STATE OF NEW YORK PUBLIC SERVICE COMMISSION

Proceeding on Motion of the Commission to
Consider Resource Adequacy Matters Case 19-E-0530

REPLY COMMENTS OF POTOMAC ECONOMICS, LTD.

Potomac Economics, Ltd. ("Potomac Economics"), respectfully submits these reply comments in accordance with the New York State Public Service Commission's ("PSC" or "Commission") *Notice Extending Reply Comment Deadline* issued on December 20, 2019 and asks that they be accepted into the record in the above-captioned proceeding.

Potomac Economics currently serves as the independent Market Monitoring Unit ("MMU") for the New York Independent System Operator, Inc. ("NYISO"). The NYISO's Market Administration and Control Area Services Tariff ("Services Tariff") requires the MMU to help ensure that the NYISO's markets are operated in a "robust, competitive, efficient and non-discriminatory" manner.[1] As the MMU, we are also responsible for reporting on: "…the performance of the wholesale markets to the ISO, the [FERC], and other interested entities such as the [Commission] and participants in its stakeholder governance process".[2]

These reply comments respond to a small number of initial comments that advocate for or assert substantial benefits of transitioning from a centrally coordinated capacity market to a procurement model for purposes of satisfying New York's resource adequacy needs. We hope

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1 See NYISO's Market Administration and Control Area Services Tariff ("Market Services Tariff" or "MST") Attachment O §30.1.2.

2 See MST Attachment O §30.4.5.2.

these comments will be helpful to the Commission as it develops a record in the above-captioned proceeding.

I. BACKGROUND AND INTRODUCTION

The New York Public Service Commission ("the Commission") has raised fundamental questions regarding alternative means to maintain resource adequacy in New York. In particular, the Commission has inquired about the potential effectiveness of alternative resource adequacy programs, such as the state-directed long-term contracting model currently used in California. The California Public Utility Commission directs utilities to enter into long-term contracts with individual generators to satisfy resource adequacy requirements and certain policy objectives.

A number of commenters in this proceeding have argued in favor of a bilateral contracting mechanism similar to the one used in California. For example, the comments of the National Resources Defense Council and several associated parties advocate for a new resource adequacy construct under which (1) "the New York State Reliability Council and NYISO would continue to collaborate to calculate mandatory reliability requirements for LSEs in the New York Control Area" but (2) "wholesale customers could satisfy their mandatory reliability requirements by demonstrating that they have self-supplied or procured enough capacity through bilateral contracts, either for resource adequacy alone or for the full energy and capacity value of a resource."[3] This "process would be overseen by the State rather than NYISO" and the "ICAP market, which could be used by LSEs to procure additional required capacity, would be voluntary rather than mandatory."[4]

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[3] Comments of Natural Resources Defense Council, Sustainable FERC Project, Sierra Club, New Yorkers for Clean Power, Environmental Advocates of New York, and Vote Solar, *Proceeding on Motion of the Commission to Consider Resource Adequacy Matters*, filed on November 8, 2019, at 10 ("NRDC Comments").

[4] *Id.*

The NRDC Comments elaborate on this argument by describing the California bilateral contracting mechanism in detail, and asserting that the California model has three primary benefits: (1) "Sellers get revenue certainty with long term sale of energy and RECs in contracts overseen by state regulators"; (2) the bilateral mechanism "[p]otentially lowers the cost of capital for new entrants given the certainty of long-term revenue stream"; and (3) the mechanism's "[p]rimary reliance on bilateral contracts avoids FERC policy changes such as BSM."[5] Based on these asserted benefits, the NRDC Comments ask the PSC to adopt a structure that is very similar to the one used in California, and under which the PSC would have substantially-expanded responsibilities, including (1) setting the IRM, (2) enforcing resource adequacy obligations imposed on loads, including all competitively-served retail loads, (3) determining the "capacity value" of resources, (4) determining generator performance criteria, (5) determining the mechanisms for recovery of capacity procurement costs by load-serving entities, (6) setting the parameters of capacity procurement (*e.g.,* time periods, flexibility components), and (7) overseeing the various procurement methods used by load-serving entities.

Similarly, the New York Association of Public Power ("NYAPP") asserts that "mandatory capacity auctions cannot achieve policy goals including emissions reductions, fuel security, economic development and local reliability needs."[6] According to NYAPP, "[t]he solution is for the Commission to work with interested stakeholders to revise the NYISO market rules to transition the mandatory Capacity auction to a 'residual' auction that supplements other means of procuring capacity, including bilateral contracts and self-supply."[7] This approach

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5 *Id.* at 16.

6 Comments of New York Association of Public Power, *Proceeding on Motion of the Commission to Consider Resource Adequacy Matters*, filed on November 8, 2019, at 4.

7 *Id.*

would effectively eliminate the role that the ICAP Market currently plays in addressing resource adequacy concerns, and instead "provide a greater role for resource planning and procurement for LSEs and policymakers in the state."[8]

A number of other parties, while not expressly advocating for the adoption of a bilateral contracting mechanism, identify the California model as a potentially viable approach for the PSC to adopt. The Advanced Energy Economy Institute, commenting on behalf of the Advanced Energy Economy, the Alliance for Clean Energy New York, the American Wind Energy Association, and the Solar Energy Industries Association, suggests that the California model is potentially viable in New York, and notes that it would involve a "shift away from the mandatory ICAP to a voluntary residual capacity market with bilateral trading."[9] Similarly, the Long Island Power Authority, while not expressly endorsing the California approach, identifies it as a potentially viable mechanism for addressing the state's resource adequacy needs while also satisfying the aggressive environmental goals of the CLCPA.

In these reply comments, we explain why the move to a procurement model would be a serious mistake, describing the inefficiencies and associated substantial cost increases that would likely result from a transition to such a model.

II. PITFALLS OF TRANSITIONING TO A PROCUREMENT MODEL

Robust markets have tremendous potential to harness the ingenuity of individuals to create novel solutions to environmental problems, while minimizing the long-run costs of satisfying

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8 *Id.*

9 Comments of Advanced Energy Economy Institute, on behalf of Advanced Energy Economy, the Alliance for Clean Energy New York, the American Wind Energy Association, the Solar Energy Industries Association, *Proceeding on Motion of the Commission to Consider Resource Adequacy Matters*, filed on November 8, 2019, at 29.

reliability requirements. State-directed long-term contracting mechanisms can never hope to be as effective as an efficiently designed market.

We understand the arguments being advanced in favor of transitioning to a procurement model for satisfying New York's resource adequacy needs, but we believe this would be a serious mistake that would increase costs dramatically in the long-run, ultimately making it more difficult to achieve the State's environmental policy objectives. A procurement model will:

- Not procure efficient quantities of new resources;
- Not maintain economic existing resources;
- Not procure resources in the most valuable locations;
- Place excessive investment risk on New York's consumers rather than allowing it to be borne by investors and developers that can manage it efficiently;
- Inhibit retail competition, thereby limiting the role of consumers in helping integrate intermittent renewable generation; and
- Be detrimental to innovation.

We discuss each of these factors individually in the subsections below, although they are not completely independent of one another.

A. The Procurement Model Will Not Procure Efficient Quantities of New Resources or Maintain Economic Existing Resources;

Competitive wholesale electricity markets provide incentives that maintain an economic portfolio of resources by setting transparent prices that reflect the marginal reliability value of capacity resources. The marginal reliability value of capacity is reflected in the capacity demand curve in each region. The capacity demand curve sets forth the quantity of capacity that is efficient to procure at a particular price level, procuring more capacity when the price is low and procuring less capacity when the price is high. In this way, the capacity demand curve is set at a level that will induce new entry when necessary to satisfy the region's minimum reliability requirement, but will allow prices to fall as capacity levels rise to reflect the diminishing

reliability value of additional capacity. This is very important because it provides an efficient signal to guide decisions to retire existing resources.

In contrast, a Procurement Model relies on one or more large buyers that contract with many sellers to satisfy a minimum capacity requirement, but generally will not procure additional capacity above the minimum capacity requirement. In a wholesale electricity market with large lumpy investments, this creates four critical problems:

i. The market will not procure additional capacity above the minimum requirement even when it is low cost and economic based on the reliability benefits the additional capacity provides.

ii. Incumbent generators must face the risk that they will only be able to sell a portion (or none) of their generator's capacity when there is a surplus, which can lead economic existing resources to retire prematurely.

iii. To the extent that the incumbent generator is able to sell its capacity, the large buyer will likely have sufficient leverage to pay a price close to the resource's going forward cost, making the generator reluctant to invest in economic maintenance and capital additions and more likely to retire.

iv. Finally, the problems faced by incumbent generators described above will face all new investors after the initial term of their contracts, which will hinder new investment over the long-run.

The effects of the factors above on the decisions by existing resources are serious. By providing compensation that is well below the marginal reliability value of existing resources, it is likely that economic resources will retire. This will increase the need for more expensive new resources to replace existing economic resources that retire prematurely.

The final issue has important critical implications for new investment in New York. Because revenues expected after the initial contract term will be depressed, it is likely that new investors will not enter the market without a large above-market upfront contract. For the same reason, existing resources that are needed for local reliability will also likely demand above-market contracts to make capital investments and remain in service. This is likely to raise the

costs of maintaining the generation portfolio over time and create substantial liabilities for New York's taxpayers and/or rate payers, which we discuss in more detail in Section C.

Ultimately, the Procurement Model is much less efficient than the NYISO's centralized market that provides transparent, non-discriminatory pricing where resources compete to sell a single capacity product. Robust competition between new and existing resources creates opportunities to make low-cost uprates, retrofits, and repowerings of existing generators, encourages timely retirement of units that are no longer economic, and postpones the need to invest in costly new generation resources. Suppliers can profit from such low-cost investment opportunities in a competitive market like the NYISO, while suppliers have little incentive to make such investments under the Procurement Model.

B. The Procurement Model Will Not Procure Resources in the Most Valuable Locations

The value of capacity varies widely based on location because of transmission bottlenecks that limit capacity in some regions from being deliverable to other regions. This is reflected in the transmission network model that the NYISO uses as the basis for its locational capacity market requirements. The model considers 21 distinct locations and 25 distinct transmission interfaces internal to the New York Control Area. [10] These locations allow capacity prices to vary throughout the state in a manner that reflects the marginal reliability value of additional capacity in each location.

Over time, the number of locations and interfaces has increased as the new entry and retirements have shifted the location of transmission bottlenecks. Hence, the locational value of

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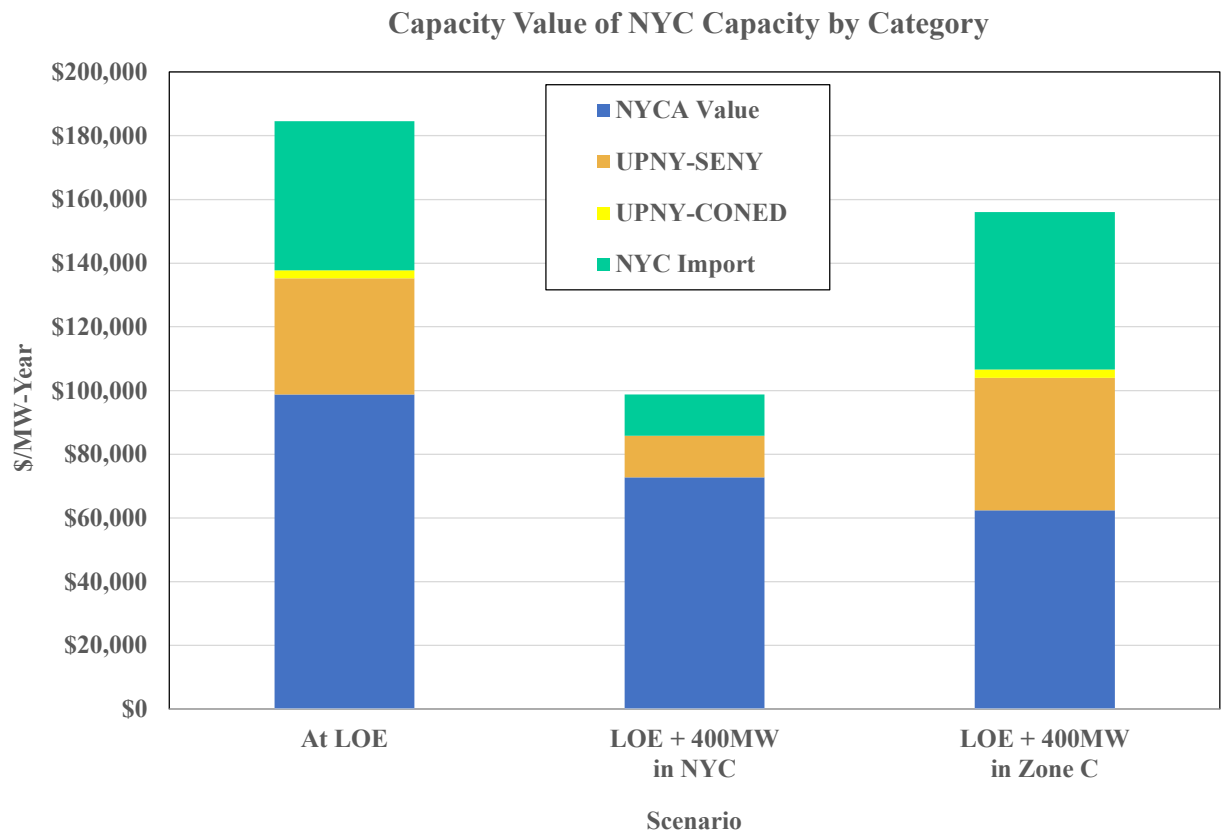
[10] See *Technical Study Report: New York Control Area Installed Capacity Requirement For the Period May 2020 to April 2021*, New York State Reliability Council Installed Capacity Subcommittee, December 6, 2019, Figure A-11.

resources evolves over time and cannot be adequately captured under a regime where the State is entering into very long-term bilateral contracts.

To illustrate the complex and changing nature of capacity value, the following analysis shows the total capacity value of generation based on location under different circumstances. Capacity value is broken into underlying components that differentiate the value capacity for meeting the statewide (i.e., NYCA) requirements from the value for relieving transmission bottlenecks into import-constrained areas in Southeast New York. The value of a MW in New York City is the total bar, while the value of a MW in Southeast NY is the top of the orange bar and the value of a MW upstate is simply the blue bar. This analysis is shown for the 2019/20 Capability Year for the system at the "Level of Excess" which is the level of capacity investment that is targeted in the NYISO's Demand Curve Reset process. For each location, the analysis shows how these values change as additional capacity is added to the system.[11]

[11] See *2018 NYISO State of the Market Report*, Potomac Economics, May 2019, Section VII.D for a discussion of how capacity value is quantified.



The figure shows that a resource on New York City not only provides value for relieving transmission constraints into New York City but also constraints into Southeast New York ("UPNY-SENY") and through the Hudson Valley ("UPNY-ConEd"). However, these values change as capacity levels change in each area. For instance, the figure shows how the capacity value would change if resources are added to New York City as compared with a scenario where resources are added in the middle of upstate New York ("Zone C"). Although this is a relatively simple example, it shows that procuring resources efficiently depends on this variable capacity value and the offer prices of supply in each area. Ultimately, optimizing these procurements can only be done on a multilateral basis where the contribution of each unit based on its location to satisfying each of NYISO's locational requirements is considered. This type of multilateral optimization is the core function of the market.

The complexity of assessing the locational reliability value of capacity is greatly increased when capacity is being procured through long-term (e.g., 20-year) bilateral contracts. This requires the buyer to have tremendous insight about future trends in new entry, retirements, and other market forces. Ultimately, a procurement agent of the State, such as NYSERDA, lacks the information and expertise to make efficient procurement decisions over the long-term. Indeed, the next subsection discusses the problems that can arise when long-term bilateral contracts are used as the basis for directing capital for new investments on a large scale.

C. The Procurement Model Will Place Excessive Investment Risk on New York's Consumers

One of the primary reasons for deregulation in the late 1990s was to shift investment risk and decision-making from regulated customers to investors. The value of shifting this risk off of customers is clear from the last two decades under regulation when customers were exposed to sizable inefficient and "stranded" costs that were the direct result of poor procurement decisions. The NYISO Comments provided an excellent summary of these problems:

> New York's prior experience with PPAs between utilities and QFs under PURPA illustrates the severity of potential cost shifts to consumers that can be caused by over-reliance on long-term bilateral contracting combined with preferential pricing for favored resources. New York's "Six Cent Law" ultimately resulted in high costs for several New York utilities with one company reaching a multi-billion dollar settlement to terminate above-market QF PPAs in order to avoid bankruptcy.[12] Consumers ultimately bore a large part of the bill. The PSC itself has previously recognized the disadvantages of over-reliance on long-term bilateral contracting. In its 2007 long-term resource portfolio planning proceeding, the PSC concluded that mandating the use of long-term resource procurement contracts risked exposing consumers to significant investment risks. The PSC reasoned that, "[t]o the extent required, mandatory utility long-term contracts can be used as a last resort to facilitate new investment

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[12] Ultimately, Niagara Mohawk Power Corporation agreed in 1997 to pay 19 independent power producers approximately $3.6 billion in cash plus certain stock and assets to restructure or terminate 29 power purchase agreement that required the utility to buy electricity at above-market prices, avoiding a potential bankruptcy filing that had been contemplated in 1996. See PSC Case 94-E-0098, et al., Proceeding on Motion of the Commission to the Rates, Charges, Rules and Regulations of Niagara Mohawk Power Corporation for Electric Service, Opinion and Order Adopting Terms of Settlement Agreement Subject Modifications and Conditions, Opinion No. 98-8 (March 20, 1998).

for reliability or other policy reasons, if the market fails to provide such capacity."[13] Instead, the PSC determined that resource procurement should principally focus on competitive markets and initiatives compatible with them, such as the procurement of generator attributes through renewable energy credit and zero emission credit programs.[14] As these decisions illustrate, long-term contracts have an important place in capacity markets but there would be downsides to supplanting markets with them entirely.

Over the long-term, uncertainty is a significant feature of virtually any market and it generates substantial risk. These risks are is best managed by private market participants who have the incentive and means to manage long-term market risk at the lowest cost. Private firms can often mitigate risk through diversification, financial hedging, and/or hedging actions that limit losses under certain important scenarios. These risks are largely unmanaged in a procurement model that guarantees cost recovery for private firms because they no longer bear the risk.

This section discusses some ways in which the Procurement Model places excessive risk on New York's customers that is avoided under the NYISO's current market-based approach to investment. First, long-term procurements inherently involve forecasting many factors that are highly uncertain over the long term, including: the growth in load, resource retirements, transmission security requirements, and the development of responsive demand. These factors can lead sizable errors in determining when and where new resources are needed, resulting in excessive costs that must be borne by rate payers.

Second, recent resource adequacy studies have demonstrated that the capacity value of non-conventional technologies varies considerably based on factors such as the penetration of

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[13] See Case 07-E-1507, Proceeding on Motion of the Commission to Establish a Long-Range Electric Resource Plan and Infrastructure Planning Process, Order Initiating Electricity Reliability and Infrastructure Planning (December 24, 2007) at 23.

[14] See 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 (August 1, 2016). Pages 14, 19-20.

intermittent generation and energy storage resources.[15] [16] For example, our assessment found that the capacity value of a 4-hour battery ranges from as little as 63 percent under high-battery/low-intermittent penetration scenarios to as much as 97 percent under low-battery penetration scenarios. If the procurement requirements and process do not properly value each resource type, it could lead to 20-year commitments that are extremely expensive that do not satisfy the resource adequacy needs of New York. On the other hand, if individual private firms bear this risk, they have the flexibility to make efficient business decisions to help manage the risk, such as investing in a diversified generation portfolio and/or financial hedging with other private firms.

Third, as New York's utilities have made clear, the balance sheets of investor-owned utilities are not large enough to absorb the financial liabilities that would be necessary to move to a California-style procurement model, leading some commenters to propose these liabilities could be borne by NYSERDA.[17] However, if the State's environmental policy objectives are satisfied through centralized procurement, the resulting financial liabilities will be enormous and ultimately underwritten by New York State.

We have estimated the outstanding financial liabilities that would be held by the State from 2021 to 2040. The following figure shows the estimated outstanding financial liabilities in this timeframe from long-term contracts with new generators needed to satisfy the goal of zero CO_2 emissions by 2040 under three scenarios: (a) where contracts include RECs and capacity,

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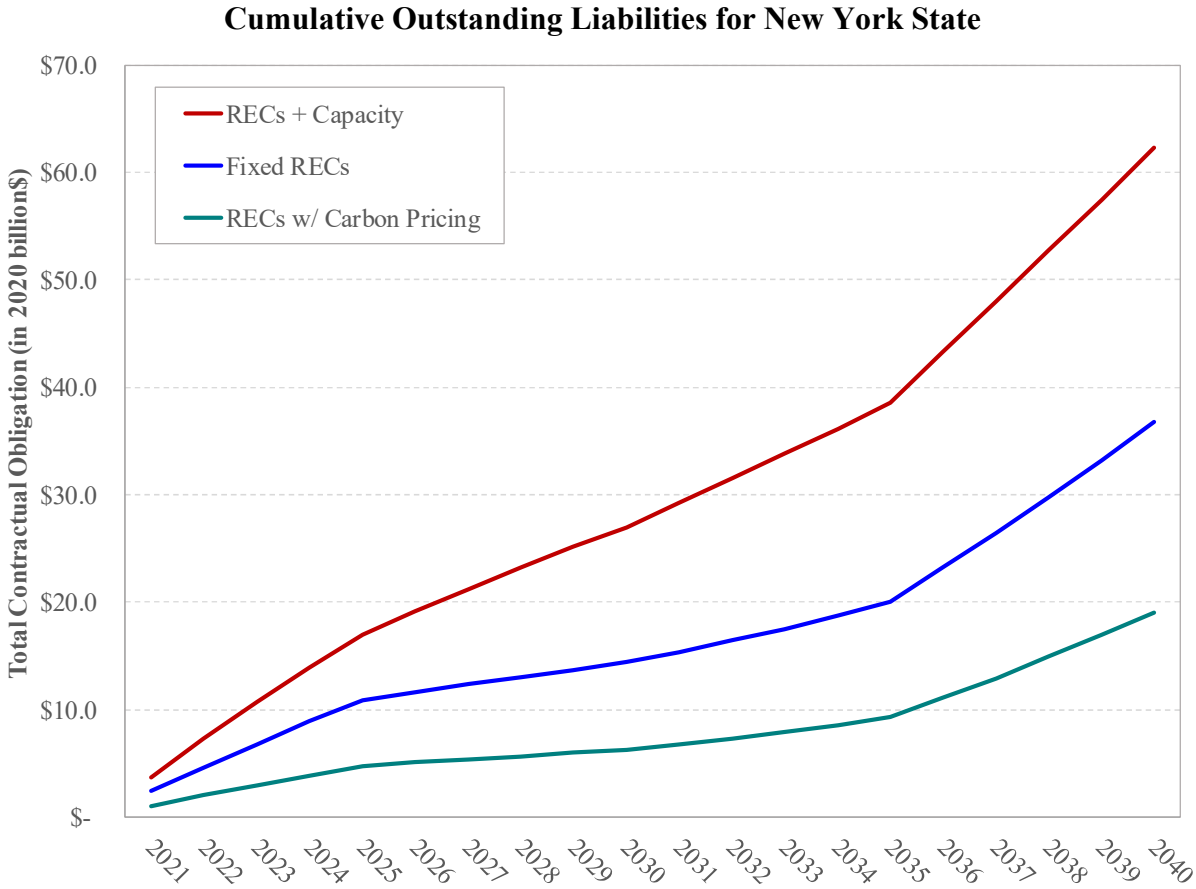
15 See *Alternative ELR Capacity Value Study: Methodology and Updated Results*, Market Monitoring Unit, Potomac Economics, Installed Capacity Working Group materials, February 25, 2019.

16 See *Valuing Capacity for Resources with Energy Limitations*, GE Energy Consulting, Installed Capacity Working Group materials, September 27, 2018.

17 See NRDC Comments.

(b) where contracts include RECs-only, and (c) where contracts include RECs-only with Carbon Pricing.[18]



The total outstanding obligations for RECs and capacity are enormous, even for a state the size of New York. For example, in the peak year 2040, total outstanding obligations would reach $~$63 billion. Importantly, these liabilities only include the long-term contracts for new generation. Under a Procurement Model, the State and/or LSEs would also be compelled to contract with all new and existing resources that are needed to satisfy the New York's reliability needs. As discussed above, this contracting will not be optimal or efficient. Hence, the

[18] These estimates are derived using the assumed quantities of capacity for each technology from 2021 to 2040 are based on the McKinsey & Company article: *The Global Relevance of New York State's Clean-Power Targets*, July 2019, the Levelized Cost of Entry for intermittent renewable generation from the NYSERDA 2018 Offshore Wind Solicitation Results, and the Brattle study of Carbon Pricing that was performed for the NYISO in 2019.

cumulative liabilities from these contracts with conventional resources could be as substantial as the renewable energy contracts quantified above.

Such large financial liabilities could have deleterious effects on the state's credit rating. If these financial liabilities are recouped through pass-through charges to distribution customers, it will create an incentive for distribution customers to seek to move their consumption off-grid, thereby increasing the charges to the remaining rate payers and potentially increasing the flight of rate payers from the market.

Fourth, another key potential risk that will be borne by New York is non-performance risk. This risk is significant under NYSERDA's procurements because NYSERDA's contracts effectively allow developers to walk away from a project without a significant penalty. [19] For developers participating in a NYSERDA RFP, there is an incentive for the developer to offer discounts in order to be selected because: (a) the developer can block competing projects from being selected and moving forward, and (b) the developer knows that if certain projections do not go as expected (e.g., energy price forecasts are revised downward or tax treatment changes adversely), it can delay construction or back out entirely. This puts New York at significant risk of not satisfying the objectives of individual solicitations. On the other hand, when developers are incentivized through transparent market signals, non-performance is no longer an issue as investors seek to minimize the time to bring resources online in order to gain an advantage over competitors.

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[19] In a recent procurement, NYSERDA required the developer to post financial security that amounts to far less than 1 percent of the gross cost of new entry that would be typical for an 800-MW offshore wind facility. Furthermore, the 25-year term of the contract will not be reduced unless the project enters after January 1, 2027, although the project is expected to come online several years earlier. See the public contract between NYSERDA and Empire Wind at: https://www.nyserda.ny.gov/-/media/Files/Programs/offshore-wind/osw-phase-1-procurement-report.pdf.

This tremendous shift of risk from investors to consumers explains why the benefits espoused by NRDC are not real. The "revenue certain" and potential reduction in capital costs comes at a very high price to New York's consumers. Not only will the contract liabilities likely be much higher than continuing to procure capacity through the competitive market, but the assumption of risk by consumers that produces these "benefits" will be enormous.

Deregulation in New York has been extremely successful and was primarily predicated on the benefits of allowing private investors shoulder the risk of their investments and take actions to manage the risk. Replacing the NYISO capacity market with a Procurement Model a large step backward because it would shift substantial risks and liabilities on to New York's rate payers and taxpayers, effectively undoing the benefits of deregulation.

D. Procurement Model Would Inhibit Retail Competition

The Procurement Model is incompatible with retail competition in a number of ways. First, the long-term procurement obligations cannot be carried out effectively by competitive LSEs as customers are extremely mobile. Therefore, an LSE is unlikely to know its obligations much more than one year in the future. Hence, much shorter-term contracts are necessary under retail competition and requiring long-term contracts will likely make it impossible for competitive LSEs to compete for customers.

However, even if the State acts as a central buyer and allocates the costs to the LSEs, retail competition will be hindered. While discussion of the CLCPA has focused on the development on non-conventional resources, the implementation of the CLCPA will require major contributions from retail customers. In particular, the integration of renewable generation could be facilitated by shifting consumption patterns, as well as growth in the demand from electric vehicles and the switching of appliances from gas to electricity. This shift in

consumption will require major changes in consumer tastes and adoption of smart devices, which would both be facilitated by a vibrant and competitive retail market.

A competitive retail market requires consumers to be able to generate cost savings through changes in consumption and to capture a portion of the resulting benefits. In the power system envisioned by the CLCPA with very high intermittent renewable penetration, this requires large amounts of demand that can respond flexibly to wholesale prices (e.g., charging electric vehicles during low-price conditions, running major appliances in response to wholesale prices, willingness to curtail under tight system conditions, etc.). This level of innovation will be impossible to achieve unless a large portion of the generating costs are allowed to flow through wholesale prices rather than the large distribution charges, as would be required by the Procurement Model.

Ontario provides a useful example of how not to engage retail customers in an effort to shift consumption patterns to reduce greenhouse gas emissions. Ontario has relied on centralized procurement through long-term contracts to shift its generation mix away from coal towards intermittent renewable generation. (Ontario also continues to rely on older nuclear and hydroelectric generation assets, which accounted for 85 percent of its total generation in 2019.) However, the reliance on long-term contracts has led to low and non-volatile wholesale prices combined with very large capacity costs. For instance, in 2019, Ontario's average wholesale spot price was 1.7 cents per kWh compared to an average "Global Adjustment" to recoup the cost of bilateral contracts with generators of 8.3 cents per kWh. When wholesale prices do not vary significantly and account for a small portion of the overall bill, consumers have little reason to shift consumption.

Robust retail competition would reduce the cost of integrating intermittent renewable generation, but the Procurement Model would stifle wholesale market signals that are necessary

for a well-functioning retail market. If retail customers are forced to bear the costs of long-term contracts that are recouped through pass-through distribution charges, it will inhibit financial incentives that would encourage consumers to shift consumption in ways that support the CLCPA. Furthermore, this lack of consumer demand would likely reduce investment in enabling technologies such as innovative smart devices.

E. A Procurement Model would be Detrimental to Innovation

Governments are most successful in promoting specific policy objectives when they define clear objectives and then allow the competitive market to provide incentives for businesses and individuals to develop creative solutions. The Procurement Model would not stimulate the same level of innovative solutions as would be facilitated by competitive markets. We cannot anticipate all the ways in which the market could provide innovative solutions to the objectives of the CLCPA while satisfying the State's reliability needs, but this subsection discusses recent examples of unanticipated market-based investments that have provided significant benefits to consumers.

As the NYISO mentioned in its comments, "in a 2012 study of resource adequacy in California, the Brattle group noted that 'evidence from the eastern capacity markets in PJM, ISO-NE, and NYISO shows that open, nondiscriminatory procurement auctions are able to mobilize large quantities of low-cost capacity supply from unconventional and unanticipated sources.'[20] This study indicated that innovation in site-selection, technology choice and other areas was fostered by competitive market forces." By establishing efficient prices that reflect the needs of the system, incentives are created that foster the development of the lowest-cost portfolio of

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[20] Resource Adequacy in California, Options for Improving Efficiency and Effectiveness, Johannes P. Pfeifenberger, Kathleen Spees, Samuel A. Newell (October 2012) at 25 ("2012 Brattle Study"), available at http://files.brattle.com/files/6238_resource_adequacy_in_california_calpine_pfeifenberger_spees_newell_oct_2012. pdf.

resources and technologies to satisfy these needs. This function of the competitive market cannot be replicated under a Procurement Model.

In our roles as the Market Monitoring Unit for the NYISO and the External Market Monitor for ISO-NE, we have observed large investments in projects that entered the market when capacity prices were far below the estimated Net Cost of New Entry.[21] Their willingness to enter without state subsidies when capacity prices were low strongly suggests that they were able capture project-specific cost advantages. In New York, we observed five instances of competitive unsubsidized new entry over the last ten years.[22] In their first two capability years of operation, spot capacity prices were less than 50 percent of the Net Cost of New Entry in their respective locations for three of the projects and less than 75 percent for the other two projects.

New generation has entered the market over the last decade despite relatively low capacity prices for multiple reasons. First, such projects may enjoy unique cost advantages that allow them to enter at lower capacity price levels. Second, as discussed in Subsection C above, generators may be willing to accept lower prices during the initial phase of operation if it allows them to capitalize on a first-mover advantage over a competitor. At the same time, such fast-moving entrants also provide significant cost savings to consumers.

As discussed in Subsection D above, a robust retail market would encourage innovation by firms that could develop enabling smart grid technology. However, this sort of retail market is unlikely to arise if all new investment is channeled through contracts with State Agencies or regulated load-serving entities.

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[21] The Net Cost of New Entry reflects the estimated annual capacity revenue needed to allow the investment in a typical new resource to break even.

[22] These are Empire CC in 2010, Bayonne Energy Center in 2012, Greenidge repowering in 2016, Bayonne Energy Center II in 2018, and CPV Valley CC in 2018.

III. EXPERIENCE IN CALIFORNIA WITH THE PROCUREMENT MODEL

California is going through a process to overhaul its resource adequacy mechanism after recognizing that "Given the passage of time and the rapid changes occurring in California's energy markets, it may be worthwhile to re-examine the basic structure and processes of the Commission's RA program."[23] This finding comes after an extensive record in which stakeholders identify significant deficiencies with California's current resource adequacy model.

In a joint filing of California's IOUs, the companies stated "The current Resource Adequacy ("RA") process requires resources that meet minimum requirements for peak load, location, or flexibility. As a result, the current RA process may retain older, less efficient plants because they can bid lower costs than newer, more efficient plants, notwithstanding that the newer, more efficient plans may be more valuable to future grid operations."[24] In other words, the California resource adequacy mechanism gives existing generators very little incentive to repower or build new generation that would help integrate renewables in the coming years. Consequently, new generation build is motivated only through above-market contracts.

The California IOUs also stated that "While retirement of thermal resources should be expected and is necessary to meet the state's emissions goals, it is important that such retirements occur in an orderly manner. This orderly manner must consider reliability and the attributes of those emitting resources that are retained to meet reliability as the transition to a zero-emitting fleet occurs. The recent increase in proposed reliability must-run ("RMR") contracts for gas-fired generators demonstrates the structure of the current RA program is failing

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[23] *Order Instituting Rulemaking to Oversee the Resource Adequacy Program, Consider Program Refinements, and Establish Annual Local and Flexible Procurement Obligations for the 2019 and 2020 Compliance Years*, dated September 28, 2017, California PUC Rulemaking 17-09-020, page 2.

[24] *Comments Of Southern California Edison Company (U 338-E), Pacific Gas And Electric Company (U 39-E) And San Diego Gas And Electric Company (U 902-E) On The Order Instituting Rulemaking To Oversee The Resource Adequacy Program*, dated October 30, 2017, California PUC Rulemaking 17-09-020, page 2.

to secure the operation of resources the California Independent System Operator ("CAISO") deems necessary for reliability during this transition to a cleaner resource fleet." [25] This result is evidence of the precise problem we describe above in Section II.A. The California procurement model cannot efficiently coordinate retirements with new entry. This coordination occurs naturally in a competitive market with transparent price signals to govern decisions by generators to invest or retire.

Another problem that has been recognized with long-term contracts for capacity is that shifting generation patterns may diminish the capacity value of intermittent renewable resources, leaving rate payers with large contractual obligations in return for very little capacity. For example, the CPUC recently reported that the recognized capacity value for solar generation dropped from 75 percent of a conventional resource in 2017 to just 15 percent in 2020 because of improvements in the techniques for assessing capacity value and increased penetration of solar generation. [26] Consequently, if long-term contracts are made for intermittent generation assuming inflated capacity values, the actual value of the contracted resources will be far below expectations, resulting in higher capacity costs for rate payers. In a competitive market, solar generation owners would have efficient incentives to mitigate this decline in capacity value by promptly adding battery storage to the system.

Ultimately, it will be extremely difficult for New York State to achieve its ambitious environmental policy goals while maintaining reliability by replicating the California model. A resource adequacy mechanism that relies on long-term contracts with the state to direct new investment and maintains existing generation through shorter contracts for capacity will be costly

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25 *Id.*, pages 2-3.

26 California PUC staff presentation titled *New Models for Resource Adequacy*, November 1, 2019 Workshop, slides 9-10.

and unable to provide efficient investment signals. Ultimately, a competitive market with transparent price signals for energy, ancillary services, and capacity is needed to provide efficient signals for the retirement of older resources and entry of new resources that will be needed to integrate the renewable generation.

IV. CONCLUSIONS

The New York Public Service Commission ("the Commission") has questioned the compatibility of competitive wholesale power markets with New York state's environmental policy objectives. As we discussed in our initial comments, the NYISO's competitive wholesale markets should be an integral part of the overall solution to promote New York state's policy objectives in a manner that preserves reliability. We outlined key enhancements to the energy, ancillary services, and capacity market will help ensure that the market efficiently facilitates actions to satisfy New York's public policy goals while minimizing the costs to New York's consumers.

Some commenters argued that New York should transition to a state-directed procurement model like the mechanism used in California. As we have described in these reply comments, such a transition would be extremely costly and inefficient because the procurement model will not coordinate efficient investment in new resources or retirement of existing resources. It will also:

- Not procure resources in the most valuable locations;
- Place excessive investment risk on New York's consumers rather than allowing it to be borne by investors and developers that can manage it efficiently;
- Inhibit retail competition, thereby limiting the role of consumers in helping integrate intermittent renewable generation; and
- Be detrimental to innovation.

For these reasons, we respectfully urge the Commission to not adopt the recommendations of NRDC, NYAPP and others in favor of moving away from the competitive market to a Procurement model.

Respectfully submitted,

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