EXH. CJP-9
DOCKETS UE-240004/UG-240005
2024 PSE GENERAL RATE CASE
WITNESS: CRAIG J. POSPISIL

BEFORE THE
WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION, **Complainant,** **v.** **PUGET SOUND ENERGY,** **Respondent.**	**Docket UE-240004** **Docket UG-240005**

EIGHTH EXHIBIT (NONCONFIDENTIAL) TO THE PREFILED DIRECT TESTIMONY OF

CRAIG J. POSPISIL

ON BEHALF OF PUGET SOUND ENERGY

FEBRUARY 15, 2024

STATE OF NEW YORK
PUBLIC SERVICE COMMISSION

Proceeding on Motion of the Commission to
Implement a Large-Scale Renewable Program
And a Clean Energy Standard

Case 15-E-0302

PETITION OF THE ALLIANCE FOR CLEAN ENERGY NEW YORK TO ADDRESS POST COVID-19 IMPACTS ON RENEWABLE DEVELOPMENT ECONOMICS AND CONTRACT CONSIDERATIONS

I. INTRODUCTION

Beginning in 2016 with the initiation of its Clean Energy Standard program,[1] New York State has defined its enduring, targeted commitment to combat climate change. Subsequently enacting its groundbreaking Climate Leadership and Community Protection Act in 2019 and the Accelerated Renewable Energy Growth and Community Benefit Act in 2020, New York sealed its commitment into law, leading the nation on this front.[2]

The renewable energy industry responded. Awards in response to New York State Energy Research and Development Authority ("NYSERDA") solicitations since CES Program implementation began far outpace the State's earlier procurement efforts, totaling over 9.4 GW as of this time ("Awarded Projects").[3] New Yorkers are already benefitting from significant and

[1] *See* NYPSC Case 15-E-0302, *Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Program and a Clean Energy Standard*, Order Adopting a Clean Energy Standard (issued and effective August 1, 2016) (hereinafter, "CES Proceeding," "CES Program" and "CES Order," respectively).

[2] *See* Climate Leadership and Community Protection Act, S.B. 6599, 2019 Leg., 242nd Sess. (N.Y. 2019) (codified as Ch. 106, L. 2019) (hereinafter, "CLCPA"); Accelerated Renewable Energy Growth and Community Benefit Act, c. 58, L. 2022 (hereinafter, "ACRE Act").

[3] As established herein, the Commission has taken numerous important steps to refine the CES Program. As set forth below, this Petition accordingly addresses the MWs that were procured in the last Tier 1 renewable energy credit ("REC") solicitation initiated prior to issuance of the CES Order but primarily focuses on the megawatts ("MWs") procured in the solicitations that were initiated after the CES Order and additional PSC orders were issued refining the CES Program. These later solicitations have yielded much larger levels of awards, both in terms of the number of projects awarded and the resultant total MWs. For ease of reference, these solicitations are treated herein as capitalized

growing levels of clean energy. On April 18, 2023, a press release issued by Governor Kathy Hochul announced, "eight new large-scale renewable energy infrastructure projects have been completed in the last six months to deliver clean energy to New York's power grid."[4] As reflected in the New York State Independent System Operator, Inc. ("NYISO") operating reports, with over 2,000 MW of land-based wind ("LBW") resources now in operation, LBW resources alone contributed 8% of the needed generation during this past winter's peak periods with zero emissions.[5] A May 2023 press release from the NYISO announced a solar generation record for New York: during the noon hour on May 18th, solar power generated 20% of the state's electricity demand.[6] This is real progress, but still a fraction of what is needed.

To date, the New York State Public Service Commission ("Commission" or "NYPSC") has evinced its commitment to build renewable energy by devising more effective solicitation processes, eliminating some permitting obstacles, making efforts to improve interconnection processes and authorizing major transmission upgrades to ensure renewable energy can be delivered to consumers. Much work, however, remains for New York's commitments to combat climate change to be met.

To meaningfully address the issues presented by this Petition, two points must be recognized from the outset. First, securing a renewable energy credit ("REC") award via a

terms referenced by year, *e.g.*, the solicitation that NYSERDA initiated in 2017 is referred to as the 2017 REC Solicitation.

[4] April 18, 2023, During Earth Week, Governor Hochul Announces Completion Of Eight New Large-Scale Renewable Energy Infrastructure Projects, https://www.nyserda.ny.gov/About/Newsroom/2023-Announcements/2023-4-18-During-Earth-Week-Governor-Hochul-Announces-Completion-Of-Eight-New-Large-Scale-Renew

[5] See NYISO, "Winter 2022-2023 Cold Weather Operations," presented March 16, 2023, available at https://www.nyiso.com/documents/20142/36685306/04_2022%20-%202023%20OC%20Cold%20Weather%20Operating%20Conditions.pdf/4b9fe9d1-3007-f6fe-56b5-89d3a9d7e039.

[6] May 26, 2023, NYISO Announces a New Generation Record. https://www.nyiso.com/-/press-release-%7C-nyiso-announces-new-solar-generation-record.

NYSERDA Tier 1 solicitation is just one initial step in project development. Project permits and interconnection authorization are often subsequently pursued followed by financing and construction arrangements, including the execution of contracts, to complete project development. Based on New York's efforts early in the CES Program, the small subset of Awarded Projects able to complete this entire cycle and reach operation have been five to seven years in the making up to this point.[7]

Second, the significant remaining work includes both procurement of additional generating capacity and completion of Awarded Projects. Recognizing thousands of megawatt hours ("MWhs") of renewable generation must still be procured through NYSERDA Tier 1 solicitations, the Commission has set a 2026 deadline to complete NYSERDA solicitations to allow sufficient time for development and construction.[8] Maintaining that cadence uninterrupted is critical to the State's climate change commitment. Through RESRFP21-1, the State has generally remained on track.

However, pertinent to this Petition, while developers also had been proceeding apace with Awarded Project development, dramatic shifts in the global economy have caused a number of severe and unforeseeable economic disruptions since fall 2021. A number of factors not seen in decades, including the COVID-19 pandemic and the war of aggression in Europe with Russia's

[7] *See* n. 46 *infra.*

[8] *See* NYPSC Case 15-E-0302, *supra*, White Paper on Clean Energy Standard Procurements to Implement New York's Climate Leadership and Community Protection Act (June 18, 2020) (hereinafter, "White Paper"); *see also* NYPSC Case 15-E-0302, *supra*, Order Adopting Modifications to the Clean Energy Standard (issued and effective October 15, 2020) (hereinafter, "CES 2.0 Order") at 22 (accepting the White Paper's procurement analysis and associated trajectory). ACE NY notes that the four-year period between the last solicitation and the 2030 mandate should be considered a guide only to define the timetable for project development in New York given experience to date. To complete the analyses to support this Petition on an apples-to-apples basis, PA accepted DPS Staff's timetable and utilized an average of a four-year period as the basis to compare the costs and benefits of authorizing the Adjustment Mechanism versus the protracted project completion timeframes if developers are required to turn back awards and potentially begin new projects under future solicitation awards.

invasion of Ukraine, have collectively led to intractable supply chain bottlenecks and labor constraints. Meanwhile, unprecedented increases in demand for new renewable energy development relative to other goods and services as more States and countries implement their own climate change initiatives has further exacerbated these inflationary effects for the renewable energy industry, leading to wholly unpredictable upsurges in the costs of renewable energy development.

The end result: skyrocketing, unpredictable inflationary spikes. As established herein, these effects collectively ("Post-COVID Impacts") have eroded the viability of Awarded Projects that have not already been cancelled, are not operational and are not yet nearing operation ("Under Development Projects"). Proceeding with the Tier 1 REC program on a status quo basis is, thus, no longer viable.

Recognizing the pronounced effects of the Post-COVID Impacts on renewable energy development, NYSERDA incorporated an inflation strike price adjustment mechanism in its RESRFP22-1 solicitation to support future project development.[9] This solicitation revision marks an important change for the currently pending, and potentially future, solicitations.[10]

Under Development Projects, however, have no mechanism to recover the insurmountable shortfalls that the Post-COVID Impacts have produced. Existing Tier 1 REC contracts ("REC Contracts") do not currently contain an express inflation provision to offset the unpredictable and corrosive Post-COVID Impacts. Strike pricing is instead held constant.

[9] NYSERDA, "Renewable Energy Standard Purchase of New York Tier 1 Eligible Renewable Energy Certificates Request for Proposals (RFP)" (dated January 13, 2023) (hereinafter, RESRFP22-1), available at https://portal.nyserda.ny.gov/servlet/servlet.FileDownload?file=00P8z000002LTLBEA4.

[10] Given continuing developments in the renewable energy markets and financial markets, ACE NY urges NYSERDA to carefully consider the components of the adjustment mechanism addressed herein when devising the associated adjustment mechanism for future Tier 1 REC solicitations.

Given the scope and scale of unprecedented Post-COVID Impacts, the Alliance for Clean Energy New York, Inc. ("ACE NY")[11] retained the PA Consulting Group, Inc. ("PA") to analyze the effects of the Post-COVID impacts on the renewable energy industry. Using publicly available indices and information, PA quantitatively and qualitatively assessed the effects of the Post-COVID Impacts using the Under Development Projects as the study base case. As established in detail *infra*, while DPS Staff relied on a 20% attrition rate to establish the required scale and cadence for new Tier 1 procurement to comply with the CLCPA, the portfolio of Under Development Projects cannot proceed economically on existing contract terms. With New York State's successful implementation of its climate change public policies hanging in the balance, NYSERDA must be able to also incorporate a contract adjustment mechanism in existing REC contracts to restore the viability and keep New York on track to comply with CLCPA mandates.

Absent authorization of an adjustment mechanism, existing awards necessarily will be tendered back, detrimentally impacting New York's climate change initiatives. While, at best, some developers may be able to offer these or new projects into future solicitations, these future proposals, by definition, must necessarily be based on strike prices that reflect the higher project costs. These projects also may well be different in size, configuration and location, and if awarded, will reach operation much later. At worst, the developers of some Awarded Projects will not be able to submit new proposals in New York, and thus, a subset of Awarded Projects will be permanently cancelled.

As detailed herein, failure to redress these Post-COVID Impacts on the Under Development Projects will significantly delay the development of Tier 1 renewable resources,

[11] ACE NY is a member-based organization with a mission to promote the use of clean, renewable electricity technologies and energy efficiency in New York State. ACE NY members include companies that currently, or may in the future, develop, own and operate renewable energy facilities in New York communities. This petition is submitted on behalf of ACE NY as an organization, and not on behalf of its individual members.

resulting in serious adverse effects for New Yorkers. PA's conservative projections estimate such delays would result in incremental energy payments of approximately $1 billion and an approximate $960 million increase in capacity payments. Adverse environmental impacts will be profound, projected to reach over six million short tons of additional CO2 emissions at a societal cost to New Yorkers of $900 million using the social cost of carbon metric. In addition, protracted construction schedules or outright cancellations will have ripple effects on economic development, labor deployment and the State's ability to effectively align its generation and transmission upgrades to ensure renewable energy can be delivered to New York consumers statewide. And, protracted project completion will drastically derail the schedule for renewable development, exacting shortfalls violative of CLCPA mandates.

As established herein, balancing costs and benefits of the options now available to New York in light of evolving economic disruptions since the RESRFP21-1 proposal deadline, authorizing an adjustment mechanism "is an effective and efficient response for the State to meet its CLCPA mandates by redressing what are unprecedented and corrosive economic disruptions."[12] To manage the devastating effects of the Post-COVID Impacts and support ongoing renewable energy development, a contract adjustment mechanism must adequately account for the numerous factors specifically undercutting project completion. ACE NY thus submits this Petition, supported by the PA Affidavit advanced by Messrs. Repsher and Chaudhari, respectfully requesting that the Commission reaffirm its commitment to renewable generation development by redressing the deleterious economic disruptions and allowing project this development to proceed uninterrupted. Specifically, based on the quantitative and qualitative

[12] *See* **Attachment A**, Affidavit of Mark Repsher And Ashish Chaudhari in Support of The Alliance for Clean Energy New York, Inc.'s Petition To Address Post-Covid Impacts on Renewable Development Economics and Contract Considerations (hereinafter, the "PA Affidavit" and cited by paragraph as "PA Aff. P __") at P 12.

analyses and additional evidence detailed in the PA Affidavit, ACE NY requests that the Commission issue an order directing NYSERDA to incorporate an adjustment mechanism in its existing REC Contracts composed of the specific components documented by PA (the "Adjustment Mechanism").

Time is of the essence for New York to remain on a trajectory to meet the CLCPA mandates. Commission action on an expedited basis will provide affected developers participating in the Tier 1 REC program with critically needed certainty. Authorization of the Adjustment Mechanism will allow developers of Under Development Projects to take the steps necessary to advance their projects in the upcoming construction windows (*e.g.*, Spring 2024 for projects that are permitted and have addressed interconnection requirements). On the other hand, if the Adjustment Mechanism is not authorized, project developers must assess whether projects – particularly, as established *infra*, earlier vintage projects – must be cancelled prior to making additional financial commitment in the form of contract or interconnection security payments or can be reformulated to be offered in any future NYSERDA solicitation. ACE NY also respectfully requests that the Commission issue an order authorizing the Adjustment Mechanism by its October 12, 2023 session.

II. COMMUNICATION

The following persons should be included on the official service list in this proceeding, and all communications concerning this filing should be address to them:

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III. BACKGROUND

A. New York's Commitment To Combat Climate Change

In 2016, the Commission accelerated its commitment to develop renewable generation to combat climate change through the implementation of its CES Program.[13] Under its initial framework, the CES Program required 50% of energy serving New York consumers to be generated by renewable resources by 2030 ("50 x 30"). To achieve these levels, the Commission's CES Order provided for, *inter alia*, a Tier 1 program designed to foster development of environmentally beneficial, LBW and utility-scale solar PV generation projects by compensating them for their emissions-free generation through the purchase of RECs. To further augment

[13] *See generally* CES Order.

renewable energy development, the CES Order also tasked NYSERDA with enhancing its competitive solicitations to ensure more effective REC procurement.[14]

Building upon these efforts, in July 2019, New York State enacted the CLCPA, a comprehensive law to combat climate change economy-wide.[15] Pertinent hereto, the CLCPA further fast-tracked the State's renewable energy development targets by statutorily mandating 70% renewable energy consumption by 2030 ("70 x 30").[16] In addition, by law, New York State must have an emissions-free electric system by 2040.[17] The CLCPA also requires the State to procure 6,000 MW of solar resources, 3,000 MW of energy storage resources ("ESRs") and 9,000 MW of offshore wind ("OSW") resources by 2025, 2030 and 2035, respectively.[18]

Thereafter, DPS Staff issued the CES White Paper recommending enhancements to the CES Program to implement CLCPA mandates.[19] Reinforcing the fundamental fact that supporting project viability is critical to achieve the 70 x 30 mandate, DPS Staff highlighted that the success of Tier 1 procurements would depend on low and predictable rates of project attrition.[20]

[14] *See id.* at 4.

[15] *See generally* CLCPA.

[16] *See* N.Y. Pub. Ser. L. (hereinafter, "NYPSL") § 66-p(2).

[17] *Id.; see also* N.Y. Environ. Cons. L. § 75-0103(13)(B) and N.Y. Environ. Cons. L. § 75-0109 (4)(F) (requiring adoption of a Scoping Plan to outline a series of policy and regulatory recommendations for attaining greenhouse gas emissions limits and precluding sources of greenhouse gas emissions within the electric generation sector from using offsets to comply with State-mandated emissions limits, further demonstrating the State's commitment to combat climate change most effectively); *see also* New York State Climate Action Council, "Scoping Plan – Full Report" (dated December 2022) at 121-122, available at: https://climate.ny.gov/resources/scoping-plan/ (providing that a key assumption in all greenhouse gas mitigation scenarios designed to meet CLCPA-mandated emissions reductions is achievement of the 70 x 30 mandate).

[18] *See* NYPSL § 66-p(5).

[19] *See generally* White Paper (projecting the quantity of renewable energy and annual Tier 1 procurement targets to meet 70 x 30 mandate).

[20] *Id.* at 27.

DPS Staff further recognized that meeting the 70 x 30 requirement was "a necessary and foundational precondition for achieving the 2040 Zero Emission Target."[21]

In October 2020, the Commission issued its CES 2.0 Order to effectuate the State's further commitment to its climate change initiatives by revamping the existing structure of its CES Program, including specific procurement deadlines to meet the CLCPA's more aggressive and accelerated clean energy mandates.[22] The CES 2.0 Order adopted the White Paper recommendations and amended the existing CES Program structure to accelerate renewable energy development based on a 20% project attrition rate.[23] Pertinent hereto, focused on minimizing project attrition, the Commission echoed Staff's findings, emphasizing the importance of project viability in proposal valuation, "on the grounds that high levels of project attrition can negatively impact program budgets and success."[24]

B. Post-CES 2.0 Order Tier 1 Solicitation, Contract and Program Modifications

Since issuance of its CES 2.0 Order, the Commission has carefully considered the ongoing evolution of renewable energy markets and associated financing structures. In response to two separate petitions, the Commission has approved amendments designed to more effectively and efficiently administer its Tier 1 program.[25] Specifically, on March 12, 2019, ACE NY filed a petition with the Commission requesting that NYSERDA be directed to implement an Index REC

[21] *Id.* at 3.

[22] *See* CES 2.0 Order.

[23] *See* CES 2.0 Order at 22 (accepting the White Paper's renewable energy procurement analysis and associated trajectory, delineating the initial load forecast and procurement targets for the Tier 1 program and establishing annual Tier 1 procurement targets of approximately 4,500 GWh between 2021 to 2026).

[24] *Id.* at 26-27, 29 and 79-80 (acknowledging that CLCPA mandates could not be achieved without aggressive deployment of renewable resources and directing a new Tier 4 to be implemented to ensure renewable generation is located in, or delivered via new transmission to, New York City).

[25] While critical to resolve the issues raised in those petitions, these modifications cannot ameliorate the disruptions eluding renewable energy development addressed herein.

procurement mechanism for future Tier 1 REC Solicitations.[26] Citing, *inter alia*, its statutory obligations to provide safe and adequate service at just and reasonable rates, the Commission directed NYSERDA to offer bidders an Index REC price option beginning in RESRFP20-1, finding this option will "give developers more flexibility to adapt their bidding behavior to their financing and operational needs," reduce risk premiums, and provide lower, less volatile, prices for New York consumers.[27]

Subsequently, NYSERDA submitted a petition requesting authorization to provide developers with Awarded Projects the option to convert their as-bid fixed REC contract price to the Index REC strike price that had been authorized for bidders in future solicitations.[28] Noting that "achievement of New York's ambitious renewable energy goals will require robust participation by developers," the Commission analyzed whether conversion would "support the development of additional renewable generation resources."[29] Again citing to its statutory obligations to provide safe and adequate service at just and reasonable rates, the Commission authorized NYSERDA to amend its Tier 1 contracts based on, *inter alia*, its findings that conversion would foster renewable energy development and provide substantial cost savings for both developers and consumers, without undue administrative burden on NYSERDA.[30] On these

[26] *See* Case 15-E-0302, *supra*, Petition of American Wind Energy Association and Alliance For Clean Energy New York For An Order Modifying The Clean Energy Standard Tier 1 Procurement Process (dated March 12, 2019).

[27] *See* Case 15-E-0302, *supra*, Order Modifying Tier 1 Renewable Procurements (issued and effective January 16, 2020) at 3.

[28] *See* Case 15-E-0302, *supra*, Order Authorizing Voluntary Modification of Certain Tier 1 Agreements (issued and effective November 20, 2020) (hereinafter, the "Existing Contract Conversion REC Order").

[29] *Id.* at 16.

[30] *Id.* at 8, 10.

grounds, the Commission authorized NYSERDA to allow already Awarded Projects the option to convert their contractual pricing terms to an Index REC strike price.[31]

C. Authorizing Cost Recovery for Significant Bulk System Transmission Improvements to Keep Pace With Renewable Generation Development

Recognizing that energy deliverability and associated curtailment evidenced the concomitant need for adequate transfer capability to ensure implementation of the CLCPA,[32] the State followed the CLCPA with the enactment of the ACRE Act.[33] The Commission then initiated the Power Grid Proceeding in May, 2020 to identify and effectuate plans for the necessary transmission and distribution upgrades.[34] Pursuant thereto, the State's utilities issued a report in November 2020 identifying local transmission and distribution needs to guide future transmission

[31] *Id.* at 10. Most recently, the Commission also made a series of changes to facilitate payment under the Tier 1 program by load serving entities ("LSEs"). Specifically, in its April 2023 Order, the Commission simplified and streamlined LSE compliance obligations by adopting a load share "pay as you go" model that charges each LSE a standardized wholesale dollar per MWh charge based on the LSE's actual wholesale load. *See* NYPSC Case 15-E-0302, *supra*, Order Modifying Clean Energy Standard Tier 1 Obligations (issued and effective April 20, 2023) (hereinafter, the "April 2023 Order"). Notably, the April 2023 Order also adopted mechanisms to facilitate the growing demand to secure voluntary RECs, a change that also requires ongoing renewable development apace with CES 2.0 Order's cadence. *See id.* at 7.

[32] As early as December 2016, the NYISO completed high-level studies demonstrating that the CES Program would "require additional transmission capacity in New York State to deliver renewable resources from upstate New York and northern regions to consumers in downstate New York." *See* NYPSC Case No. 16-E-0558, *In the Matter of New York System Operator, Inc.'s Proposed Public Policy Transmission Needs for Consideration for 2016*, Comments of the New York Independent System Operator, Inc. (dated December 5, 2016) at 1, 7-9 (highlighting the fact that much of New York's renewable capacity is located or being proposed in Upstate New York and additional renewable energy must move east and south to serve load under the CES mandate but "curtailment of renewable generation to maintain transmission system reliability, consistent with the NYISO's 2010 wind study's findings, would jeopardize achievement of 50% by 30 because energy will not be deliverable from renewable resources to downstate load centers" absent additional bulk power transmission development).

[33] *See* ACRE Act (acknowledging the potential for ongoing permitting delays to interfere with renewable energy procurement and impede CLCPA compliance and establishing a framework intended to streamline the siting of renewable energy projects.). The ACRE Act created the Office of Renewable Energy Siting ("ORES") to improve the process and timing for siting and construction of large-scale renewable energy projects in an environmentally responsible and cost-effective manner. *See* NY Exec. Law § 94-c.

[34] *See* NYPSC Case 20-E-0197, *Proceeding on Motion of the Commission to Implement Transmission Planning Pursuant to the Accelerated Renewable Energy Growth and Community Benefit Act,* Order on Transmission Planning Pursuant to the Accelerated Renewable Energy Growth and Community Benefit Act (issued and effective May 14, 2020) (hereinafter, "Power Grid Proceeding").

infrastructure investments and ensure that the electric grid is equipped to support the levels of renewable energy consumption required by the CLCPA.[35]

In the past seven months, the Commission has issued orders authorizing cost recovery for billions of dollars in transmission upgrades that, *inter alia,* will support implementation of the CLCPA renewable resource requirements.[36] Most pertinent hereto, in its February 2023 order, the Commission approved cost recovery to complete 62 Phase 2 local transmission upgrade projects to reduce congestion in the three "areas of concern" upstate.[37] Importantly, the Commission established its decision to fund Phase 2 projects was directly linked to ensuring the portfolio of contracted Tier 1 projects in the areas of concern were deliverable.[38]

[35] *See* NYPSC Case 20-E-0197, *supra,* Utility Transmission and Distribution Investment Working Group Report (issued November 2, 2020). In line with these efforts and to better identify the transmission demands and requisite improvements associated with the growing availability of renewable energy resources, the Commission issued a series of orders focused on transmission upgrades. *See* NYPSC Case 20-E-0197, *supra*, Order on Phase 1 Local Transmission and Distribution Project Proposals (issued and effective February 11, 2021) (hereinafter, "Phase 1 Order") (identifying two categories of potential transmission upgrades: "Phase 1" upgrades, which consist of projects needed to maintain safety and reliability but also provide deliverability benefits, and "Phase 2" upgrades, which are focused entirely on supporting heightened access to new renewable resources); *see also* Case 20-E-0197 at 34, *supra*, Order on Local Transmission and Distribution Planning Process and Phase 2 Project Proposals (issued and effective September 9, 2021) (hereinafter, "Phase 2 Order"). In its Phase 2 Order, the Commission solidified the need for significant investments in three "areas of concern" in Upstate New York in order to effectively unbottle access to renewables and, specifically, directed the four major upstate electric utilities to propose cost-effective solutions outside of their rate cases solely for the purposes of advancing CLCPA mandates by eliminating transmission constraints in those areas.

[36] *See* NYPSC, Case 20-E-0197, *supra*, Order Authorizing Development of Phase 1 Transmission Projects and Cost Recovery Measures (issued and effective July 14, 2022) (approving National Grid's request to pursue development of 26 transmission upgrades and modifications to support CLCPA renewable resource requirements, recognizing that renewable generation output in the three upstate regions was already experiencing significant curtailment due to insufficient transmission capacity) and Order Authorizing Continuation of Phase 1 Transmission Projects and Cost Recovery Measures (issued and effective December 15, 2022) (approving $98 million worth of funding to New York State Electric & Gas Corporation to continue development of 27 local transmission projects to help improve system headroom for new renewable generation).

[37] *See* NYPSC, Case 20-E-0197, *supra*, Order Approving Phase 2 Areas of Concern Transmission Upgrades (issued and effective February 16, 2023) (hereinafter, the "Phase 2 AOC Order").

[38] *Id.* at 24-25.

D. Growing System Needs to Support CLCPA Mandates

As the State transitions all sectors of the economy away from fossil fuel consumption and toward electrification, the grid must manage significant load increases at levels growing faster than anticipated due to, *e.g.,* the enactment of laws dictating building requirements. At the same time, environmental regulation is driving certain existing non-renewable generators to retirement.[39] As these policies are implemented, the NYISO has repeatedly advised that well-orchestrated execution during the transition period to the CLCPA-mandated 2030 and 2040 deadlines is critical to ensure continued system reliability, which, in part, requires timely deployment of new renewable electricity supply resources to meet the State's commitment to combat climate change.[40]

IV. NYSERDA' s Tier 1 Program Implementation

A. REC Solicitations and Project Development To Date

As shown in the PA Affidavit, REC awards are "a fundamental component of project development in New York," as the revenue from power markets "do not compensate renewable resources fully for their environmental attributes."[41] Since the CES Program was initiated the

[39] *See* New York Department of Environmental Conservation ("DEC"), Ozone Season Oxides of Nitrogen (NOx) Emission Limits for Simple Cycle and Regenerative Combustion Turbines, 6 NYCRR Subpart 227-3 (2019) (hereinafter, "Peaker Rule"); *see also* NYISO, "Power Trends 2022 – The Path to a Reliable, Greener Grid for New York" (hereinafter, "Power Trends 2022") at 22, available at https://www.nyiso.com/documents/20142/2223020/2022-Power-Trends-Report.pdf (stating that the Peaker Rule will affect approximately 3,300 MW of power generation downstate, ultimately eliminating approximately 1,600 MW of capability during the summer of 2025 and 950 MW starting May 2023); *see also* CLCPA § 7(2) (requiring all state agencies to factor in achievement of greenhouse gas emission reduction limits in permitting determinations); *see also* DEC, "Notice of Denial of Title V Air Permit, Greenidge Generation LLC" (June 30, 2022), available at https://www.dec.ny.gov/docs/administration_pdf/greenidgefinal630.pdf (denying a Title V air permit renewal application for the Greenidge Generating Station, a 107-megawatt natural gas-fired electric generating facility on CLCPA grounds); *see also* 2019 NYC Local Law No. 97 (requiring certain buildings to satisfy new energy efficiency and emissions limits by 2021); *see also* NYISO, "Short-Term Assessment of Reliability: 2023 Quarter 1" (dated April 14, 2023), available at https://www.nyiso.com/documents/20142/16004172/2023-Q1-STAR-Report-Final.pdf/ (referencing increased load in New York City); *see also* NY Energy Law § 11-104(6)(b),(7) (requiring that by 2026, new buildings up to 7 stories tall, with some limited exceptions, must be built without fossil fuel equipment, and requiring the same for all new buildings regardless of height by 2029); *see also* DEC, Advanced Clean Car Rule II, 6 NYCRR Part 218 (requiring passenger vehicles sold in the state to be zero emission by 2035).

[40] *See* Power Trends 2022 at 5.

[41] *See* PA Aff. P 15.

Commission has authorized a series of programmatic improvements to meet CLCPA mandates. As a result, these solicitations have successfully attracted participation from a wide variety of qualifying renewable energy projects and have resulted in awards to a diverse array of developers proposing projects located throughout New York State.[42] The steady growth in the number of projects and capacity committed through Tier 1 REC solicitations is consistent with the upward trajectory of renewable energy procurement contemplated in CES 2.0.[43] In total, nearly 9,400 MW of new renewable capacity (primarily solar PV and LBW), spread across 117 projects, have been awarded Tier 1 REC contracts to date.[44]

Tier 1 Solicitation	Reference	Date Issued	Submission Deadline	# of Projects Awarded	MW Capacity Awarded	# of Developers Awarded
3257	2016 REC Solicitation	4/21/2016	5/26/2016	6	304	4
RESRFP17-1	2017 REC Solicitation	6/2/2017	9/28/2017	27	1,608	13
RESRFP18-1	2018 REC Solicitation	4/25/2018	8/16/2018	20	1,661	11
RESRFP19-1	2019 REC Solicitation	4/23/2019	9/10/2019	21	1,278	8
RESRFP20-1	2020 REC Solicitation	7/21/2020	10/21/2020	21	2,109	10
RESRFP21-1	2021 REC Solicitation	4/22/2021	8/26/2021	22	2,408	11
Total				117	9,369	

While the State has taken steps to drive the transition to clean energy, the process for bringing a renewable energy project to commercial operation remains complex and time-

[42] *See id.* P 14.

[43] *See* CES 2.0 Order at 22 accepting the White Paper's initial load forecasts and procurement targets, including annual solicitations of approximately 4,500 MW, to ensure that the requisite 24,990 GWh of incremental renewable energy is procured no later than 2026 to achieve 70 x 30).

[44] *See* PA Aff. P 14, Table 1.

consuming.[45] In addition to prolonged permitting processes, project developers must complete the NYISO interconnection process which is facing significant backlogs despite improvements that have been made thereto.[46] Projects must also secure financing, procure equipment and make necessary construction arrangements to complete development.[47] Given REC contracts are a lynchpin to project development, completion of these efforts necessarily follow REC awards.

As demonstrated in the PA Affidavit, eight projects awarded through the CES program have become operational within the past six months.[48] Notably, the completed projects were awarded contracts from the 2016 pre-CES Program Solicitation and the 2017 REC solicitation, evidencing as much as a seven-year period from initial solicitation to project completion.[49] Pertinent hereto, equipment and construction arrangements for these projects were secured before the Post-COVID economic disruptions addressed in detail *infra* materialized.[50] While the State has taken steps to streamline permitting processes through enactment of the ACRE Act, and timelines may vary depending on the unique circumstances of each project, "the trajectory of the New York projects that have recently become operational reflects the typical lag experienced by project developers to date between contract award and commercial operation."[51]

[45] For example, the ACRE Act was designed to streamline the siting and construction of large-scale renewable energy projects but that program is still in its infancy. *See also* ORES, "Permitted Applications To Date", available at https://ores.ny.gov/permit-applications.

[46] *See* PA Aff, P. 15, 17.

[47] *See id.* P 16.

[48] *Id.* P 50.

[49] *Id.* P 18.

[50] *Id.*

[51] *Id.* P 19.

B. Unprecedented Economic Disruption Resulting from Post-COVID Impacts

A developer must take into account various economic factors and projections when developing a proposal in response to NYSERDA's REC solicitations.[52] During time periods proposal submissions were due in response to RESRFP17-1 through RESRFP21-1, overnight capital costs for solar and LBW projects were declining and conservative projections by reputable sources demonstrated it would have been reasonable and justifiable for developers to expect this downward trend to continue.[53] "Matched against these equipment cost reductions in this time frame were reasonable expectations that inflation levels would remain relatively static and low," with economic forecasts indicating those trends would continue for the foreseeable future.[54] Interest rates over this same period were also low, with an annual average interest rate near 0% in a number of these years.[55] In fact, as demonstrated in the PA Affidavit, "both the inflation levels and the interest rates remained at historically low levels through [both] the September, 2019 submission deadline for RESCRFP19-1 . . . [and] the October, 2020 submission deadline for RESCRFP20-1[.]"[56] Forecasts available through August, 2021 continued to project low inflation levels.[57]

[52] *Id.* P 21.

[53] *Id.* PP 24 – 30.

[54] *Id.* P 31 ("From 2012 to 2020, the Producer Price Index (All Commodities) ("PPI") and the Consumer Price Index (All Items Less Food and Energy) ("CPI") showed annual average growth levels of -0.3% and 1.9%, respectively, with a maximum of 4.4% and 2.2.%, respectively. Looking back five years from the dates of the 2016 solicitation through RESRFP20-1 submission deadlines, CAGRs for both PPI and CPI were moderate, ranging from -1.9% (2016 Q2) to 1.3% (2020 Q4) for PPI and 1.9% (2017 Q3 and 2018 Q3) to 2.0% (2016 Q2, 2019 Q4, and 2020 Q4).").

[55] *Id.* P 32 ("The average annual Effective Federal Funds Rate ("EFFR") is used as the base rate to establish interest rates for a number of lending products, including loans for renewable energy project development. The annual average interest rate was near 0% in a number of these years (including near 0% levels in 2021). The high over this entire period was just 2.2% in 2019.").

[56] *Id.* P 33.

[57] *Id.* P 34.

As the PA Affidavit concludes, not only did the combination of these factors lead to declining contract prices for renewable generation year over year nationwide, but developers responding to REC solicitations during this period would have reasonably expected any modest inflationary impacts that did materialize would be offset by other factors and their project costs to decline from submission deadline to project completion.[58]

Contrary to reasonable and well-founded expectations, however, unpredictable market conditions have resulted in severe and unpredictable economic disruption.[59] The global COVID-19 pandemic has resulted in, *inter alia*, supply chain bottlenecks and labor constraints.[60] The effects these conditions have had on inflation have been exacerbated by additional unforeseen factors, including a war in Europe.[61] These effects are apparent on a broad scale: PPI and CPI have grown by a total of approximately 10.7% and approximately 8.9%, respectively — a level of growth in those indices that "had not been observed over at least the past decade."[62] Interest rates have also climbed to a level "more than twice as high as the highest annual average [Effective Federal Funds Rate] of 2.2% observed in any year for the ten-year period from 2011-2021."[63]

As established in the PA Affidavit, and as further pertinent to the Commission's review of this Petition, the effects of the Post-COVID Impacts are "being borne even more severely by solar and LBW" developers.[64] The growing nationwide focus on addressing climate change has markedly increased the demand for renewable energy, putting additional cost and inflationary

[58] *Id.* P 35.
[59] *Id.* P 36.
[60] *Id.*
[61] *Id.*
[62] *Id.* P 37.
[63] *Id.* P 39.
[64] *Id.* P 36.

pressures on the renewable energy sector.[65] Sixteen states have established targets for emissions-free electric grids, while at the same time a growing number of corporate entities have adopted their own voluntary clean energy commitments over and beyond these State initiatives.[66]

"The substantial growth in demand for solar and LBW projects has exacerbated inflation for renewable project cost components relative to broader inflation levels."[67] As the PA Affidavit establishes, "[t]aken collectively, [these] sustained inflationary trends impacting key pricing and financing inputs for renewable energy projects during the intervening periods since the time proposals were submitted in the REC Solicitations have materially eroded project economics."[68]

Acknowledging the impacts of the wide-scale economic disruption on renewable development, NYSERDA incorporated an optional adjustment mechanism provision.[69] Specifically, NYSERDA authorized the adjustment of developers' as bid strike prices as of the commencement of "Construction Activities" to account for inflationary changes between the bid submission deadline and construction.[70] To date, however, NYSERDA has not taken any steps to address the deleterious effects of the Post-COVID Impacts on the viability of the Under Development Projects.

[65] *Id.* P 40.

[66] *Id.*

[67] *Id.* P 44 ("The key inflation indices more directly applicable to solar and LBW development project costs have increased in recent history even more substantially than PPI. From 2021 Q3 (the submission deadline for the 2021 REC Solicitation) to 2022 Q4, PPI grew by a total of approximately 12%. However, components of PPI tied more closely to industries impacting the cost of renewable development projects have generally grown at a faster rate. For example, the index for Electric Power & Specialty Transformer Manufacturing ('EPSTM'), which is a reasonable proxy for specialized equipment comprising much of a renewable development project, has grown by nearly three times as much at 32% over the same timeframe. Likewise, New Non-Residential Building Construction, Northeast ("Construction"), a reasonable proxy for engineering, procurement, and construction ('EPC') service costs as well as other renewable development costs, has grown by more than twice the PPI level at 8% over the same timeframe.").

[68] *Id.* P 49.

[69] *See* RESRFP22-1.

[70] *Id.* at 12.

C. Post-COVID Impacts on Under Development Projects

To date, approximately 1.1 GW of solar and LBW project capacity has already been cancelled, representing a 12% attrition rate to date.[71] In addition to eliminating these projects from its assessment from the outset, PA set its base case for its analyses on the Under Development Projects. Given the deleterious effects of the Post-COVID Impacts on Under Development Projects, the PA Affidavit confirms that project developers of such projects face substantial gaps in revenues.[72] They, thus, cannot reasonably be expected to proceed with project development under existing REC Contract terms.

As identified by the parameters set for its analyses, 86 of the 117 Awarded Projects are Under Development Projects, which collectively are no longer viable under their existing contracts.[73] This projected rate of attrition far exceeds what was contemplated by the Commission, based on calculations set forth in the PA Affidavit.[74] As documented in the PA Affidavit, losing these projects "will indisputably affect the levels of renewable generation available to serve New Yorkers both in the near term and as the State nears the CLCPA 2030 mandated deadline to demonstrate 70 x 30 compliance."[75]

D. Proposed Adjustment Mechanism

The Adjustment Mechanism detailed in the PA Affidavit includes all necessary components to restore viability and allow development under the REC Tier 1 program to proceed uninterrupted.[76] As established in the PA Affidavit, the proposed Adjustment Mechanism is based

[71] *See* PA Aff. P 57.
[72] *Id.* P 53.
[73] *Id.* P 58.
[74] *Id.* P 57.
[75] *Id.* P 58.
[76] *Id.* P 68.

on publicly available data, and has been developed to ameliorate the Post-COVID Impacts as they have specifically affected the renewable energy industry.[77] As proposed, the Adjustment Mechanism would be applied as a one-time adjustment, implemented via a contract modification specific to the two core technology types (solar and LBW) and corresponding to a contractually defined trigger point.[78] The adjustment for each project would be calculated using publicly available indices.[79] Specifically, as established in the PA Affidavit, the following Solar Adjustment Mechanism Formula and LBW Adjustment Mechanism Formula would restore viability to support project completion, while also ensuring efficiency, transparency, and simplicity in their application:

Solar Adjustment Mechanism Formula

$$REC_{adj} = REC_{orig} * \left(0.40 * \frac{Index_{T,Mod}}{(1+MEF) * Index_{B,Mod}} + 0.17 * \frac{Index_{T,EPSTM}}{Index_{B,EPSTM}} + 0.20 * \frac{Index_{T,Steel}}{Index_{B,steel}} + 0.23 * \frac{Index_{T,,Construction}}{Index_{B,Construction}}\right) * Adj_{IDC} * Adj_{TL}$$

Where:

$Index_B$ (for each component) is the price or unitless index as of the respective REC Solicitation submission deadline
$Index_T$ (for each component) is the price or unitless index on the date triggering the Adjustment Mechanism established in the modified contract.

LBW Adjustment Mechanism Formula

$$REC_{adj} = REC_{orig} * \left(0.52 * \frac{Index_{T,EPSTM}}{Index_{B,EPSTM}} + 0.19 * \frac{Index_{T,Steel}}{Index_{B,Steel}} + 0.15 * \frac{Index_{T,Turbine}}{Index_{B,Turbine}} + 0.08 * \frac{Index_{T,Construction}}{Index_{B,Construction}} + 0.06 * \frac{Index_{T,Cement}}{Index_{B,Cement}}\right) * Adj_{IDC} * Adj_{TL}$$

Where:

$Index_B$ (for each component) is the price or unitless index as of the respective REC Solicitation submission deadline
$Index_T$ (for each component) is the price or unitless index on the date triggering the Adjustment Mechanism established in the modified contract.[80]

[77] *Id.* P 62.

[78] *Id.*

[79] *Id.* P 63.

[80] *Id.* P 67.

V. REQUEST FOR NYSERDA TO INCORPORATE A ONE-TIME ADJUSTMENT MECHANISM IN EXISTING REC CONTRACTS

A. The Adjustment Mechanism Will Allow the Tier 1 REC Program To Continue To Implement the State's Public Policy Initiatives And Ensure Safe And Adequate Service At Just And Reasonable Rates

The Commission must ensure electric corporations furnish safe and adequate service at just and reasonable rates in accordance with NYPSL Section 65.[81] NYPSL Section 5 further requires that the Commission "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 preservation of environmental values and the conservation of natural resources."[82]

The CLCPA accordingly requires the new clean energy system established thereunder to be implemented to meet the 70 x 30 mandate while providing safe and adequate service. Specifically, NYPSL Section 66-p — a core provision of the CLCPA — mandates the Commission must move toward the 70 x 30 mandate in a well-ordered way, requiring the Commission to "issue a comprehensive review of the [renewable energy] program" by July 1, 2024 and every two years thereafter.[83] As part of such comprehensive review, the Commission must determine and report, *inter alia*, the "progress in meeting the overall targets for deployment of renewable energy systems and zero emission sources, including factors that will or are likely to frustrate progress toward the targets[.]"[84]

[81] *See* NYPSL § 65(1) (providing, in pertinent part, that "every electric corporation…shall furnish and provide such service, instrumentalities and facilities as shall be safe and adequate and in all respects just and reasonable.").

[82] *See* NYPSL § 5(2).

[83] *See* NYPSL § 66-p.

[84] *Id.*

Commission orders issued since enactment of the CLCPA have reaffirmed the State's commitment to ensure the 70 x 30 mandate is met in full compliance with its statutory obligations. Notably, the Commission's Existing Contract Conversion Order authorizing NYSERDA to incorporate a conversion mechanism in existing Tier 1 REC contracts was rooted in the need to ensure Tier 1 procurements were cost-effective and to minimize project attrition to meet CLCPA's mandates.[85] There, the Commission focused on the fact that Awarded Projects faced a serious risk of attrition.[86] The Commission concluded a conversion to Index REC pricing would meaningfully reduce these risks and, ultimately, facilitate the timely and more cost-effective completion of those projects in furtherance of the State's climate change goals. Basing its determination, in part, on its finding that conversion to Index REC pricing would result in "substantial cost savings" for New York consumers, the Commission also noted implementation could be achieved with relative administrative ease.[87]

As established by the evidence in the PA Affidavit, the same result obtains here. By authorizing implementation of the Adjustment Mechanism, the Commission will ameliorate the unforeseeable, corrosive economic disruptions resulting from the Post-COVID Impacts. New York consumers will receive substantial economic and environmental benefits as the State further solidifies its commitment to combat climate change. In accordance with its statutory obligations and consistent with its precedent, the economic viability of the State's clean energy Tier 1 program

[85] *See* Existing Contract Conversion Order at 11 ("[T]he proposal has the potential to accelerate the State's progress towards the renewable energy goals included in the CLCPA. These ambitious goals will require a considerable increase in Tier 1 procurement and highlights the importance of minimizing projects attrition."). "Unlike a Fixed-Price REC, an Index REC is based on the developer's estimated revenue requirement for the project as represented by a strike price (i.e., an all-in price for RECs, energy, and capacity). Under this approach, the developer is paid a variable REC price that is calculated by subtracting, from the strike price, index prices for energy and capacity. This formulation is intended to *increase the likelihood that a developer will satisfy its revenue requirement for a project, and ultimately reduce the per-REC costs to ratepayers*." *Id.* (emphasis added).

[86] *Id.*

[87] *Id.*

will be restored and the CES Program will continue to provide safe and adequate electric service at just and reasonable rates to New Yorkers on the trajectory mandated by the CLCPA.[88]

As demonstrated *infra,* with the deadline for issuance of the Commission's comprehensive review of its renewable energy program only a year away, this Petition presents the Commission with the opportunity to proactively redress the economic disruptions that have eroded its Tier 1 program. Indeed, by putting the Tier 1 program back on track New York State will send a powerful signal to the renewable energy industry that will facilitate the State's implementation of its climate change initiatives.

i. The PA Affidavit Confirms That Proceeding With The Under Development Projects On A "Business As Usual" Basis Is No Longer A Viable Option

As established in the PA Affidavit, Awarded Project developers could not have reasonably anticipated the marked confluence of economic disruptions to the renewable energy development industry comprising the Post-COVID Impacts at proposal submission.[89] With no inflation adjustment mechanism provision in existing REC Contracts, the Post-COVID Impacts have "materially eroded project economics" for the Under Development Projects without recourse contractually.[90]

[88] PA Aff. P 68. Additionally, authorizing the Adjustment Mechanism would align with the bounds allowed for rate recovery for development of associated transmission capability. In its Phase 2 AOC Order, the Commission authorized the construction of, and cost recovery for, 62 transmission projects to transfer renewable energy from identified areas of concern. In doing so, the Commission recognized that the significant range in costs estimated by the transmission owners was reasonable at that time, given the stage of development of the projects. *See* Phase 2 AOC Order at 38-41. Specifically, the Commission acknowledged as reasonable a fairly large accuracy range from minus 25% to plus 50% for the cost estimates provided by transmission owners, resulting in a large bound for cost recovery. *Id.*

[89] *Id.* P 35 (explaining a combination of dynamics up to, and including, August 2021 [the deadline for the submission of proposals in the 2021 REC Solicitation continued], including continued low inflation forecasts, low interest rates, and project cost reductions, led to declining contract prices for renewable generation and a reasonable expectation from developers responding to NYSERDA's 2021 REC Solicitation in August 2021 that "project costs would decline from submission deadline to project completion.").

[90] *Id.* P 49.

As established in the PA Affidavit, although the specific consequences of the Post-COVID Impacts "will ultimately be unique to each project[,] the costs for renewable projects viewed holistically have risen so substantially since developers submitted their respective REC Solicitation proposals, that it is reasonable to presume Under Development Projects are no longer economically viable under their existing contract terms."[91] The Post-COVID Impacts are simply too severe. The portfolio of Under Development Projects cannot be built.

As further established, the Under Development Projects account for over 70% of the total Awarded Projects by count and represent 80% of the total MWs procured thus far in Tier 1 solicitations.[92] Taking these figures into account, the PA Affidavit projects that the attrition rate due to the Post-COVID Impacts, if not redressed, will far exceed the 20% attrition rate on which the Commission relied when establishing the total amount of, and cadence for procuring, energy from Tier 1 resources required to achieve CLCPA targets.[93] With its first CES Program assessment post-CLCPA enactment approaching, the Commission must now address the additional steps that must be taken with the State's commitment to renewable energy development lying in the balance.

ii. The Adjustment Mechanism Was Designed To Be Easily Administered and Meaningfully Ameliorate the Post-COVID Impacts on Awarded Projects Not Yet Constructed

The Adjustment Mechanism proposed in the PA Affidavit has been designed to both restore economic viability for Under Development Projects to be constructed and allow NYSERDA to apply the mechanism transparently and with relative administrative ease.[94] Specifically, the

[91] *Id.* PP 53-54.

[92] *Id.* P 58.

[93] *See* CES 2.0 Order at 24-25 ("[A]pproximately 24,990 GWh of energy from new Tier 1 resources will be needed to achieve the 70 by 30 Target. To achieve this amount of incremental generation, the White Paper proposes average annual Tier 1 procurement targets of approximately 4,500 GWh per year over the 2021 to 2026 period, assuming an attrition rate of 20%.").

[94] *See* PA Aff. PP 61 - 63.

Adjustment Mechanism captures the marked confluence of economic disruptions that have directly affected the renewable energy industry through specific cost components that are necessary to restore viability and allow projects to proceed to construction.[95]

Additionally, balancing efficiency, transparency and simplicity, the Adjustment Mechanism utilizes publicly available data and indices. It provides a formula to be uniformly applied by technology type — to utility-scale solar and LBW projects — thereby avoiding the need to make a number of judgment calls specific to each Awarded Project under development.[96]

As to application of the Adjustment Mechanism, PA again focused on administrative simplicity and transparency. To those ends, PA proposes that the Adjustment Mechanism will be a one-time adjustment incorporated in REC contracts, calculated using "publicly available indices corresponding to a time specified" therein.[97]

iii. Failure To Implement the Adjustment Mechanism Will Produce Significant Execution Risk

As the Commission established in its recent Tier 4 Order, renewable project procurement delays "should not only be assessed in terms of delay in the procurement process and construction timeline but also in terms of the risk of a selected project ultimately being successfully realized at all."[98] As the Commission explained, "consideration of [such] execution risk illustrates the importance of avoiding delays with a view towards meeting CLCPA mandates."[99] Absent redress,

[95] *Id.* P 68.

[96] *Id.*

[97] *Id.* P 62.

[98] Case 15-E-0302, *supra*¸ Order Approving Contracts for the Purchase of Tier 4 Renewable Energy Certificates at 49 (issued and effective April 14, 2022) (hereinafter, "Tier 4 Order").

[99] *Id.* at 51.

developers cannot reasonably be expected to secure financing and proceed with projects that are no longer economically viable.

As a threshold point, PA clearly established that its analyses conservatively presume all Under Development Projects would be offered in future REC solicitations and given awards as new projects. This analysis framework was used to provide the Commission with the most conservative assessment of the cost and benefits of implementing the Adjustment Mechanism.[100] However, it is not reasonable to assume all, or even a majority of, the Under Development Projects can be successfully offered as new projects.

This is particularly true with respect to the Under Development Projects that received awards in RESRFP17-1 and RESRFP18-1. As established in the PA Affidavit, "while these projects are likely to be some of the more mature projects, they also are more likely to be facing [project related] deadlines that cannot be extended[.]"[101] For example, land options could come up against termination dates with landowners unwilling to negotiate new terms. [102] Permits or interconnection agreements may also expire or new requirements may be triggered.[103] Projects affected by any of these or other circumstances may well be incapable of withstanding execution risk.[104] If they cannot, the projects will be cancelled leaving the State ultimately with a portfolio of less developed projects proceeding on protracted construction schedules that will result in longer lead times for their completion.[105]

Moreover, while it is true that some developers may be able to reformulate some portion

[100] PA Aff. P 74.
[101] *Id.* P 20.
[102] *Id.* P 96.
[103] *Id.*
[104] *Id.* P 97.
[105] *Id.* P 92.

of Under Development Projects into new projects that may be offered in future Tier 1 solicitations, there is no way to know what percentage of the projects this will be and the transition to new projects will itself have adverse impacts.[106] Even if certain Under Development Projects are eventually offered as new projects into future solicitations, higher costs necessarily will be incorporated into the strike prices for these projects and there is no assurance those projects will mirror the original projects in size, configuration or location.[107]

Further, developers of any new projects in the stead of Awarded Projects will be forced to manage the delay and uncertainty associated therewith —the very same type of execution risk the Commission established must be avoided in its Tier 4 Order because such delays will, in and of themselves, cause uncertainty and lost opportunities, further impairing the likelihood that the Under Development Projects will be "successfully realized at all."[108] For example, as established in the PA Affidavit, delays may require land option contracts or other project agreements to be renegotiated.[109] If the terms of such contracts are modified, execution will most assuredly come at a higher – potentially, much higher – cost.[110] And the developer of the Under Development Projects may well be required to seek amendments to already secured siting permits.[111] Depending on the significance and materiality of any changed terms, developers could face a lengthy process, without any assurance that the amendment sought will be authorized.[112]

[106] *Id.* P 73.

[107] *Id.* PP 96-97.

[108] *See* Tier 4 Order at 49; *see also* PA Aff. P 97.

[109] PA Aff. P 96.

[110] *Id.*

[111] *Id.*

[112] *Id.*

Such delay could also require the developer to forfeit its Class Year status, setting the project back to the beginning of the interconnection process anew.[113] Were this to occur, there could be no assurance that the same interconnection terms could be obtained once the project made its way all the way through the process again.[114] Forcing a substantial number of relatively mature projects to start over will further encumber a process already well-recognized as laboring under major backlogs despite numerous efforts to improve it.

While approximately 9 GW of new renewable capacity has been awarded Tier 1 REC contracts to date, it is well-understood that "more expeditious project development is needed" to meet CLCPA mandates.[115] Providing a mechanism that would permit the Under Development Projects to remain in the development cycle would allow NYSERDA to maintain the pipeline of viable projects it has already carefully selected and shift its focus on procuring the significant amount of renewable energy still needed to achieve CLCPA mandates.[116]

In stark contrast, should the Under Development Projects be left to attrit, the amount of additional GWh needed to be procured in the remaining solicitations to be commenced would increase proportionally. Likewise, project development and construction would be required to be completed in proportionally tighter time frames with far more projects left vying for the same equipment and labor forces. Put simply, failure to timely redress the Post-COVID Impacts on Under Development Projects would, as the Commission has aptly recognized in past orders, "risk trivializing the challenges associated with the achievement of the CLCPA targets."[117]

[113] *Id.*

[114] *Id.*

[115] *Id.* P 8.

[116] *Id.* P 68.

[117] *See* Tier 4 Order at 51.

iv. The Adjustment Mechanism Is a Cost-Effective Solution that Will Yield Substantial Economic Benefits for New York Consumers

As the Commission recently reaffirmed in its Phase 2 AOC Order, given the substantial system transformation required to combat climate change as contemplated by the CLCPA and the Commission's CES orders, and that the cost of such transformations ultimately will be borne by New York consumers, it is critical to ensure ratepayer funding supports cost-effective and efficient solutions and choices.[118] The Adjustment Mechanism offers the Commission a cost-effective and efficient solution to ameliorate the corrosive effects of the Post-COVID Impacts on Tier 1 project development.

The CES 2.0 Order authorized the actions proposed therein to enhance and improve the Tier 1 REC procurement process based on, *inter alia*, the Commission's finding that such improvements would provide significant benefits at only a *de minimis* increased costs to consumers. In support of this determination, the Commission relied on a rate impact analysis performed by DPS Staff, which demonstrated that the improvements proposed therein would "yield a net benefit of around $7.7 billion over the lifetime of [those] projects, taking into account the value of the avoided carbon emissions" at an increased cost of "less than 0.5% (or $0.35 per month for the typical residential customer)[.]"[119]

In line with these analyses, PA built on DPS Staff's rate impact assessment and determined the overall rate impact on consumers of authorizing the Adjustment Mechanism.[120] As projected by the PA Affidavit, utilizing the Adjustment Mechanism for the Under Development Projects

[118] Phase 2 AOC Order at 38 – 42 (recognizing New York consumers pay the cost of transmission solutions needed to eliminate congestion and reach CLCPA targets and, accordingly, noting the need to identify efficient and cost-effective choices).

[119] *See* CES 2.0 Order at 14.

[120] *See* PA Aff. P 76.

would restore viability with an overall rate impact of 1.7% when its impacts are viewed in isolation.[121]

Notably, however, implementation of the Adjustment Mechanism will also provide significant economic benefits that will inure to New York consumers as further demonstrated in the PA Affidavit. To perform its qualitative and quantitative analysis of the costs and benefits of authorizing the Adjustment Mechanism for the Under Development Projects, PA employed a simplifying assumption to derive the most conservative results. Specifically, although it acknowledged that developers of Under Development Projects may be required to cancel projects outright absent redress for the reasons established by example *supra*, PA assumed that affected developers of all Under Development Projects will offer new projects in future solicitations in the stead of all Awarded Projects, they will receive awards and these projects all will able to be constructed albeit, on a protracted, construction schedules which, for purposed of this analyses, was assumed to only be four years.[122] Even under this conservative bright line approach, the PA Affidavit establishes implementation of the Adjustment Mechanism would yield substantial economic benefits while failure to implement the Adjustment Mechanism would have significant adverse economic impacts on New Yorkers.

Specifically, the PA Affidavit demonstrates that the assumed the four-year protracted construction timeline for new projects would result in significantly higher energy and capacity clearing prices over the entire interim period.[123] The modeling conducted by PA establishes adding resources years later than their originally proposed in service dates pushes energy prices

[121] *Id.* at 81 ("We calculate using the same methodology as utilized by DPS Staff in the White Paper and determine that authorizing the Adjustment Mechanism would result in a 1.7% increase in consumer bills, all else equal.").

[122] *Id.* P 74.

[123] *Id.* P 85.

higher because, "zero or low-variable cost energy [does] not replace[] [other] sources of energy, such as higher-variable cost thermal generators,"[124] resulting in "incremental energy costs of approximately $1 billion."[125] As to capacity prices, the PA Affidavit establishes such delay "will lower total system supply and tighten reserve margins, leading to higher auction clearing prices," resulting in a "gap in supply [that] will cost consumers approximately $960 million more in capacity payments over this time frame."[126]

Additionally, as explained in the PA Affidavit, the lost time value of money associated with delaying the Under Development Projects would be substantial and, thus, should also be taken into account to meaningfully analyze the full economic effects of implementing the Adjustment Mechanism.[127] "[T]ime value of money principles dictate that significantly delayed economic benefits are less valuable than economic benefits realized in the near term."[128] Using IMPLAN, a well-recognized model, PA was able to quantify the host of direct and indirect economic benefits that would be realized by the timely completion of the Under Development Projects such as job creation, labor income and economic output. As the findings of PA's assessments demonstrate, the "lost time value of money associated with putting off these realized economic benefits would be substantial."[129] Specifically, "[a]ssuming a discount rate of 6.14% (consistent with the DPS Staff White Paper), total economic output pushed out four years reduces their net present value by

[124] *Id.* P 84.

[125] *Id.*

[126] *Id.* P 85.

[127] *Id.* P 86.

[128] *Id.*

[129] *Id.* P 88 ("Taking direct, indirect, and induced impacts into account, proceeding with the Adjustment Mechanism will lead to approximately 4,000 jobs that would otherwise be foregone due to protracted construction periods, or approximately 16,000 job-years. Labor income in the near term would be approximately $1.1 billion higher, and total economic output (of which labor income is a component) would be approximately $3.8 billion higher during that four-year period.").

approximately $481.8 million, relative to realizing those benefits by authorizing the Adjustment Mechanism and keeping the Under Development Projects on schedule."[130]

Labor and supply chain implications of Under Development Project delays also must be considered. As demonstrated in the PA Affidavit, given, *inter alia*, the sheer number of public policy initiatives supporting the development of renewable energy and the growing demand of large corporations electing to participate in voluntary REC initiatives, "supply chain and labor shortages will continue to present significant economic challenges for renewable projects for years to come *even if* the Under Development Projects were to proceed on schedule."[131] Thus, rejecting relief in response to this Petition but attempting to comply with CLCPA procurement mandates will not only be "incredibly logistically challenging,"[132] it will also "risk[] [the creation of] insurmountable labor and supply chain shortages."[133]

B. Resulting Adverse Environmental Impacts and Reliability Considerations Drive the Need for Implementation of the Adjustment Mechanism To Allow Continued Renewable Development on the Current Cadence

Emphasizing "[e]very year of carbon emission reductions contributes to climate change mitigation; every year of air quality improvements contributes to public health benefits,"[134] the Commission established in its Tier 4 Order that while delays in renewable development will likely impact CLCPA targets, "the benefits of shifting to a clean energy system should be pursued not only from the perspective of the ultimate CLCPA target dates."[135] The Tier 4 Order involved only a percentage of the MWs at issue here. Thus, the adverse environmental impacts of failing to

[130] *Id.* P 88.

[131] *Id.* P 99 (emphasis in original).

[132] *Id.* P 98.

[133] *Id.* P 99.

[134] Tier 4 Order at 51.

[135] *Id.*

remain true to these fundamental principles apply with even greater force here. Any delay in renewable project development must necessarily be considered in light of the lost near-term benefits of shifting to a clean energy system.

The PA Affidavit demonstrates that delays in development of the Under Development Projects caused by failing to redress Post-COVID Impacts will lead to higher emissions any time the NYISO must move up the generation stack to a fossil-fueled unit, or once in that portion of the stack, to a unit with an even less efficient heat rate.[136] The incremental emissions from additional fossil fuel generation operations are projected to reach over six million short tons of additional CO2 emissions at a societal cost to New Yorkers of $900 million using the social cost of carbon metric.[137] Again, this analysis presumes all Under Development Projects eventually become operational on a lagged basis. These impacts will be even more severe in the face of each project that cannot proceed at all.

Moreover, recent reports of load growth at an accelerated pace — largely attributed to increased electric vehicle usage and other electrification patterns driven by CLCPA mandates — and the concomitant impending impact on reliability[138] further underscore the need to implement the Adjustment Mechanism to avoid project delay and cancellation of Under Development Projects. As established in the PA Affidavit, delays in renewable energy development would only

[136] PA Aff. P 89 ("Given their zero or low-variable cost and emissions free operating profile, renewable generators will clear the wholesale energy market ahead of thermal generators, displacing the latter on the supply stack and eliminating their associated emissions. However, under a protracted construction schedule extended out for an additional assumed four-year period, fossil fuel-powered thermal generators would be operated to a greater extent to meet the same load needs.").

[137] *Id.*

[138] *See generally* NYISO, "Short-Term Assessment of Reliability: 2022 Quarter 1" (dated April 15, 2022), available at https://www.nyiso.com/documents/20142/16004172/2022-Q1-STAR-Report-vFinal.pdf and NYISO, "2023 Load and Capacity Data Gold Book" (dated April 2023), available at https://www.nyiso.com/documents/20142/2226333/2023-Gold-Book-Public.pdf.

exacerbate the reliability risk already implicated in recent reports and undercut the State's commitment to developing the resources necessary to effectively combat climate change[139]

C. Delays To Renewable Development Would Have Ripple Effects on Other Significant Efforts Designed To Meet CLCPA Mandates

As demonstrated *supra*, the ACRE Act directs the Commission to plan and authorize the development of adequate transmission infrastructure to ensure the deliverability of renewable energy in compliance with CLCPA mandates. The Commission has responded to these statutory requirements with a series of orders providing for expedited development of the transmission upgrades required to keep pace with renewable development and support implementation of the CLCPA. As explained in the PA Affidavit, "it is important [from an economic perspective] for [such] generation and transmission upgrades to continue to be developed in lockstep with each other" to allow the CES Program "to support implementation of the CLCPA mandates efficiently and cost effectively."[140] Failure to redress the Post COVID-19 Impacts on the Under Development Projects, however, would result in delay or outright cancellation of such projects, unnecessarily disrupting the efficient transformation of New York's electric system.

Most recently, the Commission approved a set of 62 transmission projects located in defined areas of concern with the sole purpose of advancing CLCPA mandates.[141] Notably, the need for these expedited transmission projects was specifically assessed by reviewing the amount and location of renewable energy generation under contract with NYSERDA via its Tier 1

[139] PA Aff. P 89 (noting that greenhouse gas emitting resources that would otherwise soon be retired pursuant to environmental regulations may need to be operated longer than would otherwise be required if renewable energy development proceeds apace).

[140] *See id.* P 90.

[141] *See* Phase 1 Order at 5; *see generally* AOC Phase 2 Order.

solicitations.[142] The generation modeled to support authorization of these upgrades thus included Under Development Projects.[143]

Failing to authorize the Adjustment Mechanism would, at best, unmoor the synchronization of already approved Phase 2 AOC transmission upgrades from the very renewable generation projects upon which the Commission based their need and justification. Notably, however, further adverse impacts could result. Even if Awarded Projects within the area of concern at issue in the Phase 2 AOC Order are eventually offered as new projects, there is no way to ensure the same set of Tier 1 projects with the same scope and same configuration upon which the Commission authorized the Phase 2 AOC upgrades will go forward. Thus, without implementation of the Adjustment Mechanism, the specific Phase 2 AOC transmission upgrades may no longer be needed as designed, much less cost effective or efficient. Even more problematically, other upgrades may be needed instead.[144] Put simply, by failing to keep the first string intact, several others will unwind.[145]

[142] *See* AOC Phase 2 Order at 25-26 (noting the generation modeled for this purpose included renewable projects under contract only through NYSERDA's 2020 Tier 1 solicitations, but was updated by the Commission to include the results of the 2021 Tier 1 solicitations available at the time the Commission issued its Phase 2 AOC Order).

[143] *See* AOC Phase 2 Order at 26.

[144] As noted in the PA Affidavit, a subset of the Under Development Projects has been identified for Clean Path New York ("CPNY"), the State's first combined transmission and generation project, designed to provide renewable energy to New York City. PA Aff. P 91. The same economic disruptions discussed herein likely affect the CPNY Under Development Projects, and thus, may require further consideration under the structure of that part of the Commission's CES Program.

[145] *Id.* It should also be noted that undue delay in renewable development resulting from the Post-COVID Impacts will also unnecessarily lead to more volatility in annual REC kWh charges to consumers year over year. For all the reasons discussed herein, and supported by the PA Affidavit, the delays and potential outright project cancellations caused by Post-COVID Impacts will pull Under Development Projects out of this cycle, disrupting the cadence the Commission designed for the Tier 1 program. In its April 2023 Order, the Commission revised LSE Tier 1 payment obligations to be based on their load percentage of the RECs actually purchased by NYSERDA annually. Such disruption will force consumers to experience much larger increases in their REC charges in the later years of the CES Program.

VI. ACE NY RESPECTFULLY REQUESTS COMMISSION ACTION BY ITS OCTOBER 12, 2023 SESSION

For all the reasons discussed herein, and supported by the PA analyses, the Under Development Projects cannot reasonably be completed as originally contracted and are currently sitting in a position of uncertainty that itself is corrosive to project development efforts, particularly at a time when investment dollars are becoming exceedingly more difficult to secure and the larger number of State public policy initiatives are increasing competition for them. The issues presented in this Petition require expedited Commission action to provide developers critically needed information, namely: (1) if authorized, certainty that the means will be available that can support the current development trajectory of these projects; or (2) if rejected, the ability to assess whether it can offer new projects into future NYSERDA Tier 1 solicitations and, if so, the scope and timing of those new projects.

The timing of the Commission's decision is equally critical. A Commission decision by its October 12, 2023 session would allow the more mature projects to be in a position to confirm ongoing development and access the Spring 2024 development window. Missing this window, on the other hand, will require developers to reassess costs and associated decisions whether to proceed with project completion. Thus, based on the foregoing, ACE NY respectfully requests Commission action on this Petition by the October 12, 2023 session.

VII. NEW YORK STATE ADMINISTRATIVE PROCEDURE ACT

Pursuant to Section 202 of the State Administrative Procedure Act ("SAPA"), the Commission's consideration of this Petition is a soft rulemaking requiring publication of a notice in the New York State Register and 60 days for public comment.[146] To that end, a draft form

[146] 6 NYCRR § 617.7.

notification suitable for publication in the *New York State Register* pursuant to SAPA is attached hereto as **Attachment B**.

VIII. CONCLUSION

For the foregoing reasons, ACE NY respectfully requests that the Commission issue an order by its October 12, 2023 session authorizing the Adjustment Mechanism addressed herein and supported by the PA Affidavit and directing NYSERDA to incorporate the Adjustment Mechanism in existing REC Contracts.

Dated: June 7, 2023
Albany, New York

Respectfully submitted,

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Attachment A

STATE OF NEW YORK
PUBLIC SERVICE COMMISSION

Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Program and a Clean Energy Standard

Case 15-E-0302

AFFIDAVIT OF MARK REPSHER AND ASHISH CHAUDHARI IN SUPPORT OF ALLIANCE FOR A CLEAN ENERGY NEW YORK, INC.'S PETITION TO ADDRESS POST-COVID IMPACTS ON RENEWABLE DEVELOPMENT ECONOMICS AND CONTRACT CONSIDERATIONS

I. INTRODUCTION, QUALIFICATIONS AND SCOPE OF REVIEW

1. My name is Mark Repsher. I am a Partner at PA Consulting Group, Inc ("PA"). My business address is 1700 Lincoln Street, Suite 3550, Denver, Colorado. I have nearly 22 years of experience in energy and utility advisory services. My experience in this field is broad, having advised and supported clients in navigating policy and regulatory changes, undertaking strategic resource planning, crafting development and operational strategy, performing due diligence for proposed mergers, acquisitions, and financings, performing asset valuation, and undergoing restructuring and other litigation. I have extensive experience providing these services related to the New York power market for clients that include power generation asset owners, developers, and trade associations. I have also provided expert witness testimony in nine past engagements before a range of audiences including state utility commissions, the Federal Energy Regulatory Commission, and independent system operators. My resume is attached hereto as Exhibit MR-1.
2. My name is Ashish Chaudhari. I am an Associate Partner at PA. My business address is 1700 Lincoln Street, Suite 3550, Denver, Colorado. I have 15 years of experience in energy and utility advisory services. I have deep expertise with renewable development, having supported development, financing, and transactions involving all forms of renewable generation, including land-based wind and solar, in most U.S. power markets including New York. My experience with renewable project development includes financial modeling, PPA settlement

analysis, and advice on optimal renewable project configurations for submissions in response to public policy initiative solicitations. My resume is included as Exhibit AC-1.

3. We are members of a team of experts at PA that lead a wide variety of consulting engagements involving wholesale power market design and implementation across the country, including New York. We have a deep knowledge of the State renewable energy programs and wholesale competitive electric markets in New York. We also have extensive experience working with developers to assess the economics of renewable development in New York and throughout the country. We are closely monitoring the actions being taken by New York State to combat climate change, including the enactment of laws and the implementation of public policy initiatives that are designed to overhaul New York's electric infrastructure at an accelerated pace and transform it to meet the mandates of 70% renewable energy consumption by 2030 ("70x30") and subsequently, a zero-emitting electricity system by 2040.
4. The Alliance for Clean Energy New York, Inc. ("ACE NY") is a member-based organization in New York with a mission it defines as promoting the use of clean, renewable electricity technologies and energy efficiency in New York State, in order to increase energy diversity and security, boost economic development, improve public health, and reduce air pollution. We understand that ACE NY aims to be the voice of the renewable energy industry and works to advance New York State's nation-leading renewable energy goals through the advancement of public policy initiatives. Nearly all of the developers receiving awards under the State's Renewable Energy Standard ("RES") program authorized in New York Public Service Commission ("NYPSC") Case 15-E-0302 (or, "CES Program") are members of ACE NY.[1]
5. We have been asked by ACE NY to: (i) assess the respective facts, circumstances, economic conditions and climate for renewable energy development at the time the New York State Energy Research and Development Authority ("NYSERDA") issued awards ("Awarded Projects") in its completed solicitations for renewable generation projects under Tier 1 of the CES Program, beginning in 2016 (3257) with a primary focus on its Tier 1 2017 REC solicitation through its Tier 1 2021 REC solicitation (individually, by solicitation designation,

[1] *Compare* ACE NY Members as of April 24, 2023, *available at* https://static1.squarespace.com/static/61c4c9f853c27d1232fffc7a/t/64502bb4a6a5a81f9aa09cbc/1682975668226/ACE+NY+Member+Company+List+as+of+Apr+24.pdf, *with* https://nygats.ny.gov/ng/Report/getdto_view_Report_PublicOperationalEA & https://nygats.ny.gov/ng/Report/getdto_view_Report_PublicProvisionalEA.

e.g., "RESRFP17-1" and, all solicitations from 2016 through 2021, collectively "RECs" and "REC Solicitations"); (ii) analyze publicly available inflation metrics and other related renewable energy development-specific cost drivers for the period spanning the Commission's initiation of the CES Program beginning in 2016 through today and the nature and degree of changes to these drivers since the RESRFP21-1 Solicitation; (iii) identify the impacts of the dramatic shifts in the global economy and the associated market disruptions, supply chain constraints, labor shortages, and other challenges on the economics of Awarded Projects that have not been cancelled, are not yet operational, and are not yet nearing operation ("Under Development Projects"); (iv) if required, identify the necessary components of, and develop the structure for, an adjustment mechanism to restore viability for Under Development Projects ("Adjustment Mechanism"); (v) estimate the costs and assess the benefits of implementing the Adjustment Mechanism; and (vi) assess the adverse effects of failing to so implement this mechanism on New Yorkers. Based on the foregoing, we have been asked to provide our expert opinion on the magnitude of renewable energy project cost increases since the respective deadlines for the submission of proposals in the REC Solicitations and develop recommendations to redress these impacts and restore viability for project development.

6. To reach our determinations, we assessed the economic circumstances renewable developers faced at the time awards were made as compared with the economic conditions they now face. To recognize that the Under Development Projects all face project-specific considerations that vary and to avoid making a series of judgment calls as to each of them, we analyzed price and financial input pressure on the portfolio of Under Development Projects using publicly available data, and performed wholesale power market modeling using assumptions informed by publicly available data as well as those developed internally by PA using our professional judgment. No specific circumstances faced by any individual renewable energy project or developer were modeled. To further support our work and reach our findings, we also met with ACE NY member companies on several occasions to benchmark our assessments and confirm that our findings developed utilizing publicly available industry data, or assumptions developed internally by PA generally aligned with the status of their respective Awarded Projects. Our analyses include both qualitative and quantitative assessments. Based on our findings derived from these assessments, our work focused on the pricing and financial inputs specific to renewable energy development that must be incorporated in the Adjustment

Mechanism to address project viability as discussed in detail herein.

7. The remainder of our affidavit is organized as follows:

- Section II presents our findings and conclusions.
- Section III provides the following information pertinent to Commission review of the requested relief in the Petition: (i) the evolution of New York's REC program following initiation of the CES Program and the subsequent enactment of the Climate Leadership and Community Protection Act ("CLCPA") and Accelerated Renewable Energy Growth and Community Benefit ("ACRE") Act; (ii) the cadence of NYSERDA's past and future REC solicitations and the awards that must be made thereunder to comply with CLCPA mandates and the NYPSC's defined time table established in its CES 2.0 Order;[2] (iii) market conditions at the time submissions were due to NYSERDA in response to its Tier 1 REC Solicitations; and (iv) the unprecedented, reasonably unforeseeable scope and scale of economic disruptions faced by renewable energy project developers since the deadline for the submission of proposals in RESRFP21-1.
- Section IV identifies the Under Development Projects, quantifies the impacts of these changed conditions to the Under Development Projects and demonstrates the collective effects of the economic disruptions that have been experienced to date have significantly eroded the economics of these projects.
- Section V establishes the necessary components of a contract Adjustment Mechanism to support a level of compensation that restores viability for project development so developers may proceed with project completion. It then estimates the overall impact on consumers to provide for the Adjustment Mechanism and qualitatively and quantitatively identifies the associated benefits of taking this step.
- Section VI provides a qualitative and quantitative assessment of the costs, benefits and incremental risks when developers are unable to complete the Under Development Projects absent an Adjustment Mechanism. To be conservative, we used the simplifying assumption that, under these circumstances, developers will

[2] *See* NYPSC Case 15-E-0302, *Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Program and a Clean Energy Standard,* Order Adopting Modifications to the Clean Energy Standard (issued and effective October 15, 2020) (hereinafter, "CES 2.0 Order").

tender back awards, offer new projects in future solicitations and receive awards but construction would have to proceed on a protracted, four-year lagged basis. That said, we wish to underscore from the outset that, particularly given the vintage of the some of the awards, some projects may not be able to proceed and will be cancelled outright.

II. SUMMARY AND CONCLUSIONS

8. We first must underscore the importance of maintaining a viable schedule for the development of renewable energy projects if New York is to meet CLCPA mandates. As established herein, renewable project development in New York has generally taken five to seven years from the submission of proposals (in response to REC Solicitations) to project operation. To meet the CLCPA mandates, more expeditious project development is needed. Recognizing this fact, New York has taken a number of steps to eliminate barriers and resolve backlogs so projects can be completed in a timelier manner. Declining to take affirmative action to ameliorate the severe adverse inflationary impacts experienced by the Under Development Projects may irreversibly derail these efforts, putting at risk the implementation of renewable energy mandates under the CLCPA.
9. We urge the Commission to also consider the record in this proceeding with an eye towards effectively and efficiently achieving the broader public policy goals embodied in the State's CLCPA clean energy mandates. To meet these mandates, it is well-established that unprecedented amounts of new generation and associated transmission must be built to produce and deliver renewable power to New Yorkers. Through its efforts to date, NYSERDA has been able to secure the Awarded Projects, a carefully selected set of solar and land-based wind ("LBW") solutions to meet these needs, which will provide important benefits to New Yorkers. Working in lockstep with NYSERDA's solicitation awards, the New York Independent System Operator, Inc. ("NYISO") has produced transmission studies updating energy deliverability needs. Based on these studies, and studies conducted by Transmission Owners ("TOs"), the Commission has approved a series of transmission upgrades to ensure that energy from Awarded Projects can be delivered to consumers in compliance with CLCPA mandates, most recently, as discussed below, in its Phase 2 Areas of Concern ("AOC") Order

issued in the Power Grid Proceeding earlier this year.[3] Notably, the Phase 2 AOC Order authorized cost recovery for the first set of upgrades designed expressly to expand transfer capability to implement the CLCPA renewable energy consumption mandates.

10. As established herein, project completion now faces a marked confluence of economic disruptions, supply chain and labor shortages, and a substantial increase in demand for new renewable resources. These unforeseen and unpredictable economic conditions jeopardize project economics because current project costs exceed the costs supported by the Under Development Projects' contracts.

11. The fundamental question now before the Commission in this Petition is what additional steps must be taken for projects to be completed and for the State to remain on track to meet its CLCPA mandates.

12. Based on our analysis, we conclude that the portfolio of competitively procured Under Development Projects is not economically viable given unprecedented and reasonably unforeseen inflationary pressures specific to renewable project pricing and financial inputs. Therefore, proceeding status quo under current contract prices is not an option for the State to adhere to its CLCPA mandates. Likewise, pushing out these projects will have substantial adverse economic and environmental impacts even under a very conservative assumption that new projects will eventually be built on a protracted construction schedule in their stead. Taking the costs and benefits of whether or not to implement an Adjustment Mechanism into account, we further conclude that authorizing the carefully tailored Adjustment Mechanism delineated herein for Under Development Projects is an effective and efficient response for the State to meet its CLCPA mandates by redressing what are unprecedented and corrosive economic disruptions.

III. BACKGROUND

A. THE NEW YORK TIER 1 REC PROGRAM

13. With the initiation of the CES Program in 2016, NYSERDA revamped its solicitation processes beginning in 2017 to procure RECs from LBW and solar generating facilities, as

[3] *See* NYPSC Case 20-E-0197, *Proceeding on Motion of the Commission to Implement Transmission Planning Pursuant to the Accelerated Renewable Energy Growth and Community Benefit Act,* Order Approving Phase 2 Areas of Concern Transmission Upgrades (issued and effective February 16, 2023) (hereinafter, "Power Grid Proceeding" and "Phase 2 AOC Order," respectively).

well as uprates at hydroelectric facilities. With New York State's enactment of the CLCPA and the ACRE Act, and the Commission's revisions to the CES Program to implement the CLCPA mandates in 2020, NYSERDA was directed in the CES 2.0 Order to procure an adequate amount of RECs through annual solicitations by 2026 to meet the CLCPA 70x30 mandate.

14. As a result of its process enhancements, NYSERDA has successfully issued awards to an increased and substantial number of renewable energy projects in each of its REC Solicitations from 2017 through 2021. We focus primarily on the LBW and solar projects awarded in the Tier 1 REC Solicitations (RESRFP17-1 through RESRFP21-1). In addition, where relevant, we also have provided information concerning the six solar and LBW awards issued by NYSERDA in its 2016 solicitation which immediately preceded implementation of the CES Program. Results of the 2016 – 2021 REC Solicitations are set forth in Table 1 below and show: (i) overall a total of nearly 9.4 GW of solar and LBW projects have received awards in these solicitations; and (ii) solicitation enhancements following CES Program implementation in 2017 have contributed to a higher number of awards and a much larger amount of awarded capacity, a trend that continued following the enactment of the CLCPA and the ACRE Act.

Table 1 – Awarded Solar and LBW Projects

Tier 1 Solicitation	**Reference**	**Date Issued**	**Submission Deadline**	**# of Projects Awarded**	**MW Capacity Awarded**	**# of Developers Awarded**
3257	2016 REC Solicitation	4/21/2016	5/26/2016	6	304	4
RESRFP17-1	2017 REC Solicitation	6/2/2017	9/28/2017	27	1,608	13
RESRFP18-1	2018 REC Solicitation	4/25/2018	8/16/2018	20	1,661	11
RESRFP19-1	2019 REC Solicitation	4/23/2019	9/10/2019	21	1,278	8
RESRFP20-1	2020 REC Solicitation	7/21/2020	10/21/2020	21	2,109	10
RESRFP21-1	2021 REC Solicitation	4/22/2021	8/26/2021	22	2,408	11
Total				117	9,369	

15. REC awards are a fundamental component of project development in New York. Revenues from NYISO's wholesale power markets do not compensate renewable resources fully for their

environmental attributes. Developers thus require compensation through REC payments for the environmental attributes these environmentally beneficial projects provide to adequately recover their investments. Once projects secure REC awards, renewable energy developers must also successfully navigate two additional approval processes – project permitting and project interconnection. Both of these tasks can significantly increase the time required to complete a project in New York.

16. Once the applicable regulatory requirements are satisfied, developers must then secure financing and equipment, procurement, and construction contracts in order to proceed with construction of the facility.
17. The delays renewable energy project developers have faced in New York are well-documented and have largely come at the hands of prolonged permitting proceedings and/or materially delayed interconnection processes. These delays generally occur after project awards have been issued. As a direct result, to date, of the nearly 9.4 GW of solar and LBW Awarded Projects announced in the combined 2016 solicitation and the RESRFP17-1 through RESRFP21-1 REC Solicitations under the CES Program, a small subset of Awarded Projects – less than 500 MW – are operational.
18. Notably, the projects placed into service are Awarded Projects from the three solicitations that immediately preceded and followed implementation of the CES Program (NYSERDA's 2016 pre-CES Program solicitation through RESRFP18-1), demonstrating that it is taking five to seven years from solicitation to project operation. With industry standard construction time frames of roughly 18 months to two years, it is further notable that equipment for these projects was procured and the construction contracts were executed before the economic headwinds addressed herein took root.
19. Based on our independent review of publicly available project development information and as further confirmed by our discussions with ACE NY members, a significant period of time necessarily elapses between project award and commercial operation for developers to secure necessary permits, obtain interconnection authorization, procure equipment, secure construction arrangements, and build the project and its associated infrastructure. While that time frame will certainly vary on a project-to-project basis, the trajectory of the New York projects that have recently become operational reflects the typical lag experienced by project developers to date between contract award and commercial operation.

20. We note that the Under Development Projects include projects that received awards in 3257, RESRFP17-1, and RESRFP18-1. While these projects are likely to be some of the more mature projects, they also are more likely to be facing deadlines that cannot be extended, *e.g.*, termination provisions in land options.

B. PREVAILING MARKET CONDITIONS AT TIME OF NYSERDA PROPOSAL SUBMISSION DEADLINES

21. To develop a proposal in response to NYSERDA's REC solicitations, a developer must take into account projections of equipment costs (*e.g.*, will technological innovation or manufacturing efficiencies reduce costs, what other factors will affect these costs positively or negatively), financing costs (*e.g.*, the interest rate on debt), and projections of expected escalation factors over time (*i.e.*, the extent to which today's dollars can reasonably be expected to be inflated in future years).
22. We have conducted an analysis of these factors for the period spanning the spring of 2016 through the summer of 2021, the former representing when proposals were due for RFP 3257 and the latter representing when proposals were due for RESRFP21-1.
23. We note from the outset that we have defined these conditions and the economic circumstances that have evolved from that time to today utilizing publicly available cost information to provide an objective assessment that avoids attempting to ascribe which factors affected which projects most significantly. Where, as will be demonstrated herein, impacts have been so extreme, this objective approach reasonably encapsulates the range of circumstances borne across Under Development Projects.
24. Turning first to equipment cost considerations, with overnight capital costs for solar and LBW projects declining over the period when the REC Solicitations were issued, developers reasonably could have expected this downward trend in overnight capital costs to continue from the date of proposal submission to the date they placed major equipment orders and began project construction.[4] Our analysis of estimates of historical overnight capital costs and projected future overnight capital costs released by reputable sources demonstrates that these

[4] The term "overnight capital cost" as used throughout this affidavit refers to capital expenditures less construction period financing costs. Said differently, it represents the capital expenditures if a facility were to be constructed overnight and thus, would not bear any construction period financing costs. It is not to be confused with the cost of capital, which refers to financing costs.

expectations would have been well-founded.

25. For example, the National Renewable Energy Laboratory ("NREL") releases annual forecasts of generic utility-scale solar PV and LBW overnight capital costs in their Annual Technology Baseline ("ATB"). Each year, NREL's published ATB delineates its forward-looking projections of overnight capital costs and a two-year backward looking "baseline" overnight capital cost for each technology. NREL's ATB is a well-recognized source to assess actual and projected generic costs for each technology type.

26. For utility-scale solar PV, the baseline overnight capital cost set forth in the 2021 ATB had declined (in real $) by a Compound Annual Growth Rate ("CAGR") of approximately 14.2% as compared to baseline overnight capital cost set forth in the 2016 ATB. NREL's ATBs also provided forecasts of future costs, and projected that in the five years following publication, solar overnight capital costs (in real $) would decline at a CAGR ranging from 2.0% (2019 ATB) to 5.6% (2016 ATB). See Table 2.

27. Notably, the NREL projected overnight capital cost forecasts for solar facilities have themselves proven to be conservative. The baseline overnight capital costs reported by NREL were often lower than those that had been forecasted in its previously issued ATBs. For example, the baseline solar PV overnight capital cost for 2019 that NREL reported in its 2021 ATB was 19.7% lower than the average projected 2019 solar PV overnight capital cost that NREL had identified in its ATBs for the period from 2016 to 2019. See Table 2.

Table 2 – NREL ATB Years 2016-2021: Solar

ATB Year	**Baseline Overnight Capital Cost Applicable to Two Years Before ATB Year (2021$/kWdc)**	**Difference Between Forecast Average from Prior ATBs and Baseline**	**5-Year Forward Overnight Capital Cost CAGR**
2016	2,305		-5.6%
2017	2,276		-3.5%
2018	1,964	-6.4%	-3.4%
2019	1,205	-28.4%	-2.0%
2020	1,258	-13.2%	-4.2%
2021	1,070	-19.7%	-5.0%

28. Rapidly declining PV module prices were the main driver of observed historical solar project cost declines. Per the US Energy Information Administration's ("EIA") Monthly Solar Photovoltaic Module Shipments Report, the average value of module shipments (reported in

nominal $ per peak Wdc) declined from $1.59/Wdc in 2011 to $0.34/Wdc in 2021. Therefore, by way of example, if a developer submitting a proposal in RESRFP18-1 applied a look-back period of three to five years, they would have identified a declining CAGR of approximately 10-15% in PV module prices as reported by EIA. See Table 3.

Table 3 – EIA Historical PV Module Prices

Year	Average Value ($/peak watt DC)	Three-Year Lookback CAGR	Four-Year Lookback CAGR	Five-Year Lookback CAGR
2011	1.59			
2012	1.15			
2013	0.75			
2014	0.87	-18.2%		
2015	0.71	-15.0%	-18.4%	
2016	0.72	-1.4%	-11.0%	-14.6%
2017	0.48	-18.0%	-10.7%	-16.0%
2018	0.45	-14.2%	-15.4%	-10.0%
2019	0.41	-17.5%	-12.9%	-14.2%
2020	0.34	-10.9%	-17.1%	-13.6%
2021	0.34	-8.7%	-8.4%	-14.0%

29. While historical and projected overnight capital cost declines have been less substantial for LBW generating facilities than utility-scale solar PV facilities given the relative maturity of these two industries, they were still notable. NREL's baseline overnight capital cost for LBW facilities (assuming a Class 4 resource) declined (in real $) by a CAGR of approximately 3.7% between its 2016 ATB and 2021 ATB. The 2016-2021 ATBs also projected declines in the five-year forward LBW overnight capital costs at a CAGR ranging from 1.0% (2017 and 2018 ATBs) to 3.5% (2021 ATB).
30. Here, too, NREL's baseline overnight capital cost for LBW plants was conservative. For example, the actual baseline wind overnight capital cost for 2019 set forth in NREL's 2021 ATB was 4.3% lower than the average projected 2019 LBW overnight capital cost that NREL had identified in its ATBs previously issued for the period from 2016 to 2019. See Table 4.

Table 4 – NREL ATB Years 2016-2021: LBW

ATB Year	Baseline Overnight Capital Cost Applicable to Two Years Before ATB Year (2021$/kW)	Difference Between Forecast Average from Prior ATBs and Baseline	5-Year Forward Overnight Capital Cost CAGR
2016	2,000		-1.1%
2017	1,799		-1.0%
2018	1,717	-13.4%	-1.0%
2019	1,732	-5.8%	-1.8%
2020	1,605	-9.4%	-1.8%
2021	1,659	-4.3%	-3.5%

31. Matched against these equipment cost reductions in this time frame were reasonable expectations that inflation levels would remain relatively static and low. From 2012 to 2020, the Producer Price Index (All Commodities) ("PPI") and the Consumer Price Index (All Items Less Food and Energy) ("CPI") showed annual average growth levels of -0.3% and 1.9%, respectively, with a maximum of 4.4% and 2.2.%, respectively. Looking back five years from the dates of the 2016 solicitation through RESRFP20-1 submission deadlines, CAGRs for both PPI and CPI were moderate, ranging from -1.9% (2016 Q2) to 1.3% (2020 Q4) for PPI and 1.9% (2017 Q3 and 2018 Q3) to 2.0% (2016 Q2, 2019 Q4, and 2020 Q4).
32. Interest rates over this same period were also low. The average annual Effective Federal Funds Rate ("EFFR") is used as the base rate to establish interest rates for a number of lending products, including loans for renewable energy project development. The annual average interest rate was near 0% in a number of these years (including near 0% levels in 2021). The high over this entire period was just 2.2% in 2019.
33. We have examined conditions faced by Under Development Projects over the 2016 – 2021 REC Solicitation processes. As reflected in the table below, both the inflation levels and the interest rates remained at historically low levels through the September, 2019 submission deadline for RESRFP19-1. The same remained true at the time of the October, 2020 submission deadline for RESRFP20-1 notwithstanding a worldwide pandemic.

Table 5 – NREL LBW ATB Years 2016-2021

Tier 1 Solicitation	Reference	Submission Quarter	PPI Five-Year CAGR	CPI Five-Year CAGR	EFFR Five-Year Historical Average
3257	2016 REC Solicitation	2016 Q2	-1.9%	2.0%	0.1%
RESRFP17-1	2017 REC Solicitation	2017 Q3	-0.8%	1.9%	0.3%
RESRFP18-1	2018 REC Solicitation	2018 Q3	0.0%	1.9%	0.6%
RESRFP19-1	2019 REC Solicitation	2019 Q3	-0.8%	2.0%	1.0%
RESRFP20-1	2020 REC Solicitation	2020 Q4	1.3%	2.0%	1.2%
RESRFP21-1	2021 REC Solicitation	2021 Q3	4.5%	2.4%	1.1%

34. And even forecasts available up through the last submission deadline for which Project Awards are known (RESRFP21-1 in August, 2021) continued to project low inflation levels. Publicly available inflation forecasts available throughout this time frame including for 2021 Q3, such as the Federal Reserve Bank of Philadelphia's quarterly Survey of Professional Forecasters which includes surveyed forecasters' median projections of near- and long-term CPI, never assumed that average annual headline CPI would exceed more than 2.4% over the long term (measured on a look-ahead four-year or nine-year basis). See Table 6. Expectations that inflation rates observed in early 2021 would revert back to more modest levels were also embodied in statements issued by the Board of Governors of the Federal Reserve System's Federal Open Market Committee ("FOMC"). Every FOMC statement issued during 2021 Q3 attributed any increase in inflation to "largely reflecting transitory factors."

Table 6 – Median Headline CPI Annualized Projection

Tier 1 Solicitation	Reference	Submission Quarter	One-Year Forward	Two-Year Forward	Four-Year Forward	Nine-Year Forward
3257	2016 REC Solicitation	2016 Q2	2.1%	2.3%	2.1%	2.2%
RESRFP17-1	2017 REC Solicitation	2017 Q3	2.2%	2.3%	2.2%	2.3%
RESRFP18-1	2018 REC Solicitation	2018 Q3	2.3%	2.3%	2.2%	2.2%
RESRFP19-1	2019 REC Solicitation	2019 Q3	2.0%	2.2%	2.1%	2.2%
RESRFP20-1	2020 REC Solicitation	2020 Q4	2.0%	1.9%	2.0%	2.1%
RESRFP21-1	2021 REC Solicitation	2021 Q3	2.4%	2.3%	2.8%	2.4%

35. The combination of these dynamics led to declining contract prices for renewable generation year over year nationwide. Developers responding to each of these REC Solicitations, including RESRFP21-1 in August, 2021, thus reasonably would have assumed that modest broader inflationary impacts would generally be offset by renewable project equipment cost reductions, and thus, reasonably would have expected that their project costs would decline from submission deadline to project completion (or, in the case of solar PV modules, would have continued declining from submission deadline to project completion).

C. UNPRECEDENTED DISRUPTION OF ECONOMIC CONDITIONS

36. Notwithstanding expectations announced in 2021 Q3 based on information known at that time, inflationary impacts have not, in fact, been transitory. With the benefit of hindsight, we now know that the post-COVID market conditions have been severe, and include supply chain bottlenecks and labor constraints that are causing unprecedented economic disruption. Their effects on inflation have been further exacerbated by additional unforeseeable factors, including a war in Europe on a scale not seen since the 1940's. These effects are apparent on a broad scale (represented by PPI and CPI) and, pertinent to the Commission's review of this Petition, as addressed below, are being borne even more severely by solar and LBW generation projects.

37. Turning first to general inflation impacts, since 2021 Q3, the bid submission deadline for the last set of Awarded Projects, PPI and CPI have both grown by a total of approximately 10.7%

and approximately 8.9%, respectively, representing a CAGR of approximately 7.0%, and approximately 5.9% for PPI and CPI, respectively. This level of growth in PPI and CPI had not been observed over at least the past decade, and represents a near doubling of the maximum annual growth rate observed for PPI since 2012 (4.4% in 2017) and more than a doubling of the maximum annual growth rate observed for CPI (2.2% in 2016) over the same period. Furthermore, these inflation levels significantly exceed any average annual inflation projection from the Survey of Professional Forecasters reports issued up to that time which showed a maximum average annual CPI growth projection of 2.75%. Table 7 compares actual growth in PPI and CPI (as of 2023 Q1) since the deadline for each relevant REC Solicitation submission relative to the growth in CPI by 2023 Q1 that had been projected in the quarterly Federal Reserve Bank of Philadelphia's Survey of Professional Forecasters released around those respective deadlines.

38. PPI and CPI growth on an annualized basis have been equally, or more, substantial since the pre-COVID period up to the 2019 REC Solicitation and the COVID-era 2020 REC Solicitation. Since 2019 Q3, the bid submission deadline for the 2019 REC Solicitation, PPI and CPI have grown by a total of approximately 29.7% and approximately 15.2%, respectively, representing a CAGR of approximately 7.7%, and approximately 4.1% for PPI and CPI, respectively. Since 2020 Q4, the bid submission deadline for the 2020 REC Solicitation, PPI and CPI have grown by a total of approximately 30.3% and approximately 12.7%, respectively, representing a CAGR of approximately 12.5%, and approximately 5.4% for PPI and CPI, respectively. See Table 7.

Table 7 – Inflation Since RFP Submissions to 2023 Q1, Relative to Forecasts

Tier 1 Solicitation	Reference	Submission Quarter	PPI Total Growth	CPI Total Growth	Projected CPI Growth from Survey Released in Submission Quarter
3257	2016 REC Solicitation	2016 Q2	39.5%	23.0%	15.8%
RESRFP17-1	2017 REC Solicitation	2017 Q3	33.3%	20.4%	13.3%
RESRFP18-1	2018 REC Solicitation	2018 Q3	26.9%	17.8%	10.3%
RESRFP19-1	2019 REC Solicitation	2019 Q3	29.7%	15.2%	7.5%
RESRFP20-1	2020 REC Solicitation	2020 Q4	30.3%	12.7%	4.6%
RESRFP21-1	2021 REC Solicitation	2021 Q3	10.7%	8.9%	3.5%

39. Interest rates have likewise climbed. As has been well publicized for more than a year, the Federal Reserve began raising the EFFR in Q2 2022 in an attempt to moderate economy-wide demand and rein in inflation. See Table 8. As documented above, holding at near 0% levels in 2021, the EFFR has subsequently risen to approximately 4.5% on average for 2023 Q1. This level is more than twice as high as the highest annual average EFFR of 2.2% observed in any year for the ten-year period from 2011-2021. The resultant higher financing costs have further driven up renewable development project costs.

Table 8 – Quarterly Average Effective Federal Funds Rate

Quarter	Quarterly Average EFFR
2021 Q3	0.1%
2021 Q4	0.1%
2022 Q1	0.1%
2022 Q2	0.8%
2022 Q3	2.2%
2022 Q4	3.7%
2023 Q1	4.5%

40. Pertinent hereto, at the same time, the growing nationwide focus on addressing climate change has markedly increased the demand for renewable energy, putting additional cost and inflationary pressures on the renewable energy sector. As reflected in the table below, as of this time, 16 other States plus the District of Columbia now have legislative targets for

emissions-free electric systems by no later than 2050, many of which are in the Northeast. Notably, this list does not include states whose emissions-free electric system provisions are established by administrative fiat. See Table 9.

Table 9 – State Legislative Clean Electricity Targets

State	**Law and Enactment Date**	**100% Clean Electricity or Net-Zero GHG Emissions Target Date**
California	SB 100: September 2018	2045
Colorado	SB 19-236: May 2019	2050
Connecticut *	SB 10: May 2022	2040
District of Columbia	DC Act 22-583: January 2019	2032
Hawaii	HB 623: June 2015	2045
Illinois	SB 2408: September 2021	2050
Maine *	LD 1494: June 2019	2050
Maryland	SB 0528: April 2022	2045
Massachusetts *	S.9: March 2021	2050
Minnesota	SF 4: February 2023	2040
Nevada	SB 358: April 2019	2050
New Mexico	SB 489: March 2019	2045
New York *	S6599: July 2019	2040
North Carolina	HB 951: October 2021	2050
Oregon	HB 2021: July 2021	2040
Rhode Island *	H7277 SUB A: June 2022	2033
Virginia	HB 1526 / SB 851: April 2020	2050
Washington	SB5116: May 2019	2045

41. In addition, voluntary renewable energy purchases are also having a pronounced effect on demand. Corporate buyers are announcing voluntary renewable energy procurement in large volumes in advance of, and apart from, State-mandated deadlines. For example, in the one-year span from March 2022 to February 2023, more than 200 new corporate deals were announced representing 24.5 GW of renewable energy, a 45% increase over the prior 12 months.[5]

42. As a result, new renewable energy facility development has substantially outpaced past years. For example, as reported by EIA Electric Power Monthly, the average annual total solar and LBW capacity additions from 2020 through 2022 were approximately 24.1 GW, nearly double

[5] *See* SP Global Market Intelligence, *200-plus deals power 24.5-GW corporate renewable capacity surge in 2022*, March 1, 2023, https://www.spglobal.com/marketintelligence/en/news-insights/research/200-plus-deals-power-24-point-5-gw-corporate-renewable-capacity-surge-in-2022.

the 12.7 GW average level achieved over the preceding three years. See Table 10. Notably, as addressed in more detail below, these projects were constructed with equipment procured and construction arrangements in place under pre-pandemic inflation levels and interest rates.

Table 10 – Annual Change in U.S. Solar and Wind Capacity

Year	**Change in Wind Net Summer Capacity (MW)**	**Change in Solar PV Net Summer Capacity (MW)**	**Change in Total Wind and Solar PV Net Summer Capacity (MW)**
2013	1,294	2,284	3,578
2014	4,877	3,033	7,909
2015	7,723	3,537	11,260
2016	8,738	7,865	16,603
2017	6,286	5,439	11,725
2018	6,698	4,962	11,659
2019	9,276	5,540	14,816
2020	14,173	10,380	24,553
2021	15,009	13,980	28,989
2022	8,183	10,558	18,741

43. Demand for energy from new renewable development projects is also demonstrated in the explosive growth in active solar and LBW development capacity present in interconnection queues throughout the US. To illustrate this dynamic, we reviewed the capacity of solar and LBW development projects active in interconnection queues for the three largest wholesale power markets in the US – PJM, MISO, and ERCOT - at representative snapshots in time. These three markets are useful samples not only because they are the largest, but also because they represent a range of renewable energy demand sources from State policy targets to voluntary corporate and utility procurement. Active solar and LBW development project capacity present across these three markets' interconnection queues has grown from approximately 71 GW total at the end of 2015 to nearly 620 GW as of April 2023. See Table 11. While some significant portion of capacity active in interconnection queues will not ultimately be built, the growth in levels of capacity proposed indicates significantly rising demand for renewable energy projects. Successful projects in interconnection queues elsewhere in the US represent competing sources of demand for equipment -- and, depending on their respective locations, skilled labor forces -- that would otherwise be sourced by renewable development projects in New York.

Table 11 – Active Development Capacity in Three Largest Markets' Interconnection Queues

Snapshot	Solar (Nameplate GW)	LBW (Nameplate GW)	Total Solar and Wind (Nameplate GW)
Year-End 2015	15	56	71
Year-End 2017	62	77	139
Year-End 2019	189	68	257
Year-End 2021	370	55	425
April 2023	539	80	620

44. The substantial growth in demand for solar and LBW projects has exacerbated inflation for renewable project cost components relative to broader inflation levels. The key inflation indices more directly applicable to solar and LBW development project costs have increased in recent history even more substantially than PPI. From 2021 Q3 (the submission deadline for the 2021 REC Solicitation) to 2022 Q4, PPI grew by a total of approximately 12%. However, components of PPI tied more closely to industries impacting the cost of renewable development projects have generally grown at a faster rate. For example, the index for Electric Power & Specialty Transformer Manufacturing ("EPSTM"), which is a reasonable proxy for specialized equipment comprising much of a renewable development project, has grown by nearly three times as much at 32% over the same timeframe. Likewise, New Non-Residential Building Construction, Northeast ("Construction"), a reasonable proxy for engineering, procurement, and construction ("EPC") service costs as well as other renewable development costs, has grown by more than twice the PPI level at 28% over the same timeframe. See Table 12.

Table 12 – Total Change in Renewable Indices Relative to PPI as of 2022 Q4

Since Quarter	PPI	EPSTM	Steel Product Mfg	Turbine Mfg	Cement & Concrete	Construction
2016 Q2	41%	79%	101%	12%	40%	57%
2017 Q3	35%	75%	83%	14%	35%	53%
2018 Q3	29%	64%	50%	16%	30%	48%
2019 Q3	31%	62%	60%	10%	26%	40%
2020 Q4	32%	58%	62%	7%	24%	36%
2021 Q3	12%	32%	1%	5%	17%	28%

45. More detail on the definitions for these indices and their applicability to renewable project development costs is provided in Appendix A hereto.

46. While we acknowledge that solar PV module prices have not risen as significantly as PPI,

developers could not have reasonably expected that module prices would reverse their historical price decline trends. Notably, in the 18-month span between 2021 Q3 and 2023 Q1, module prices have risen approximately 11%, on average, for a net increase of more than 20% over historic levels. See Table 13.

Table 13 – Changes to Recent PV Module Prices Reported by EIA Since 2021 Q3

Quarter	**Average Value ($/peak watt DC)**	**Change Since 2021 Q3**
2021 Q3	0.33	0%
2021 Q4	0.35	6%
2022 Q1	0.37	11%
2022 Q2	0.37	13%
2022 Q3	0.43	30%
2022 Q4	0.40	22%
2023 Q1	0.36	11%

47. As noted above, developers responding to NYSERDA Tier 1 REC Solicitations, including the solicitation issued amidst a global pandemic, would reasonably have projected continued low inflation levels, low interest rates, and declining equipment prices. These patterns generally continued through August, 2021. While some volatility had begun to surface by late summer 2021, it was not expected to continue as noted above. Likewise, per NREL's 2021 ATB, future renewable overnight capital cost projections generally did not reflect significant near-term renewable overnight capital cost increases.
48. Based upon our review of information concerning solicitation results publicly made available by NYSERDA through RESRFP20-1, average Index REC strike prices underlying project awards in the REC Solicitations since the CES Program was initiated generally tracked these trends, reflective of expectations of continued declines in equipment prices and stable, low inflation levels and interest rates.
49. Taken collectively, sustained inflationary trends impacting key pricing and financial inputs for renewable energy projects during the intervening periods since the time proposals were submitted in the REC Solicitations have materially eroded project economics.

IV. DELETERIOUS IMPACTS ON UNDER DEVELOPMENT PROJECTS

50. Our analysis assessed Awarded Projects from the REC Solicitations that have not been cancelled, are not yet operational, and are not yet nearing operation. To determine this subset

of projects, we relied on publicly-available project-level information reported in the Large-scale Renewable Projects Reported by NYSERDA: Beginning 2004 dataset,[6] NYISO's Interconnection Queue[7] and news articles announcing project completion (such as a New York State press release issued in April 2023 indicating that eight renewable energy projects became operational in the past six months).[8] We have referenced this subset of projects throughout our Affidavit as the Under Development Projects.

51. We recognize that there are projects within this subset that could still be cancelled, or conversely, could be built even if no adjustment is awarded. However, there is considerable uncertainty around the same given the prevailing severe economic disruptions. Applying generic cost considerations to all of the Under Development Projects is reasonable for purposes of completing this assessment, particularly given the substantial deterioration in economic conditions for renewable energy projects since fall 2021.

52. As demonstrated herein, economic conditions have evolved since the deadline for the submission of proposals in RESRFP21-1 that could not have reasonably been foreseen based on conditions that had been experienced over the preceding decade and were projected to continue to be experienced by developers. And recently enacted federal programs, such as the Infrastructure Investment and Jobs Act and CHIPS and Science Act, are expected to spur large scale project development which will place additional pressure on constrained supply sources and limited labor resources. As a result, supply chain and labor pressures impacting renewable energy projects may remain heightened in New York State over the time frames that the Under Development Projects would be completed.

53. Given the nature and structure of REC Solicitations with contracts that contain no inflation adjustment provisions, these severe economic disruptions are deleteriously affecting project economics. With annualized growth in PPI at nearly twice that of pre-2021 growth rates and increased demand concentrated in the renewable energy sector placing further pressure on costs, it is reasonable to assume most, if not all, Under Development Projects are no longer viable at their original strike prices that were established competitively. The specific impacts

[6] https://data.ny.gov/Energy-Environment/Large-scale-Renewable-Projects-Reported-by-NYSERDA/dprp-55ye

[7] https://www.nyiso.com/interconnections

[8] https://www.nyserda.ny.gov/About/Newsroom/2023-Announcements/2023-4-18-During-Earth-Week-Governor-Hochul-Announces-Completion-Of-Eight-New-Large-Scale-Renew

of the recent unprecedented inflation, as further exacerbated by factors directly affecting the renewable energy industry, will ultimately be unique to each project. Each project will reflect a variety of development and procurement approaches and strategies and will have expected different timing for the commencement of construction. However, while the specific effect of these factors will be unique to each Project, we have applied a set of broader, industry-derived factors that provide the Commission with a reasonable base assessment of the corrosive impacts of these economic disruptions on the entire portfolio of Under Development Projects. Specifically, by assessing the major components of utility-scale solar PV and LBW overnight capital costs, assigning these components to publicly available proxy price indices to assess changes in the cost of these components, and then incorporating adjustments to account for rising interest rates, we were able to estimate the impact that recent inflationary trends have had on the overall costs of the portfolio of Under Development Projects relative to the costs that developers would reasonably have anticipated when they submitted their proposals in response to the NYSERDA REC Solicitations.

54. Applying this methodology, we determined that the costs for renewable projects viewed holistically have risen so substantially since developers submitted their respective REC Solicitation proposals, that it is reasonable to presume Under Development Projects are no longer economically viable under their existing contract terms.

55. As reflected in Table 14, solar and LBW Under Development Project capacity, taken collectively, is substantial, totaling approximately 7.5 GW of the approximately 9.4 GW procured in the 2016 – 2021 REC Solicitations.

Table 14 – Under Development Solar and LBW Awarded Projects

Tier 1 Solicitation	**Reference**	**# of Projects**		**MW Capacity**		**# of Developers**	
		Awarded	Under Devt	Awarded	Under Devt	Awarded	Under Devt
3257	2016 REC Solicitation	6	3	304	50	4	1
RESRFP17-1	2017 REC Solicitation	27	12	1,608	872	13	9
RESRFP18-1	2018 REC Solicitation	20	16	1,661	1,268	11	10
RESRFP19-1	2019 REC Solicitation	21	18	1,278	1,235	8	7
RESRFP20-1	2020 REC Solicitation	21	15	2,109	1,703	10	6
RESRFP21-1	2021 REC Solicitation	22	22	2,408	2,408	11	11
Total		117	86	9,369	7,536		

56. We acknowledge that project attrition is a natural consequence of the project development process as projects mature and new information becomes available (*e.g.*, numerous factors may prevent a project from going forward, including unforeseen obstacles preventing either the issuance of a permit or the ability to secure interconnection rights). For that reason, the Commission has reasonably assigned a 20% project attrition rate to the REC Tier 1 program as reflected in the CES 2.0 Order.

57. The attrition rate due to these unpredictable conditions, if not redressed, however, will far exceed DPS Staff's presumed 20% level. As of this time, approximately 1.1 GW of solar and LBW project capacity have already been cancelled. When measured against total solar and LBW Awarded Projects, NYSERDA has already experienced a 12% attrition rate. These projects have been excluded from the Under Development Project capacity shown in the table above.

58. Of the 117 solar and LBW Awarded Projects issued since the 2016 REC Solicitation, PA has identified 86 Awarded Projects – over 70% of the total Awarded Projects by count – that are Under Development Projects. On a nameplate capacity basis, the Under Development Projects represent 80% of total MWs. If these projects are cancelled as a direct effect of inflation, losing 80% of the MWs at this stage of the Tier 1 Program will indisputably affect the levels of renewable generation available to serve New Yorkers both in the near term and as the State

nears the CLCPA 2030 mandated deadline to demonstrate 70x30 compliance.

59. New York is not alone. Similar efforts to redress the deleterious effects of these economic disruptions are either underway in, or already resolved by, a number of States. For example, in California and Hawaii, two States that also have aggressive climate change mandates, commission orders have been issued permitting existing contracts to be amended to account for these unprecedented economic conditions. We expect modifications will be authorized in other States as well so that project development can continue apace with their respective clean energy deployment and decarbonization mandates.

V. CONSIDERATIONS UNDERLYING, AND DEFINED STRUCTURE OF, AN ADJUSTMENT MECHANISM

60. To redress these impacts, an Adjustment Mechanism must first account for the significant additional divergence in the trajectory of renewable energy project cost components from an already significant uptick in broader inflation. It must also account for the reasonably expected increase in interest rates that have substantially increased the financing costs of projects. As we recognized above, each project has been uniquely affected by the circumstances that have evolved since the submission deadline for RESRFP21-1. Therefore, we first had to determine whether to recommend an Adjustment Mechanism (or mechanisms) structured to account for the specific and unique level of impacts borne by each project, on a project-by-project basis, or to recommend a uniform Adjustment Mechanism applicable to all projects differentiated only by a particular technology (solar PV or LBW).
61. While we acknowledge a project-by-project adjustment would potentially produce the most exact realignment, it will be far more administratively intensive and would require a substantial number of judgment calls. Balancing efficiency, transparency, and simplicity, we are recommending a uniform approach by technology type for the two core technologies -- a utility-scale solar PV Adjustment Mechanism ("Solar Adjustment Mechanism Formula") and a LBW Adjustment Mechanism ("LBW Adjustment Mechanism Formula"). While we acknowledge that a uniform application may be less precise in some cases, this approach will allow NYSERDA to simply and transparently calculate the Adjustment Mechanism and apply it to the Under Development Projects.
62. We next addressed how the Adjustment Mechanism should be applied. Focused again on administrative simplicity as well as transparency, the Adjustment Mechanism should be a one-

time adjustment, which would be implemented via a contract modification. The adjustment for each project would be calculated, using a formula specified in the modified contract, that incorporates publicly available indices corresponding to a time specified in the modified contract. We recommend tying this to the commencement of Construction Activities as defined in the Inflation Risk Adjusted Bid Proposal option set forth in RESRFP22-1.

63. We also have identified specific characteristics for the indices used to develop the Adjustment Mechanism. To provide transparency, publicly available indices were used. While we necessarily structured the Adjustment Mechanism to capture inflationary effects as they have specifically affected the renewable energy development industry, we also have utilized a limited number of indices to ease its administration. Importantly, we have selected indices that are regularly updated and are reasonably expected to remain available when the Adjustment Mechanism will be calculated for projects in the future. Lastly, to provide adequate revenues to restore viability, we have structured the Adjustment Mechanism to account for: (i) the overnight capital cost impacts to utility-scale Solar PV and LBW projects; and (ii) interest rate changes affecting project financing costs.

64. To capture the overnight capital cost impacts for the two core technology types, we relied on NREL publicly available information to weight the cost components on a percentage basis – specifically, *U.S. Solar Photovoltaic System and Energy Storage Cost Benchmarks, With Minimum Sustainable Price Analysis: Q1 2022* for solar PV projects and *2021 Cost of Wind Energy Review* for LBW projects. We then identified publicly available price indices as reasonable proxies for each component. The components to calculate the overnight capital cost impacts attributable to each technology type are set forth below in Tables 15 and 16, with additional information concerning the identified indices set forth in Appendix B hereto.

Table 15 – Utility-Scale Solar PV Overnight Capital Cost Components

NREL Cost Component	**NREL Component Weighting**	**Hard or Soft Cost?**	**Specialized Component?**	**Best Available Index**
Module	40.3%	Hard	Yes	Module
Inverter	3.2%	Hard	Yes	EPSTM
Electrical Balance of System	9.2%	Hard	Yes	EPSTM
Permitting, Inspection, Interconnection	3.0%	Both	Yes	EPSTM
Transmission Line	1.5%	Hard	Yes	EPSTM
Structural Balance of System	20.2%	Hard	No	Steel
Install Labor & Equipment	13.7%	Soft	Yes	Construction
EPC Overhead	6.8%	Soft	Yes	Construction
Developer Overhead	2.2%	Soft	Yes	Construction

Table 16 – Land-Based Wind Overnight Capital Cost Components

NREL Cost Component	**NREL Component Weighting**	**Hard or Soft Cost?**	**Specialized Component?**	**Best Available Index**
Nacelle – Drivetrain Assembly	15.1%	Hard	Yes	Turbine
Tower	15.1%	Hard	No	Steel
Rotor – Hub Assembly	3.5%	Hard	No	Steel
Nacelle – Structural Assembly	7.6%	Hard	Yes	EPSTM
Nacelle – Electrical Assembly	12.3%	Hard	Yes	EPSTM
Nacelle – Yaw Assembly	2.8%	Hard	Yes	EPSTM
Rotor – Blades	15.0%	Hard	Yes	EPSTM
Rotor – Pitch Assembly	4.7%	Hard	Yes	EPSTM
Electrical Infrastructure	9.8%	Hard	Yes	EPSTM
Foundation	5.6%	Hard	No	Cement
Development	1.7%	Soft	Yes	Construction
Engineering & Project Management	0.7%	Soft	Yes	Construction
Site Access & Staging	3.0%	Soft	Yes	Construction
Assembly & Installation	3.0%	Soft	Yes	Construction

65. The interest rate change effects can be measured for generic solar and LBW projects on the same basis and are composed of two components: (i) interest during construction ("IDC"), realized on a construction loan; and (ii) interest on term loans ("TL"). Interest rates on both loans are typically set at the base rate plus a risk premium. Although the risk premium may change depending on the developer's unique circumstances, the base rate utilized generally does not. As such, changes to the base rate would translate one-for-one to changes in the interest rate, all things equal. A reasonable proxy for the base rate is the EFFR. Using a levelized cost of energy ("LCOE") model, we calculated that each percentage point increase

in the EFFRs underlying a 24-month construction loan with monthly draws results in an approximately 0.7% increase in solar and wind LCOEs. Similarly, each percentage point increase in the EFFRs underlying an initial five-year term loan results in an approximately 1.3% increase in solar and wind LCOEs.

66. Lastly, for solar PV projects, a Module Expectation Factor ("MEF") was developed to represent the reasonable expectation of PV module cost declines (between REC Solicitation submission date and module procurement date) that a developer would have included in its proposed submission, as discussed above. To remain consistent throughout our affidavit, we utilized the same assumed forward looking period of four years addressed in detail below. Publicly-available module cost data sets from EIA and Lawrence Berkeley National Laboratory were used – specifically, extrapolating trends in recent historical module prices as of the proposal deadline of each REC Solicitation to develop expectations of module price declines over the next four years - to determine the MEF for each REC Solicitation. This approach resulted in a MEF value ranging from -20% in 2021 (*i.e.*, a developer in 2021 would have reasonably expected module costs to decline by 20% in nominal dollars from 2021 to 2025) to -45% in 2017 and 2019.

67. Based on the foregoing, we recommend the following Solar Adjustment Mechanism Formula and LBW Adjustment Mechanism Formula to calculate the Adjusted Index REC for each Under Development Project based on its respective technology type:

Solar Adjustment Mechanism Formula

$$REC_{adj} = REC_{orig} * \left(0.40 * \frac{Index_{T,Mod}}{(1+MEF) * Index_{B,Mod}} + 0.17 * \frac{Index_{T,EPSTM}}{Index_{B,EPSTM}} + 0.20 * \frac{Index_{T,Steel}}{Index_{B,steel}} + 0.23 * \frac{Index_{T,,Construction}}{Index_{B,Construction}}\right) * Adj_{IDC} * Adj_{TL}$$

Where:

$Index_B$ (for each component) is the price or unitless index as of the respective REC Solicitation submission deadline
$Index_T$ (for each component) is the price or unitless index on the date triggering the Adjustment Mechanism established in the modified contract.

LBW Adjustment Mechanism Formula

$$REC_{adj} = REC_{orig} * \left(0.52 * \frac{Index_{T,EPSTM}}{Index_{B,EPSTM}} + 0.19 * \frac{Index_{T,Steel}}{Index_{B,Steel}} + 0.15 * \frac{Index_{T,Turbine}}{Index_{B,Turbine}} + 0.08 * \frac{Index_{T,Construction}}{Index_{B,Construction}} + 0.06 * \frac{Index_{T,Cement}}{Index_{B,Cement}}\right) * Adj_{IDC} * Adj_{TL}$$

Where:

$Index_B$ (for each component) is the price or unitless index as of the respective REC

Solicitation submission deadline
$Index_T$ (for each component) is the price or unitless index on the date triggering the Adjustment Mechanism established in the modified contract.

68. As demonstrated herein, the Under Development Projects are at a high risk of failure without the recommended Adjustment Mechanism. . While it will always be the case that unforeseen obstacles still may cause a specific project to be cancelled, it is our opinion that the proposed Adjustment Mechanism should facilitate project completion of Under Development Projects in time to contribute to achievement of the CLCPA's renewable energy goals.

VI. QUANTITATIVE AND QUALITATIVE ASSESSMENT OF ADJUSTMENT MECHANISM COMPARED WITH THE EFFECTS IF DEVELOPERS CAN OFFER NEW PROJECTS IN FUTURE REC SOLICITATIONS OR CANCEL PROJECTS OUTRIGHT

69. We believe the evidence provided above establishing the unprecedented and unpredictable changes in renewable energy project costs and interest rates evolving since the 2021 REC Solicitation demonstrates that proceeding on a "business as usual" basis is not viable. It thus becomes necessary to assess the steps the Commission should take so that its CES Program can continue to foster development of necessary renewable energy facilities at the levels and time frames mandated by the CLCPA.
70. As established above, the Adjustment Mechanism has been expressly designed to facilitate completion of Under Development Projects. In direct contrast, failing to authorize implementation of the Adjustment Mechanism will have significant adverse effects.
71. Before addressing these costs and benefits in detail, we initially note that the Under Development Projects are composed of projects that received awards from the last pre-CES Program solicitation in 2016 through RESRFP21-1. As a general matter, it is reasonable to presume that projects receiving awards in the earlier solicitations are among the more mature projects. However, they also may well be the projects facing the tightest deadlines or expiration of contract terms.
72. It is also necessary to further frame this analysis by underscoring two core considerations. First, given the nature of the decision presented by the Petition to either authorize the Adjustment Mechanism or reject this requested relief, a Commission decision rejecting the relief sought herein necessarily strips consumers of the associated benefits of authorizing the

Adjustment Mechanism.

73. Second, for the reasons set forth in more detail below, New York State cannot reasonably presume that the Under Development Projects will bid again – as is, or perhaps, at all – in a future solicitation. As noted, some significant portion of Under Development Projects – and, as further noted, some of the more mature projects -- will be forced to be cancelled due to expiring permits, land leases, or interconnection agreements. After tendering back awards, developers potentially could offer a new project into a future solicitation. However, even if that were to occur, these projects would necessarily be offered at higher strike prices given the significant above-cited inflationary factors affecting underlying project costs. Moreover, it is also possible that major changes would be made in the size, type or location of the projects offered in the future.

74. Because it would have required a number of judgment calls, we did not analyze, nor do we present here, what portion of projects will permanently fail versus what portion will be offered as new projects, much less what portion of those new projects would ultimately be successful. Instead, to assist the Commission in addressing these issues, we quantitatively and qualitatively assessed the costs and benefits under both actions, conservatively assuming that new projects are offered, they are given awards and they all are constructed in some configuration but taking into account the protracted time frame for their completion. To be consistent with the 2026 deadline for the final REC solicitation set forth in the CES 2.0 Order (*i.e.*, that a four-year period is required to complete projects form the time of their award),[9] we conservatively assumed that construction would be prolonged by just four years for the new projects, not the six to seven years for project completion evidenced to date.

75. As established above, the Adjustment Mechanism has been designed to ameliorate the Post COVID Impacts on project economics. Conceivably, if the Commission acts on the Petition by the October session, construction of some projects reasonably could be commenced as early as next spring. To complete an objective assessment of the benefits and costs, however, we we accepted the in-service dates set forth in the Large-scale Renewable Projects Reported by NYSERDA: Beginning 2004 dataset,[10] but assuming that projects listed with 2023 in-service dates (the earliest listed in-service date for Under Development Projects) would instead enter

[10] https://data.ny.gov/Energy-Environment/Large-scale-Renewable-Projects-Reported-by-NYSERDA/dprp-55ye

service in 2024 given construction timelines.

76. Turning first to the rate impacts on consumers, we first recognize that the impact on the overall rates paid by consumers will vary based on service territory and other factors. That said, we have built on the rate impact analysis provided by the Staff of the New York Department of Public Service ("DPS Staff") in the White Paper that formed the basis for the Commission's CES 2.0 Order and conducted a high-level assessment of the overall rate impact on consumers should the Commission authorize the Adjustment Mechanism.[11]

77. Total retail electric sales revenues in New York State were approximately $26.2 billion in 2022. When divided by total retail volumetric sales in that year (approximately 142.5 TWh), average realized electricity rates were approximately 18.4 cents/kWh. For simplicity, we assume that the average realized electricity rates remain flat, in nominal dollars, for years 2024 through 2045, with total retail electricity sales volumes changing annually by the percentage change in total electrical energy demand forecast by the NYISO in the Baseline scenario in the 2022 Load and Capacity Book ("Gold Book").[12] This results in forward-looking annual retail electricity sales in New York of approximately $28.9 billion, on average, from 2024-2045. On an NPV basis, using the discount rate of 6.14% utilized in the DPS Staff White Paper, the total value of these forward-looking assumed retail electricity sales is approximately $331.3 billion.[13]

78. To calculate the impacts of implementing the Adjustment Mechanism on rates, for simplicity, we assumed: (i) all Under Development Projects would be completed largely on track with the schedules currently reported by NYSERDA (adjusting reported 2023 in-service dates to 2024 to account for construction timelines); and (ii) all Under Development Projects would receive REC compensation for the MWh volumes established in their Bid Quantities as reported by NYSERDA. To illustratively estimate the impact to REC pricing of the proposed Adjustment Mechanism, we used the REC price reported by NYSERDA for each Under

[11] *See* NYPSC Case 15-E-0302, *supra*, White Paper on Clean Energy Standard Procurements to Implement New York's Climate Leadership and Community Protection Act (June 18, 2020) (hereinafter, "DPS Staff White Paper").

[12] For consistency with PA's wholesale market modeling, which is described in further detail below and was completed before the 2023 Gold Book was released, PA utilized 2022 Gold Book projected demand growth rates for this assessment.

[13] DPS Staff White Paper, App. A at 49.

Development Project for each REC solicitation from 3257 through RESRFP20-1.[14] Because NYSERDA has not yet publicly released REC prices for RESRFP21-1, we used the average volume-weighted REC price reported by NYSERDA for RESRFP20-1 as a proxy for the REC prices in RESRFP21-1.

79. We then applied the Solar and LBW Adjustment Mechanism Formulas to these REC prices to calculate updated REC prices, assuming the mechanism was triggered in 2022 Q4, the last full quarter for which final index data is available from the Bureau of Labor Statistics.[15] The effect of illustratively applying the |Adjustment Mechanism for each Under Development Project, by REC Solicitation and technology type, is shown in Table 17. For example, for purposes of rate impact calculation, we assumed the incremental REC price resulting from applying the Solar Adjustment Mechanism Formula to Under Development solar projects issued awards in RESRFP18-1 would be approximately 62% of the current REC price for each such Under Development Project.
80. Utilizing these Bid Quantities and illustratively calculated REC price impacts, we calculate an incremental cost to ratepayers of authorizing the Adjustment Mechanism averaging approximately $486 million annually from 2024-2045 which was then adjusted on an NPV basis using the same DPS Staff White Paper discount rate of 6.14% to result in a total incremental costs to ratepayers of approximately $5.8 billion.
81. In our final step, we compared the NPV of assumed total future retail electric sales with the NPV of illustratively calculated incremental REC payment costs. We calculate using the same methodology as utilized by DPS Staff in the White Paper and determine that authorizing the Adjustment Mechanism would result in a 1.7% increase in consumer bills, all else equal.

[14] For the avoidance of doubt, the timing of triggering the Adjustment Mechanism for each project would be unique to each project.

[15] BLS states that all indices are subject to monthly revisions up to four months after original publication.

Table 17: Illustrative REC Price Impact Assuming 2022 Q4 Adjustment Mechanism Trigger

Tier 1 Solicitation	Reference	Submission Deadline	Solar REC Adjustment	LBW REC Adjustment
3257	2016 REC Solicitation	5/26/2016	50%	N/A (No Under Development Capacity)
RESRFP17-1	2017 REC Solicitation	9/28/2017	73%	71%
RESRFP18-1	2018 REC Solicitation	8/16/2018	62%	56%
RESRFP19-1	2019 REC Solicitation	9/10/2019	71%	54%
RESRFP20-1	2020 REC Solicitation	10/21/2020	71%	N/A (No Under Development Capacity)
RESRFP21-1	2021 REC Solicitation	8/26/2021	43%	N/A (No Under Development Capacity)

82. Notably, in completing these calculations, we did not offset these increases in any way to reflect the substantial benefits New York consumers will receive by authorizing the Adjustment Mechanism. First, New York consumers will benefit from lower energy and capacity prices if an Adjustment Mechanism is authorized and Under Development Projects proceed. We have used the same assumptions about the timing of project completion to calculate those benefits. Specifically, to complete the comparative analysis, we have assumed awards are tendered back, some version of new projects has replaced Under Development Projects and these projects are completed in a protracted time frame (*i.e.*, an additional four years will elapse). During that protracted period of project development, there will be less low variable cost renewable energy on the system to displace higher variable cost thermal energy, and tighter capacity supply and demand balances resulting in higher capacity pricing. Consumers will thus face higher energy and capacity costs, all else equal.

83. To quantify the impacts, we ran both scenarios in Aurora, an industry-standard production cost model. To simplify this assessment, we kept all other assumptions, including commodity prices and load levels, constant. Presuming a Commission decision in October, the first of the Under Development Projects would optimistically be assumed to come online in early 2024. In contrast, without an Adjustment Mechanism, we must take the protracted construction schedule into account which would cause the last of the replacement projects to be completed by the end of 2031. As such, we have focused our efforts on the 2024 through 2031 timeframe

to capture the impacts of failing to authorize the Adjustment Mechanism.

84. New York State's projected average annual energy consumption during the period from 2024 through 2031 is projected to be approximately 150 TWh, which will be met via a mix of nuclear, large impoundment hydro, renewable, and thermal projects. If the relief sought herein were to be rejected, the protracted four-year period to complete project development and construction is projected to cause higher power prices as zero or low-variable cost energy is not replacing current sources of energy, such as higher-variable cost thermal generators. Based on our production cost modeling, we project incremental energy costs of approximately $1 billion. See Table 18.

85. New York State's projected average annual peak demand for the period from 2024 through 2031 is approximately 32 GW. NYISO procures sufficient capacity to meet this peak demand, including an annually determined installed reserve margin, via the Installed Capacity ("ICAP") market. Because the new, FERC-approved market structure will go into effect on May 1, 2024, we have applied the NYISO's capacity accreditation rules. If the relief sought herein were to be rejected, the resultant protracted construction period with four additional years elapsing will lower total system supply and tighten reserve margins, leading to higher auction clearing prices. All else equal, the gap in supply will cost consumers approximately $960 million more in capacity payments over this time frame. See Table 18.

Table 18 – Wholesale Market Savings If Adjustment Mechanism Is Authorized

Year	**Avoided NYISO Market Energy Cost (nominal $millions)**	**Avoided NYISO Capacity Market Cost (nominal $millions)**
2024	$163	$110
2025	$205	$235
2026	$209	$361
2027	$218	$504
2028	$130	$104
2029	$62	-$44
2030	$18	-$133
2031	$2	-$172
Total	$1,007	$964

86. Additionally, the Adjustment Mechanism will also produce economic benefits beyond wholesale energy and capacity cost savings. We conservatively assume for the purposes of this assessment that the MWs associated with the Under Development Projects will ultimately

be built with new projects that are similarly structured or have different project compositions submitting proposals in future REC solicitations – either of which will proceed on a four-year protracted construction time frame. Even under this conservative assumption, time value of money principles dictate that significantly delayed economic benefits are less valuable than economic benefits realized in the near term. To calculate the lost economic benefits associated with delayed development and construction activity, we utilized IMPLAN (Impact Analysis for Planning), a well-recognized Input-Output model that analyzes the inter-related nature of spending among industries and assesses economic impacts related to a wide variety of capital projects proposed by federal and State agencies as well as private industry. IMPLAN produces a forecast of economic benefits – specifically, job-years created, labor income, and economic output -- and categorizes benefits into direct impacts (*i.e.*, impacts directly associated with development and construction of the affected projects), indirect impacts (i.e., supply chain impacts from direct expenditures), and induced benefits (*i.e.*, impacts to household income resulting from direct and indirect impacts).

87. Taking direct, indirect, and induced impacts into account, proceeding with the Adjustment Mechanism will lead to approximately 4,000 jobs that would otherwise be foregone due to protracted construction periods, or approximately 16,000 job-years. Labor income in the near term would be approximately $1.1 billion higher, and total economic output (of which labor income is a component) would be approximately $3.8 billion higher during that four-year period. Notably, these squandered economic benefits do not include the costs that will be borne by communities and school districts when PILOT and HCA payments are deferred. See Table 19.

Table 19 – Economic Benefits of Adjustment Mechanism Facilitating On-Time Construction

Benefit Type	**Total Jobs**	**Job-Years**	**Labor Income (2023$ millions)**	**Economic Output (2023$ millions)**
Direct	2,200	8,799	$640.3	$2,128.5
Indirect	629	2,516	$200.6	$618.1
Induced	1,197	4,790	$268.6	$1,016.3
Total	4,026	16,105	$1,109.5	$3,762.8

88. The lost time value of money associated with putting off these realized economic benefits would be substantial. Assuming a discount rate of 6.14% (consistent with the DPS Staff White

Paper), total economic output pushed out four years reduces their net present value by approximately $481.8 million, relative to realizing those benefits by authorizing the Adjustment Mechanism and keeping the Under Development Projects on schedule.

89. Authorizing the Adjustment Mechanism will also provide significant environmental benefits. Given their zero or low-variable cost and emissions free operating profile, renewable generators will clear the wholesale energy market ahead of thermal generators, displacing the latter on the supply stack and eliminating their associated emissions. However, under a protracted construction schedule extended out for an additional assumed four-year period, fossil fuel-powered thermal generators would be operated to a greater extent to meet the same load needs. This incremental fossil fuel generation is projected to result in over six million short tons of additional CO_2 emissions from 2024 through 2031. Under the CLCPA, the State uses a 'Value of Carbon' to measure the impact of CO_2 (and other greenhouse gas) emissions. Applying this 'Value of Carbon,' these additional CO_2 emissions are projected to impose an incremental $900 million of societal costs on New Yorkers. See Table 20.

Table 20 – Avoided CO_2 Emission Impacts of Authorizing Adjustment Mechanism

Year	**Avoided CO_2 Emissions (thousand short tons)**	**New York Value of Carbon ($/short ton CO_2)**	**Emissions Savings (nominal $millions)**
2024	856	136	$116
2025	1,426	140	$200
2026	1,686	145	$245
2027	1,253	150	$188
2028	722	156	$112
2029	158	162	$26
2030	74	167	$12
2031	7	173	$1
Total	6,183		$901

90. It is also noteworthy that, in contrast to prior transmission upgrades that the Commission had authorized which were identified, in part, as needed to meet the affected utility's respective load obligations, the Commission issued an order in February 2023 authorizing cost recovery to expedite the development of a series of transmission projects that were expressly identified for the purpose of meeting CLCPA mandates. Pertinent hereto, the Commission established

in its Phase 2 AOC Order that these transmission upgrades were designed to ensure the energy deliverability of the Awarded Projects. From an economic perspective, for the CES Program to support implementation of the CLCPA mandates efficiently and cost effectively, it is important for the generation and transmission upgrades to continue to be developed in lockstep with each other.

91. To that same end, it is noteworthy that a subset of Under Development has been identified for Clean Path New York ("CPNY"), the State's first combined transmission and generation project, designed to provide renewable energy to New York City. The same economic conditions are affecting these Under Development Projects. To the extent the associated Under Development Projects are delayed or cancelled, the potential shortfall in Tier IV RECs generated by CPNY could impact the ability of buildings in New York City to meet their greenhouse gas emission reduction targets under the City's Local Law 97.
92. The State has also made it clear it will reduce statewide carbon emissions in the electric sector while at the same time proceeding with beneficial electrification of the economy. Given the recent NYISO findings regarding future capacity needs, there is a clear need for new transmission resources and innovative clean energy solutions to ensure that the State's CLCPA mandates are achieved, and system reliability is protected. Foregoing approval of the Adjustment Mechanism at this time would unnecessarily deprive the State of long-defined and well-advanced renewable energy projects developed by experienced clean energy developers in time to align with the completion of the associated necessary transmission upgrades. In our opinion, that outcome would not be in the best interest of New Yorkers. By actively partnering with the State in its efforts to achieve its CLCPA mandates, these projects will facilitate New York's transition to first a 70 x 30 system and, ultimately, an emissions-free electric system. In our opinion, disrupting the sequencing of bringing generation and transmission projects on line would not be in the best interest of New Yorkers.
93. Each of these costs is significant in and of itself. But, even collectively, they do not present the full extent to which failing to authorize the Adjustment Mechanism will prevent the State from meeting CLCPA mandates.
94. We took the most conservative, bright line approach that no project was permanently cancelled to complete the quantitative assessments above. However, in addition to the costs of a protracted construction schedule identified above in herein in juxtaposition to the benefits that

authorizing the Adjustment Mechanism would bring, we believe the additional significant costs that may result if the relief requested herein is not authorized also warrant Commission consideration.

95. First, it is certainly possible that some number of Under Development Projects may not be offered in any form again in a future solicitation. This fact is particularly true given the vintage of some of the solicitation awards.

96. In any event, if they are successful in future solicitations, the higher costs necessarily would be incorporated into the strike prices for these projects. Moreover, a four-year delay may require land option contracts to be renegotiated. If no agreement can be reached, these contracts will be terminated. Alternatively, their terms may change. In either event, permit and/or interconnection agreement modifications may well be required. If material modifications are required, developers would be forced to begin that process anew, a process that is already encumbered by a much higher volume of interconnection requests and associated study requirements.

97. Again, while we applied the simplified assumption that addressing these project dynamics would push out project completion by four years, it is also certainly possible that it will take even longer to resolve these issues. Furthermore, project modifications could require additional investment from project developers which would further increase the costs underlying the strike prices that the projects offer into future solicitations. If more time is needed, consumers will also bear higher energy and capacity costs for longer periods of time, there will be higher system emissions, and there will be further delayed economic benefits in the form of jobs, labor income, and economic output over that entire extended period.

98. Labor implications also must be taken into account. Accommodating the backlog of delayed affected projects (or replacement capacity) while keeping pace with CLCPA-driven procurement targets would be incredibly logistically challenging given the sheer volume of capacity that would need to enter service in a given year. For example, assuming project completion is pushed out by four years, approximately 4.2 GW of solar and wind nameplate capacity would need to enter service in year 2028 alone. For reference, since 2013, solar and LBW nameplate capacity additions in New York have averaged under 200 MW annually, reaching a high of just under 500 MW in 2021 (per EIA Electric Power Monthly) – underscoring the difficulties the State is likely to face in meeting any procurement targets that

include a significant backlog of projects. In addition, as discussed above, other major infrastructure projects enabled by policies such as the Infrastructure Investment and Jobs Act and CHIPS and Science Act are expected to place further pressure on constrained labor resources.

99. In addition, with many States in the Northeast actively pursuing renewable energy development under their own public policy initiatives and the growing demand from large corporations participating in voluntary REC initiatives, supply chain and labor shortages will continue to present significant economic challenges for renewable projects for years to come *even if* the Under Development Projects were to proceed on schedule. Pushing these significant future capacity additions out to the future years (which, importantly, also coincide with the CLCPA mandated 2030 deadline for New York consumers to receive 70% of their generation from renewable resources) -- while still maintaining the clean energy procurement schedule mandated by the CLCPA – risks creating insurmountable labor and supply chain shortages.

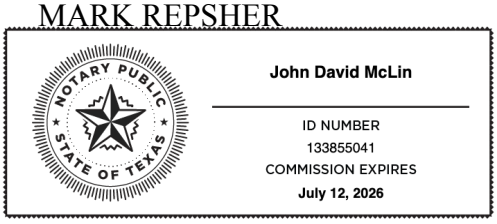
I swear under the penalties of perjury that all of the above is true and accurate.

Mark Daniel Repsher
MARK REPSHER

State of Texas, County of Collin

Sworn and subscribed this 7th day of June, 2023

John David McLin
Notary Public



Notarized online using audio-video communication

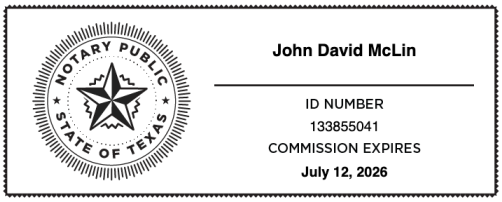
I swear under the penalties of perjury that all of the above is true and accurate.

Ashish Chaudhari
ASHISH CHAUDHARI

State of Texas, County of Collin

Sworn and subscribed this 7th day of June, 2023

John David McLin
Notary Public



Notarized online using audio-video communication

Exhibit MR-1

Mark Repsher

Partner, Economics & Investment Strategy

Primary expertise

- **Expert witness support**
- **Power plant project development**
- **Asset and contract valuation/due diligence**
- **Complex portfolio and platform advisory support**
- **Strategic resource and environmental compliance planning**
- **Offshore wind due diligence**
- **Detailed storage due diligence**
- **Interregional transmission diligence**
- **Environmental and coal asset valuation**
- **Mergers, acquisitions, and divestitures**
- **Utility non-core asset divestiture**
- **Utility and cooperative environmental compliance planning**
- **Private equity acquisition support**

Clients

- Invenergy LLC
- Calpine
- Vistra Energy
- U.S. Wind
- Terra-Gen
- NextEra Energy
- Key Capture Energy
- ITC Holdings
- Grid United
- Apollo Global Management
- KKR (Kohlberg Kravis Roberts) & Co.
- BlackRock
- Vision Ridge Partners
- Diamond Generating Corporation
- Mitsubishi Corporation
- Hoosier Energy Rural Electric Cooperative

Qualifications

- B.A. in Economics, Minor in Spanish

Experience summary

- **Support in numerous regulatory and litigation proceedings,** including expert witness (including developing direct testimony, developing rebuttal testimony, and sitting for deposition), whitepaper development, economic and ratepayer impact analysis, restructuring support, force majeure analysis and other contract disputes for energy, coal, natural gas, and transportation agreements.
- **Complex advisory support,** including strategies regarding deployment of new business models in energy markets and emerging technologies in both established and developing markets (e.g., batteries, offshore wind). Support C-suite and investors reimagine platform and assist in execution.
- **Strategic resource and environmental compliance planning,** assisting clients with "no regrets" strategic planning related to known and unknown changes in the marketplace that will affect ratepayer costs. Work has included portfolio optimization while operating under environmental Consent Decrees limiting generation of core facilities.
- **Infrastructure due diligence,** including solar, onshore and offshore wind, a variety of energy storage technologies, and interregional transmission – regarding expected penetration levels by US (United States) region, project-level economics for specific development projects and expected changes in hourly price evolution and regulations throughout the US.

PA experience

Independent Power Producer – New York Offshore Wind Impact Assessment

2022/23

Mark supported an independent power producer who owns a thermal asset in NYISO Zone J in evaluating the economic impacts of a New York offshore wind project in order to build a proposal for the NYSERDA 2022 OREC RFP. The first phase of the project included evaluating the jobs, economic impact and benefits to disadvantaged communities from the new transmission and onshore facilities using the input-output model IMPLAN as well as evaluating the emissions and health benefits caused by shutting down a thermal unit using the EPA's COBRA screening model. In addition to analyzing the project's economic and health benefits, Mark assisted the client in writing the Article VII permit application for the new transmission project. In the second phase of the project, the client partnered with a global energy company who had secured an OSW lease in the NY Bight auction with plans to interconnect the OSW generation at the thermal facility. PA conducted production cost modeling to develop ratepayer energy and capacity savings and revised the IMPLAN and COBRA models to incorporate the expanded project scope. PA provided significant OREC proposal support including development of the offer data form, economic impacts report, and disadvantaged communities impact report.

Invenergy – Grain Belt Express Analysis and Testimony Support

2022/23

Mark has supported Invenergy in its efforts to build an HVDC transmission line to connect low cost wind resources in SPP with premium regions in MISO and PJM. To assist the client, Mark led preparation of wholesale market forecasts under a number of scenarios to evaluate the economic and carbon impacts of brining low cost wind to the ratepayers within utility service territories in MISO and PJM. PA assessed ratepayer impacts by developing a partial revenue requirements model for utilities assumed to purchase a segment of the transmission line and associated wind development. Similarly, PA used the wholesale market modeling to evaluate the significant carbon savings realized by those same ratepayers, due to the transmission line and wind development displacing higher emitting resources. PA summarized its findings in several white papers for use in discussion with legislative and regulatory bodies, as well as utilities that may be interested in purchasing a segment of the transmission line. Mark also provided expert witness testimony on behalf of the client before the Missouri Public Service Commission and the Illinois Commerce Commission.

LS Power – Illinois's Climate and Equitable Jobs Act Whitepaper

2022/2022

Mark supported LS Power in analyzing the impacts of Illinois's Climate and Equitable Jobs Act (CEJA) on future reliability in PJM's ComEd zone. PA analyzed the impacts resulting from legislatively-mandated natural gas-fired retirements, the clean capacity needed to backfill these retirements, and the impact on weather-driven events on the zones reliability (including risk of black- and brown-outs). PA's findings were presented in a public whitepaper, which has informed discussions within the Illinois Legislature.

Calpine – Capacity Market Quadrennial Review Support

2022

PA was engaged by Calpine to conduct analysis on factors impacting PJM's Capacity Market design within the most recent Quadrennial Review Process. Every four years, PJM is obligated to review: (1) the shape of the VRR Curve, (2) the Cost of New Entry (CONE) for each LDA, and (3) the methodology for determining the Net Energy and Ancillary Services Revenue Offset (EAS Offset) for the PJM Region and for each Zone. Based on initial proposed recommendations by PJM, Brattle, and the Independent Market Monitor, PA (represented by Mark) presented before the PJM Market Implementation Committee actionable and data-backed analysis in multiple meetings to demonstrate where each of the three components were not in line with the latest market realities. PA's arguments convinced PJM to move away from the initially proposed values.

Invenergy – Texas Senate Bill 3 Testimony

2021

Mark supported Invenergy before the Texas State Legislature regarding Texas' newly proposed Senate Bill 3. The proposed legislation would mandate certain renewable facilities in the state to procure ancillary services and replacement power sufficient to manage net load variability, as one response to the aftermath of February 2021's winter storm Uri. Mark submitted testimony before the legislature highlighting the limited impact this portion of the legislation would have on improving overall system reliability, while potentially introducing significant cost burdens to wind and solar generation that may impact future growth within the state.

US Wind – Offshore Wind Development Testimony Support

2021

Mark served as the expert witness for US Wind's application to build an offshore wind facility off the coast of Maryland. PA developed ratepayer impact analyses, and wrote direct, supplemental direct, and rebuttal testimony for the proceeding. In addition, Mark sat for deposition in front of the Maryland Public Service Commission. US Wind was successfully awarded the offshore wind lease at the end of the proceeding.

Independent Power Producer – ERCOT (Electric Reliability Council of Texas) Contract Dispute

2021

Mark was the expert witness in a dispute regarding a heat rate call option (HRCO). Mark authored direct testimony, supplemental direct testimony, and rebuttal testimony. In addition, he sat for deposition by opposing counsel. The arbitration panel ruled in favor of his client.

Vistra Energy – PJM Carbon Pricing White Paper

2020/2021

Mark assisted Vistra Energy in understanding the potential impacts of a carbon pricing program in the PJM power market and how it could mitigate those impacts for ratepayers in the PJM footprint. To this end, PA worked with the client to discuss the potential structure of a carbon program within PJM, developed core fundamental modeling to evaluate both status quo change in the PJM market and change with a carbon program, and assessed the costs and benefits of a carbon program. PA also developed technical conference material and a whitepaper summarizing its analysis.

Private Equity Firm – New York Battery Storage Portfolio Acquisition Due Diligence

2020

Mark assisted a private equity firm in evaluating a late stage development portfolio of distributed battery energy storage projects located in Con Edison's (ConEd) New York City service territory. The portfolio was expected to be primarily compensated through the Value of Distributed Energy Resources (VDER) retail tariff as well as receive NYSERDA Market Acceleration Bridge Incentive funding. PA modeled the components of the VDER value stack the project would be eligible for, determined the costs under the required ConEd delivery tariff, and built a set of dispatch constraints and incentives for a representative distribution-connected front-of-the-meter (FtM) battery energy storage system (BESS). Using its proprietary BESS dispatch optimization model and projections of NYISO Zone J Energy and Capacity prices, PA projected VDER revenues, energy costs, and Con Ed contract demand costs over 20 years. PA also evaluated the availability of the NYSERDA Market Acceleration Bridge Incentive funding for distribution-connected storage assets in NYC by analyzing the ConEd interconnection queue. PA delivered (1) a quantitative summary of monthly asset operations and revenues in spreadsheet format, and (2) an executive-level summary presentation outlining market fundamentals, qualitative policy and regulatory considerations, and modeling results.

Battery Storage Developer – New York Development Due Diligence

2020

PA was engaged by a battery storage developer to evaluate potential earnings of BESS development projects in the NYISO, ERCOT, and ISO-NE power markets. The client wanted to understand how energy, volatility, and ancillary price formation (and associated revenues that a BESS may earn) may evolve within the changing dynamics in each market. To assist the client, PA (led by Mark) produced market price forecasts for each of the three markets, including projections of zonal energy, capacity, and ancillary prices. PA then worked with the client to develop operating dispatch characteristics for a generic 2 hour, 1.1 hour, and regulation only duration projects, and forecasted the projects' baseline operations and contribution margins. PA summarized its findings in a market report that included an overview of North American power markets, a summary of PA's fundamental market modeling projections (including but not limited to prices, supply/demand, dispatch curves, etc.), as well as the results of PA's dispatch analysis.

Independent Power Producer – New York Renewable Portfolio Divestment

2019

Mark supported an independent power producer in the divesture of a development portfolio of renewable assets across the NYISO, ERCOT, PJM, and SPP power markets. To support the client, PA developed fundamental energy and capacity market price projections for the target zones in each market, as well as renewable compensation projections for PJM. In addition, PA conducted a sensitivity case for the NYISO market that incorporated the impacts of New York implementing a state-wide carbon program on realized energy prices across NYISO. PA summarized its findings in an Independent Energy Market Expert (IEME) report that included a description of PA's market modeling projections and emphasized the current and projected state of the target markets.

Invenergy – ERCOT Marginal Losses Policy Paper

2017/2018

Mark led an analysis on behalf of Invenergy and its partners regarding the inclusion of marginal losses in ERCOT's nodal prices and the potential economic harm to Texas ratepayers. Importantly, Mark successfully defended PA's analysis in front of legislators, regulators, and ISO staff to prevent the proposal from moving forward. More recently, Mark developed materials for submittal to the Texas legislature in the wake of several proposed bills introduced to levy renewable energy facilities with incremental costs in the ERCOT market.

PJM Power Providers (P3) – Capacity Market Parameter Testimony

2014

Mark assisted a consortium of PJM Independent Power Producers ("IPP") during PJM's second triennial reset of the ISO's RPM capacity construct parameters. Specifically, PA assisted the group in countering ISO claims related to the appropriate cost of funds figure; presented findings at the PJM stakeholder meeting on how the cost of funds figure should be adjusted; met with the ISO's chief economist to present findings; and assisted the consortium in the development of testimony before FERC to support the group's position.

Exhibit AC-1

Ashish Chaudhari

Associate Partner, Economics & Investment Strategy

Primary expertise

- **Renewable project development and financing**
- **Complex portfolio and platform advisory support**
- **Storage project development and financing**
- **vPPA modeling and risk analysis**
- **Expert witness support**
- **Asset and contract valuation/due diligence**
- **Private equity acquisition support**
- **Thermal portfolio modeling**
- **USPAP valuation**
- **Mergers, acquisitions, and divestitures**
- **Cogeneration and steam modeling and valuation**
- **Stranded-asset risk and recontracting analysis**

Clients

- BlackRock
- Axium Infrastructure
- energyRE
- Apollo Global Management
- ISquared Capital
- National Renewable Services
- Bluewave Solar
- Invenergy LLC
- Calpine
- Aypa Power
- Cordelio Power
- EQT Partners

Qualifications

- M.S. in Industrial and Systems Engineering
- B.S. in Mechanical Engineering

Experience summary

- **Support in renewable and storage development and financing**, including tax-equity financing, vPPA analysis, SCED analysis, LMP and shape basis analysis, arms-length transaction review, backcast analysis, and third-party PPA review.
- **Support in numerous litigation proceedings,** including developing direct testimony and rebuttal testimony, restructuring support, power plant valuations per USPAP standards, and contract disputes for energy, coal, natural gas, and transportation agreements.
- **Platform and portfolio transaction support**, including financial modeling, market and regulatory policy review, development pipeline valuation, and red-flag review.
- **Infrastructure due diligence,** including solar, onshore and offshore wind, a variety of energy storage technologies, and interregional transmission – regarding expected penetration levels by US (United States) region, project-level economics for specific development projects and expected changes in hourly price evolution and regulations throughout the US.

PA experience

Transmission Developer – New York Transmission Development

2022/23

Ashish is supporting developer in the development of a large HVDC transmission line designed to bring clean energy from upstate New York into Zone J. The project involved evaluating the impact on New York energy and capacity prices with and without the line, helping determine the value of the project. In addition, PA also helped determine the revenues and settlement under the existing contract structure with a state agency. Furthermore, PA evaluated NYC's Tier 4 REC program and analyzed the current structure, future supply/demand, recontracting and price potential, and developed pathways reflecting the potential evolution of the City's REC program. PA represented its findings in a word-format report, ultimately suitable for financing.

Independent Power Producer – Damages Analysis and Testimony Support

2022/23

Ashish supported an EPC contractor against a claim of non-performance losses and associated economic penalties related to a cogeneration facility operating in Massachusetts. To assist the client, PA prepared wholesale market and generation forecasts to evaluate the impact of alleged performance shortfalls following a reconfiguration that the EPC was hired to build. As part of its analysis, PA also developed a valuation of the facility and employed an income approach to calculate potential economic losses. In addition, PA identified and analyzed additional measure to further mitigate any lost performance. PA summarized its findings in a word report and supported the development of expert witness testimony and legal arguments for arbitration purposes.

Infrastructure Fund – New York Solar and Storage Developer Due Diligence

2022

Ashish support a client considering the potential acquisition of a community solar and storage developer with more than 150 under-development assets across the Mid-Atlantic and Northeast, including NYISO. PA's due diligence support centered on evaluating the economic drivers of the asset pipeline. This analysis focused on state-specific policy structures and rules related to wholesale commodity electricity costs, community solar bill credit forecasts for residential and commercial/industrial subscribers, policy-based pricing paradigms for solar and/or energy storage (e.g., NY VDER and MA SMART programs), and retail electric rates. PA developed a comprehensive report to summarize the key considerations for converting the pipeline into operating projects focused on the evaluation of community solar programs and (ii) the economics of wholesale market prices and retail electric rates. PA's efforts helped the client make a successful bid to acquire this developer/portfolio.

Independent Power Producer – ERCOT (Electric Reliability Council of Texas) Contract Dispute

2021

Ashish led the analysis in a dispute regarding a heat rate call option (HRCO) between a thermal generation owner and counterparty. Ashish authored direct testimony, supplemental direct testimony, and rebuttal testimony. He also developed the models used to determine damage calculations and were presented in arbitration. The arbitration panel ruled in favor of his client.

Private Equity – Renewable Platform Acquisition Support

2021/22

Ashish was engaged by a large European infrastructure fund seeking to acquire a renewables developer with a 1.6 GW operating portfolio, and a pipeline of over 8 GW of under-development projects located across multiple power markets, including NYISO. In Phase 1, PA reviewed the seller's business outlook and financial model to develop a red flag report that highlighted the key value drivers and risks associated with the portfolio. In Phase 2 of the process, PA assisted the client in developing an informed bid on both, the operating and the development pipeline. PA's analysis included analyzing revenue expansion opportunities and a QF recontracting analysis under PURPA regulations taking into account recent state and utility policy

impacting the Avoided Cost Rate (ACR). In addition, PA projected solar realized energy ACRs in specific power markets, along with energy and capacity prices, REC prices, and renewable asset realized revenues across various power markets. A summary of PA's key takeaways was prepared in the form of an executive-level presentation. As a result of PA's work, the client was successful in acquiring the renewables developer.

Independent Power Producer – New York Combined Cycle Due Diligence

2019

A power developer approached PA to perform due diligence on a natural gas-fired Combined Cycle asset facility in NYISO Zone J. Specifically, PA (led by Ashish) provided fundamental market price projections and merchant operations and contribution margin projects for the asset. PA's fundamental modeling process incorporated a production cost model in addition to PA proprietary models, such as environmental optimization, renewable, ancillary and capacity compensation models. In addition, PA also offered discussion and modeling methodology on pertinent environmental regulations (MATS, NOx, and Sox emissions, 316(b), coal ash, RGGI, etc) and views on renewable energy standards, and underlying drivers of pricing.

Private Equity Firm – Natural Gas and Hydro Portfolio Evaluation

2018

Ashish provided due diligence support related to the evaluation of a 1.5 GW natural gas-fired combined cycle project located in PJM, as well as 77 run-of-river hydroelectric power generation assets located in NYISO, PJM, ISO-NE, and MISO. PA developed a projection of energy, ancillary services, and capacity prices for 17 zones within these ISO/RTOs, as well as a higher-level view of renewable energy compensation in each market. PA utilized a "fatal flaw" approach to analyze basis risk for the portfolio, organizing the 77 hydroelectric assets into groups based on interconnection location to ascertain whether certain groups warranted further transmission constraint analysis. PA provided the results of its analysis in spreadsheet format that summarized LMP basis, monthly revenues, and monthly operations. PA also delivered an overview of the mechanisms of the ISO-NE Forward Capacity Market (FCM).

PJM Power Providers (P3) – Capacity Market Parameter Testimony

2014

Ashish assisted a consortium of PJM Independent Power Producers ("IPP") during PJM's second triennial reset of the ISO's RPM capacity construct parameters. Specifically, PA assisted the group in countering ISO claims related to the appropriate cost of funds figure; presented findings at the PJM stakeholder meeting on how the cost of funds figure should be adjusted; met with the ISO's chief economist to present findings; and assisted the consortium in the development of testimony before FERC to support the group's position.

Attachment B

For Department of State use only.

Notice of Proposed Rule Making

(SUBMITTING AGENCY)

[ ] Approval has been granted by Executive Chamber to propose this rule making.
[ ] This rule making does not require Executive Chamber approval.

NOTE: Typing and submission instructions are at the end of this form. Please be sure to COMPLETE ALL ITEMS. Incomplete forms will be cause for rejection of this notice.

1. A. *Proposed action:*

	NYPSL §§ 65, 5 66-p Authorization	Title ____ NYCRR
		Title ____ NYCRR
		Title ____ NYCRR
		Title ____ NYCRR
		Title ____ NYCRR
		Title ____ NYCRR

B. [ ] This is a consensus rule making. A statement is attached setting forth the agency's determination that no person is likely to object to the rule as written [SAPA §202(1)(b)(i)].

C. [ ] This rule was previously proposed as a consensus rule making under I.D. No. _____. Attached is a brief description of the objection that caused/is causing the prior notice to be withdrawn [SAPA §202(1)(e)].

D. [ ] This rule is proposed pursuant to [SAPA §207(3)], 5-Year Review of Existing Rules (see also item 16).

2. *Statutory authority under which the rule is proposed:*
New York Public Service Law, Sections 65, 5, 66-p

3. *Subject of the rule:*
A request for an order authorizing an adjustment mechanism for existing Tier 1 REC Contracts

4. *Purpose of the rule:*

To authorize, and direct NYSERDA to implement, the adjustment mechanism identified herein.

5. *Public hearings* (check box and complete as applicable):
[x] A public hearing is not scheduled. (*SKIP TO ITEM 8*)
[ ] A public hearing is required by law and is scheduled below. (***Note***: first hearing date must be at least 60 days **after** publication of this notice unless a different time is specified in statute.)
[ ] A public hearing is not required by law, but is scheduled below.

Time:	*Date:*	*Location:*

6. *Interpreter services* (check only if a public hearing is scheduled):
   [ ] Interpreter services will be made available to hearing impaired persons, at no charge, upon written request to the agency contact designated in this notice.

7. Accessibility (check appropriate box only if a public hearing is scheduled):
   [ ] All public hearings have been scheduled at places reasonably accessible to persons with a mobility impairment.
   [ ] Attached is a list of public hearing locations that are **not** reasonably accessible to persons with a mobility impairment. An explanation is submitted regarding diligent efforts made to provide accessible hearing sites.

8. *Terms of rule* (SELECT ONE SECTION):
   A. [x] The full text of the rule is attached because it does not exceed 2,000 words.
   B. [ ] A summary of the rule is attached because the full text of the rule exceeds 2,000 words.

   Full text is posted on the following State website. [Pursuant to SAPA §202(7)(d), provide sufficient information to enable the public to access the full text without extensive searching. For example, provide a URL or a title to either a webpage or a specific section of the website where the full text is posted]:

   C. [ ] Pursuant to SAPA §202(7)(b), the agency elects to print a description of the subject, purpose and substance of the rule as defined in SAPA §102(2)(a)(ii) [Rate Making]. Web posting of full text of such rule is not required [SAPA §202(1)(a)].

9. *The text of the rule and any required statements and analyses may be obtained from:*

Agency contact John Pitucci
Agency Name New York Public Service Commission
Office address 3 Empire State Plaza
Albany, New York 12223-1350
Telephone (518) 486-2655 *E-mail:* john.pitucci@dps.gov

10. *Submit data, views or arguments to* (complete only if different than previously named agency contact):

Agency contact Michelle Phillips, Secretary
Agency name New York Public Service Commission
Office address 2 Empire State Plaza
Albany, New York 12223-1350
Telephone (518) 474-6530 *E-mail:* secretary@dps.ny.gov

11. *Public comment will be received until:*
   [x] 60 days after publication of this notice (MINIMUM public comment period).
   [ ] 5 days after the last scheduled public hearing required by statute (MINIMUM, with required hearing).
   [ ] Other: (*specify*) _____.

12. A prior emergency rule making for this action was previously published in the _____ issue of the *Register,* I.D. No. _____ .

13. *Expiration date* (check only if applicable):

[ ] This proposal will not expire in 365 days because it is for a "rate making" as defined in SAPA §102 (2)(a)(ii).

14. *Additional matter required by statute:*

[ ] Yes (include below material required by statute).

[x] No additional material required by statute.

15. *Regulatory Agenda* (See SAPA §202-d[1]):

[ ] This rule was a Regulatory Agenda item for this agency in the following issue of the *State Register:*

_____ .

[ ] This rule was not under consideration at the time this agency submitted its Regulatory Agenda for publication in the *Register.*

[x] Not applicable.

16. ***Review of Existing Rules*** (ALL ATTACHMENTS MUST BE 2,000 WORDS OR LESS)

This rule is proposed pursuant to SAPA §207 (item 1D applies) (check applicable boxes):

[ ] Attached is a statement setting forth a reasoned justification for modification of the rule. Where appropriate, include a discussion of the degree to which changes in technology, economic conditions or other factors in the area affected by the rule necessitate changes in the rule.

[ ] Attached is an assessment of public comments received by the agency in response to its publication of a list of rules to be reviewed.

[ ] An assessment of public comments is not attached because no comments were received.

[x] Not applicable.

17. ***Regulatory Impact Statement (RIS)***

(SELECT AND COMPLETE ONE; ALL ATTACHMENTS MUST BE 2,000 WORDS OR LESS, EXCLUDING SUMMARIES OF STUDIES, REPORTS OR ANALYSES [Needs and Benefits]):

A. The attached RIS contains:

[ ] The full text of the RIS.

[ ] A summary of the RIS.

Full text is posted on the following State website. [Pursuant to SAPA §202(7)(d), provide sufficient information to enable the public to access the full text without extensive searching. For example, provide a URL or a title to either a webpage or a specific section of the website where the full text is posted]:

[ ] A consolidated RIS, because this rule is one of a series of closely related and simultaneously proposed rules or is virtually identical to rules proposed during the same year.

B. A RIS is **not attached,** because this rule is:

[ ] subject to a consolidated RIS printed in the *Register* under I.D. No.: _____ ; issue date: _____ .

[x] exempt, as defined in SAPA §102(2)(a)(ii) [Rate Making].

[ ] exempt, as defined in SAPA §102(11) [Consensus Rule Making].

C. [ ] A **statement is attached** claiming exemption pursuant to SAPA § 202-a (technical amendment).

18. ***Regulatory Flexibility Analysis (RFA) for small businesses and local governments***
(SELECT AND COMPLETE ONE; ALL ATTACHMENTS MUST BE 2,000 WORDS OR LESS):

A. The attached RFA contains:

[ ] The full text of the RFA.

[ ] A summary of the RFA.

Full text is posted on the following State website. [Pursuant to SAPA §202(7)(d), provide sufficient information to enable the public to access the full text without extensive searching. For example, provide a URL or a title to either a webpage or a specific section of the website where the full text is posted]:

[ ] A consolidated RFA, because this rule is one of a series of closely related rules.

B. [ ] A **statement is attached** explaining why a RFA is not required. This statement is in scanner format and explains the agency's finding that the rule will not impose any adverse economic impact or reporting, recordkeeping or other compliance requirements on small businesses or local governments and the reason(s) upon which the finding was made, including any measures used to determine that the rule will not impose such adverse economic impacts or compliance requirements.

C. A RFA is **not** attached, because this rule:

[ ] is subject to a consolidated RFA printed in the *Register* under I.D. No.: _____ - _____ ; issue date: _____ .

[x] is exempt, as defined in SAPA §102(2)(a)(ii) [Rate Making].

[ ] is exempt, as defined in SAPA §102(11) [Consensus Rule Making].

19. ***Rural Area Flexibility Analysis (RAFA)***
(SELECT AND COMPLETE ONE; ALL ATTACHMENTS MUST BE 2,000 WORDS OR LESS):

A. The attached RAFA contains:

[ ] The full text of the RAFA.

[ ] A summary of the RAFA.

Full text is posted on the following State website. [Pursuant to SAPA §202(7)(d), provide sufficient information to enable the public to access the full text without extensive searching. For example, provide a URL or a title to either a webpage or a specific section of the website where the full text is posted]:

[ ] A consolidated RAFA, because this rule is one of a series of closely related rules.

B. [ ] A **statement is attached** explaining why a RAFA is not required. This statement is in scanner format and explains the agency's finding that the rule will not impose any adverse impact on rural areas or reporting, recordkeeping or other compliance requirements on public or private entities in rural areas and the reason(s) upon which the finding was made, including what measures were used to determine that the rule will not impose such adverse impact or compliance requirements.

C. A RAFA is **not attached,** because this rule:

[ ] is subject to a consolidated RAFA printed in the *Register* under I.D. No.: _____ - _____ ; issue date: _____ .

[x] is exempt, as defined in SAPA §102(2)(a)(ii) [Rate Making].

[ ] is exempt, as defined in SAPA §102(11) [Consensus Rule Making].

20. ***Job Impact Statement (JIS)***
(SELECT AND COMPLETE ONE; ALL ATTACHMENTS MUST BE 2,000 WORDS OR LESS):

A. The attached JIS contains:

[ ] The full text of the JIS.

[ ] A summary of the JIS.

[ ] Full text is posted on the following State website. [Pursuant to SAPA §202(7)(d), provide sufficient information to enable the public to access the full text without extensive searching. For example, provide a URL or a title to either a webpage or a specific section of the website where the full text is posted]:

[ ] A consolidated JIS, because this rule is one of a series of closely related rules.

B. [ ] A **statement is attached** explaining why a JIS is not required. This statement is in scanner format and explains the agency's finding that the rule will not have a substantial adverse impact on jobs and employment opportunities (as apparent from its nature and purpose) and explains the agency's finding that the rule will have a positive impact or no impact on jobs and employment opportunities; except when it is evident from the subject matter of the rule that it could only have a positive impact or no impact on jobs and employment opportunities, the statement shall include a summary of the information and methodology underlying that determination.

[ ] A JIS/Request for Assistance [SAPA §201-a(2)(c)] is attached.

C. A JIS is **not attached,** because this rule:

[ ] is subject to a consolidated JIS printed in the *Register* under I.D. No.: _____, issue date:

[x] is exempt, as defined in SAPA §102(2)(a)(ii) [Rate Making].

[ ] is proposed by the State Comptroller or Attorney General.

AGENCY CERTIFICATION (To be completed by the person who PREPARED the notice.)

I have reviewed this form and the information submitted with it. The information contained in this notice is correct to the best of my knowledge.

I have reviewed Article 2 of SAPA and Parts 260 through 263 of 19 NYCRR, and I hereby certify that this notice complies with all applicable provisions.

Name _____ *Signature* _____

Address _____

Telephone _____ *E-Mail* _____

Date _____

Please read before submitting this notice:

1. Except for this form itself, all text must be typed in the prescribed format as described in the Department of State's Register procedures manual, *Rule Making in New York.*
2. Rule making notices, with any necessary attachments (in MS Word), should be e-filed via the Department of State website.

Substance of Proposed Rule

The New York Public Service Commission ("NYPSC") is considering a petition ("Petition") filed by The Alliance for Clean Energy New York, Inc. ("ACE NY") seeking authorization of a one-time adjustment mechanism (the "Adjustment Mechanism") to contracts for a portfolio of land-based wind and utility scale solar PV projects that have received renewable energy awards under New York State Energy Research and Development Authority solicitations. As detailed in the Petition and the affidavit submitted in support thereof, ACE NY establishes the corrosive effects of the severe and unforeseeable economic disruptions that have occurred since fall 2021 have eroded the viability of these projects, and thus, they can no longer be timely completed to meet the State's climate change statutory requirements in compliance with the Climate Leadership and Community Protection Act. ACE NY further establishes implementation of the Adjustment Mechanism composed of the components delineated therein is a cost-effective and efficient solution that will ameliorate these economic disruptions and restore viability, provide significant economic and environmental benefits for New York consumers and allow the State's efforts to upgrade and enhance the transmission system to remain aligned with renewable generation development, all of which will be lost in the absence of the requested relief.