November 8, 2019

VIA ELECTRONIC FILING

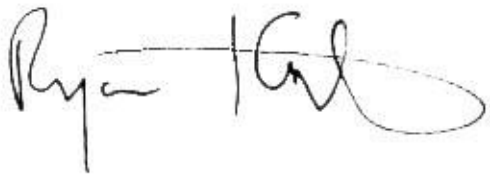
Hon. Michelle Phillips
Secretary to the Commission
New York State Public Service Commission
Empire State Plaza, Agency Building 3
Albany, New York 12223-1350

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

Dear Secretary Phillips:

Advanced Energy Economy Institute (AEE Institute), on behalf of Advanced Energy Economy (AEE), the Alliance for Clean Energy New York (ACE NY), the American Wind Energy Association (AWEA), the Solar Energy Industries Association (SEIA), and their joint and respective member companies, submit for filing comments in response to the August 8 *Order Instituting Proceeding and Soliciting Comments*.

Respectfully Submitted,



Ryan Katofsky
Managing Director
AEE Institute

Comments in Response to Order Instituting Proceeding and Soliciting Comments (Case 19-E-0530)

Advanced Energy Economy Institute
Alliance for Clean Energy New York
American Wind Energy Association
Solar Energy Industries Association

Advanced Energy Economy Institute ("AEE Institute"), the Alliance for Clean Energy New York ("ACE NY"), the American Wind Energy Association ("AWEA"), and the Solar Energy Industries Association ("SEIA") applaud the New York Public Service Commission ("NY PSC" or "Commission") for its foresight and initiative in opening the above-captioned proceeding to investigate whether changes are needed to align the New York Independent System Operator's ("NYISO's") resource adequacy provisions with the state's energy and environmental policies. We appreciate the opportunity to provide responses to the important questions raised in the Commission's August 8 *Order Instituting Proceeding and Soliciting Comments* ("Order Instituting Proceeding") in the instant case. Our organizations collectively represent and work with a range of companies across the advanced energy industry, including large-scale and small-scale wind and solar, hydroelectric power, other renewable energy technologies, battery energy storage, demand response, and energy efficiency. Given the complexity of the issues at hand, our comments place a particular focus on guiding principles that we believe should inform this proceeding as it unfolds.

These comments reflect the joint views of AEE Institute, working with Advanced Energy Economy ("AEE");[1] ACE NY;[2] AWEA[3]; SEIA;[4] and their joint and respective member companies. These organizations and companies are referred to collectively in these comments as the "advanced energy companies," "we," or "our."

I. EXECUTIVE SUMMARY

The seven questions posed by the Commission in this proceeding can be reduced to a single foundational question: Will NYISO's market rules inevitably collide with New York State policies and, in so doing, inhibit the ability to satisfy those policies cost effectively? It is our view that NYISO market rules are *already* colliding and interfering with the achievement of state policy objectives, and that, on the current trajectory, this interference will only worsen. Reforms are needed to realign market-directed outcomes with the outcomes mandated by state policies; failure to address this disconnect will make it difficult or impossible for the state to meet the legally-binding targets set by the Climate Leadership and Community Protection Act ("CLCPA") and other state policies *reliably, cost-effectively, and on time.*

[1] AEE is a national business association representing leaders in the advanced energy industry. AEE supports a broad portfolio of technologies, products, and services that enhance U.S. competitiveness and economic growth through an efficient, high-performing energy system that is clean, secure, and affordable.

[2] ACE NY's mission is to promote 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.

[3] The American Wind Energy Association (AWEA) is a national trade association representing a broad range of entities with a common interest in encouraging the expansion and facilitation of wind energy resources in the United States.

[4] The Solar Energy Industries Association is the driving force behind solar energy and is building a strong solar industry to power America through advocacy and education. As the national trade association for the U.S. solar energy industry, which employs more than 242,000 Americans, we represent all organizations that promote, manufacture, install and support the development of solar energy. SEIA works with its 1,000 member companies to build jobs and diversity, champion the use of cost-competitive solar in America, remove market barriers and educate the public on the benefits of solar energy.

While there are multiple sources of tension between the NYISO markets and New York State policies, our comments identify a few sources of acute pain. In particular, application of Buyer-side Mitigation ("BSM"), at the direction of the Federal Energy Regulatory Commission ("FERC"), to energy storage and other resources supported by state policy tragically harms the price signaling that would otherwise facilitate the resource entry and exit needed to meet state policy goals. Specifically, BSM hurts exactly those new, carbon-free, state-supported generators the system most needs; meanwhile it overpays, via artificially BSM-inflated capacity prices, existing generating units that are no longer needed to maintain resource adequacy. Design parameters in the installed capacity ("ICAP") market based around traditional generation resources, and insufficient price signals in NYISO's markets more generally (that is, failing to incent market entry by resources needed to reach the state's goals or encouraging the orderly exit of resources that work against those goals) further exacerbate the misalignment between the NYISO market and the state's policy goals.

There are multiple potential approaches to address the current disconnect between NYISO markets and New York State policies. Our comments therefore open with a set of guiding principles that any potential reforms should be measured against. We then consider some specific options for addressing resource adequacy in New York State. While we do not take a collective position at this time regarding the optimal approach to maintain resource adequacy while also ensuring that the state's policy objectives will be fulfilled, we reach the conclusion that the state could rely on the NYISO competitive wholesale markets to cost-effectively meet the state's policy objectives, but only if FERC and/or NYISO are willing to enact reforms that ensure the cost-effective achievement of the state's policy goals. In short, the state's policy goals must be a central part of NYISO's market design. If such reforms prove infeasible, the state will

need to step in to diminish NYISO's role and assert more direct control over ensuring resource adequacy.

We further note that additional market changes beyond the specific resource adequacy/capacity market construct questions raised in this proceeding can also play an important role in transitioning the state's resource mix in accordance with state policy and thereby addressing the concerns raised by the Commission. Specifically, incorporation of carbon pricing into the NYISO markets and consideration of reforms to NYISO's energy and ancillary services markets (including price formation and the design of new grid services markets) will increase the flexibility of the electricity system and support efficient market entry and exit, enabling cost-effective attainment of the state's policy goals while also maintaining reliability and resource adequacy. We therefore request that these issues, in particular the incorporation of carbon pricing into the NYISO markets, be included in the scope of this proceeding.

II. BACKGROUND AND PERSPECTIVE IN THIS CASE

As the costs of advanced energy technologies continue to decline and as state policies necessitate a shift to a low- and eventually zero-carbon electricity system, New York faces a potential disconnect between the future resource mix that will achieve state policy goals cost-effectively and the resource mix that current NYISO wholesale market rules are poised to deliver. New York is not alone in facing this disconnect between state policy and wholesale market design. By tackling this issue proactively, remaining open to a range of solutions, and soliciting broad stakeholder input, the Commission has put New York in a position to arrive at cost-effective, long-term solutions to achieve the state's policy objectives and potentially to serve as a model for other regions.

However, the questions raised by the Commission in its Order instituting this proceeding do not have singular, obvious answers, and significant effort will be required to achieve the laudable goal of "reconcil[ing] resource adequacy provisions and the State's renewable energy and environmental emission reduction goals."[5] We encourage the Commission to give this issue the attention it deserves, and we look forward to remaining engaged in a productive dialogue as the Commission and other stakeholders continue to propose, consider, and evaluate the implications of potential solutions. As the Commission reviews comments in this docket, we offer several overarching recommendations.

First, consider the guiding principles discussed in Section III below, which reflect the unique needs of New York State as well as the experience of advanced energy companies across the country with the interaction of state policies and wholesale markets. These guiding principles are intended to apply under any future resource adequacy mechanism adopted by the state and NYISO.

Second, strongly consider and evaluate the near- and medium-term benefits of adding a carbon price in NYISO, as well as revising the state's Renewable Energy Certificate ("REC") procurement mechanism. Doing so could help alleviate concerns about conflicts between wholesale market mechanisms and state policies by reflecting New York's greenhouse gas reduction requirements in NYISO's markets. These actions are relevant today, even as the Commission continues to explore the potential benefits of broader market changes in the future.

[5] Order Instituting Proceeding at 1.

Implementing carbon pricing in the wholesale market, as is currently being contemplated by the NYISO, would provide a near-term opportunity to align the NYISO markets with New York State public policy goals, and we encourage the Commission to consider broadening this proceeding to consider the valuable role of carbon pricing in addressing the tensions between state policy goals and the NYISO wholesale markets underlying this proceeding. A recent report from The Analysis Group finds that pricing carbon emissions in NYISO would lower the cost of achieving the goals of the CLCPA by up to $850 million[6] while also providing a financing tool and sending near-term and long-term price signals to incent investment in zero- and low-carbon resources and encourage the orderly retirement of higher-emitting resources. We also note that establishing a price on carbon should be accompanied by a prohibition on applying BSM rules to new clean energy resources. Without such adjustments, clean energy resources may be blocked from responding to these improved price signals, raising prices and directly inhibiting the achievement of the state's policy goals.

Nevertheless, carbon pricing alone will not provide sufficient incentive for the resource deployment needed to reach New York's ambitious environmental and energy goals in the long-term. This is especially the case for technologies such as energy storage that have lower MWh output than renewables and that will therefore receive a lower financial signal from a policy that rewards production of clean MWh.

[6] Susan Tierney and Paul Hibbard, *Clean Energy in New York State: The Role and Economic Impacts of a Carbon Price in NYISO's Wholesale Electricity Markets*, prepared by Analysis Group for the New York Independent System Operator, Oct. 3 2019. P. 36. Available at: https://www.analysisgroup.com/globalassets/uploadedfiles/content/news_and_events/news/2019-analysis-group-nyiso-final-report.pdf

In addition, the Indexed REC procurement mechanism proposed by AWEA and ACE NY in their March 12 petition[7] in Case 15-E-0302 would, if accepted by the Commission, give renewable energy project developers the confidence to continue to develop projects and bid for contracts even while the future structure of the NYISO capacity market is subject to change. Maintaining investor confidence needed to facilitate development of new clean resources is critical to achieving continued progress toward the state's goals.

Third, continue working proactively to better integrate advanced energy resources into the market. Apart from but related to this proceeding, both the Commission and NYISO have taken actions to strengthen alignment between market rules and state policies by removing barriers to entry for advanced energy resources and are exploring opportunities to incorporate state policy goals into the wholesale market. In addition to NYISO's proposal to incorporate the social cost of carbon into the wholesale price of electricity, we applaud the following efforts by NYISO and the Commission, which will better align the state's energy and environmental goals and NYISO market rules, and which any subsequent Commission action should build upon:

- **NYISO's efforts to integrate electric storage and distributed energy resources ("DERs") into the wholesale market.** NYISO has taken significant steps to recognize the benefits that electric storage and DERs can bring to its wholesale markets, releasing the "DER Roadmap" in 2017 to explore approaches to accommodating these resources. In addition to its efforts to comply with FERC Order No. 841 (which requires NYISO and the other RTOs/ISOs to adopt revised market rules to incorporate storage in their

[7] *Statement of American Wind Energy Association and Alliance for Clean Energy New York in Opposition to Petition of Multiple Intervenors and Independent Power Producers of New York Inc., and 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*, Case 15-E-0302, March 12, 2019

markets), in a recent FERC filing NYISO also proposed changes to its tariff that would allow aggregations of DERs to participate in its markets. While AEE and multiple other organizations did note the need for multiple improvements to NYISO's proposal,[8] we applaud NYISO's effort to address electric storage and DER participation, which will allow the state to more reliably and cost-effectively reach its environmental and clean energy goals.

- **NY PSC's continued focus on changing wholesale market rules that create barriers to the participation for advanced energy technologies.** Most recently, the Commission and the New York State Energy Research and Development Authority ("NYSERDA") filed a joint complaint at FERC against NYISO regarding the application of BSM to battery energy storage, a request that was supported by AEE, ACE NY, and other organizations.[9] Such engagement on the part of the Commission is key to ensure continued alignment between the state's energy policies and the wholesale market—including but not limited to NYISO's resource adequacy provisions.

These and related efforts by the Commission and NYISO will not solve the fundamental challenges identified in this proceeding, but they will avoid exacerbating the disconnect between state policies and NYISO market rules.

Fourth, carefully consider the unique opportunities and challenges associated with operating as a single-state ISO. New York's position as a single-state ISO may allow it to more

[8] See comments filed in Docket No. ER19-2276 on July 18, 2019 by Advanced Energy Management Alliance ("AEMA"), Advanced Energy Economy ("AEE"), Consumer Power Advocates ("CPA"), Energy Spectrum, Inc., Natural Resources Defense Council ("NRDC"), Sustainable FERC Project, and the New York Battery & Energy Storage Technology Consortium("NY-BEST").

[9] Docket No. EL19-86-000, July 29, 2019.

quickly and effectively adopt approaches tested elsewhere and may further open up certain options that are otherwise unavailable in multi-state markets. In general, New York, with a single-state ISO, has an opportunity to demonstrate alternative market designs that take into account the state's greenhouse gas reduction targets, electricity supply preferences, and other energy policies. We encourage the Commission to evaluate and take advantage of such alternatives.

III. GUIDING PRINCIPLES

As the Commission considers potential market reforms to better align NYISO's resource adequacy provisions with the state's energy and environmental policies, our organizations recognize that there are multiple potential paths forward. Accordingly, we offer the following seven guiding principles, which are informed by the collective experience of advanced energy companies in New York and in markets across the country and are intended to serve as relevant guideposts for the development and evaluation of any future market reforms that emerge out of this proceeding. Specifically, we recommend that any future market construct be designed such that it will do the following:

1. **Maintain New York's high level of reliability.** With the express assent of Congress,[10] New York has adopted and maintained higher reliability standards than required in other jurisdictions. In support of these higher reliability standards, NYISO and the Commission have both adopted unique programs that that utilize a wide array of advanced energy

[10] *See, e.g.,* 16 U.S.C. 824(i)(3) ("[T]he State of New York may establish rules that result in greater reliability within that State").

technologies and demand-side management measures to maintain the state's heightened level of reliability and resilience, such as the use of Special Case Resources ("SCRs") in NYISO and the Commercial System Relief Program and Distribution Load Relief Program on the retail side. The capability of advanced energy technologies like wind, solar, and storage to provide reliability services is increasing rapidly,[11] and the state should continue to support and expand the unique programs that have utilized advanced energy to meet its heightened reliability standards.

2. **Ensure achievement of state goals adopted in the CLCPA.** The CLCPA, signed by Governor Cuomo in July 2019, sets forth ambitious but achievable goals for the electricity sector, including a requirement that the state's electricity be 70% renewable by 2030 and 100% clean by 2040. These legally binding requirements are not subject to change without further legislative action, so any changes to NYISO's markets must be compatible with and in service of achieving a 100% clean electricity system by 2040.
3. **Enable all resources to compete and participate.** All resources should be able to compete on a technology-neutral basis to provide energy, resource adequacy, ancillary services, and any other benefits or services based on their price (inclusive of carbon emissions costs) and technical capabilities.
4. **Allow resources to deliver their full value to ratepayers and do not mitigate payments for attributes or services *not* valued within the wholesale markets.** The offers of resources with attributes that meet state policy objectives, where such attributes

[11] *See, e.g.*, "Using Renewables to Operate a Low-Carbon Grid: Demonstration of Advanced Reliability Services From a Utility-Scale Solar PV Plant", California ISO, National Renewable Energy Laboratory (NREL), and First Solar, http://www.caiso.com/Documents/UsingRenewablesToOperateLow-CarbonGrid.pdf.

are not valued in NYISO markets, should not be administratively repriced in a manner that raises customer costs and risks such resources not clearing the ICAP market. Policies that do so, such as BSM, inefficiently raise the capacity price above the efficient level or over-procure redundant resources, and thus raise costs to load.

5. **Adjust to the different resource mix of the future.** Both NYISO and the Commission should work proactively to identify and plan for the suite of products and services that may be needed to maintain the reliability and resilience of the electricity system as the resource mix changes to reflect state policies (*i.e.*, as it transitions to a system that has higher penetration of DERs, energy storage, and variable renewable resources, along with higher overall demand due to electrification of buildings and vehicles). Adjusting to the different resource mix of the future also means ensuring that the design of wholesale markets signals the need for and encourages the development of additional transmission infrastructure to deliver renewable resources to loads. Failure to address transmission needs will result in continued transmission bottlenecks, which pose a direct threat to cost-effective achievement of the CLCPA goals.
6. **Ensure that market constructs and state policies provide pathways for needed resources to be financed, without inefficiently prolonging the life of resources no longer needed.** Any future market construct must improve opportunities for new entrants into the market and ensure that any major changes to existing resource adequacy mechanisms retain these opportunities. Achievement of the CLCPA will require significant new entry of advanced energy resources, including both resources specifically targeted by state policies (such as offshore wind), as well as resources not directly mandated by state policy yet nonetheless needed to cost-effectively and reliably achieve

100% clean electricity, including demand response, energy efficiency, and energy storage (beyond the goals and targets already in place under state law and policies). Such market entry will only happen if sufficient financial incentives are available within or outside the market. At the same time, it is important to avoid solutions that result in over-compensating resources that are no longer needed, or that will provide additional support for the construction of costly new carbon-emitting resources, since these resources will have a short useful life (and could impose stranded investment risk) given the mandates of the CLCPA to decarbonize the power sector by 2040.

7. **Ensure that the roles of state regulators and the wholesale market operator (and by extension federal regulators) are clearly defined.** The PSC and NYISO should, in any revised construct, clarify and define the roles of state regulators and the wholesale market operator (and by extension federal regulators overseeing the wholesale market) in ensuring resource adequacy and procuring resources. This is a crucial centerpiece of effectively bridging state policies and the wholesale markets; failure to clearly define these roles has caused or exacerbated conflict in other regions. Options to balance and define these roles are discussed in more detail in response to Questions Four and Six, below.

These seven guiding principles inform our responses to the Commission's questions and apply in addition the specific discussion that follows.

IV. RESPONSES TO NYPSC REQUEST FOR COMMENT

Consistent with the guiding principles detailed above, AEE Institute, ACE NY, AWEA, and SEIA provide the following initial responses to the questions raised by the Commission in this proceeding.

Q1. Are the State's energy policies and mandates, such as those related to Offshore Wind, photovoltaics, other renewables, and energy storage compatible with the NYISO's resource adequacy mechanisms? If not, what issues are manifested? Also, if not, how could they be aligned?

Current NYISO resource adequacy mechanisms are not aligned with the energy mandates codified through the CLCPA and other policies. Indeed, certain NYISO polices, such as BSM, directly conflict with New York State policies and associated mandates. Specifically, we note at least four major issues that must be considered.

First, the current market structure may prevent ratepayers from getting all the value out of resources developed and deployed to meet state energy policies, resulting in inefficient infrastructure buildout. If resources deployed with the support of and to meet state policies are unduly prevented from participating in NYISO markets and contributing to resource adequacy, or if their capacity value is inappropriately discounted, consumers will be paying for these resources without receiving their full value. At the same time, customers will also be forced to pay for additional (and unneeded) resources to meet resource adequacy requirements through the NYISO Installed Capacity (ICAP) market. The salience of this concern depends on application of existing ICAP market rules—especially BSM—and whether these rules prevent state-supported resources from having a fair chance to sell their capacity into ICAP. In short, the more resources deployed to meet state policy goals that ICAP market rules like BSM exclude from the ICAP market, the more additional capacity consumers will have to buy and the more

their costs will go up. The need to buy that additional capacity could also slow or inhibit the achievement of the CLCPA goals to the extent that additional capacity is higher-emitting.

Especially in light of these adverse outcomes, it is our view that NYISO's capacity market should not seek to mitigate or otherwise regulate the revenues that resources may receive for services they provide in other markets, or the revenues they receive for attributes they provide outside of the wholesale market. BSM rules should instead focus on their original intent to ensure that buyers are not seeking to exercise market power and artificially reduce capacity prices by dumping uneconomic capacity in the markets. Applying BSM rules to revenues received by resources for services they provide in other markets (e.g., demand response or DERs providing retail services) or for attributes they provide that are not valued in the wholesale markets (e.g., carbon emission reductions and other environmental attributes in furtherance of state goals) extends BSM beyond its original intent and effectiveness. This application of BSM rules is also illogical, as it penalizes resources for services they are providing outside the wholesale market and preserves a market construct where higher-emitting generators effectively enjoy a subsidy because the cost of their emissions are not reflected in their operations. Applying BSM to the offers of resources deployed to meet state policy goals not only denies them a fair chance to sell their capacity into the ICAP, but also denies customers the full benefit of the costs they will incur—*regardless* of these resources' treatment in capacity markets— to attain the state's energy and environmental policy goals.

Unfortunately, recent FERC filings indicate that NYISO clearly intends to apply BSM measures to an ever-expanding set of resources that receive state support when such resources offer to sell capacity in the ICAP market. For example, NYISO has already proposed in its compliance filing in response to FERC Order No. 841 to eliminate the BSM exemption for small

storage resources below 2 MW, which (if accepted) would extend BSM to these small electric storage facilities that will be critical to meeting state policy objectives.[12] In addition, without changes to NYISO rules, BSM will be applied to other large-scale renewable resources developed Downstate to meet state goals. Due to pending matters at FERC, there is concern that BSM measures could be extended further, including to resources Upstate.[13] All of these pending and in-place BSM rules will also impact resources such as the planned 1,700 MW of offshore wind that will be procured in the near term and 9,000 MW that will be procured over time.

In addition, the method NYISO uses to determine the capacity value of resources is critical; undervaluing resources needed to reach state goals will directly undermine cost-effective achievement of these goals. For example, NYISO is proposing to discount the capacity value of energy storage to 75 percent after 1000 MW of market penetration is reached, which would be counter to the CLCPA's objectives.[14] These discriminatory capacity valuation rules should be addressed. Arbitrary and discriminatory discounting of the capacity value of electric storage resources and other advanced energy technologies risks undercompensating them for the capacity value they provide while also saddling consumers with the cost of procuring additional unneeded capacity.

Second, current resource adequacy mechanisms and related market rules may not cost-effectively maintain reliability under the future resource mix contemplated by state policy. In simple terms, today's ICAP market design procures "plain" MWs of capacity to cover

[12] *See* NYISO Order No. 841 Compliance Filing at 51-54 (Dec. 3, 2018), FERC Docket No. ER19-467-000.

[13] *See, e.g.*, FERC Docket No. EL13-62-000 et al. (addressing complaints regarding alleged "price suppression" in Upstate New York).

[14] *See* NYISO Proposed Tariff Revisions Regarding Establishment of Participation Model for Aggregations of Resources, Including Distributed Energy Resources, at 79-82 (June 27, 2019), FERC Docket No. ER19-2276-000.

load as a means of ensuring resource adequacy. This will not be optimal or sufficient for a future electricity system dominated by renewable energy, energy storage, DERs, and demand management—*i.e.*, the resource mix prioritized by the state as embodied in the CLCPA, the Reforming the Energy Vision proceeding, and other state policies and programs. Under this resource mix, flexibility will be needed to address variations in renewable energy output and more dynamic consumer behavior and loads. Going forward, the market must send investment signals to ensure adequate flexibility, ramping, and load-following and load-management, and identify ways to respond to emerging grid needs, rather than simply encourage additional generation capacity that lacks such essential characteristics. We acknowledge and appreciate that NYISO has started to work on some of these issues and encourage them to move expeditiously.

Additionally, changes to related NYISO market rules should be considered to avoid a heightened risk of renewable energy curtailment as the resource mix in New York shifts toward increased penetration of variable renewable energy resources. Currently, resources are permitted to interconnect without funding system upgrades with the understanding that, at times, those resources and/or other resources interconnecting at the same or nearby points may be required to curtail their output. While this structure was an effective mechanism to foster competition among traditional resources with variable costs, it is not a valid mechanism for renewable resources with no variable costs. Given the likely proliferation of renewable resources on the Upstate transmission and distribution system, renewable-on-renewable curtailments are increasingly likely, and are already occurring today in certain locations and under certain system conditions. Achieving the resource mix mandated by the CLCPA requires resolution of this growing issue.

Third, the failure of current market constructs to sufficiently value advanced energy resources risks their ability to access financing opportunities needed to drive market-based

new entry of resources needed to meet state goals. The range of resources needed to achieve state goals cost-effectively while maintaining reliability must be financeable, as such resources will not enter the market without a path to economic viability. However, due to a combination of factors, the current resource adequacy construct combined with other NYISO markets is currently unlikely to provide sufficient long-term revenue opportunities to allow the NYISO markets, on their own, to drive the transition required by the CLCPA. In addition to the challenges discussed above regarding the distortive effect of applying BSM to resources needed to meet state goals, the current oversupply of capacity in NYISO and lack of sufficient price formation in the energy market all contribute to a failure to provide sufficient signals through the market to incentivize entry of resources needed to meet state goals. Addressing efficient market exit (as discussed below), improving energy market price formation (through mechanisms like the Operating Reserve Demand Curve or other features), and addressing gaps in the ancillary services markets will all help to ensure that advanced energy resources are compensated according to the value they provide to the grid.

Importantly, the challenges that advanced energy resources are facing in NYISO's markets exist *despite,* and not because of, their relative economic competitiveness. Advanced energy resources have come down in cost rapidly over the past decades; at the same time, technology advancements increasingly allow a mix of advanced energy resources to deliver all the products and services needed to maintain reliability. Recent analysis by Rocky Mountain Institute finds that a "Clean Energy Portfolio" comprised of wind, solar, storage, and demand-

side management that matches the operational characteristics of gas generation offers a lower-cost solution than 90 percent of proposed gas-fired generation.[15]

Also facing challenges under the current resource adequacy construct are resources such as demand response, energy efficiency, and energy storage that are currently heavily reliant on capacity market revenues and/or complementary NYISO or state policies and programs. Given the importance of capacity market revenues for these resources today, the lack of a multi-year price lock for new resources in the current ICAP market presents a challenge to securing financing to enable market entry. While some flexible, clean resources such as energy storage also have revenue opportunities in the energy and ancillary service markets, without a stable capacity price signal, these flexible, clean resources may not be built and thus will not have the opportunity to participate in energy and ancillary services markets. Going forward, it is also important to note that some of these resources are also not specifically targeted by state procurements or policies, yet will be needed to maintain reliability as the state reaches its CLCPA goals.

In short, a one-size fits all resource adequacy construct is insufficient to meet the varied needs of our future energy system. Any new resource adequacy construct must take into account the needs and characteristics of resources that are financed and that participate in the market very differently today.

Fourth, current market rules may limit efficient market exit needed to enable entry of new clean resources. If NYISO takes overly conservative or unsubstantiated steps to preserve

[15] Rocky Mountain Institute, *The Growing Market for Clean Energy Portfolios* and *Prospects for Gas Pipelines in the Era of Clean Energy* (2019), both available at https://rmi.org/insight/clean-energy-portfolios-pipelines-and-plants/.

existing generation, either through capacity auction parameters that inefficiently prolong the economic life of such resources, mitigating new market entrants, generically boosting market revenues, or issuing Reliability Must Run (RMR) contracts, costs to customers will needlessly increase. Even under existing market rules, older fossil-fired capacity—which often has high marginal costs and long start-up times—is being retained in the market by capacity payments that reward such units for the capability to operate for a long duration when dispatched, despite the fact that this capability is likely to have diminished value in the grid of the future; in fact, the long start-up times of these resources limits system flexibility and actually works against reliability as the resource mix transitions to more and more clean energy. Such practices risk creating capacity surpluses that could reduce energy and capacity prices for all resources and make it difficult or impossible to incent the entry of the significant quantity of new resources needed to meet the state's policy objectives.

In light of these four challenges, we offer below several recommendations to ensure better alignment between state policy goals and the wholesale markets administered by NYISO *in addition to* the specific recommendations that we discuss in response to Question Four, below. In particular, we recommend that the Commission do the following:

- Provide support for NYISO's proposal to incorporate carbon pricing into wholesale market prices, as described previously; this would be a significant step toward resolving the revenue issues noted above.
- Oppose application of BSM to resources supported by the policy mechanisms put in place to meet the CLCPA requirements, while being mindful of resources such as DR and storage that rely heavily on capacity market revenue to get developed and deployed in the first place, and that will help the state meets its goals. If current and proposed application

of BSM to resources supported by state policy continues and/or is expanded, the Commission may need to consider taking over additional resource adequacy responsibility to avoid the negative impacts of undue application of BSM. This is discussed in more detail in response to Question Four.

- Engage in strategic planning and expansion of transmission and non-transmission alternatives to enable renewable energy to serve load and to avoid the growing risk of renewable-on-renewable curtailment. Toward this goal, consider the eight recommendations included in the paper *Building Clean Energy in New York: The Case for Transmission Investments* which was filed by ACE NY in Case No. 18-E-0623.[16]
- Explore and support new approaches for valuing essential reliability services in the wholesale market, including but not limited to: flexibility to respond to sudden and/or unexpected changes in supply and demand, such as "ramping" capability; additional operating reserves (perhaps as an alternative to a ramping product and/or growing energy demand to shape regional load more optimally); and frequency response as a contingency reserve service, provided more quickly than frequency regulation ("Fast Frequency Response"). Reforms to existing products to enable additional flexibility should also be considered.
- Support ongoing efforts to create active and dynamic DER markets, such as efforts underway through the Market Design and Integration Working Group, and ongoing rate design reforms, such as the mass-market successor to net energy metering ("NEM") in the value of DER ("VDER") proceeding. In addition, support new efforts related to

[16] Building Clean Energy in NY: The Case for Transmission Investments, Alliance for Clean Energy New York, Filed in Case 18-E-0623 on September 10, 2019.

DERs, including further evolution of the Load Serving Entity ("LSE") Distribution System Platform ("DSP") model such that it not serve as a "gatekeeper," but rather work in concert with NYISO to best shape load profiles and coordinate services, including resource adequacy, in a manner that stacks savings value for all customers. Additionally, evaluate and update baseline methods used to determine how all resources and customers/aggregations can best provide multiple use applications across power system domains, including resource adequacy services.

In addition to these relatively near-term opportunities, we recommend considering more fundamental market reforms, consistent with the guiding principles outlined above, building upon successful solutions already in place in New York and elsewhere, and consistent with the issues discussed in response to Questions Four and Five, below.

Q2. Does the interaction of policies and market structure mechanisms result in safe and adequate service at just and reasonable rates for customers?

In our view, there is a significant risk that the interaction of policies and market structure mechanisms may *not* result in safe and adequate service at just and reasonable rates for customers in New York—if not today, then in the near future.

Taking each issue in turn, the current combination of market structures and state policies will not result in *safe and adequate service* if either the wholesale or retail market fails to (1) provide a pathway for financing of new, clean generating resources, and (2) incentivize investment in tools and technologies that can provide the products and services needed in a more distributed, dynamic grid (e.g., ramping capability, fast frequency response capability). As discussed above, our organizations have significant concerns that the current resource adequacy

construct (and related market design aspects) will fall short on both counts, particularly as New York moves toward its CLCPA goals.

The current market structure would also fail to deliver reliable electricity service at *just and reasonable rates* if resources developed and deployed to meet state policies have their offers administratively re-priced and are therefore not given a fair opportunity to provide, and be justly compensated for, resource adequacy and/or other services they are capable of providing in the wholesale market. In this case, as discussed above in response to Question One, consumers would be forced to procure additional and unnecessary capacity resources to meet system needs. As the market is currently designed, there is the very real possibility that this is the outcome we will get. Specifically, the ICAP market will *not* produce just and reasonable rates for customers because BSM rules will, through the administrative application of an offer floor, raise the clearing price customers pay for capacity. The resulting price will lead to inefficient deployment of capital because it will be artificially high and signal the need for capacity when there is no such need. It will also fail the *just and reasonable* test because imposing administrative floors on the capacity offers of resources deployed to meet state policies forces New York consumers to pay more for this capacity than suppliers are otherwise willing to provide it for.

Additionally, if the market fails to allow DERs, energy storage, and other advanced energy technologies to provide all the services they are technically capable of providing, such resources will be excluded from the market with or without undue over-mitigation, jeopardizing both *safe and adequate service* and *just and reasonable rates.*

Q3. Is an ICAP product an effective long-term solution for resource adequacy given the required future generating resource mix, which may have lower marginal costs or different availability profiles than many current generation resources in operation? What are the salient attributes of such long-term solutions?

Consistent with our responses to Questions One and Two, above, it is our view that the ICAP market as currently conceived will not be an effective long-term solution for resource adequacy in New York, to the extent that it:

- Does not allow resources developed and deployed to meet state policies to provide all of their value to the market
- Fails to incentivize investment in new, zero-carbon generating resources
- Fails to encourage the efficient exit of resources no longer needed for reliability
- Does not support procurement of resources to provide flexibility, ramping, and other services that will be needed in a system with higher penetration of variable resources and more diverse loads.

Specifically, if the current resource adequacy construct is maintained, the ICAP market rules should be reviewed and potentially revised or replaced to better reflect the future resource mix in New York. Current ICAP market rules such as capacity value calculations, design of auction parameters, and Capacity Resource Interconnection Service procedures should be revisited and likely updated to ensure that they do not unnecessarily obstruct the integration of resources required to meet the state's policy objectives. Of course, any revisions must not jeopardize reliability.

Furthermore, we encourage the Commission to look beyond the ICAP market to address the impacts of low/zero marginal cost resources on other markets, especially if NYISO does not make necessary reforms to its capacity market. For example, energy market price formation will need to be improved (through mechanisms like the Operating Reserve Demand Curve or other features) to ensure that resources are fully compensated for the services they provide and have incentives to respond to scarcity or reliability events on the grid. This is especially true as more

low- and zero-marginal cost renewable and other advanced energy technologies make up the majority of the resource mix. Several options to address these challenges are discussed in more detail in response to Question Four, below.

Q4. Is there a preferred mechanism(s) for ensuring resource adequacy? What are the cost impacts and benefits to consumers under the various potential resource adequacy mechanisms?

Our organizations do not have a single preferred mechanism for ensuring resource adequacy. However, we recommend following the guiding principles in Section III above to develop a preferred mechanism going forward, and we emphasize that any mechanism must allow opportunities for third-party investment while also ensuring that resources developed and deployed to meet state policy objectives are not unduly mitigated, and that they are able to provide all of the value they are capable of providing in wholesale markets.

Before discussing potential mechanisms, it is important to note that the Federal Power Act (FPA) confirms that states have broad authority to determine the specific types of generation or non-generation resources used to serve customers.[17] This is especially true for New York, which has consistently been given explicit authority by Congress to address reliability within the state and adopt higher standards.[18] FERC, in turn, regulates the rates, terms, and conditions of the provision of capacity products in wholesale markets.

[17] 16 U.S.C. § 824(b)(1) (reserving jurisdiction "over facilities used for the generation of electric energy" to the states).

[18] Energy Policy Act of 2005, 16 U.S.C. § 824o,''(3) Nothing in this section shall be construed to preempt any authority of any State to take action to ensure the safety, adequacy, and reliability of electric service within that State, as long as such action is not inconsistent with any reliability standard, except that the State of New York may establish rules that result in greater reliability within that State, as long as such action does not result in lesser reliability outside the State than that provided by the reliability standards." https://www.govinfo.gov/content/pkg/BILLS-109hr6enr/pdf/BILLS-109hr6enr.pdf.

Within these inextricably linked responsibilities, there are a range of options New York can consider to more clearly define each party's roles and responsibilities as the state complies with the CLCPA and as the resource mix changes. The range of available options for ensuring resource adequacy can be thought of along a spectrum, all falling somewhere between two "bookends," which we will use to explore tradeoffs, including costs and benefits to consumers.

Wholesale Market-Driven Resource Adequacy

At one end, NYISO, under FERC regulation, would retain primary responsibility for ensuring resource adequacy, procuring resources to meet resource adequacy requirements through its centralized capacity market construct (or another construct in the future). This approach has several potential drawbacks, many already described above in discussion of the ICAP market, including:

- Conflict between New York State policies and the NYISO market, if resources procured to meet state policy goals become subject to BSM and other market rules and design parameters that inhibit the efficient entry of resources needed to meet state policy goals and retain resources that work against those goals;
- Administrative determinations of the capacity value of resources that may result in discrimination between resource types or systematic under-valuing of resources;
- Potential for over-procurement of capacity and delayed retirements, at an increased cost to consumers;
- Increased complexity of NYISO markets that value all of the attributes required to meet state policy objectives, and potential for conflict with FERC where the state chooses to value some attributes (*e.g.*, environmental performance) outside of the market;

- Federal agency—and not New York State officials—has major, and potentially preclusive, impact on the selection of resources that provide resource adequacy in the state.

State Agency-Driven Resource Adequacy

At the other bookend is a bottom-up planning and procurement approach whereby New York State regulators (through the NYPSC, NYSERDA, or another agency) could take on primary responsibility for resource adequacy, and engage in more centralized planning and procurement of resources to meet resource adequacy requirements. This approach also has several potential drawbacks, including:

- Potential scrutiny and even rejection by FERC (described in more detail below);
- Potential for diminished competition (and resultant cost increases and diminished choice for customers);
- Potential for exclusion of third-party resources depending on the mechanisms used to procure resources (perhaps alleviated by following an approach similar to NYSERDA's existing competitive auction for REC procurement);
- Possible exclusion or under-procurement of resources needed to maintain reliability and reach clean energy goals, yet not specifically supported by state procurement targets (e.g., demand response, energy efficiency resources, energy storage adopted to provide demand response, etc.);
- Increased administrative burden at the state level.

Between these two bookends, there are many alternative options for defining the roles of the state and NYISO in ensuring resource adequacy at least cost while satisfying New York State's policy mandates.

Wholesale Market-Driven Resource Adequacy Alternatives

NYISO could continue to hold primary responsibility for procuring resources needed to meet reliability requirements through its markets but take proactive steps to ensure that the market outcomes reflect the state's policies and resource preferences. Some other markets have attempted to make such reforms.

PJM Interconnection ("PJM") and ISO New England ("ISO-NE") both provide examples of reform approaches that we strongly recommend *avoiding* or, at a minimum, significantly scrutinizing to understand their full impact. For example, in response to FERC directives to dramatically expand its BSM rules, PJM proposed a Resource-Specific Carve Out option ("ReCO") that would allow resources subject to BSM to effectively remove themselves from the centralized wholesale capacity market structure and still be counted toward resource adequacy requirements. This approach could alleviate the central problem in NYISO's market today by protecting resources needed to meet state policy objectives from the worst impacts of BSM. However, as contemplated in PJM, ReCO could be very complicated to implement, and because of how PJM proposes to calculate the contribution of carved-out resources to resource adequacy requirements, it may not fully value them and may require the procure of additional unneeded capacity within the centralized market. We have also heard concerns that extensive carve-outs risk bifurcating the market, and may erode price signals, harming resources need to meet state policy goals that rely on the capacity market (e.g., demand response, some DERs) without

contemplating a transition or replacement for these lost revenues. Finally, it could result in lost market opportunities for third parties if ReCO plans are not sufficiently open to competition.

Under ISO-NE's Competitive Auctions with Sponsored Resources (CASPR), the auction design attempts to incorporate state policy objectives by aligning retirement of aging generation and replacement with the entry resources deployed to meet state-policy objectives. In theory, this approach should align how the centralized capacity market procures resources with the policy mandates of the six New England states. However, this approach still risks retention of aging resources at the cost of excluding from the capacity market the resources needed to meet state goals. Developed in New England as a short-term solution, CASPR or a similar approach will not solve New York's long-term needs; it is built upon a foundation of applying BSM to clean resources, is likely to suffer from significant illiquidity, and does not provide entering clean resources with sufficient revenue certainty.

A more viable alternative that would avoid the downsides of the approaches taken in PJM and ISO-NE would be to design the NYISO capacity market around the goal of procuring resources needed for the state to meet its mandated clean energy targets. Each year, an increasing amount of clean energy (renewable energy, energy storage, demand response, etc.) would be procured through the NYISO markets, alongside a decreasing amount of non-clean resources. In essence, the NYISO would serve as a centralized procurement agent for the state so that all products and services would be transacted through the NYISO markets. Renewables and nuclear power could be secured through a bundled procurement for capacity and RECs/Zero Emission Credits ("ZECs"), alongside a complementary "flex capacity procurement" for resources such as storage and demand response.

State Agency-Driven Resource Adequacy Alternatives

On the other side of the spectrum of options, the state could take a more active role in ensuring resource adequacy than it does today, but continue to rely on NYISO to establish resource adequacy requirements and dispatch resources in the energy and ancillary services markets, while also ensuring that resource adequacy resources perform as required.

The Midcontinent ISO ("MISO") and California ISO ("CAISO") both follow this kind of approach. In MISO, most states conduct integrated resource planning ("IRP") or other resource adequacy planning process under which vertically-integrated utilities procure resources to meet reliability needs. This set of resources is brought to MISO to meet the region's resource adequacy needs. MISO's centralized capacity market is effectively a residual market that allows utility members to purchase capacity to resolve deficiencies outside of the state-driven planning processes; prices in this market are very low most of the time. In CAISO, the California Public Utilities Commission ("CPUC") administers a resource adequacy program that requires the states utilities to procure resources under contract to meet most of the state's resource adequacy needs.

One way that this could work in New York is to shift away from the mandatory ICAP to a *voluntary* residual capacity market with bilateral trading. Under this approach, the New York State Reliability Council ("NYSRC") and NYISO would continue to collaborate to calculate mandatory reliability requirements for wholesale customers (i.e., LSEs) in the New York Control Area as they do today. Importantly, however, the ICAP market would be voluntary rather than mandatory, and BSM would not be applied to resources developed and deployed to meet state policies. Wholesale customers would be able to satisfy the mandatory reliability requirements by demonstrating that they have self-supplied or procured capacity that meets NYISO requirements. This proposal would enable wholesale customers to realize the value of the utility-scale

renewable resources deployed to meet state policy goals. A voluntary market would also allow wholesale customers to engage in long-term contracts (which is already allowed) without fear of being subject to BSM.

Under such an approach, it would be essential to ensure that resource adequacy requirements must ensure procurement not only of the mix of resources that can satisfy the requirements of the CLCPA, but all resources needed to meet the state's broader goals, including but not limited to demand response, energy storage, and DERs. Otherwise, these resources will be left to rely on a residual capacity market that is unlikely to provide sufficiently strong price signals to enable investment. The NYISO or NYPSC could facilitate bilateral transactions by increasing price transparency potentially by posting limited information about bilateral offers, developing a standardized contract, or hosting a bilateral trading platform.

Should New York State take on additional resource adequacy responsibility beyond what it does today, the NYPSC should be cognizant of the fact that wholesale capacity transactions are FERC jurisdictional. If New York State plays the role of overseeing capacity sales for resale, it could run afoul of FERC's jurisdiction. In CAISO, FERC recognized, but did not assert, in the first instance, its jurisdiction over capacity sales. If the NYPSC wanted to oversee a resource adequacy program in the manner that the CPUC does, it could request a similar finding from FERC.

Recommendations for Resource Adequacy in New York

Overall, we find that the existing capacity market structure is only viable moving forward to the extent that it can both avoid over-mitigation of resources developed and deployed to meet state targets, and incorporate reforms to ensure that a resource mix consistent with state policy can be financed and deployed without jeopardizing reliability. The state should quickly

determine whether the NYISO market can be sufficiently reformed to meet the state's policy goals, and if not, consider asserting a broader direct state role in managing resource adequacy.

When considering a reformed NYISO role in resource adequacy, we recommend avoiding the approaches taken in PJM and ISO-NE and instead recommend introducing reforms into the NYISO markets that would allow the market to deliver the resources needed to achieve state goals. However, we acknowledge that trying to reform the NYISO, a FERC jurisdictional entity, will be extremely challenging, and may introduce concerns, including but not limited to excessive use of BSM. If, after further consideration, reforms to the NYISO market prove too difficult, appear insufficient to meet state goals, or are found to be otherwise undesirable, the state should explore options to take on a more primary role in ensuring resource adequacy, such as by setting reliability requirements for LSEs with a voluntary residual capacity market, as described above.

In addition to reconsidering the capacity market construct as a means to address resource adequacy while achieving the state's mandates, the Commission should work with NYISO and FERC to enact NYISO's proposal to incorporate carbon pricing into wholesale market prices (as discussed above), and should further reform the energy and ancillary markets to incent flexible resources. For example, as noted above, new ancillary services products can be developed, such as ramping products, fast frequency, and others, to ensure reliability in an evolving resource mix and ensure that advanced energy technologies are compensated for providing those services. NYISO is already examining changes to its operating reserve demand curve that governs the quantity of reserves purchased in NYISO as well as how they are priced. The NYPSC should encourage those efforts.

Q5: Should alternative approaches be considered to ensure the procurement of generation resources is aligned with State policy goals. If so, which ones? Are there existing or proposed models which might be instructive, such as the State overseeing LSEs' resource adequacy portfolios (e.g., an approach similar to the one used by California) or restructuring NYISO rules to accommodate State public policies (e.g., a Fixed Resource Requirement Alternative, as proposed by FERC Order issued on June 29, 2018 in Docket No. EL16-49, ¶160 et seq.)?

A thorough exploration of potential improvements and alternatives will serve New York well. At this time, our organizations do not have a single preferred approach, but instead recommend that the Commission and NYISO keep in mind the guiding principles above, and the recommendations above in response to Question Four.

With respect to the two alternatives the Commission references, namely, CAISO and the pending Fixed Resource Requirement Alternative (now called ReCO) in PJM, we caution that these approaches may not be directly applicable or desirable, as discussed above. Specifically, as noted above in our response to Question Four, while the PJM ReCO could provide some protection from BSM for resources deployed to meet state policy goals, it also has significant shortcomings that could inhibit achievement of state policy objectives; if those shortcomings are not resolved, we would not recommend such an approach. The approach taken by CAISO could be workable, although it has encountered difficulties; specifically, in the past regulators have arguably engaged in too much direct control of the LSE procurement and planning processes, including rejecting attempts by some LSEs to sign bilateral resource adequacy contracts with natural gas units. Over time, these decisions likely contributed to a shortage of ramping resources in California.[19] As a result, the CPUC has engaged in emergency procurements, such as a recent

[19] CAISO, *Summer Loads & Resource Assessment* (May 8, 2019), http://www.caiso.com/Documents/Briefing-2019-SummerLoads-Resources-Assessment-Report-May2019.pdf, at 2.

2.5 GW all-source RFP for peak energy, which would come online in the summer of June 2021.[20] Such interference and emergency procurements can be avoided with better upfront planning by the NYPSC. Additionally, following the CAISO model would require approval by FERC.

Q6: What is the State role with respect to resource adequacy matters that best serves New York's electricity customers with safe, adequate, and reliable service at just and reasonable rates in the context of state policies?

Generally speaking, and consistent with the Federal Power Act and court precedent, the state has the role of determining what kind of resources should serve its consumers as well as setting environmental performance objectives. NYISO's role is to develop market mechanisms and procure grid services that leverage a competitive framework to deliver the most cost-effective, reliable, and stable resource mix consistent with state policies. Within this framework, there are many options for dividing these roles, as described in our response to Question Four, above.

Given that New York has a single-state ISO, the Commission is in a unique position to influence the approach taken to ensure that resource adequacy requirements are met competitively, in keeping with state goals, and in a manner that ensures not just adequate capacity but also adequate flexibility, ramping, and other services. In this regard, we note that RTO membership has always been voluntary, and state regulators can exert significant authority over whether those utilities should join or form an independent grid operator. NYISO is a case

[20] These actions occurred after a CPUC regulator proposed a 2 GW of emergency procurements by June 2021 to address 4 GW of natural gas retirements by the end of 2020. *See* Utility Dive, "California proposes 2.5 GW procurement, gas plants extensions to ensure reliability," Iulia Gheorghiu (Sept. 13, 2019), available at https://www.utilitydive.com/news/california-proposes-25-gw-procurement-gas-plants-extensions-to-ensure-rel/562883/.

in point; while it is subject to FERC jurisdiction, it is also a creation of New York State law and regulation. Accordingly, its markets should produce outcomes that are consistent with both the Federal Power Act and state law.

Q7: What, if any, next steps should the Commission take with respect to resource adequacy matters?

Given the many interrelated and complex issues at play in this proceeding, our organizations recommend holding one or more technical conferences to allow for additional education, exploration, and discussion among stakeholders, the Commission, NYISO, NYSERDA, and other relevant parties. This would be particularly valuable to consider the broader reforms to NYISO markets beyond the ICAP market that could help resolve the conflicts underlying the Commission's questions here, including integration of a carbon price into the NYISO market. The Commission should also consider whether external resources and/or expertise should be brought in to ensure that the issues raised in this proceeding can be fully explored before any reforms are implemented. Of course, the value of broad stakeholder engagement and a thorough exploration of the issues needs to be balanced with the need to move expeditiously, so that the state can stay on track with its clean energy targets. Moving expeditiously will also allow qualifying projects to maximize the value to New York State of the Federal Production Tax Credit (PTC) and Investment Tax Credit (ITC), both of which are beginning to ramp down over the next several years.

Moving forward, the Commission should also monitor FERC's actions in the PJM docket regarding application of its BSM rules currently under consideration at FERC (Docket Nos. EL18-178 et al.). If FERC imposes or otherwise supports applying minimum offer price rules/BSM to resources designed to achieve PJM state policy objectives, then the NYPSC should

strongly consider revising the manner in which capacity is procured in the state, because, if the current FERC commissioners support strong minimum offer price rules in PJM, they are likely to support them in NYISO's ICAP market as well. The NYPSC should also seek comments on the issues experienced and "lessons learned" from the California resource adequacy program to better understand how state regulators can more effectively oversee a resource adequacy program within a state. Conversations with FERC and NYISO about next steps in the event New York State seeks a more direct role in resource adequacy would be instructive and informative and give the state more information about the various paths forward for resource adequacy.

In addition, we offer the following resources to inform the Commission's consideration of this important topic:

- Audun Bodderud, ***Market Considerations for a High Penetration Renewables Scenario,*** Energy Systems Integration Group (Oct. 2018), available at https://www.esig.energy/download/session-1-market-considerations-for-a-high-penetration-renewables-scenario-audun-botterud/

- Bethany Frew, ***Beyond Capacity Adequacy*** (Sept. 2018), *available at* https://www.esig.energy/beyond-capacity-adequacy/

- Electric Power Research Institute, ***Wholesale Electricity Market Design Initiatives in the United States: Survey and Research Needs*** (2016 Technical Update) (Nov. 2016), *available at* https://www.epri.com/#/pages/product/3002009273/?lang=en-US

- Energy Innovation, ***Wholesale Electricity Market Design for Rapid Decarbonization,*** Energy Innovation (June 2019), *available at* https://energyinnovation.org/publication/wholesale-electricity-market-design-for-rapid-decarbonization/.

- Wind Solar Alliance, ***Customer-Focused and Clean: Power Markets for the Future*** (Nov. 2018), PJM Focus available at https://static1.squarespace.com/static/58ecc722197aea316e9b93fc/t/5be480688a922ddc7214af20/1541701745128/WSA+ARA+PJM+market+design+report+final.pdf; MISO Focus available at https://static1.squarespace.com/static/58ecc722197aea316e9b93fc/t/5be5a3010ebbe8659191505f/1541776133013/WSA+ARA+MISO+market+design+report+final.pdf.

V. CONCLUSION

AEE Institute, ACE NY, AWEA, and SEIA appreciate the Commission's effort to tackle the important, pressing, and increasingly common question of how to achieve alignment between wholesale market rules, resource adequacy, and state energy and environmental policies. We look forward to our continued participation in this important proceeding.