

STATE OF NEW YORK
PUBLIC SERVICE COMMISSION

CASE 15-E-0302 - Proceeding on Motion of the Commission to
Implement a Large-Scale Renewable Program and a
Clean Energy Standard.

ORDER MODIFYING TIER 1 RENEWABLE PROCUREMENTS

Issued and Effective: January 16, 2020

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STATE OF NEW YORK
PUBLIC SERVICE COMMISSION

At a session of the Public Service
Commission held in the City of
Albany on January 16, 2020

COMMISSIONERS PRESENT:

John B. Rhodes, Chair
Diane X. Burman, dissenting
James S. Alesi
Tracey A. Edwards
John B. Howard

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BY THE COMMISSION:

INTRODUCTION

On August 1, 2016, the Public Service Commission (Commission) established the Clean Energy Standard (CES), which sets forth a goal that 50% of New York's electricity is to be generated by renewable energy resources by the year 2030 (referred to as the 50 by 30 goal).¹ To achieve this goal, the CES Framework Order established, in part, a Renewable Energy Standard (RES) Tier 1 component that requires load serving entities (LSEs) to serve their retail customers by procuring new

¹ Case 15-E-0302, et al., Order Adopting A Clean Energy Standard (issued August 1, 2016) (CES Framework Order). The recently enacted Climate Leadership and Community Protection Act, which will be subject to future Commission action, requires that at least 70% of New York's electricity come from renewable energy sources by 2030. See, Chapter 106 of the Laws of 2019.

renewable resources, evidenced by the procurement of qualifying Renewable Energy Credits (RECs). The Commission authorized the New York State Energy Research and Development Authority (NYSERDA) to act as the central procurement administrator, and to award long-term contracts to eligible generators through annual competitive solicitations for the purchase of Tier 1 RECs.

The CES Framework Order further directed NYSERDA to undertake Tier 1 procurements by employing Fixed-Price REC contracts, whereby winning bidders would receive a fixed as-bid REC price throughout the contract lifetime for the environmental attributes associated with every megawatt hour (MWh) produced by the facility. The winning bidders may either sell their output into the wholesale markets administered by the New York Independent System Operator, Inc. (NYISO) or through bilateral arrangements.

In 2018, the Commission adopted a variant of the Fixed-Price REC approach for offshore wind REC solicitations (referred to as ORECs), due to the higher capital costs and risks associated with installing wind turbines offshore.² The Offshore Wind Order directed NYSERDA to require bidders to offer both a Fixed-Price OREC and an Index OREC bid. Unlike a Fixed-Price OREC, an Index OREC is based on the developer's estimated revenue requirement for the project (i.e., strike price) and varies over the life of the contract based on the net difference between the strike price and a reference price expressed in a market index.³ The netting process is intended to benefit both

² 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).

³ The market index can be determined using an appropriate proxy for the energy and capacity revenues expected to be earned in the wholesale markets, which is described in detail below.

the developers by increasing the likelihood that a developer will satisfy its revenue requirement for a project, as well as the ratepayers by reducing the per-REC costs.

On March 12, 2019, the American Wind Energy Association (AWEA) and the Alliance for Clean Energy New York (ACE NY) (collectively, Petitioners) filed a petition requesting that the Commission direct NYSERDA to implement an Index REC procurement mechanism similar to the OREC model for future Tier 1 RES solicitations. The Petitioners assert that an Index REC would serve as a hedge against market volatility, lower the financing costs for renewable generators, and provide lower costs and less volatile prices for ratepayers. Petitioners also claim that an Index REC approach would avoid a potential "double payment" to renewable generation projects, in the event that carbon pricing is adopted in the NYISO wholesale energy market.

In this Order, the Commission adopts the Petitioners request and directs NYSERDA to offer bidders an Index REC price option in future RES solicitations, beginning in 2020. Providing this option, in addition to continuing to allow for a Fixed-Price REC bid, if preferred by the developer, will give developers more flexibility to adapt their bidding behavior to their financing and operational needs. The use of an Index REC should also reduce the risk premiums that developers account for in their bids to accommodate for uncertainty in power market revenues, thereby lowering ratepayer costs on a per-REC basis. Finally, the Index REC has the added benefit of avoiding a double payment for the renewable attributes in the event that carbon pricing is implemented within the wholesale energy market. In order to implement aspects of the Index REC option described herein, NYSERDA and Department of Public Service Staff (DPS Staff) are directed to file an implementation plan, for Commission action, within 90 days of this Order.

BACKGROUND

The CES Framework Order adopted the 50 by 30 goal as part of a strategy to reduce statewide greenhouse gas emissions by 40% by the year 2030.⁴ The CES is divided into a RES and a Zero-Emissions Credit (ZEC) requirement. The RES includes several aspects, including a Tier 1 component that obligates every LSE to serve their retail customers by procuring new renewable resources, evidenced by the procurement of qualifying Tier 1 RECs from NYSERDA or other sources, or by making Alternative Compliance Payments (ACPs), in increasing quantities to satisfy the State's 2030 goal.⁵ The RES also includes a Tier 2 maintenance program to provide financial support for existing eligible renewable facilities that are at risk of ceasing operations.

The CES Framework Order also authorized NYSERDA, as the central procurement administrator for Tier 1, to conduct annual competitive solicitations for the purchase of RECs from eligible generators.⁶ The RECs may then be sold to LSEs for use in satisfying their Tier 1 compliance obligations. LSEs are required to serve their retail customers by procuring Tier 1 RECs in a defined and increasing percentage of the total load served by the LSE.⁷ The Commission also addressed other aspects of the Tier 1 RES solicitations, including the type of

⁴ CES Framework Order.

⁵ RECs represent the environmental attributes, including but not limited to estimated avoided carbon dioxide emissions, associated with electricity generated by facilities that meet the Tier 1 eligibility criteria established in the CES Framework Order.

⁶ Tier 1-eligible generators are certain defined renewable energy facilities that enter commercial operation on or after January 1, 2015.

⁷ RECs are issued and exchanged in the form of Tier 1 New York Generation Attribute Tracking System (NYGATS) certificates.

procurement model, pricing methodologies, counterparties, the length of contracts, and their interaction with power markets in New York. A number of procurement options were considered, including bundled power-purchase agreements, utility-owned generation, and various types of REC-only contracts. The key differentiating factors between the procurement options included the extent to which hedging of commodity revenue uncertainty occurred, and the level of involvement of NYSERDA and other entities, such as utilities.

The Commission concluded that Tier 1 RES procurements should begin by employing the Fixed-Price REC method, whereby winning bidders would receive a fixed as-bid price throughout the contract lifetime for the environmental attributes associated with every MWh produced by the facility.⁸ NYSERDA was directed to evaluate proposals and award project contracts according to pre-determined price and non-price evaluation criteria. This structure offers projects fully contracted RECs for the contract term at a known price while leaving energy and capacity to be sold by the developer as it sees fit, whether into NYISO wholesale markets or through bilateral arrangements. Projects may also seek hedges from market counterparties to mitigate commodity price risks.⁹ The Commission noted that an advantage of the Fixed-Price REC is that the REC payments provide predictable cashflows for both NYSERDA and the project, allowing for a stable collection schedule from ratepayers and revenue confidence for the project.

⁸ CES Framework Order, pp. 100-101.

⁹ Hedges are a form of insurance policy that use financial instruments or market strategies to offset the risk of adverse price movements, and to reduce the potential for unanticipated losses. Long-term market-based hedging products for electricity prices are limited and relatively expensive.

The primary challenge associated with the Fixed-Price REC is that the contract structure offers only limited revenue certainty to project investors. While developers may hedge their wholesale revenues with market-based products, this revenue risk is likely to increase the cost of project financing relative to a more fully-hedged contract with a counterparty, such as a utility or NYSERDA. The Commission reasoned that, to the extent that a pure hedging product removes all market risk from developers and may allow for a lower REC bid, it also places a degree of market risk onto customers.¹⁰ For that reason, a Fixed-Price REC option leaves market risk with developers who will, in many cases, be best equipped to manage risk and respond to market conditions.¹¹

The first three Tier 1 RES solicitations were held in 2017, 2018, and 2019, with all three of the solicitations being oversubscribed. For 2017, 26 new projects were selected, with an aggregate nameplate rating of 1,383 megawatts (MW) of renewable generation capacity and a weighted average REC price associated with the new renewable generation of \$21.71 per MWh. The 2018 solicitation resulted in contracts being awarded to 19 new projects, with an aggregate nameplate rating of 1,364 MW at a weighted average REC price of \$18.52 per MWh. The 2019 solicitation is currently under review, and the results of that solicitation are anticipated in the near future.

In 2018, the Commission modified its approach to renewable procurements in the Offshore Wind Order by establishing a hybrid procurement approach in which offshore wind developers were required to submit two bids: one offering a fixed-price OREC similar to a Tier 1 Fixed-Price REC, and a

¹⁰ CES Order, pp. 100-101.

¹¹ Offshore Wind Order, p. 38.

second for a variable-priced OREC based on the Index REC method. The two-bid approach required the bidder to commit to either bid if accepted. The bids were evaluated by calculating a weighted average levelized net OREC cost for each bid package.¹² The lower of the two bids, which was the Index OREC, was then used as the basis of the contract price.¹³

An Index OREC provides offshore wind developers, which are confronted with high initial capital costs, with a hedge on future wholesale revenues in order to lower its cost of capital and facilitate project financing. The Index OREC price varies over the life of the contract based on the net difference between the strike price and a reference price expressed in a market index. The market index is used as a proxy to estimate the market energy and capacity revenues expected to be earned by the project. Netting these revenues (as represented by the market index) from the strike price provides a greater likelihood that developers will earn their all-in revenue requirement for the project.¹⁴ This should effectively reduce a project's cost of capital relative to a Fixed-Price OREC structure.

According to the Offshore Wind Order, if NYSERDA awards a contract based on the Index OREC strike price that was bid, each monthly period of the contract will have its own

¹² The current weighting is 90 percent for the Index OREC and 10 percent for the Fixed-Priced OREC.

¹³ The contract specifies conditions that may trigger a reversion to the alternative price.

¹⁴ The Index REC structure offers a substantial, but not "perfect", hedge against energy and capacity prices. Because the Index OREC payment is calculated based on a proxy index of wholesale prices rather than the actual prices the generator receives, the generator may experience a small shortfall or a small surplus during some months.

contract price (the Monthly OREC Price) for that month, calculated using reference energy and capacity prices.¹⁵ The Index OREC strike price bid by the generator is the starting point for determining the monthly contract prices. Each Monthly OREC Price is calculated, during a settlement period following the month, using the following formula: Index OREC strike price - Reference Energy Price and Reference Capacity Price = Monthly OREC Price.

In the case of offshore wind, the Reference Energy Price is a time-weighted average hourly NYISO day-ahead market price index for the delivery month and a load-weighted average of NYISO Zone J (New York City) and Zone K (Long Island) prices. The Reference Capacity Price is a MWh equivalent price based on the zonal load-weighted average NYISO spot market Unforced Capacity (UCAP) prices of the included zones for the delivery month. The Reference Capacity Price is the load-weighted average of NYISO Zone G, H, I, J, and K monthly spot market UCAP prices.

NYSERDA issued its first offshore wind procurement on November 8, 2018, and received 18 proposals from four proposers. Subsequently, NYSERDA executed contracts for two projects with an aggregate nameplate rating of 1,696 MW, and estimated the average OREC cost to be \$25.14 per MWh. NYSERDA indicated in its Offshore Wind Phase 1 Report that it ultimately selected the Index OREC bid option over the Fixed-Price OREC for both projects based on the competitiveness of the Index OREC prices submitted by each proposer.¹⁶ According to the Offshore Wind Phase 1 Report, the index structure inherently limits both

¹⁵ Offshore Wind Order, Appendix C.

¹⁶ See NYSERDA's Launching New York's Offshore Wind Industry: Phase 1 Report (filed October 23, 2019) (Offshore Wind Phase 1 Report).

upside and downside financial return, creating a comparatively narrow distribution of financial profit from year to year and reducing a project's cost of capital relative to a Fixed-Price OREC structure. NYSERDA concluded that this procurement experience resulted in competitive bids and was generally a successful step in the fulfillment of the Offshore Wind Order.

NYSERDA emphasizes in its Offshore Wind Phase 1 Report that even though it selected the bids using the Index OREC pricing models for both awards, it does not want to preempt the developer's appetite for risk by requiring only hedged procurements going forward. Some developers may prefer to bid a Fixed-Price REC in future solicitations based on the individual characteristics of the project and its financing needs. Developers who "balance-sheet" finance their projects or have a long-term view of rising energy prices, or projects that have their energy offtake contracted for prior to bidding, for example, may prefer the Fixed-Price OREC approach over the Index OREC. While NYSERDA opines that the Index OREC has the advantage of stabilizing project revenues and ratepayer costs, the Fixed-Price OREC may still become advantageous depending on future market and regulatory conditions. In future solicitations, NYSERDA therefore recommends that the Commission continue to consider the use of both price structures.

SUMMARY OF THE PETITION

On March 12, 2019, Petitioners filed a request that the Commission direct NYSERDA to implement an Index REC procurement mechanism for future RES solicitations. The Petitioners assert that an Index REC would serve as a hedge against market volatility, lower the financing costs for renewable generators, and provide lower costs and less volatile prices for ratepayers. The Petitioners also claim that an Index

REC would avoid a potential double payment to renewable generation projects, in the event that carbon pricing is implemented in the wholesale energy market.

Petitioners argue that the existing Fixed-Price REC construct does not offer any energy revenue certainty for project developers, even though wholesale energy revenue is the largest component of the market value and revenue expectations for a developer. This lack of revenue certainty, Petitioners continue, increases the risk to developers, which in turn increases the cost of capital and leads to higher comparative Fixed-Price REC bids. Those higher bid prices are ultimately translated into higher costs for ratepayers, according to Petitioners.

In recommending the adoption of the Index REC procurement approach, Petitioners suggest a Reference Energy Price using the monthly, time-weighted average of the NYISO day-ahead market prices for the particular zone in which the project is located. Time-weighting, Petitioners assert, is preferred because generators will be more cognizant of market price signals to incentivize production at times when prices are highest and demand is greatest. The zonal price where the energy is generated is preferred by Petitioners because it arguably provides the best overall hedge where the generation interconnects within the NYISO system.¹⁷ Regarding the Reference Capacity Price, Petitioners favor allowing bidders to determine their own UCAP Production Factors at the time of bidding, one each for summer and winter, which would allow developers

¹⁷ The Offshore Wind Order uses a similar Reference Energy Price, but with a dual-zone approach using Zones J and K due to the expected downstate location of offshore wind projects.

flexibility to balance energy and capacity revenues to meet their hedging needs.¹⁸

PUBLIC NOTICE

Pursuant to the State Administrative Procedure Act (SAPA) §202(1), a Notice of Proposed Rulemaking was published in the State Register on July 24, 2019 [SAPA No. 15-E-0302SP39]. The time for submission of comments pursuant to the SAPA notice expired on October 2, 2019. In addition, the Commission issued a Notice Solicitating Comments on August 8, 2019, which sought information relating to a series of questions designed to solicit input on REC procurement options. Pursuant to that notice, initial comments were due on October 2, 2019, with reply comments due on November 15, 2019. The comments received are summarized in Appendix A, and are addressed in relevant part within the Discussion section below.

LEGAL AUTHORITY

The Commission's authority derives from the New York State Public Service Law (PSL), through which numerous legislative powers are delegated to the Commission. Pursuant to PSL §5(1), the "jurisdiction, supervision, powers and duties" of the Commission extend to the "manufacture, conveying, transportation, sale or distribution of . . . electricity." PSL §5(2) requires the Commission to "encourage all persons and corporations subject to its jurisdiction to formulate and carry out long-range programs, individually or cooperatively, for the performance of their public service responsibilities with economy, efficiency, and care for the public safety, the

¹⁸ The UCAP Production Factor is the percentage of the generator's Installed Capacity (ICAP) that can contribute during peak hours.

preservation of environmental values and the conservation of natural resources.”

PSL §66(2) provides that the Commission shall “examine or investigate the methods employed by [] persons, corporations and municipalities in manufacturing, distributing and supplying . . . electricity . . . and have power to order such reasonable improvements as will best promote the public interest, preserve the public health and protect those using such . . . electricity. . . .” Further, PSL §65(1) provides the Commission with authority to ensure that “every electric corporation and every municipality shall furnish and provide such service, instrumentalities and facilities as shall be safe and adequate and, in all respects, just and reasonable.” The Commission also has authority to prescribe the “safe, efficient and adequate property, equipment and appliances thereafter to be used, maintained and operated for the security and accommodation of the public” whenever the Commission determines that the utility’s existing equipment is “unsafe, inefficient or inadequate.”¹⁹ PSL §4(1) also expressly provides the Commission with “all powers necessary or proper to enable [the Commission] to carry out the purposes of [the PSL]” including, without limitation, a guarantee to the public of safe and adequate service at just and reasonable rates,²⁰ environmental stewardship, and the conservation of resources.²¹

¹⁹ PSL §66(5).

²⁰ See *International R. Co. v Public Service Com.*, 264 AD 506,510 (1942).

²¹ PSL §5(2); see also, *Consolidated Edison Co. v Public Service Commission*, 47 N.Y.2d 94 (1979) (overturned on other grounds) (describing the broad delegation of authority to the Commission and the Legislature’s unqualified recognition of the importance of environmental stewardship and resource conservation in amending the PSL to include §5).

DISCUSSION

REC Design

Based on its various solicitations for renewables, NYSERDA has gained valuable experience in administering both Fixed-Price and Index REC procurements, and has been successful in securing competitive prices using each method. The first two Fixed-Price REC Tier 1 RES solicitations were oversubscribed, with the 2017 solicitation resulting in the selection of 26 new projects with an aggregate nameplate rating of 1,383 MW of installed capacity at a weighted average REC price of \$21.71 per MWh. For 2018, NYSERDA selected 19 new projects with an aggregate nameplate rating of 1,364 MW of installed capacity at a weighted average REC price of \$18.52 per MWh. The only solicitation so far to employ an Index REC in New York was the 2018 offshore wind solicitation, which resulted in contracts with two new projects with an aggregate nameplate rating of 1,696 MW and an estimated OREC price of \$25.14 per MWh.

Considering the larger capital needs of offshore wind and the resulting higher risk profiles of those types of projects relative to onshore developments, the general proximity of REC prices amongst the two types of procurements provides the Commission with valuable insight into how risk and other factors have been integrated into bidding behavior. As compared to conventional generators, renewable projects have relatively high, initial capital expenditures and relatively lower operating expenses, making them highly sensitive to the cost of capital. The cost of capital is itself sensitive to the amount of risk inherent in the development. Offshore wind financing, in particular, is more sensitive to the cost of capital because the technology and construction costs are presently more expensive and riskier than onshore resources due to the more

challenging engineering involved and the local supply-chain economics.²²

Wholesale market revenue volatility is a large risk factor for the developments of renewables, and the lack of hedging in a Fixed-Price REC contract likely leads developers to incorporate relatively substantial risk premiums into bids to compensate for this uncertainty. Conversely, the Index OREC price likely reflects a meaningful reduction in risk premium relative to the Fixed-Price REC as a result of the wholesale market revenue hedging that occurs using this method. Thus, the relative proximity of the Index OREC price with the Fixed-Price Tier 1 REC prices, even though offshore wind usually has higher capital needs and a greater risk profile than onshore projects, indicates that onshore renewable developers may be incorporating significant risk premiums into their Fixed-Price REC bids.

NYSERDA's quantitative analysis in its comments indicates that the introduction of an Index REC structure could deliver significant cost benefits to ratepayers. NYSERDA found that the Index REC structure offered REC pricing benefits of approximately \$8 per MWh or more, in comparison to a Fixed-Price REC contract. These savings primarily result from the ability with an Index REC to hedge wholesale market revenues, as well as the resulting reduction in risk premiums that are normally embedded in Fixed-Price REC bids to compensate for the lack of hedging in those contracts.

When applied to the State's renewable energy goals, the cost savings identified by NYSERDA are substantial. In order to achieve the CES goal of 50 by 30, the CES Framework Order determined that approximately 70,500 GWh per year of renewable energy will be needed by 2030, including approximately

²² Offshore Wind Order, p. 16. See also NYSERDA's Offshore Wind Policy Options Paper (filed January 29, 2018).

29,200 GWh per year of new renewable energy production.²³ The savings during this time frame using NYSERDA's per REC savings value of \$8 per MWh would lead to savings of approximately \$233 million per year through 2030, and approximately \$4.6 billion over the life of the contracts.²⁴ In addition, NYSERDA indicated that using an Index REC would likely expand the pool of bidders in future procurements, providing a boost to competition and likely additional downward pricing pressure on REC bids.

Using an Index REC would also have other likely ancillary benefits for ratepayers besides reducing costs. While Multiple Intervenors contend that an Index REC approach, which provides for a relatively steady level of overall revenue to developers, would shift market price risk and volatility from the developer onto ratepayers, any such shift would be mitigated by changes in market prices. We anticipate that over a developers' contract term, price fluctuations in Index REC prices would be accompanied by the opposite impact on ratepayer's energy bills. In other words, as energy market prices rise for ratepayers, they will generally pay less for Index RECs that reflect the increased revenues associated with those market prices, and vice versa. Therefore, ratepayers should benefit both from a project's reduced finance costs and a reduction in volatility of their energy bills. Under the Fixed-Price REC price structure, however, ratepayers bear the higher cost to finance the project and are exposed to the impact of wholesale price fluctuations on their energy bills, unless their

²³ CES Framework Order, p. 85.

²⁴ NYSERDA undertook an analysis of levelized REC costs under four Tier 1 installation types: Small Solar, Large Solar, Small Wind and Large Wind. Across all four installation types, the price differentials between the Index REC and Fixed-Price REC, on a levelized basis, were consistent.

supplier enters into a secondary hedge for this portion of the energy market.

The Index REC also has the added benefit of reducing the potential for double payments associated with the renewable attributes in the event that carbon pricing is implemented within the wholesale energy market. Under a proposal advanced by the NYISO, a generator would be subject to a carbon charge based on the amount of carbon created by the production of electricity at the facility. The generator would be expected to include the carbon charge in its energy price bid into the NYISO market. The carbon charge would therefore result in higher location-based marginal prices (LBMPs) if a fossil fuel-based generator is the marginal unit when prices are formed for the applicable period of demand. On the other hand, renewable generators produce no carbon and therefore would be exempt from paying the carbon charge under the proposal. Since renewable resources have low operating costs and therefore usually qualify to receive the LBMP in most demand periods when it produces electricity, those resources are likely to benefit from an increase in the LBMP due to the carbon charge. A double-payment may therefore result because renewable energy generators could receive the imbedded carbon charge in the LBMP, in addition to receiving compensation for their RECs from either Tier 1 REC contracts, OREC contracts, or from Value Stack compensation for the Environmental Value.

Under the Index REC, if wholesale market revenues increase as a result of a higher LBMP, for example, the REC payment would generally decrease so developers would only receive payment once for avoided carbon emissions. For the Fixed-Price REC, however, the price of the REC does not change during the contract period so higher LBMPs would have no effect on REC payments received by the developer.

The Commission rejects the suggestion by some commenters that, because the Fixed-Price REC solicitations are successfully deploying renewable installations, no further action is required. NYSERDA has made a compelling showing that substantial cost savings will likely result if the Index REC is introduced as a bidding option within the RES. Furthermore, as discussed above, other ratepayer and developer benefits may result from this change, including reduced finance costs and a reduction in volatility of their energy bills.

The City of New York (the City) recommends that Index pricing should first be tested on a limited pilot basis alongside Fixed-Price REC procurements, to fully analyze the economic impact of Index RECs on customers and to ensure that customers are adequately protected. The Index REC method has been adopted and successfully used by NYSERDA for an offshore wind solicitation, and the concept is well established and sufficiently understood such that a pilot program is not necessary prior to widescale implementation. The Commission similarly rejects the need to reconsider the option of allowing utility ownership of renewable resources. There is no basis to deviate from the policy direction adopted in the CES Framework Order and the REV Framework Order that generally prohibits utility ownership of generation resources in order to promote entry by market participants.²⁵

Single Bid Requirement

Most commenters support allowing the option to bid either a Fixed-Price REC or an Index REC, rather than requiring both, as is currently done in offshore wind solicitations. NYSERDA explains that the OREC bidding method where two bids are

²⁵ Case 14-M-0101, Reforming the Energy Vision, Order Adopting Regulatory Policy Framework and Implementation Plan (issued February 26, 2015) (REV Framework Order).

required is more appropriate for that nascent market and not the more mature and diverse Tier 1 market, which requires a more flexible approach to allow project and developer circumstances to dictate what type of bid is offered. AWEA, ACE-NY, EDF Renewables (EDFR), Natural Resources Defense Council (NRDC), Invenergy, LLC (Invenergy), and Valcour Wind Energy, LLC (Valcour) support the Index REC method, while others in support add that NYSERDA should be permitted the flexibility to alter program design details such as bidding options in response to changing market conditions. The NYISO states that the Index REC structure could provide a workable approach to financing renewable resources.

The Joint Utilities,²⁶ Independent Power Producers of New York (IPPNY), New York Municipal Power Agency (NYMPA), and the Suffolk County Legislature argue that a Fixed-Price REC option should remain in place and be the preferred option. Multiple Intervenors note that there has been no demonstration that a purely Fixed-Price REC approach would not result in the State meeting its Tier 1 targets, including the expanded targets of the CLCPA.

The Commission's previous rationale for using a Fixed-Price REC option in RES solicitations and the two-bid option in offshore wind procurements was based on longstanding Commission precedent to leave market risk with developers who will, in many cases, be best equipped to manage risk and respond to market conditions. That principle remains relevant. Some developers may find that managing market risks (and potential market gains) on their own, rather than through a contract with NYSERDA, may

²⁶ The Joint Utilities consist of Central Hudson Gas & Electric Corporation, Consolidated Edison Company of New York, Inc., New York State Electric & Gas Corporation, Niagara Mohawk Power Corporation d/b/a National Grid, Orange and Rockland Utilities, Inc., and Rochester Gas and Electric Corporation.

be the most cost-effective approach and therefore most beneficial to ratepayers.

Other developers may have unique long-term market views, risk tolerances, and business models, which, when combined with project specific considerations, tend to favor a Fixed-Price REC structure rather than an Index REC. Similarly, for developers who balance-sheet finance their projects or who have a long-term view of rising energy prices, or for projects that have their energy offtake agreements secured prior to bidding, the Fixed-Price REC option may be preferable. Therefore, the Commission will not disrupt the existing option for developers to bid a Fixed-Price REC price into future RES solicitations if they so choose. For other developers seeking the lowest cost financing and lowest cost of capital, or whose projects have unusual or challenging operating characteristics or other additional risks outside of financing that may lead financiers to impose risk premiums on project funding, the Index REC option may be preferred. Accordingly, the Commission directs NYSERDA to allow either a Fixed-Price REC bid or an Index REC bid in future RES solicitations beginning in 2020.

Ultimately, the balancing of various risks and rewards is a business judgment, and the most successful procurement strategy will be one that enables bidders to optimize their bids based on their own perceptions of potential risks and rewards.²⁷ As NYSERDA points out, the onshore renewable industry is more mature and flexible so that both types of bids should not be required. Instead, developers will have the option to bid either a Fixed-Price REC bid or an Index REC bid, but not both. Developers will enjoy more flexibility to adapt to financing and operational needs under this approach.

²⁷ Offshore Wind Order, p. 39.

While allowing developers to submit Index REC bids addresses the concern surrounding potential "double payments" to renewable generation projects in the event that carbon pricing is adopted in the wholesale energy market, that concern remains for developers who elect to submit a Fixed-Price REC bid. Thus, for future Fixed-Price REC bids that are ultimately awarded a Tier 1 contract, NYSERDA is directed to include provisions in those contracts to allow for modification to the REC price in order to address any double payments in the event that the generator is otherwise compensated for the renewable attributes.

Index REC Structure

An Index REC structure requires a number of components that are critical for its successful operation. NYSERDA shall structure and evaluate future RES procurements similarly to the method used for offshore wind solicitation. The Index OREC provides a successful template for the Commission to evaluate these matters, considering the strong demand and competitive pricing resulting from the first offshore wind solicitation. In some cases, though, the Index OREC framework will need modifications to reflect the market or operating characteristics of the onshore resources participating in RES Tier 1 procurements.²⁸ For other issues not addressed in this Order, the Commission directs NYSERDA and DPS Staff to file an implementation plan, as discussed below.

Comparing the bid prices should be performed similarly to the offshore wind solicitation by calculating the estimated levelized net REC cost of each bid, which would ensure cost

²⁸ Offshore resources are presently eligible to participate in RES Tier 1 solicitations, and will continue being eligible to participate in the modified Tier 1 solicitation methodology enacted in this Order. As offshore wind prices continue to decline, it may be possible at a future time to eventually merge the RES Tier 1 and OREC procurements.

effectiveness for ratepayers. In the offshore wind procurement, all bidders were required to submit both Fixed-Price OREC and Index OREC bids which were evaluated on a weighted-average basis. This weighting would not be needed in the RES solicitations due to the prohibition against two bids directed herein. Bidders would need to provide either a Fixed-Price REC bid or an Index REC bid, but not both.

Several design elements were identified by commenters. A summary of the critical elements determined by the Commission in this Order, based on stakeholder input and a careful evaluation of the Tier 1 Fixed-Price REC and Index OREC solicitation results, are illustrated in Table 1 below. The Index REC procurement methodology is included as Appendix B to this Order.

Table 1: Tier 1 Index REC Design	
Settlement Period	Monthly settlement period for both Reference Energy and Capacity Prices
Reference Energy Price	
Market Choice	Hourly day-ahead LBMP
Geographic Precision	Zonal - Based on project's location
LBMP Weighting	Simple averaging of hourly prices
Reference Capacity Price	
Market Choice	ICAP Spot Market Auction
Geographic Precision	Single-Zone Reference Capacity Price

Settlement Period

The Commission directs NYSERDA to use a monthly settlement period applicable to both the Reference Energy Price and the Reference Capacity Price. For the Reference Energy Price, NYSERDA should use the NYISO's day-ahead energy prices because they are more stable and robust than the real-time prices. It is understood generally that the shorter the settlement period, the more precise the hedge is, and if the settlement period is too long, it may delay payments and cause

cash flow complications for the developer. However, it is important to preserve the structural incentive for projects to maximize generation during peak pricing periods. NYSERDA shall accomplish this by calculating a single Reference Energy Price for each month as a simple monthly average of NYISO's actual day-ahead energy prices. For the Reference Capacity Prices, NYSERDA shall also use a monthly settlement period to provide the most precise hedge.

Reference Energy Price

The energy payments received for generators participating in the NYISO wholesale market are based on the LBMP price at the bus at which they are injecting.²⁹ Although paying projects based on the bus location represents a better hedge and is more cost effective than one based on a wider geographic area, it could be less feasible and provide for less market compatibility by obscuring market price signals for a project to deliver into higher price buses. Conversely, determining the Reference Energy Price based on multi-zone averages can limit the hedging ability of an Index REC since the wider the geographic region, the more likely that prices will differ from the generator bus. Because the zonal average for the Reference Energy Price would balance these issues, it is preferred by the Commission. Commenters, including NYSERDA, agree with this approach.

As noted by NYSERDA, there are various options when considering weighting of different time intervals for the calculation of the Reference Energy Price, and these weighting considerations can affect the structural incentives that

²⁹ A bus is the vertical line at which components of the power system like generators, loads, and feeders are connected. A generator bus is the bus that connects the generator to its generating transformer.

encourage shifting generation to high-price periods. For example, solar generation benefits from weighting by a generic technology generation profile while wind generation involves more variable generation profiles and would not benefit from such a profile. NYSERDA argues that using a simple average of hourly prices across the settlement period would reduce the administrative complexity and would provide comparable hedging benefits for all technologies. The Joint Utilities and other commenters concur with this assessment. The Commission also agrees and directs the adoption of this approach.

It is well established that renewable generation technology costs continue to decline, which should encourage REC prices to similarly decline. Under certain circumstances, NYSERDA explains that the sum of the Reference Energy Price and Reference Capacity Price could potentially exceed the strike price, requiring a payment from the developer to NYSERDA. The Joint Utilities argue that this scenario represents a return of costs to ratepayers and should be permitted. To address the unlikely scenario that a payment is required from the developer to NYSERDA, NYSERDA is directed to net out any payments it would receive from generators from subsequent REC payments under NYSERDA's contract obligations.

Regarding times when the LBMP is negative, the resulting REC price paid to the developer could be correspondingly higher than normal. NYSERDA provides four different options for addressing REC payments during periods of negative LBMPs, including using a floor of zero. Each option would act to de-incentivize generators from generating during times of negative LBMPs. As discussed by Multiple Intervenors, the negative LBMP prices are a signal to generators that generation is not desired during that time and if generators chose to do so, the relatively high REC price would be

considered an inappropriate incentive to maximize output during these times when generation is unnecessary.

Furthermore, during these periods when the renewable generator is producing during negative LBMP prices, it may be displacing unsubsidized renewable generation, resulting in no net contribution to the State's renewable energy goals. Multiple Intervenors recommend that the appropriate mechanism would be to price the LBMPs at zero for purposes of determining the final REC price payment to the developer during negative LBMPs. The Joint Utilities argue that injections of renewables during times of negative LBMPs could displace non-curtailable, zero emission nuclear resources and thereby increase ZEC costs. The Joint Utilities therefore recommend that all negative LBMP hours be removed for purposes of computing the Reference Energy Price, and that REC payments should not be paid to curtailable renewable generators for hours generated in which the LBMP is negative.

The Commission is not convinced that negative hourly LBMPs should be treated as a price of \$0. The Index REC is a fixed price hedge, at the strike price, tied to the actual output of the generator. For the hedge to be complete, the full spectrum of prices should be included, including negative LBMPs. The instances when hourly day-ahead zonal prices are negative is rare, and it is highly unlikely that the monthly zonal LBMP would be negative.³⁰ Nevertheless, if the monthly zonal LBMP were negative, the relatively high Index REC price would be considered an inappropriate incentive to maximize output during these times when generation is unnecessary. Therefore, the

³⁰ For the period December 1, 2018 through November 30, 2019, there were only seven hours, in one of the NYISO's 11 zones, when the average LBMPs resulted in a negative hourly average and no negative monthly zonal LBMPs.

Commission adopts a ceiling on the Index REC Price payable for all hours at the strike price.

Reference Capacity Price

The UCAP Production Factor is identified as the percentage of the generator's ICAP that can contribute during peak hours. Within the Index REC structure, the Reference Capacity Price is converted to its per MWh equivalent.

According to NYSERDA, an optimal hedge results when the UCAP Production Factor changes throughout the contract term, reflecting NYISO confirmed values. Another option, which is favored by NYSERDA, is to permit the developer to establish a fixed UCAP Production Factor, fixed throughout the contract term, which would reflect the NYISO Production Factor at the start of the contract period or a custom value chosen by the project.

The Joint Utilities agree that the UCAP production factor should be fixed over the contract term to promote improved capacity performance, however, they oppose allowing the developer to determine the UCAP Production Factor. The Joint Utilities believe that this would create the potential for arbitrage where the developer would have an incentive to establish a lower Reference Capacity Price in order to receive a higher Index REC price. Although an attempt by a developer to artificially lower the impact of the capacity revenues in its bid price would result in a higher REC price component of the bid, similar to bidding a higher strike price in the first place, due to the competitive nature of the future solicitations, a developer adopting either of these bidding approaches risks submitting a REC price that is higher than those submitted by its competitors and, therefore, risks not being selected for an award. The Commission therefore adopts the recommendation to allow developers to establish a single

UCAP production factor that will be utilized for the life of the contract.

The three auction structures for capacity sales are Monthly, Capability Period, and the ICAP Spot Market. LSEs utilize these auctions to purchase and meet their ICAP and UCAP requirements. The most significant auction in terms of volume is the ICAP Spot Market auction which provides the most robust investment price signals to projects. For these reasons, the Commission chooses this option for determining the Reference Capacity Price. The methodology for computing the Index REC Price, including the Reference Energy and Capacity Prices, is detailed in Appendix B.

Implementation Issues

The adoption of an Index REC structure will require a number of implementation changes to the RES Program, including revisions to the methodology for calculation of its annual Tier 1 REC price associated with its sales to LSEs for both Fixed-Price and Index REC payments. The Joint Utilities point to several additional potential implementation issues associated with the proposed Index REC structure, including changes to the current process of setting market prices, performance of auctions and managing REC vintages, changes to calculating ACPs, unintentional impacts on the market for RECs imported to or exported from New York, and impacts to the Value Stack Environmental Value tariffs. Each of these issues will require careful planning and attention from the Commission, but these issues are not critical to the Commission's decision of whether to adopt the Index REC. Implementation issues relating to compliance, including those raised in the comments, shall be addressed through the filing of an implementation plan for review and approval, as appropriate, by the Commission.

It has been suggested by the Advanced Energy Economy Institute (AEE Institute) that implementation of an Index REC could result in more volatility in computing the Environmental Value because the calculation method is tied to the Tier 1 REC price. The other two related concerns of the AEE Institute involve determining if the Environmental Value should vary by zone and how the Social Cost of Carbon would factor into setting the Environmental Value if the NYISO implements its carbon pricing proposal. The suggestion by the AEE Institute to hold a stakeholder process within the VDER proceeding to consider these issues is appropriate and should be undertaken in the Value Stack Working Group at a later date.³¹

The issue of contract and other administration issues required with a change from the current Fixed-Price REC price structure to allowing developers the optionality to submit either a Fixed-Price or Index REC bid is addressed by NYSERDA. NYSERDA acknowledges these issues, but none of them appear unique or critical to rendering the determinations made in this Order. The Joint Utilities raise the issue of how market revenues will be determined and the extensive calculations and documentation that would be required under an Index REC approach. NYSERDA's recommendation to address these administrative issues in an implementation plan is appropriate and is therefore adopted.

The Commission also agrees with NYSERDA that the implementation plan does not require approval prior to the issuance of a 2020 RES solicitation that will include the Index

³¹ Matter 17-01277, Value of Distributed Energy Resources Working Group Regarding Rate Design.

REC option within its bidding structure.³² Since facilities that would be under contract and paid using an Index REC approach will not be installed in the immediate future, there is sufficient time to evaluate and incorporate the details necessary for its successful implementation. NYSERDA and DPS Staff are therefore directed to file an implementation plan within 90 days of this Order, incorporating the policies and determinations established herein, and recommending a preferred approach to address other identified issues.

CONCLUSION

As discussed above, the Commission adopts the Petitioners' request and directs NYSERDA to include an additional option for bidders to offer an Index REC price in future RES solicitations, beginning with the 2020 solicitation. The Commission finds that this approach has several benefits and will further the public interest by assisting in achieving the State's environmental and energy policy objectives.

The Commission orders:

1. The New York State Energy Research and Development Authority (NYSERDA) shall include an additional option for bidders to offer an Index REC price in future Tier 1 Renewable Energy Standard (RES) solicitations, beginning with the 2020 RES solicitation.

2. NYSERDA and Department of Public Service Staff shall file a proposed Implementation Plan no later than 90 days from the issuance of this order, making the necessary revisions

³² Currently, NYSERDA anticipates issuing its 2020 Tier 1 RES solicitation in the second quarter of 2020, with bids due in the third quarter of 2020 and awards expected to be announced in the fourth quarter of 2020.

discussed in the body of this Order and proposing the other necessary implementation details for Commission action.

3. In the Secretary's sole discretion, the deadline set forth in Ordering Clause No. 2 may be extended. Any request for an extension must be in writing, must include a justification for the extension, and must be filed at least one day prior to the affected deadline.

4. This proceeding is continued.

By the Commission,

(SIGNED)

MICHELLE L. PHILLIPS
Secretary

SUMMARY OF COMMENTS

Advanced Energy Economy Institute (AEE Institute)
Alliance for Clean Energy (ACE)
American Wind Energy Association (AWEA)
City of New York (The City)
EDF Renewables (EDFR)
Environmental Advocates of New York (EANY)
Independent Power Producers of New York (IPPNY)
Invenergy, LLC (Invenergy)
Joint Utilities
Multiple Intervenors
Natural Resources Defense Council (NRDC)
New York Independent System Operator (NYISO)
New York Municipal Power Agency (NYMPA)
New York State Energy Research and Development Authority
(NYSERDA)
Pace Energy and Climate Center (PACE)
Sierra Club
Shell Energy North America and Shell New Energies (Shell)
Suffolk County Legislature (Suffolk County)
Valcour Wind Energy, LLC (Valcour)

AEE Institute

AEE Institute supports NYSERDA in soliciting bids for either Fixed-Price or Index RECs. AEE Institute believes that an Index REC is an appropriate way to address the NYISO carbon pricing proposal. It would lower financing cost, AEE Institute continues, lead to lower and less volatile prices for consumers, and reduce the overall cost of projects because developers would no longer need to hedge wholesale market price risk to secure financing. AEE Institute cautions that changes may be necessary as to how Index RECs are calculated including how the Environmental Value Stack is calculated.

AEE Institute believes that under the current method of computing the Environmental Value, the Index REC may introduce more year to year volatility. Also, if zonal pricing

is introduced, AEE Institute claims that the Commission will need to determine whether the Environmental Value will vary by zone or whether a blended value will be used. AEE Institute believes that once the Commission approves the use of Index REC approach, and once the methodology for computing the Index REC mechanism is finalized, the Commission should conduct a stakeholder process to determine what changes may be necessary.

AEE Institute agrees with the Joint Utilities, the City, and Multiple Intervenors that customers would see more variability in their REC costs, and customers might pay more for electricity and RECs with Index RECs than with the current Fixed-Price RECs. AEE Institute believes that during periods of high electricity market prices, the Index REC price could shrink all the way to zero, creating a negative REC payment. AEE Institute believes that Index RECs can be designed to provide a ceiling on customer electricity prices during times of negative energy prices. AEE asserts that adopting the Index REC would show cost savings and price stability for customers.

AWEA/ACE/NRDC

AWEA/ACE/NRDC state that an Index REC reduces the overall risk between parties and decreases price volatility to both generators and consumers. It does not shift risks from generators to consumers, and it is not a Contract for Differences, according to AWEA/ACE/NRDC. AWEA/ACE/NRDC sees no harm in NYSEERDA maintaining authority to solicit both types of bids. AWEA/ACE/NRDC believe that the use of an Index REC will be helpful to the Commission's recently launched Resource Adequacy proceeding that is exploring the compatibility of the NYISO capacity market structure with the CLCPA. AWEA/ACE/NRDC state that nothing in the Index REC structure will negatively affect the NYISO market. In the Offshore Wind Order,

AWEA/ACE/NRDC continue, the Commission stated that the Index OREC meets the concerns of NYISO to preserve incentives to respond to market conditions. AWEA/ACE/NRDC assert that Index RECs should be structured in way that ensures each generator sees the right market price signal, and it would allow developers to bid a strike price that is robust to regulatory changes that could impact market prices. AWEA/ACE/NRDC believe that the Commission should grant NYSERDA the flexibility to make continued adjustments to the Index REC structure as market conditions change.

According to AWEA/ACE/NRDC, when it comes to market price volatility, the risks faced by developers and ratepayers are directionally opposite. Developers face a risk that prices in those markets will go down and ratepayers face a risk that prices will go up. The Index REC mechanism takes advantage of these opposing interests to reduce market price risk for both parties.

AWEA/ACE/NRDC agree with NYSERDA's proposed procurement design choices provided by NYSERDA. Under market conditions, NYSERDA may find that it can achieve better-priced bids and enter more-easily administered contracts if it sets the minimum REC price in any settlement period at a zero-dollar floor price. AWEA/ACE/NRDC believe that NYSERDA should have the flexibility to solicit both winter and summer UCAP production factors, as it has done with ORECs, and agree with NYSERDA's suggestion to use UCAP production factors for weighting the capacity reference price.

The City

The City urges the Commission to refrain from implementing sweeping changes to the current methodology of procurement. The City believes that it is important to fully

understand the potential impact of Index RECs on customers. The City recommends that Index pricing should first be tested on a limited pilot basis alongside Fixed-Price REC procurement, to fully analyze the economic impact of Index RECs on customers, to ensure that customers are adequately protected. The City states that under an Index REC procurement mechanism, customers would bear all the risks associated with large-scale renewables development. The City believes that the Commission should track the volatility of Index REC price fluctuations over time to determine how customers are economically impacted as compared to what customers currently pay under Fixed-Price REC contracts. A report of these results should be provided to stakeholders for review and comment, according to the City.

EANY/Sierra Club/NRDC/PACE

EANY filed its comments with NRDC, Sierra Club, and PACE. They argue that the Index REC structure provides a hedge against market volatility and lowers the financing costs for renewable generators, which leads to reduced capital costs. Additionally, these comments state that the Index REC structure would preserve the benefits of NYISO price signals by encouraging projects to locate in locations most valuable to the wholesale market. Lastly, they explain that the Index REC resolves the IPPNY concern with double payments if carbon pricing is implemented by the NYISO.

EDFR

EDFR agrees with AWEA and ACE-NY that the Commission should implement an Index REC procurement mechanism. EDFR believes that such an approach will be beneficial in promoting development, although the costs and risks associated with project siting and development should be fully evaluated. EDFR

believes that an Index REC structure can reduce market uncertainty by providing developers with a more predictable long-term revenue stream. It would lower the financing costs for renewable generators, and it would lower prices for consumers. EDFR believes that a more cost-effective hedge would be a generic, zonal-wide generation profile for each renewable resource type when computing the Index values.

IPPNY

IPPNY argues that the Commission's adoption of an Index OREC approach for offshore wind was based on unique circumstances of offshore wind development, and cannot be used as a precedent for applying the Index REC approach to future onshore wind and solar projects, when existing projects have been successfully financed, built, and operated for many years in New York with the support of Fixed-Price REC contracts.

Invenergy

Invenergy strongly supports implementing an Index REC procurement mechanism. Invenergy states that NYSERDA's comments provide ample evidence of the benefits of the Index REC approach in terms of attracting private investment in renewable energy projects to New York. Invenergy urges the Commission to act on the petition in a timely manner.

Joint Utilities

Joint Utilities urge the Commission to reject the Index REC proposal because it imposes additional costs on utility customers. The Joint Utilities believe that an Index REC structure would lead to lower developer financing costs because risk would shift from developers to customers. Also,

the Index REC proposal may not be legally feasible because it could directly impact NYISO market prices.

With ORECs, the Commission adopted a hybrid approach requiring developers to submit both Fixed-Price and Index REC bids. The Joint Utilities believe that the Commission's adoption of an Index OREC approach for offshore wind was needed to quickly spur development of offshore wind generation. For mature technologies such as onshore wind and solar, the Joint Utilities believe that there is no need for this sort of risk reduction for developers.

Joint Utilities state that the Petition would alter the purpose of a REC, which currently compensates developers for environmental attributes associated with clean electricity generation at a fixed rate. They are intended to be priced separately and apart from electricity market prices, according to the Joint Utilities. Joint Utilities believe that the Index REC proposal would turn the REC into a price hedging tool, protecting developers from NYISO market price fluctuations and resulting in NYSERDA regulating much of the revenues available to those projects over time.

Joint Utilities believe that other alternatives may provide greater benefits to customers, namely allowing utilities to have an ownership role in large-scale renewables energy facilities. Joint Utilities avow that utility ownership would provide customers with protections not available from an Index REC, including Commission oversight in returning any excess revenues to customers and thereby addressing the double-payment concerns. In the near term, the Joint Utilities recommend that the Commission require NYSERDA to adopt a limited clause in NYSERDA REC contracts, which would allow a one-time price adjustment if an additional carbon price is implemented.

Joint Utilities believe that if the Commission were to adopt the Index REC mechanism, the Fixed-Price REC structure should remain in place and be positioned as the preferred option. The Joint Utilities state that the Index REC Proposal is unclear and should not be implemented as proposed. The Joint Utilities believe that the Commission should address REC procurement proposals as part of the upcoming Triennial Review Process of the CES, to allow further stakeholder discussion and input.

In reply comments, the Joint Utilities urge the Commission to mirror the approach used to solicit bids from offshore wind developers and require bidders to submit pricing for both a Fixed-Price REC and Index REC model. The Joint Utilities believe that this approach will provide stability and certainty to the future of the contracts and CES implementation.

The Joint Utilities agree with NYSERDA of the use of a monthly settlement period to establish the Reference Price, and that it not be differentiated by peak or off-peak hours. The Joint Utilities believe in avoiding multiple reference prices that differentiate between peak and off-peak periods because it will retain important incentives for projects to operate in ways that benefit the electricity system and all customers.

The Joint Utilities agree with NYSERDA that renewable energy projects should pay NYSERDA for the full difference when the Reference Price exceeds the Index REC Strike Price, and that negative REC payments from projects would not be required until after renewable energy projects have received payment for their commodity sales.

The Joint Utilities support NYSERDA's approach to use the hourly day-ahead LBMP to establish the reference energy price because the corresponding day-ahead market is based on optimal operating conditions and is more stable. In contrast,

the Joint Utilities continue, the real-time market balances supply and demand in consideration of system load, constraints and outages which leads to instability and less cost-effectiveness.

The Joint Utilities believe that the use of NYISO load zones to establish the Reference Energy Price is the simplest and most straightforward approach. However, they caution that differences between zonal and bus prices should be monitored and regularly reported on by NYSERDA. It notes that the basis difference between bus and zonal prices may be addressed over time through construction of new transmission resources.

The Joint Utilities support NYSERDA's proposal to calculate the Reference Energy Price based on a simple average of hourly prices during the month (settlement period) because it does not dilute wholesale market price signals and encourages the renewable energy generator to operate when needed without providing windfall revenues to renewable energy projects.

The Joint Utilities urge the Commission to address the negative LBMPs matter by: (1) eliminating all negative LBMP hours from the computation of the Reference Price; and (2) not providing RECs to curtailable renewable resources for negative LBMP hours in which they operate. The Joint Utilities support NYSERDA's use of the ICAP Spot Market Auction in the calculation of the Reference Capacity Price because the spot market auction closely aligns supply with the demand for resources during a given month.

The Joint Utilities support NYSERDA's use of locational capacity zones. The Joint Utilities note that the Resource Adequacy proceeding is looking into matters related to capacity mitigation in Zone J. The Joint Utilities are opposed to allowing a project operator to select a custom UCAP Production Factor because it opens up the potential for

arbitrage. Under this approach, a resource may be incented to set its UCAP value at a lower level in order to increase its Index REC, causing customers to pay twice for the capacity the resource provides above its chosen UCAP value. Allowing the UCAP value to fluctuate according to the project's actual performance over the life of the contract creates a similar concern. The Joint Utilities support using the more impartial NYISO UCAP Production Factor and fixing this value over the term of the REC contract because this approach will prevent arbitrage and preserve the incentive for project operators to improve the UCAP Production Factor and increase the overall capacity revenues in the NYISO market over the contract life.

For the Quantitative Assessment, the Joint Utilities recommend that further work be done to validate NYSERDA's analysis of the Index REC mechanism. If the Index REC mechanism is not designed properly, Joint Utilities assert, costs to customers could increase in other areas that may not be captured in NYSERDA's analysis. For example, if the price of an Index REC escalates as wholesale energy market prices drop below zero during an increasing number of hours, renewable generators will have greater incentives to continue to generate during these negative pricing hours. Without the establishment of rules to discourage such behavior, this will reduce revenues for nuclear units supported by the ZEC program which may lead to higher overall ZEC payments from customers.

Multiple Intervenors

Multiple Intervenors oppose modifying the existing procurement process and believes that the use of Index RECs would shift market price risks and associated volatility from private developers to captive customers. According to Multiple Intervenors, private developers bear the risks of wholesale

market prices and associated volatility, which is fair because customers have no say whether, when, or where a renewable generation project should be developed.

Multiple Intervenors states that rather than resolving the double-payment concern, the Commission recommended that the issue be addressed by the NYISO as part of carbon pricing proposal. Multiple Intervenors explain that the NYISO responded initially by advancing a proposal that would have imposed the carbon charge on non-carbon-emitting facilities that already are being compensated for carbon-free generation attributes through retail rate mechanisms, such as RECs. Multiple Intervenors believes that such a proposal would have eliminated the double-payment concern, although the NYISO withdrew the proposal due to objections by certain stakeholders.

Multiple Intervenors believes that, currently, the Commission and NYSERDA are able to estimate the annual financial cost of a REC contract with a reasonable degree of accuracy, thereby, allowing for payments to be forecast and then made by LSEs with only modest periodic reconciliations. Multiple Intervenors states that if Index RECs were to be utilized, such stability and predictability would be weakened significantly. With Index RECs, the cost of RECs will not be predictable with any accuracy. As market prices decline, the cost of RECs would increase, and vice versa. Thus, Multiple Intervenors argue, that even with the same level of production, the cost of a REC contract with a single supplier could fluctuate wildly on an annual or even on a monthly basis. Multiple Intervenors believes that it would become increasingly difficult, if not impossible, for suppliers to price forward electricity supplies to customers due to the uncertainty of their REC obligations.

Multiple Intervenors believe that if Index RECs are considered, the Commission would need to address periods of very

low and potentially negative market prices, as well as periods of very high market prices. Multiple Intervenors believe that prior to implementing an Index REC, the Commission should identify specifically (i) the NYISO market changes and (ii) the potential market reform it is seeking to address. Multiple Intervenors believes that the following design considerations should be incorporated into such structure: (1) RECs should be indexed off the LBMP in the NYISO Load-Zone in which the renewable generation facility is located; (2) the minimum LBMP that should be utilized for Index purposes should be no lower than \$0.00 per MWh; and, (3) new revenue streams created by market rules or regulatory changes should count fully towards the Index REC price contained in a contract.

Multiple Intervenors states that rules will need to be developed in terms of exactly how market revenues will be calculated, and those provisions will need to be reflected in future contracts. Market revenues should be specific to the NYISO Load Zone in which each renewable generation facility is located, according to Multiple Intervenors. Average market prices, Multiple Intervenors continues, should not be utilized because different facilities will have markedly different levels of output during certain hours of every day.

Multiple Intervenors believes that transitioning from Fixed-Price RECs to Index RECs would shift market price risks from renewable generation owners to customers. Multiple Intervenors states that the Commission previously has recognized this risk shifting, and it has rejected the reliance on Contracts for Differences, a variation of Index RECs. Multiple Intervenors notes that the Commission reaffirmed its preference that generation developers, and not customers bear market price risks, and it concluded in the Renewable Portfolio Standard (RPS) proceeding in 2006. Also, Multiple Intervenors states

that Index RECs would obscure market price signals related to the siting and operation of renewable generation projects. Multiple Intervenors notes that the Commission held previously that use of the Fixed-Price method would support the NYISO markets and influence the siting of project in areas where they will be of most value.

NYISO

NYISO supports the State's clean energy goals and believes that a new renewable resource procurement mechanism must be designed to maintain reliability, minimize economic risk to consumers, and reduce carbon emissions. NYISO has previously encouraged the Commission to continue to administer the Fixed-Price REC mechanism. NYISO states that Index REC structure could also provide a workable approach to financing renewable resources. NYISO supports including environmental attributes in the Indexing calculation. NYISO believes that the Indexing calculation encourages resources to follow wholesale market incentives. NYISO notes that a composite Indexing that blends reference energy prices and equivalent reference capacity prices could insulate renewable resources from energy market price signals and may adversely impact electric system reliability. NYISO states that temporal and location-based wholesale energy market prices, including negative LBMPs, encourages resources to follow the dispatch instruction that balance energy supply and demand.

NYMPA

NYMPA believes that the Index REC Proposal should be denied because the proposed approach is likely to shift market risks from developers to ratepayers. NYMPA states that it presents a significant threat of double-payment to renewable

generators because renewable generators would be paid for its emission-free output by consumers through a REC contract with NYSERDA, and then again by increased energy prices in the NYISO markets. NYMPA believes that an Index REC will provide perverse incentives for a developer to ignore energy price signals and site in areas of easiest development resulting in less desirable benefit to the market. NYMPA states that development will likely occur in areas where it is cheapest, which would exacerbate existing transmission issues in the State, and likely create new ones, resulting in increased congestion on the transmission system and increased costs to consumers. Also, NYMPA recommends that a technical conference be held on this question to ensure that all key metrics are considered.

NYSERDA

NYSERDA recommends that the Commission adopt the Index REC mechanism, and requests that the Commission allow bidders to select their preferred procurement structure, either Fixed-Price REC or the Index REC structure, and to bid accordingly. NYSERDA provides an assessment of qualitative Index REC design choices, and quantitative assessment of the Index REC and Fixed-Price REC structures.

NYSERDA provides several important design choices for adopting the Index REC structure: use of monthly settlement period with a single reference price; negative REC payments from project to NYSERDA; use of hourly day-ahead LBMP, the use of NYISO load zonal Reference Energy Price, and the use of simple average of hourly prices across the settlement period; and the use of ICAP Spot Market Auction, the use of a single-zone Reference Capacity Price, and to allow fixed, custom UCAP Production Factors.

An Index REC structure would reduce projects' exposure to market price risk, with the aim of reducing costs to ratepayers. NYSERDA states that this structure offers projects a relatively more certain amount of revenue per unit of energy generated in the form of a hedge against fluctuations in commodity prices over time, creating price stability for both ratepayers and projects. NYSERDA explains that this price stability translates to reduced project risk and resulting lower financing costs. NYSERDA claims that ratepayers benefit from these lower financing costs through lower strike prices and hence lower REC payments, while price stability also reduces their exposure to volatility in electricity markets. Because ratepayers ultimately bear the burden of both direct energy costs and CES program costs, and because under an Index REC structure these program costs reduce when energy prices increase and vice versa, NYSERDA believes the overall price volatility customers bear from both upward and downward energy price movements is reduced.

NYSERDA states that an advantage of the Fixed-Price REC is that the REC payments provide predictable cashflows for both NYSERDA and the project, allowing for a stable collection schedule from ratepayers and revenue confidence for the project. However, NYSERDA argues that the Fixed-Price REC structure offers limited revenue certainty to project investors. Projects could take steps to hedge their energy or capacity revenues, but this revenue risk is likely to increase the cost of project financing relative to a more fully-hedged contract structure according to NYSERDA. NYSERDA states that an Index REC structure would reduce projects' exposure to market price risk, and it offers projects a relatively more certain amount of revenue per unit of energy generated in the form of a hedge

against fluctuations in commodity prices over time, creating price stability for both ratepayers and projects.

NYSERDA states that since the Index REC is variable with respect to general market conditions, the incorporation of carbon pricing into energy and capacity prices would not result in double-payments. The basic design of an Index REC structure with a fluctuating REC price means that REC payments will exhibit some degree of fluctuation as opposed to a Fixed-Price REC structure. From the perspective of ratepayers, the effect will be that consumers will experience a dampening effect in their energy bills both when commodity prices go up and down since these fluctuations will follow commodity price fluctuations inversely, thus reducing their overall exposure to volatility.

NYSERDA notes that the adoption of an Index REC structure would require implementation changes to the RES Program, where it would need to revise the methodology for calculation of its annual Tier 1 REC price associated with its sales to suppliers for both Fixed-Price and variable REC payments. NYSERDA believes that details of this process should be the subject of an implementation plan.

NYSERDA states that Multiple Intervenors fail to recognize that an Index REC structure reduces rather than shifts overall market risk and volatility for both generators and customers. In the Fixed-Price REC structure, NYSERDA states that the uncertainty for future energy and capacity revenue constitutes a significant risk to investors and lenders, raising the cost of capital and requiring the project to increase its revenues through the only remaining component available, the price they bid to NYSERDA for the Fixed-Price REC bid. NYSERDA claims that under the Fixed-Price REC price structure, ratepayers both bear the cost of a higher renewable project's

finance costs and are fully exposed to the impact of wholesale prices fluctuation on their energy bills. Under an Index REC structure, ratepayers benefit both from projects' reduced finance costs and a reduction in volatility of their energy bills.

Shell

Shell believes that extending the Index REC option to additional renewable resources is not the sole option. For example, Shell comments that the Commission could direct that future REC contracts must include a mechanism to deduct the carbon component of energy clearing prices from REC payments if the NYISO's carbon pricing proposal is implemented. Shell believes that the Commission must avoid actions such as restoring utility ownership of generation, or it will close out needed investment signals that are required to implement a market-based system that shifts risks to developers. Shell recommends an expedited Technical Conference to more fully consider the long-term implications of an Index REC structure.

Suffolk County Legislature

Suffolk County Legislature recommends a more targeted application for Index RECs, such as an Index REC to be used for projects that are more complicated or more expensive to develop but offer greater community acceptance, as well as for environmental and system benefits.

Valcour

Valcour believes that an Index REC pricing mechanism can resolve the uncertainties in the revenue produced by facilities, and provide more durable market signals for investors, developers and project lenders. Valcour states that

the Index REC procurement mechanism fluctuates in a composite index of NYISO prices that would alter the REC revenue resulting in a normalized average price. The normalized contract price provides a hedge against market volatility for both consumers and renewable energy providers. Valcour believes that lack of volatility would lower the financing costs for renewable generators, and therefore lead to lower REC procurement costs, thereby providing savings to consumers.

INDEX REC PROCUREMENT METHODOLOGY

If NYSERDA awards a contract based on the Index REC Strike Price that was bid, the contract price to be paid to the generator will vary over time during the term of the contract pursuant to the Index REC procurement methodology described below. The contract price to be paid to the generator will vary monthly over time during the term of the contract. Each monthly period of the contract will have its own contract price (the Monthly REC Price) for that month, calculated for the monthly period using reference energy and capacity prices. The Index REC Strike Price bid by the generator will be the starting point for determining the monthly contract prices. Each Monthly REC Price will be calculated during a settlement period following the month by a formula that in general concept is as follows:

Index REC Strike Price - (Reference Energy Price + \$/MWh Equivalent Reference Capacity Price) = Monthly REC Price

The Reference Energy Price shall be a simple average of the hourly NYISO day-ahead zonal market price for the delivery month for the NYISO Zone where the generator is located.

The Reference Capacity Price will be based on the developer-chosen fixed production factor multiplied by the MWh equivalent of the ICAP Spot Market auction price, which is settled monthly, for the NYISO Zone where the generator is located.