alphabetical order:

   Capacity Accreditation Factor (CAF): The Capacity Accreditation Factor for the CARC to which the Bid Facility has been assigned as determined by NYISO in accordance with the New Capacity Accreditation Rules.

   Capacity Accreditation Resource Class (CARC): The Capacity Accreditation Resource Class applicable to the Bid Facility as determined by NYISO based on technology type and location under the New Capacity Accreditation Rules.

   New Capacity Accreditation Rules: NYISO's tariff revisions to its Services Tariff to adopt a marginal capacity accreditation market design, approved by the Federal Energy Regulatory Commission (Docket No. ER22-772) on May 10, 2022.

2. Article 1 of the Agreement is hereby amended by deleting the terms "Summer Capability Period" and "Winter Capability Period" in their entirety.

3. Section 4.01(a)(iii) of the Agreement is hereby deleted and replaced with the following:

   "(iii) The Reference Capacity Price for each month shall be calculated by NYSERDA using data published by NYISO for its monthly spot market unforced capacity ("UCAP") prices. NYSERDA shall:

   (A) identify the UCAP price (in dollars per kW-month) for such month in the Applicable Zone ("Reference UCAP Price");

(B) take the product of:[17]

(1) the Reference UCAP Price ($/kW-month);

(2) the Installed Capacity (MW);

(3) a conversion factor of 1,000 kW/MW; and

(4) the Bid Facility's Capacity Accreditation Factor, as determined by the NYISO.

(C) divide the total amount of dollars calculated in Section 4.01(a)(iii)(B) by the total amount of Tier-1 RECs[18] produced by the Bid Facility for the subject month (including any Tier-1 RECs produced in excess of the Annual REC Cap or otherwise not committed for sale to NYSERDA under this Agreement) to determine the Reference Capacity Price for the subject month.

(D) In any month in which NYISO subjects the Applicable Zone to buyer-side mitigation in a manner that has the effect of excluding one or more generators eligible under Tier-1 of the CES from participating at their full capacity in the NYISO Capacity Market for the Applicable Zone, the Reference Capacity Price shall be multiplied by a Mitigation Factor. The Mitigation Factor shall be calculated as the percentage of UCAP offered in the Applicable Zone and Applicable Class Year by Qualified Renewable Exemption Applicants, as defined in the NYISO Services Tariff Att. H, that has been determined to be exempt from the Offer Floor requirement imposed by the NYISO Services Tariff Att. H, Section 23.4.5."

4. Section 4.01(b) of the Agreement is hereby deleted and replace with the following:

"(b) The following formulae depict the calculation of the Monthly REC Price in accordance with Section 4.01(a).

$$\text{Monthly REC Price} = SP^{Index} - REP - RCP \times MF$$

where:

SP^{Index} = Index REC Strike Price ($/MWh)

REP = Reference Energy Price ($/MWh)

RCP = Reference Capacity Price ($/MWh)

MF = Mitigation Factor (%) (if applicable)

[17] Because NYSERDA proposes to apply a Relative UCAP Production Factor (rUPF) value of 1 to all existing contracts, no reference to rUPF is needed here.

[18] For Upgrades and Repowerings, the total amount of Tier-1 RECs produced by the Bid Facility, as used in this instance, is adjusted to reflect the Actual Production.

The calculation of each month's Reference Capacity Price will be based on a Reference UCAP Price. The Reference UCAP Price is converted to its $/MWh equivalent, the Reference Capacity Price, through the following equation.[19]

$$\text{RCP} = \frac{\text{RUP x IC x 1,000 x CAF}}{\text{Total RECs}}$$

where:

RUP = Reference UCAP Price ($/kW-month) for the subject month
IC = Installed Capacity of the Bid Facility (MW)
Total RECs = Total amount of Tier-1 RECs produced by the Bid Facility in the subject month.[20]
1,000 = kW to MW conversion factor
CAF = Capacity Accreditation Factor for the Bid Facility's CARC"

5. Schedule 1 to the Agreement is hereby deleted in its entirety and replaced with Revised Schedule 1 attached to this modification as Appendix A.[21]

No other provision of the Agreement is otherwise modified or changed. The Parties hereto do hereby indicate their acceptance of and agreement to the foregoing by causing their duly authorized representatives to execute this Modification No. [__] in the respective spaces provided below.

[Signature Page Follows]

[19] Because NYSERDA proposes to apply an rUPF value of 1 to all existing contracts, no reference to rUPF is needed here.

[20] For Upgrades and Repowerings, the total amount of Tier-1 RECs produced by the Bid Facility, as used in this instance, is adjusted to reflect the Actual Production.

[21] The replaced Schedule 1 would include the Index REC Strike Price as modified by the methodology described in the petition and would delete all references to UPFs.

Appendix A-2

Form of Amendment to Existing Offshore Wind Renewable Energy Certificate (OREC) Purchase and Sale Agreements

[NYSERDA Letterhead]

[Date], 2023

BY ELECTRONIC MAIL

[Seller Address]

SUBJECT: Modification No. [__] to Agreement No. [_____] – [Project Name]

Dear Seller:

Reference is made to Agreement No. [_____] by and between the New York State Energy Research and Development Authority ("NYSERDA") and [Name of Seller] ("Seller"), dated [Contract Date], [as amended by [Insert any Amendments]] (the "Agreement"). Effective as of the date that the New Capacity Accreditation Rules (as defined below) come into effect, which is currently scheduled to occur on May 1, 2024, the Agreement is hereby amended as follows:

1. Article 1 of the Agreement is hereby amended by inserting the following terms in alphabetical order:

   Capacity Accreditation Factor (CAF): The Capacity Accreditation Factor for the CARC to which the Selected Project has been assigned as determined by NYISO in accordance with the New Capacity Accreditation Rules.

   Capacity Accreditation Resource Class (CARC): The Capacity Accreditation Resource Class applicable to the Selected Project as determined by NYISO based on technology type and location under the New Capacity Accreditation Rules.

   New Capacity Accreditation Rules: NYISO's tariff revisions to its Services Tariff to adopt a marginal capacity accreditation market design, approved by the Federal Energy Regulatory Commission (Docket No. ER22-772) on May 10, 2022.

2. Section 4.03(a)(iii) of the Agreement is hereby deleted and replaced with the following:

   The Index OREC Strike Price, for each month in the respective Contract Years shall be [_____][22].

3. Section 4.03(a)(iii) of the Agreement is hereby deleted and replaced with the following:.

   "(iii) The Reference Capacity Price for each month shall be calculated by NYSERDA using data published by NYISO for its monthly spot market unforced capacity ("UCAP") prices. NYSERDA shall:

[22] The Index REC Strike Price as modified by the methodology described in the petition will be inserted here.

(A) identify the UCAP price (in dollars per kW-month) for such month in the Applicable Zone ("Reference UCAP Price");

(B) take the product of:[23]

(1) the Reference UCAP Price ($/kW-month);

(2) the Operational Installed Capacity (MW);

(3) a conversion factor of 1,000 kW/MW; and

(4) the Selected Project's Capacity Accreditation Factor, as determined by the NYISO.

(C) divide the total amount of dollars calculated in Section 4.03(a)(iii)(B) by the total amount of ORECs produced by the Selected Project for the subject month (including any ORECs produced in excess of the Annual REC Cap) to determine the Reference Capacity Price for the subject month.

(D) In any month in which NYISO subjects the Applicable Zone to buyer-side mitigation in a manner that has the effect of excluding one or more offshore wind generators from participating at their full capacity in the NYISO Capacity Market for the Applicable Zone, the Reference Capacity Price shall be multiplied by a Mitigation Factor. The Mitigation Factor shall be calculated as the percentage of UCAP offered in the Applicable Zone and Applicable Class Year by Qualified Renewable Exemption Applicants, as defined in the NYISO Services Tariff Att. H, that has been determined to be exempt from the Offer Floor requirement imposed by the NYISO Services Tariff Att. H, Section 23.4.5."

4. Section 4.03(b) of the Agreement is hereby deleted and replace with the following:

"(b) The following formulae depict the calculation of the Monthly OREC Price in accordance with Section 4.03(a).

$$\text{Monthly OREC Price} = OSP^{Index} - REP - RCP \times MF$$

where:

OSP^{Index} = Index OREC Strike Price ($/MWh)

REP = Reference Energy Price ($/MWh)

RCP = Reference Capacity Price ($/MWh)

MF = Mitigation Factor (%) (if applicable)

[23] Because NYSERDA proposes to apply a Relative UCAP Production Factor (rUPF) value of 1 to all existing contracts, no reference to rUPF is needed here.

The calculation of each month's Reference Capacity Price will be based on a Reference UCAP Price. The Reference UCAP Price is converted to its $/MWh equivalent, the Reference Capacity Price, through the following equation.[24]

$$\text{RCP} = \frac{\text{RUP x IC x 1,000} \times \text{CAF}}{\text{Total ORECs}}$$

where:

RUP = Reference UCAP Price ($/kW-month) for the subject month
IC = Operational Installed Capacity of the Selected Project (MW)
Total ORECs = Total amount of ORECs produced by the Selected Project in the subject month.
1,000 = kW to MW conversion factor
CAF = Capacity Accreditation Factor for the Selected Project's CARC"

No other provision of the Agreement is otherwise modified or changed. The Parties hereto do hereby indicate their acceptance of and agreement to the foregoing by causing their duly authorized representatives to execute this Modification No. [__] in the respective spaces provided below.

[Signature Page Follows]

[24] Because NYSERDA proposes to apply an rUPF value of 1 to all existing contracts, no reference to rUPF is needed here.

Appendix B

Illustrative Example Calculations

The following table shows the Reference Capacity Price and Monthly REC Price as calculated for a single summer month at different as-bid UPFs under the current NYISO rules and the New NYISO Capacity Accreditation Rules for a solar resource (no storage) with a 20 MW installed capacity and 3,720 RECs (representing an all-hours capacity factor of 25%), assuming a Reference Energy Price of $50/MWh, a UCAP price of $5.00/kW-month and, under the New NYISO Capacity Accreditation Rules, a CAF of 15%. The adjustments to the Index REC Strike Price are calculated using the proposed default UPF for solar (no storage) of 51.4%, an estimated production profile consistent with the nameplate capacity and the capacity price forecast used for RESRFP21-1 price evaluation, as an illustrative example.

Table 2. Example Reference Capacity and REC Price Calculations – Single Summer Month – Solar

	Current NYISO Rules			**New NYISO Capacity Accreditation Rules**		
As-Bid Summer UPF	**Index REC Strike Price ($/MWh)**	**Reference Capacity Price ($/MWh)**	**Monthly REC Price ($/MWh)**	**Index REC Strike Price ($/MWh)**	**Reference Capacity Price ($/MWh)**	**Monthly REC Price ($/MWh)**
0%	$100.00	$0.00	$50.00	$103.59	$4.03	$49.56
25%	$100.00	$6.72	$43.28	$101.84	$4.03	$47.81
50%	$100.00	$13.44	$36.56	$100.09	$4.03	$46.06
75%	$100.00	$20.16	$29.84	$98.35	$4.03	$44.32
100%	$100.00	$26.88	$23.12	$96.60	$4.03	$42.57

The following table shows the Reference Capacity Price and Monthly REC Price as calculated for a single summer month at different as-bid UPFs under the current NYISO rules and the New NYISO Capacity Accreditation Rules for an onshore wind resource (no storage) with a 100 MW installed capacity and 14,880 RECs (representing an all-hours capacity factor of 20%), assuming a Reference Energy Price of $50/MWh, a UCAP price of $5.00/kW-month and, under the New NYISO Capacity Accreditation Rules, a CAF of 15%. The adjustments to the Index REC Strike Price are calculated using the proposed default UPF for onshore wind (no storage) of 17.3%, an estimated production profile consistent with the nameplate capacity and the capacity price forecast used for RESRFP21-1 price evaluation, as an illustrative example.

Table 3. Example Reference Capacity and REC Price Calculations – Single Summer Month – Onshore Wind

	Current NYISO Rules			**New NYISO Capacity Accreditation Rules**		
As-Bid Summer UPF	**Index REC Strike Price ($/MWh)**	**Reference Capacity Price ($/MWh)**	**Monthly REC Price ($/MWh)**	**Index REC Strike Price ($/MWh)**	**Reference Capacity Price ($/MWh)**	**Monthly REC Price ($/MWh)**
0%	$100.00	$0.00	$50.00	$101.55	$5.04	$46.51
25%	$100.00	$8.40	$41.60	$99.45	$5.04	$44.41
50%	$100.00	$16.80	$33.20	$97.83	$5.04	$42.79
75%	$100.00	$25.20	$24.80	$96.07	$5.04	$41.03
100%	$100.00	$33.60	$16.40	$94.51	$5.04	$39.47

The following table shows the Reference Capacity Price and Monthly REC Price as calculated for a single summer month at different as-bid UPFs under the current NYISO rules and the New NYISO Capacity Accreditation Rules for an offshore wind resource connected in Zone J with a 1,000 MW installed capacity and 260,400 ORECs (representing an all-hours capacity factor of 35%), assuming a Reference Energy Price of $50/MWh, a UCAP price of $5.00/kW-month and, under the New NYISO Capacity Accreditation Rules, a CAF of 40%. The adjustments to the Index REC Strike Price are calculated using the proposed default UPF for offshore wind of 34.1%, an estimated production profile consistent with the nameplate capacity and the capacity price forecast used for ORECRFP22-1 price evaluation, as an illustrative example.

Table 4. Example Reference Capacity and REC Price Calculations – Single Summer Month – Offshore Wind

	Current NYISO Rules			**New NYISO Capacity Accreditation Rules**		
As-Bid Summer UPF	**Index REC Strike Price ($/MWh)**	**Reference Capacity Price ($/MWh)**	**Monthly REC Price ($/MWh)**	**Index REC Strike Price ($/MWh)**	**Reference Capacity Price ($/MWh)**	**Monthly REC Price ($/MWh)**
0%	$100.00	$0.00	$50.00	$110.57	$7.68	$52.89
25%	$100.00	$4.80	$45.20	$102.78	$7.68	$45.10
50%	$100.00	$9.60	$40.40	$95.63	$7.68	$37.95
75%	$100.00	$14.40	$35.60	$88.48	$7.68	$30.80
100%	$100.00	$19.20	$30.80	$81.97	$7.68	$24.29