



**NYSERDA**

**Large Scale Renewables Program  
Purchase of Offshore Wind and Tier 1  
Renewable Energy Certificates  
Request for Information LSRRFI22-1 (Capacity Accreditation)  
RFI Release Date: July 7, 2022**

**SUMMARY OF REVISIONS:**

The following changes have been made to Request for Information LSRRFI22-1:

- Comment period has been extended from July 28, 2022, to August 4, 2022 3:00pm ET
- New URL link has been provided to NYISO materials related to capacity accreditation

**Responses Due: Thursday, August 4, 2022 by 3:00 PM Eastern Prevailing Time**

NYSERDA is actively monitoring the ongoing actions following the revisions to the Market Administration and Control Area Services Tariff proposed by the New York Independent System Operator, Inc. (NYISO) recently approved by the Federal Energy Regulatory Commission (FERC) to adopt a marginal capacity accreditation market design (the New NYISO Capacity Accreditation Rules). Understanding the impacts that the New NYISO Capacity Accreditation Rules will have on Intermittent Power Resources' participation in the NYISO Capacity Markets,<sup>1</sup> NYSERDA in consultation with the Department of Public Service (DPS) intends to address existing and future Index REC and Index OREC contracts to account for any changes to long-term capacity revenue expectations. The purpose of this Request for Information (RFI) is to invite external stakeholder review and comment on NYSERDA's proposed Index formula modifications to reflect the New NYISO Capacity Accreditation Rules to provide feedback that will assist NYSERDA in finalizing its proposed approach. NYSERDA continues to monitor the implementation of the New NYISO Capacity Accreditation Rules and may also adjust the approach described herein based on how the New NYISO Capacity Accreditation Rules are implemented.

Through this RFI, NYSERDA is seeking information from interested stakeholders, including existing and prospective Index REC and Index OREC contract holders, large-scale renewable energy project developers and owners, other public or private stakeholders and members of the public. Stakeholders responding to this RFI are referred to throughout as "Respondents." Stakeholders holding existing Index contracts are referred to throughout as "Suppliers." Stakeholders intending to respond to future Tier 1 and Offshore Wind RFPs are referred to throughout as "Proposers." Index REC contracts based on Unforced Capacity Deliverability Rights (UDRs) that are part of the Tier 4 program will be handled separately as NYISO rules on controllable lines continue to evolve.

NYSERDA does not intend to publish responses; however, responses are subject to the New York State Freedom of Information Law (FOIL), Article 6 of Public Officers Law. FOIL provides for public access to information NYSERDA possesses, and as such, consideration should be given before confidential information is submitted to NYSERDA. Respondents should consider and review whether information is critical to disclose for the intended response, and whether general, non-confidential information may be adequate instead. The Public Officers Law includes exceptions to disclosure, including Section 87(2)(d) which provides for exceptions to disclosure for records or portions thereof that "are trade secrets or are submitted to an agency by a commercial enterprise or derived from information obtained from a commercial enterprise and which if disclosed would cause substantial injury to the competitive position of the subject enterprise." Additional information submitted to NYSERDA that Respondent wishes to have treated as proprietary, and/or confidential trade secret information, should be identified and labeled "Confidential" and/or "Proprietary" on each page at the time of disclosure. This information should include a written request to except it from disclosure, including a written statement of the reasons why the information should be excepted. See Public Officers Law, Section 89(5) and the

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<sup>1</sup> 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."

procedures set forth in 21 NYCRR Part 501 <http://www.nyserda.ny.gov/About/-/media/Files/About/Contact/NYSERDA-Regulations.ashx>.

Notwithstanding the above, NYSEDA cannot guarantee the confidentiality of any information submitted.

Responding to this RFI is optional, and failure to respond will not affect any Supplier's agreement or any Proposer's ability to respond to future RFPs. Respondents to this RFI are not required to answer all questions and should focus on questions relevant to their field of expertise.

Comments are due by Thursday, August 4, 2022 at 3 p.m. ET, and should be sent to [res@nyserda.ny.gov](mailto:res@nyserda.ny.gov) with the subject line "LSRRFI22-1 Comments" or submitted via the following Seamless Docs link:

[NYSEDA LSRRFI22-1 Response Seamless Doc Form](#)

NYSEDA reserves the right to reach out to respondents to seek clarifications. Any questions about this RFI or requests to discuss this RFI should be directed to the primary contacts or other designated contacts listed below in writing through the email address noted above.

Primary Contacts: Abbey DeRocker, Tom King, Greg Lampman, and Alex Stein.

Other Designated Contacts: Dave Crudele, Laila El-Ashmawy, Mac Farrell, Liz Hanna, Doreen Harris, Brian Newton, Bram Peterson, Georges Sassine, and Jeremy Wyble.

## **1. Content of Responses**

Responses should be concise and focus on areas in which the Respondent has a particular interest or expertise. Please limit your response to 5 pages.

The following information and items must be included in every response to this RFI:

- Respondent's name, affiliation, title, and primary contact information.
- Each page of the response should include a header stating the name of the Respondent.
- Each response should include the RFI question number and the page number.
- Respondents should designate information intended to remain confidential as "Confidential" or "Proprietary." Respondents are discouraged from marking their entire response as "Confidential" or "Proprietary."

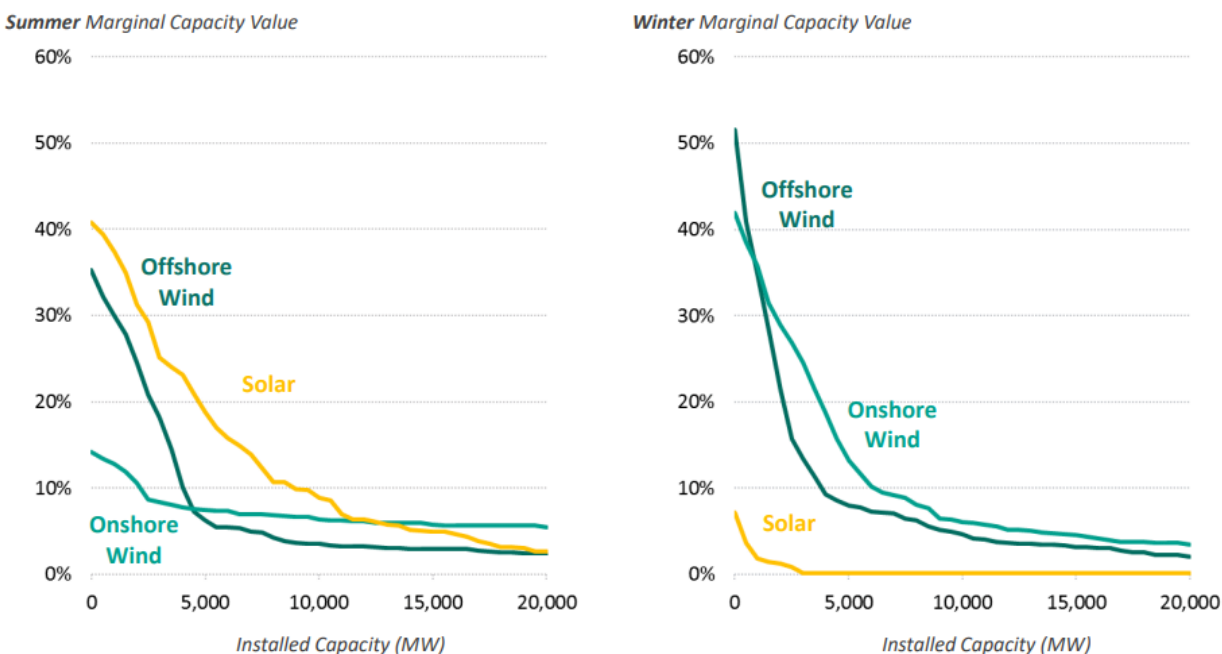
Stakeholders are encouraged to respond to the questions stated below, however, Respondents are free to provide any information deemed pertinent.

## **2. Background on New NYISO Capacity Accreditation Rules**

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. This will change how resources are paid for capacity by NYISO starting with the Capability Year that begins May 1, 2024. Respondents are encouraged to review NYISO materials related to capacity accreditation, which can be found at the ICAP Working Group link here: <https://www.nyiso.com/icapwg> A link with consolidated sources is available here: <https://www.nyiso.com/accreditation>.

To provide a preliminary context for the potential long-term trend in the marginal capacity value of Intermittent Power Resources as market penetration of each technology increases, NYSERDA refers Respondents to page 111 of The Brattle Group’s study for NYISO on “[New York’s Evolution to a Zero Emission Power System](#),” reproduced below.

### Marginal Capacity Value of Solar and Wind



#### a. Current Rules (Applicable until May 1, 2024)

The current rules governing the quantity of capacity eligible for capacity market revenue are described in NYISO’s [Installed Capacity Manual](#) and Attachment J in NYISO’s [Installed Capacity Manual Attachments](#). Additional background on capacity quantity calculation, including resource-specific derating factors, is provided in a [March 16, 2022 presentation to NYISO’s ICAP Working Group](#). **The following summary is provided for Respondents’ convenience only; Respondents should refer to the NYISO documentation for full details.**

Under current NYISO market rules, 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):

$$\text{Available ICAP} = \text{Minimum}(\text{CRIS}, \text{Nameplate Capacity})$$

Available ICAP is multiplied by a Duration Adjustment Factor to calculate Adjusted ICAP:<sup>2</sup>

<sup>2</sup> The Duration Adjustment Factor for Intermittent Power Resources is 100% because these resources cannot have a duration limitation.

$$\text{Adjusted ICAP} = \text{ICAP} \times \text{Duration Adjustment Factor}$$

For all NYISO resources, UCAP is calculated by multiplying Adjusted ICAP by a resource-specific derating factor:

$$\text{UCAP} = \text{Adjusted ICAP} \times (1 - \text{Resource Specific Derating Factor})$$

For Intermittent Power Resources, the resource-specific derating factor is:

$$\text{Resource Specific Derating Factor} = 1 - \text{Applicable Production Factor}$$

The Applicable Production Factor is calculated by dividing the resource's actual output performance over a specified peak period by the nameplate capacity, to account for the historic availability or performance of the resource.

Specifically, the Applicable Production Factor is calculated as the sum of the hourly weighted production during the specified Peak Load Windows (PLW) for the months of June, July and August (for Summer) or December, January and February (for Winter) during the previous like-Capability Period divided by the product of the nameplate capacity and the number of PLW hours. Functionally, resources are paid for capacity based on their performance during these peak hours during the previous summer or winter. The duration of the PLW on a given day can be six hours or eight hours and is dependent on penetration of generation from resources with Energy Duration Limitations. Under the current NYISO market rules, the weighting percentages for the PLW hours are reevaluated through a study done every four years and will be updated accordingly.

The full UCAP formula for Intermittent Power Resources is thus:

$$\text{UCAP} = \text{Minimum (CRIS, Nameplate Capacity)} \times \text{Duration Adjustment Factor} \\ \times (1 - (1 - \text{Applicable Production Factor}))$$

which simplifies to:

$$\text{UCAP} = \text{Minimum (CRIS, Nameplate Capacity)} \times \text{Duration Adjustment Factor} \\ \times \text{Applicable Production Factor}$$

#### **b. New Rules (Effective Starting May 1, 2024)**

The New NYISO Capacity Accreditation Rules are described in [NYISO's petition to FERC](#). Information on the proposed approach to resource-specific derating factors is available in the [April 19, 2022](#) and [May 24, 2022](#) presentations to the NYISO ICAP Working Group. **The following summary is provided for Respondents' convenience only; Respondents should refer to the NYISO documentation for full details.**

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.<sup>3</sup> 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:

$$\text{Adjusted ICAP} = \text{ICAP} \times \text{CAF}$$

As is the case under the current market rules, Adjusted ICAP will then be converted to UCAP using a resource-specific derating factor:

$$\text{UCAP} = \text{Adjusted ICAP} \times (1 - \text{Resource Specific Derating Factor})$$

On April 19, 2022, NYISO presented proposed adjustments to resource-specific derating factors to the ICAP Working Group. 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. For Intermittent Power Resources, the resource-specific derating factors would need to be adjusted to avoid double-counting of unavailability. The NYISO's proposed solution is to replace the current resource-specific derating factor (one minus the Applicable Production Factor) with one minus an Average PLW Capacity Factor Ratio, calculated as follows:

$$\text{Average PLW Capacity Factor Ratio} = \frac{\text{Average PLW Capacity Factor of Resource}}{\text{Average PLW Capacity Factor of Representative Unit}}$$

Resource-specific derating factors would be calculated annually based on prior performance. The measurement window for calculating an individual resource's average capacity factor would be all PLW hours over the two previous like-Capability Periods. The measurement window for calculating the average capacity factor of the representative unit of the resource's CARC would be all PLW hours over the same like-Capability Periods of the representative unit's production profile used for CAF modeling.<sup>4</sup> The NYISO's presentation does not specify whether or how the average capacity factors will be hourly-weighted. On June 28, 2022, NYISO presented a [proposal for its annual PLW review](#) process.

The revised UCAP formula under the New NYISO Capacity Accreditation Rules will therefore be:

$$\text{UCAP} = \text{Minimum}(\text{CRIS}, \text{Nameplate Capacity}) \times \text{Capacity Accreditation Factor} \\ \times \left( 1 - \left( 1 - \frac{\text{Average PLW Capacity Factor of Resource}}{\text{Average PLW Capacity Factor of Representative Unit}} \right) \right)$$

which simplifies to:

$$\text{UCAP} = \text{Minimum}(\text{CRIS}, \text{Nameplate Capacity}) \times \text{CAF} \\ \times \frac{\text{Average PLW Capacity Factor of Resource}}{\text{Average PLW Capacity Factor of Representative Unit}}$$

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<sup>3</sup> NYISO has retained GE Energy Consulting to support the selection of the technique used to determine the capacity credit or capacity value for different resource types, using GE MARS.

<sup>4</sup> Information from NYISO indicates that the resource-specific derating factors will be established seasonally, consistent with current practice. It has not yet been determined whether CAF values will be established seasonally or annually, but this would not change NYSERDA's proposed adjustment mechanism.

### 3. NYSERDA's Proposed Revised Reference Capacity Price Formula

In Appendix C of its July 12, 2018, Order Establishing Offshore Wind Standard and Framework for Phase 1 Procurement that defined the Index OREC construct, the New York State Public Service Commission (PSC) defined the calculation of the Monthly OREC Price paid to the generator under an Index OREC contract to be in general concept as follows:

$$\text{Index OREC Strike Price} - \frac{\text{Reference Energy Price and } \$/\text{MWH Equivalent Reference Capacity Price}}{\text{Reference Capacity Price}} = \text{Monthly OREC Price}$$

The Reference Capacity Price 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.

In its January 16, 2020, [Order Modifying Tier 1 Renewable Procurements](#), the PSC approved the use of an Index REC approach analogous to the Index OREC approach described above in Tier 1 Renewable Energy Standard procurements, and in its November 20, 2020, Order Authorizing Voluntary Modification of Certain Tier 1 Agreements, the PSC further approved the conversion of existing Tier 1 contracts with fixed REC prices to the Index REC structure.

The Reference Capacity Price formula has been defined consistently in NYSERDA Tier 1 and offshore wind solicitations as follows:

$$RCP = \frac{RUP \times UPF \times IC \times 1,000}{MDE}$$

where:

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

*UPF* = UCAP Production Factor (decimal fraction)

*IC* = Installed Capacity (ICAP) of the generator (MW)<sup>5</sup>

*MDE* = Metered delivered energy

1,000 = kW to MW conversion factor

Proposers submitting Index REC or Index OREC offers into NYSERDA Tier 1 and offshore wind solicitations are required to provide fixed Summer and Winter UCAP Production Factors which are 1) used in NYSERDA's price evaluation of the proposals in each applicable solicitation, and 2) for Suppliers, included in the Index REC and Index OREC Agreements and used as an input to the Reference Capacity Price 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 UCAP Production Factors that were used by NYSERDA to calculate the Index

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<sup>5</sup> Offer Capacity for evaluation purposes, Operational Installed Capacity or CRIS for settlement purposes.

REC Strike Price offered to the Supplier. In all cases, Proposers were and are permitted to select any UCAP Production Factor value between 0 and 1. In accord with the PSC’s [Order Authorizing Offshore Wind Solicitation in 2020](#), the seasonal UCAP Production Factors are fixed for the term of the contract.

The UCAP Production Factors selected by Proposers (or Suppliers, in the case of the voluntary Index REC modifications) represent a proxy for the Applicable Production Factor, or capacity factor during Capability Period PLW hours, under the current market rules. The resource’s capacity factor during Capability Period PLW hours is also part of the new UCAP calculation for Intermittent Power Resources, appearing as the numerator of the proposed resource-specific derating factor.

NYSERDA is therefore considering revising the Reference Capacity Price formula to include a multiplier representing the new terms in NYISO’s UCAP formula, as follows:

$$RCP = \frac{RUP \times UPF \times IC \times 1,000}{MDE} \times \frac{CAF}{Average\ PLW\ Capacity\ Factor\ of\ Representative\ Unit}$$

where:

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

*UPF* = UCAP Production Factor (decimal fraction)

*IC* = Installed Capacity (ICAP) of the generator (MW)

*MDE* = Metered delivered energy

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.

The Proposer’s selected UCAP Production Factors will be included in the Reference Capacity Price formula described above for purposes both of 1) price evaluation by NYSERDA and 2) settlement and payments over the term of the Agreement. A lower UCAP Production Factor leads to a lower Reference Capacity Price and thus a higher REC or OREC price and higher monthly payments would be evaluated less favorably in the price evaluation as it would make the project more expensive than if it had submitted higher UCAP Production Factors. Conversely, a higher UCAP Production Factor leads to a higher Reference Capacity Price and thus a lower REC or OREC price (and lower monthly payments) which will be evaluated more favorably in price evaluation, but if during operation capacity revenue is not received in the quantity represented by the UCAP Production Factors, this could put a Proposer at risk of a revenue shortfall. NYSERDA purposely ties price evaluation to settlement to ensure a fair evaluation of Proposals but, at the same time, designed the settlement mechanism to be an imperfect hedge. It is important to note that Proposers will be permitted to submit UCAP Production Factors that do not necessarily perfectly reflect the resource’s actual NYISO capacity revenues.

The following table, reproduced from RESRFP21-1, illustrates how the choice of UCAP Production Factors affects the Proposer’s monthly payment for a solar resource under the current NYISO rules,



based on an Index REC Strike Price of \$60.00/MWh, a Reference Energy Price of \$15.00/MWh, a Reference UCAP Price of \$5.00/kW-month, an installed capacity of 20 MW, and monthly REC production of 7,200 MWh (equivalent to production in a 30-day month at a 50% capacity factor).<sup>6</sup>

UCAP Production Factor	Reference Capacity Price (\$/MWh)	Monthly REC Price (\$/MWh)	Monthly Payment for RECs (\$000)
0%	\$0.00	\$45.00	\$324
25%	\$3.47	\$41.53	\$299
50%	\$6.94	\$38.06	\$274
75%	\$10.42	\$34.58	\$249
100%	\$13.89	\$31.11	\$224

Adjusting this table to the proposed new Reference Capacity Price formula, assuming the same inputs as the above table and additionally assuming a CAF of 20% and a Representative Unit PLW capacity factor of 46%,<sup>7</sup> results in the following table:

UCAP Production Factor	Reference Capacity Price (\$/MWh)	Monthly REC Price (\$/MWh)	Monthly Payment for RECs (\$000)
0%	\$0.00	\$45.00	\$324
25%	\$1.51	\$43.49	\$313
50%	\$3.02	\$41.98	\$302
75%	\$4.53	\$40.47	\$291
100%	\$6.04	\$38.96	\$281

#### a. Price Evaluation

Price evaluation and scoring for Tier 1 is described in Sections 5.3 and 5.4 on pages 39-41 of [RESRFP21-1](#). Price evaluation and scoring for offshore wind is described in Sections 4.3 and 4.4 on pages 33-36 of [ORECRFP20-1](#). The discount rates and inflation rates used in evaluation are the most recent values established by the New York State Department of Public Service Office of Accounting, Audits and Finance at the time of RFP issuance, which are published in each RFP.

For purposes of evaluation, NYSERDA will utilize forecasts of CAFs and Representative Unit PLW capacity factors, in addition to the forecasts of Reference UCAP Prices that have been utilized in prior evaluations. On [April 28, 2022](#), NYISO presented preliminary and estimated CAF values for the current system, [as indicated by the reported effective load-carrying capability \(ELCC\) and marginal reliability improvement \(MRI\) capacity percentages](#), and will continue to refine the methodology and analysis results in the coming months. NYISO presented updated modeling results on [June 28, 2022](#). In parallel, NYSERDA will use the information published by NYISO as the basis for developing forecasts to be used for evaluation purposes. While this process is not likely to be completed prior to the issuance of the

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<sup>6</sup> This 50% capacity factor is representative of average resource performance during all hours of the settlement month.

<sup>7</sup> This 46% capacity factor is representative of average Representative Unit performance during the PLW hours of the previous year's Summer Capability Period and is consistent with the current Summer UCAP Percentage for tracking solar resources in the NYISO ICAP Manual.

2022 offshore wind and Tier 1 RFPs, updated values are expected to be available prior to Proposal submission deadlines.

#### **b. Settlement Mechanism**

NYSERDA will continue to calculate the Reference Energy Price (the calculation of which is not affected by the changes described herein) and Reference Capacity Price (modified as described above once the New NYISO Capacity Accreditation Rules take effect) for each month.

Values reported or otherwise provided by the NYISO for the CAFs and Representative Unit PLW capacity factors for the relevant Capacity Accreditation Resource Classes will be used in the monthly settlement calculations.

#### **4. Next Steps**

In future RFPs, NYSERDA intends to implement the adjusted Reference Capacity Price formula described in this RFI for both price evaluation of Index REC and Index OREC Proposals and monthly REC settlement. NYSERDA will continue to review new information made available by NYISO, including additional CAF results, proposed CAF sensitivity scenarios and the proposed methodology for annually establishing the PLW that was presented to the ICAP Working Group on [June 28, 2022](#). Additional sensitivity scenario requests, an updated resource specific derating factor proposal for performance-based resources, and an updated project schedule are expected to be presented to the ICAP Working Group in July, with sensitivity scenario results to be made available in the coming months. NYSERDA encourages prospective Proposers to review the NYISO materials to support their selection of UCAP Production Factors.

NYSERDA also may submit a petition to the PSC regarding revisions to existing Index REC and Index OREC Agreements in response to the New NYISO Capacity Accreditation Rules. Prior to the implementation of the New NYISO Capacity Accreditation Rules in May 2024, NYSERDA intends to work with Suppliers to apply a standardized adjustment to the Agreements that implements the change to the Reference Capacity Price formula described in this RFI.

#### **5. Questions to Stakeholders**

1. Is there additional context that NYSERDA can provide to support Proposer selection of UCAP Production Factors?
2. Are there other factors NYSERDA should consider for inclusion in the proposed revised Reference Capacity Price formula?
3. Is there a more efficient or effective mechanism that NYSERDA should consider to address the New NYISO Capacity Accreditation Rules?
4. What factors should NYSERDA consider in developing the forecast of location-specific and technology-specific Capacity Accreditation Factors for use in evaluation?
5. What factors should NYSERDA consider in developing the forecast of technology-specific Representative Unit Peak Load Window (PLW) hours capacity factors for use in evaluation?
6. How does the preliminary nature of the proposed resource-specific derating factor formulation for Intermittent Power Resources affect Proposer selection of UCAP Production Factors?
7. In both the Tier 1 and offshore wind RFPs, Proposers may submit Proposals that include eligible Energy Storage, which can be co-located with the resource, or located separately from the resource.

How should NYSERDA evaluate Proposals that include Energy Storage, from a capacity accreditation perspective?

8. How should NYSERDA evaluate Proposals from resources using different technologies than those studied to-date by NYISO? Other eligible Tier 1 technologies include solar thermal, geothermal electric, geothermal ground source heat, tidal energy, wave energy, ocean thermal and fuel cells which do not utilize a fossil fuel resource in the process of generating electricity. If a Respondent is considering submitting a Proposal in 2022 using one of these technologies, please indicate this in your response for NYSERDA's planning purposes.
9. For existing Agreements, are there other changes NYSERDA should consider in addition to replacing the Reference Capacity Price formula? If so, what sections of the Agreement should NYSERDA consider modifying and why?
10. What is the timing, prior to Proposal submission deadlines, by which Proposers would ideally receive additional information regarding the forecasting methodology and granularity of Reference Capacity Price inputs to be used in Proposal evaluation?
11. Noting that New York's ratepayers will bear the cost of the resources constructed and built through NYSERDA's solicitations, what more can NYSERDA do to ensure that Proposers submit UCAP Production Factors that are reasonably representative of expected resource performance in response to upcoming OREC and Tier 1 RFPs?
12. Please provide any additional feedback that you believe will be helpful to NYSERDA in developing a response to the New NYISO Capacity Accreditation Rules.