UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

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PROTEST OF CLEAN ENERGY AND CONSUMER ADVOCATES

Pursuant to Rule 211 of the Federal Energy Regulatory Commission’s (Commission) Rules of Practice and Procedure,¹ Sustainable FERC Project, Natural Resources Defense Council, Advanced Energy Economy (collectively, “Clean Energy Advocates”), and the City of New York (collectively, “Clean Energy and Consumer Advocates”)—with the express support of 48 additional organizations with a deep interest in New York State’s energy policy²—respectfully submit this protest and comments on the filing dated July 19, 2021, of the New York Independent System Operator, Inc. (NYISO) (Compliance Filing), which proposes tariff revisions to amend its participation model for distributed energy resources (DERs) as required by Order No. 2222 and subsequent related orders.³

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¹ 18 C.F.R. §§ 385.211 and 214.
² In recognition that the Commission is interested in hearing from a diverse set of stakeholders who are not traditional RTO/ISO market participants (see Docket No. AD21-9-000 - Workshop Regarding the Creation of the Office of Public Participation), attached as Appendix A is a Letter of Support for Protest of Clean Energy and Consumer Advocates signed by 48 organizations that work throughout New York to advocate for and support the reduction of our energy needs through energy efficiency and the transition to a sustainable energy system through renewable energy.
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I. Introduction

This Protest of Clean Energy and Consumer Advocates addresses a single issue: The Compliance Filing’s failure to rectify barriers to the direct participation of energy efficiency (EE) resource aggregations in NYISO’s capacity market, as required by the Commission in Order No. 2222. The Clean Energy Advocates write separately to address other deficiencies with NYISO’s Compliance Filing.

Order No. 2222 establishes transformational new standards for DER participation in wholesale markets. It requires each Regional Transmission Organization (RTO) and Independent System Operator (ISO) to amend its tariffs to ensure that any DER that is technically capable of providing wholesale services through aggregation is eligible to do so. The Commission expressly defined DER to include EE resources and required that each RTO’s/ISO’s rules do not prohibit any particular type of DER technology from participating in DER aggregations. EE resources, which reliably deliver verifiable reductions in demand during peak hours, are technically capable

4 See Order No. 2222 at P 114.
5 Id. at P 114, 141.
of providing capacity as a supply-side resource, as confirmed by Order No. 2222\(^6\) and demonstrated by their current participation as a supply-side resource in ISO-NE, PJM, and MISO’s capacity markets. Accordingly, Order No. 2222 requires NYISO to have tariff provisions that allow EE resource aggregations to participate directly in its capacity market as a supply-side resource.

NYISO’s Compliance Filing violates Order No. 2222 because it does not rectify barriers to the direct participation of EE resource aggregations in the capacity market. In contrast, NYISO’s Compliance Filing maintains a general eligibility requirement for all DERs seeking to qualify as capacity suppliers that they must be able to participate in the energy market and be able to respond to and perform in a manner consistent with the directions and control of the NYISO.\(^7\) NYISO thus premises direct, supply-side capacity market participation on a resource’s ability to be dispatched or otherwise controlled by the ISO during real-time operations. This “dispatchability” requirement fails to “accommodate the physical and operational characteristics of each [DER] aggregation” and ultimately serves to prohibit certain DER technologies—i.e., EE resources, behind-the-meter solar generation, and other passive (non-dispatchable) demand resources\(^8\)—from participating in the capacity market through aggregation altogether. NYISO’s failure to remove barriers to the participation of EE resource aggregations in the capacity market violates Order No. 2222.

Importantly, NYISO’s failure to fully comply with Order No. 2222 should not inhibit other DERs from gaining timely access to NYISO’s markets. Developing a model for EE resources to

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\(^6\) See id. at P 115 (referencing Advanced Energy Economy Comments (RM16-23) at 21.).

\(^7\) See NYISO Compliance Filing at 20.

\(^8\) Passive demand resources are a category of demand resources, which are principally designed to save electricity across many hours, but cannot change the amount saved in response to a dispatch instruction. Examples include energy-efficiency measures, such as the use of energy-efficient appliances and lighting, advanced cooling and heating technologies, and passive behind-the-meter generation, such as solar power. See ISO-NE.com, Markets and Operations Markets, Data and Information, Demand Resources (last visited Aug. 23, 2021), available at https://www.iso-ne.com/markets-operations/markets/demand-resources/about.
participate in NYISO’s capacity market in a manner that is appropriate for its unique market design is a complicated undertaking that is best informed by a robust stakeholder process. Such a process need not, and should not, delay implementation of the rest of NYISO’s DER participation model to the extent the model is otherwise compliant with Order No. 2222.

Clean Energy and Consumer Advocates recommend that the Commission direct NYISO to initiate a collaborative stakeholder process to examine energy efficiency applications and to identify, evaluate, and rectify barriers to entry of EE resource aggregations. It should further direct NYISO, within six months of the issuance of its order, to report to the Commission on the status of the process, and the results and conclusions from the forum for rectifying barriers to entry of EE resource aggregations.

II. Order No. 2222 Establishes Transformational New Standards for DER Participation in Wholesale Markets

A. RTO/ISO market rules present barriers to DER participation

RTO/ISO market rules present barriers that prevent certain DERs that are technically capable of participating in the RTO/ISO markets on their own or through aggregation from doing so. In NYISO, DERs have had limited opportunities to participate in the markets because many of these resources are not able to meet the eligibility or performance requirements under existing rules to participate or to fully participate in its markets. As the Commission has observed, market rules designed for traditional resources can create barriers to entry for emerging technologies and can prohibit certain DER technologies from participating altogether.

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9 Order No. 2222 at P 26.
11 See Order No 2222 at P 16.
In May 2016, NYISO initiated a collaborative stakeholder process to address barriers to DER participation in its markets. Working iteratively with stakeholders, NYISO produced a DER Roadmap in February 2017 that set forth high-level concepts for market design and that guided the development of tariff rules to facilitate DER participation in its markets. On June 27, 2019, the NYISO proposed a participation model for DER aggregations, which the Commission accepted on January 23, 2020. NYISO is still working to implement this model and anticipates it will be operational by the fourth quarter of 2022.

In parallel to NYISO’s process to address barriers to DER participation in its markets, the Commission initiated a proceeding to consider amending its regulations to remove barriers to the participation of electric storage resource (ESR) and DER aggregations in all markets operated by RTOs and ISOs. On February 15, 2018, the Commission issued Order No. 841, which amended its regulations to facilitate participation of ESRs, and which created a new docket to further consider proposed regulations to facilitate the participation of DER aggregations. On September 17, 2020, eight months after approving NYISO’s DER participation model, the Commission issued its landmark Order No. 2222 requiring each RTOs/ISOs to have tariff provisions that allow DER aggregations to participate directly in wholesale markets.

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14 See Jan. 23, 2020 Order.
17 Order No. 841, 162 FERC ¶ 61,127 at P 5. (The Commission incorporated by reference all comments filed in response to the NOPR in Docket No. RM16-23-000 into Docket No. RM18-9-000 and directed any further comments regarding the proposed distributed energy resource aggregation reforms should be filed henceforth in Docket No. RM18-9-000).
B. Order No. 2222 established new standards for DER participation in NYISO

In Order No. 2222, the Commission found that “existing RTO/ISO market rules are unjust and unreasonable because they present barriers to the participation of [DER] aggregations in the RTO/ISO markets, and such barriers reduce competition and fail to ensure just and reasonable rates.”\(^\text{19}\) The Commission further found that removing barriers to DER participation “will help the RTOs/ISOs account for the impacts of [DERs] on installed capacity requirements and day-ahead energy demand, thereby reducing uncertainty in load forecasts and the risk of over procurement of resources and the associated costs, and provide numerous other benefits.”\(^\text{20}\)

In light of such findings, the Commission required “each RTO/ISO to revise its tariff to establish [DER] aggregators as a type of market participant that can register [DER] aggregations under one or more participation models in the RTO/ISO tariff that accommodate the physical and operational characteristics of each [DER] aggregation.”\(^\text{21}\) It further required that each RTO/ISO, to the extent that it proposes to comply with any or all of the requirements of Order No. 2222 using its currently effective requirements for DERs, to demonstrate on compliance that its existing approach meets the requirements in its final rule.\(^\text{22}\) Order No. 2222 established transformational new standards for DER participation in all ISO/RTO markets, including those operated by NYISO.

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\(^\text{19}\) Order No. 2222 at P 26.  
\(^\text{20}\) Id.  
\(^\text{21}\) Id. at P 6.  
\(^\text{22}\) Id. at P 360; see id. at P 8. (“For each RTO/ISO, the tariff provisions addressing distributed energy resource aggregations must (1) allow distributed energy resource aggregations to participate directly in RTO/ISO markets and establish distributed energy resource aggregators as a type of market participant; (2) allow distributed energy resource aggregators to register distributed energy resource aggregations under one or more participation models that accommodate the physical and operational characteristics of the distributed energy resource aggregations; (3) establish a minimum size requirement for distributed energy resource aggregations that does not exceed 100 kW; (4) address locational requirements for distributed energy resource aggregations; (5) address distribution factors and bidding parameters for distributed energy resource aggregations; (6) address information and data requirements for distributed energy resource aggregations; (7) address metering and telemetry requirements for distributed energy resource aggregations; (8) address coordination between the RTO/ISO, the distributed energy resource aggregator, the distribution utility, and the relevant electric retail regulatory authorities; (9) address modifications to the list of resources in a distributed energy resource aggregation; and (10) address market participation agreements for distributed energy resource aggregators. Additionally, each RTO/ISO must accept bids from a distributed energy resource aggregator.”)
C. NYISO’s Compliance Filing is not the product of a collaborative stakeholder process

Order No. 2222 requires NYISO to comply by either amending its tariff or demonstrating on compliance that its existing rules meets all the requirements of the Commission’s final rule.23 In its Compliance Filing, NYISO asserts that its “participation model, accepted by the Commission on January 23, 2020, satisfactorily complies with the vast majority of Order No. 2222’s directives” and proposes amendments to its tariffs “to comply with the remaining directives.”24 Of note, NYISO’s DER participation model was based on market design concepts set forth in its 2017 DER Roadmap, which were developed through a stakeholder process that occurred well before, and was not framed by, the transformational new standards for DER participation established by the Commission in Order No. 2222.25

NYISO, in contrast to its prior collaborative approach with stakeholders, did not invite input in developing the tariff amendments to comply with Order No. 2222. Instead, the NYISO gave a preliminary overview of Order No. 2222 on December 17, 2020, at the request of stakeholders, which was qualified by the fact that “NYISO [was] still evaluating the Order.”26 The NYISO then gave two presentations on its compliance plan when the filing deadline was quickly approaching. Specifically, it first presented a high-level summary of its compliance plan on June 17, 2021—one month before the compliance filing was due.27 On June 30, 2021, NRDC gave a

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23 Id. at P 360.
24 NYISO Compliance Filing at 1.
presentation to stakeholders, which identified that Order No. 2222 requires NYISO to remove barriers to the participation of EE resource aggregations in the capacity market as a supply-side resource.28 On July 16, 2021, one business day before it submitted its Compliance Filing, NYISO provided a second follow-up presentation on its Order No. 2222 compliance plan,29 which was the first time that NYISO identified the specific tariff revisions it planned to include in its Compliance Filing.30 Neither this presentation nor NYISO’s Compliance Filing addressed NYISO’s tariff provisions that prohibit the direct participation of EE resource aggregations in the capacity market as supply-side resources.

III. Order No. 2222 Requires Each RTO/ISO to Allow Any DER, Including EE Resources, to Provide All Services That They are Technically Capable of Providing Through Aggregation

A. The Commission established a broad definition of DER and confirmed the definition includes EE resources

In Order No. 2222, the Commission established a broad, technology-neutral definition of DER to cover both existing and future DER technologies. Specifically, the Commission defined DER as “any resource located on the distribution system, any subsystem thereof or behind a customer meter.”31 The Commission explained that its DER definition is “technology-neutral, thereby ensuring that any resource that is technically capable of providing wholesale services through aggregation is eligible to do so.”32 The Commission also confirmed its DER definition is

30 See NYISO proposed Market Services Tariff (MST) MST 4.1 redline available at https://www.nyiso.com/documents/20142/23091541/MST%204.1%202222%20comp%20posting.pdf/039aaee7-3a8c-336d-8169-546b5f5a8134.
31 Order No. 2222 at P. 114 (emphasis added).
32 Id.
“intended to be broad enough to encompass current and future technologies that qualify as [DERs] with no further need to clarify or revise the definition as new technologies are developed.”

In Order No. 2222, the Commission also confirmed that the definition of DER includes EE resources. To eliminate ambiguity, the Commission expressly provided that its definition of DERs “may include, but are not limited to, resources that are in front of and behind the customer meter, electric storage resources, intermittent generation, distributed generation, demand response, energy efficiency, thermal storage, and electric vehicles and their supply equipment – as long as such a resource is ‘located on the distribution system, any subsystem thereof or behind a customer meter.’” In response to Advanced Energy Economy’s request that the DER definition explicitly include EE resources, the Commission further clarified that EE resources are capable of providing demand reductions at customer sites, and therefore may meet the definition of a DER. Accordingly, Order No. 2222 expressly confirmed that its definition of DERs includes EE resources.

**B. Order No. 2222 confirmed EE resources are “technically capable” of providing capacity**

The Commission recognized in Order No. 2222 that EE resources are technically capable of providing capacity market services, but likely not energy or ancillary services. Specifically, the Commission clarified that EE resources meet the definition of DER, affirming that “energy efficiency . . . [is] capable of providing demand reductions at customer sites, and therefore ‘customer sites capable of demand reduction’ may meet the definition of a [DER].” Demand reductions have capacity value because they contribute to satisfying the peak period resource

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33 *Id.* at P. 116.
34 *Id.* at P. 114. (emphasis added).
35 *Id.* at P. 115.
36 Order No. 2222 at P 115 (*referencing* Advanced Energy Economy Comments (RM16-23) at 21.).
adequacy requirements that maintain reliability of the bulk power system.\textsuperscript{37} The Commission, however, acknowledged that to the extent EE cannot be dispatched, metered, or telemetered, it would likely be impossible for DER aggregations comprised exclusively of EE resources to be able to provide energy or ancillary services to the RTOs/ISOs because the aggregation would not be technically capable of providing those services.\textsuperscript{38}

\textbf{C. The Commission permits a flexible compliance approach so long as it does not limit the scope or applicability of Order No. 2222}

Order No. 2222 permits regional flexibility so long as each market’s rules allow DERs to provide all services that they are technically capable of providing through aggregation. Order No. 2222 provides each RTO/ISO with flexibility to facilitate the participation of DER aggregations in its markets in a way that fits the market design of the RTO/ISO.\textsuperscript{39} Specifically, it requires “each RTO/ISO to establish [DER] aggregators as a type of market participant and to allow [DER] aggregators to register [DER] aggregations under one or more participation models in the RTO’s/ISO’s tariff that accommodate the physical and operational characteristics of the distributed energy resource aggregation.”\textsuperscript{40} Each RTO/ISO complies by modifying its existing participation models to facilitate the participation of DER aggregations, by establishing one or more new

\textsuperscript{37} See \textit{PJM Interconnection, L.L.C.}, 126 FERC \textnumero{} 61275, at P 130-139, (Mar. 26, 2009) (The Commission has previously determined that EE resources are a type of capacity resources that have a “capacity benefit” and that “to the extent possible, energy efficiency solutions should be able to compete on an equal footing with demand response, generation, and transmission solutions.” \textit{Id.} at PP 130-131. It further that “energy efficiency is a critical part of efficient energy markets, and should be treated comparably to other types of resources, by being allowed to participate in base residual auctions and be paid the auction clearing price when they are accepted in the auction.” \textit{Id.} It has further asserted that “EE providers should have the ability to obtain the full economic benefits of their investments.” \textit{Id.} at P 137.

\textsuperscript{38} Order No. 2222 at P 117; \textit{but see Iso New England Inc.}, 174 FERC \textnumero{} 61252 (2021) (Clements, Comm’r, concurring at P 4) (“Energy efficiency programs continue to innovate, and it is possible we see deployment of energy efficiency measures that can and do measure real-time performance. Imagine a scenario where an installation of metered energy efficiency measures is permitted to offer 10 MW of load reduction into the Forward Capacity Market based on their studied load reduction versus a control group without those measures. Then, during a reserve deficiency, the metered load shows an actual load reduction of 12 MW versus the control group. Such demonstrated performance may well merit pay-for-performance bonuses for the 2 MW of over-performance.”).

\textsuperscript{39} \textit{Id.} at P 131.

\textsuperscript{40} \textit{Id.} at p 130.
participation models for DER aggregations, or by adopting a combination of those two approaches.\textsuperscript{41} The Commission also noted that RTOs/ISOs can propose their own definition of DERs “as long as the scope and applicability of the proposed definitions are consistent with the Commission’s definition of [DER] and consistent with all aspects of [Order No. 2222].”\textsuperscript{42} The Commission established that it will evaluate each proposal submitted on compliance to determine whether the compliance filing “meets the goals of [Order No. 2222] to allow [DERs] to provide all services that they are technically capable of providing through aggregation.”\textsuperscript{43}

D. Order No. 2222 requires NYISO to have tariff provisions that allow EE resource aggregations to participate directly in the capacity market as a supply-side resource

Order No. 2222 ultimately requires each RTO/ISO to have tariff provisions that allow EE resource aggregations to participate directly in capacity markets as a supply-side resource. As explained above, the Commission adopted a broad, technology-neutral definition of DERs to ensure that any DER that is technically capable of providing market services through aggregation is eligible to do so. The Commission also expressly confirmed that EE resources are included in the definition of DER, and that ER resources are technically capable of providing demand reductions at customer sites, which provides capacity value that helps satisfy the peak period resource adequacy requirements. While the Commission established requirements that allow for regional flexibility in how each RTO/ISO complies with Order No. 2222, it clearly established that all market rules must be consistent with the scope and applicability of its broad DER definition and must allow DERs to provide all services that they are technically capable of providing through aggregation. Accordingly, Order No. 2222 requires each RTO/ISO with a capacity market to have

\textsuperscript{41} Id.
\textsuperscript{42} Id. at P 115.
\textsuperscript{43} Id. at p 130.
tariff provisions that allow EE resource aggregations to participate directly in the capacity markets as a supply-side resource.

IV. Energy Efficiency is a Critical Resource for Maintaining Reliability at Just and Reasonable Rates in the New York Control Area

A. New York’s power system is undergoing an unprecedented energy transition that is driving reform of NYISO’s capacity market to maintain resource adequacy

New York’s power system is undergoing an unprecedented transition from a grid where energy is largely produced by central-station fossil fuel generation, towards a grid with increased renewable intermittent resources and distributed generation.44 The pace of this transition is driven by public policies as well as technological advancements that are expanding the capabilities and lowering the costs of clean resources.45

Most notably, New York’s landmark Climate Leadership and Community Protection Act46 (CLCPA) is reshaping New York’s electricity sector and the composition of its grid. The CLCPA sets ambitious climate and clean energy targets that require all sectors of the State’s economy to collectively achieve 40 percent emissions reductions from 1990 levels by 2030 and 85 percent emissions reductions by 2050,47 as well as to achieve net-zero greenhouse gas (“GHG”) emissions by 2050.48 Within the electric sector, it requires that 70% of the State’s electricity supply come from renewable energy sources by 2030 and that this supply is emissions free by 2040.49 The CLCPA also includes several important provisions to prioritize equity in fighting climate change,

45 Id.
47 CLCPA §2.
48 Id.
49 Id. at §4.
reduce criteria pollutants caused by the burning of fossil fuels, and to ensure that disadvantaged communities are not disproportionately burdened in the State’s clean energy transition.\footnote{See id. at §§2, 7.}

The electric sector targets are the foundation of the CLCPA’s comprehensive framework for decarbonizing the State’s economy: the transformation of New York’s “electricity system is assumed to be the backbone of a decarbonized economy as fossil-fueled end-uses electrify in transportation, buildings, and industry.”\footnote{Energy and Environmental Economics, Inc., Pathways to Deep Decarbonization in New York State, at 18 (June 24, 2020) available at https://climate.ny.gov/-/media/CLCPA/Files/2020-06-24-NYS-Decarbonization-Pathways-Report.pdf.} The electric sector targets, together with other public policies such as nitrogen oxide emission limits, energy infrastructure siting policy and permitting decisions, New York City’s codes to eliminate residual oil and reduce carbon emissions in large and medium-sized NYC buildings, and the Regional Greenhouse Gas Initiative, are significantly impacting which resources decide to enter and exit NYISO’s markets.\footnote{See NYISO, Power Trends 2021 at 19-25 https://www.nyiso.com/documents/20142/2223020/2021-Power-Trends-Report.pdf/471a65f8-4f3a-59f9-4f8c-3d9f2754d7de.}

The central question arising from the clean energy transition for the NYISO is “how the wholesale markets in New York can continue to provide the pricing and investment signals necessary to reflect system needs and to incent resources capable of resolving those needs.”\footnote{Id. at 9.} This question is particularly pertinent for NYISO’s capacity market. As NYISO acknowledges, steps need to be taken to enhance the capacity market “to improve the resource adequacy models used to set the Installed Reserve Margin and Locational Capacity Requirements and better align compensation with performance given the changing power grid.”\footnote{Id. at 9.} NYISO’s capacity market will need to evolve to rely on an increasing share of emerging resources like utility-scale wind, solar,
battery storage, and DERs, including demand response and EE resources, which reduce demand for electricity and thereby help maintain resource adequacy.\(^{55}\)

**B. NYISO claims its competitive markets are a powerful platform to support achievement of New York’s clean energy policies**

NYISO consistently advocates for the use of market forces to support achievement of New York’s clean energy goals. NYISO has asserted its “view that wholesale electricity markets continue to provide the strongest, most powerful platform from which we can meet the needs of the grid in transition.”\(^{56}\) NYISO claims that “leveraging wholesale electricity markets, which minimize costs and investment risks to consumers while promoting innovation, is the most powerful means to drive needed energy infrastructure investment to achieve the CLCPA goals.”\(^{57}\) It further claims, “Competitive wholesale electricity markets provide a powerful platform to attract and use new technologies essential to achieving the transformation envisioned by the CLCPA.”\(^{58}\) NYISO also promotes its markets’ ability to shift risk off of customers during the energy transition: “As the NYISO collaborates with asset owners, stakeholders, and policymakers to take the aggressive actions necessary to build the grid of the future, we must continue to leverage these competitive markets that shield customers from investment risk.”\(^{59}\) Removing barriers to EE’s supply side participation in the capacity market fits squarely within NYISO’s expressed commitments and core values concerning the use of competitive markets as a platform to achieve New York’s clean energy policies.

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\(^{56}\) NYISO Power Trends 2021 at 5.

\(^{57}\) Id. at 8.

\(^{58}\) Id. at 9.

\(^{59}\) Id.
C. Energy efficiency resources are particularly critical for maintaining resource adequacy at just and reasonable rates during NYISO’s clean energy transition

The EE resources that fall under Order 2222’s definition of DER play a particularly vital role in the energy sector by providing a low-cost way to meet electricity demand and meet environmental policy goals.\textsuperscript{60} EE provides a variety of economic and social benefits by reliably and permanently reducing demand, including avoided infrastructure (generation, transmission, and distribution) in the long-term and energy production costs, improved air and water quality, greater grid resilience, a lessening of inequitable energy burdens, and improved health and comfort.\textsuperscript{61} As a result, EE plays a central role in the achievement of ambitious clean energy and decarbonization goals.\textsuperscript{62} Indeed, the New York Public Service Commission has identified EE as playing “a key role in the achievement of New York State’s clean energy goals.”\textsuperscript{63} Policy requirements for greater EE are amplified by the fact that the transition to clean energy for heating and transportation will have a significant impact to increase total demand for electricity.\textsuperscript{64}

EE resources contribute to resource adequacy by reducing end-user load, which is particularly valuable for the transition of the power system in NYCA. In contrast to traditional generation resources that provide energy and ancillary services during scarcity conditions, energy efficiency provides verifiable reductions in end-user load just as other demand-side resources like demand response, behind-the-meter solar generation, and other passive (non-dispatchable) demand resources.\textsuperscript{65} Because they provide reliable reductions in load and can be targeted to match

\textsuperscript{60} Id.
\textsuperscript{61} Id.
\textsuperscript{64} Brattle-The Benefits of Energy Efficiency Participation in Capacity Markets at i.
\textsuperscript{65} Id. at 1.
peak system needs, EE resources have a high resource adequacy value.\textsuperscript{66} EE resources are also reliable: unlike central station power plants that can trip and cause system disturbances that must be managed by the system operator, EE resources provide permanent and verifiable reductions in demand that does not, and cannot, cause such disturbances. By reducing demand during peak hours, EE resources reduce the need for other sources of capacity.\textsuperscript{67}

NYISO forecasts that EE will play a vital role for maintaining resource adequacy during the clean energy transition of New York’s power system. Specifically, under its Baseline Summer Coincident Peak Demand Forecasts, NYISO estimates that EE’s\textsuperscript{68} contribution to maintaining resource adequacy will grow ten-fold (from 860 MW to 8,229 MW) between 2022 and 2040, when CLCPA mandates that energy supply is zero-emission.\textsuperscript{69} 8,229 MW of EE in 2040 represents 20.5% of NYISO’s econometric peak demand forecast, which is NYISO’s peak demand forecast before netting out EE savings.\textsuperscript{70} Accordingly, NYISO forecasts that EE resources will play a significant role in contributing to resource adequacy.

NYISO also conducted high and low load scenario forecasts that reflect the increasing uncertainty in forecasting future energy usage across the state because of uncertainty in the adoption rates of EE measures, behind-the-meter solar PV, electric vehicles, and other

\textsuperscript{66} See, e.g., PJM Manual 18B: Energy Efficiency Measurement & Verification, Revision: 04, (Effective Date: August 22, 2019) (EE resources are defined to provide perfect capacity value: “The EE Resource must achieve permanent, continuous reduction in electric energy consumption at the End Use Customer’s retail site (during the defined EE Performance Hours and during winter performance hours if such EE Resource is a Capacity Performance Resource) that is not reflected in the peak load forecast used for the Auction Delivery Year for which the EE Resource is proposed. The EE Resource must be fully implemented at all times during the Delivery Year, without any requirement of notice, dispatch, or operator intervention.” Id. at Section 1.1.).

\textsuperscript{67} Brattle-The Benefits of Energy Efficiency Participation in Capacity Markets at 1.

\textsuperscript{68} Includes energy savings from codes and standards.

\textsuperscript{69} NYISO Gold Book, 2021 Load & Capacity Data, at 21 (April 2021) (see Table I-1c, column (b)) (hereinafter NYISO 2021 Gold Book\textsuperscript{\textdagger}) available at https://www.nyiso.com/documents/20142/2226333/2021-Gold-Book-Final-Public.pdf/b08606d7-db88-c04b-b260-ab35c300ed64.

\textsuperscript{70} Id. (see Table I-1c, column A.) (Of note, energy efficiency is a load modifier in NYISO’s load forecasts. Econometric Summer Peak Demand is the total peak demand reflecting impacts of projected weather trends and economic growth; the Baseline Summer Coincident Peak Demand Forecast is the Econometric Summer Peak Demand less Energy Efficiency and Codes & Standards Summer Coincident Peak Demand Reductions).
The difference between the contribution of EE in NYISO’s Low Load Scenario and High Load Scenario by 2040 is 2,605 MW and 15,075 GWh. These dramatic figures demonstrate the critical role EE plays in avoiding significant infrastructure and energy production cost. EE resources are critical to maintaining reliability at reasonable rates for consumers.

Indeed, NYISO’s own modeling verifies the importance of EE in maintaining reliability at reasonable costs throughout New York’s clean energy transition. In its 2019 CARIS Report, NYISO assesses both historic and projected congestion on the New York bulk power system and estimates the economic benefits of relieving congestion. The assessment modeled a Base Case and a “70x30” scenario representing possible resource portfolios that are consistent with state mandated policy goals. The analysis found that the level of renewable generation investment necessary to achieve 70% renewable end-use energy by 2030 could vary greatly as EE and electrification adoption unfolds. It further found that because the 70% renewable target is based on the level of end-use energy, EE initiatives will have significant implications for the level of renewable resources needed to meet the CLCPA goals.

In the Base Case, the EE solutions produced the highest production cost savings of any of the generic solutions (i.e., transmission, generation, demand response and EE) because they directly reduce the need for new energy production. The relatively large value of production cost saving is mainly attributable to the reduction in energy use of the EE solution itself. EE solutions typically show greater reductions in production cost than the generation, transmission, and demand

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71 Id at 3.
72 Id. (See column (b) in tables I-16a, I-16b, I-17a, I-17b).
74 Id. at 10.
75 Id.
76 Id.
77 See id. at 56.
78 See id at 53.
response solutions because load is reduced in most hours, thereby reducing the total megawatt hours required to serve load.\textsuperscript{79} As a result, EE solutions had the best benefit/cost ratios under nearly all conditions studied (high, mid, and low cost estimate ranges for the top three congested transmission corridors in nearly all of the studies).\textsuperscript{80}

NYISO’s load forecasts and 2019 CARIS Report confirm that reductions in demand achieved through verified, measurable EE deployments represent a fundamental component of the successful, economy-wide transition to clean energy.\textsuperscript{81} The challenge facing policymakers and market operators is how to enable EE most effectively for maximum participation and impact.\textsuperscript{82}

Notably, it is unclear whether the current utility and New York State Energy Research and Development Authority (NYSERDA) EE programs alone can achieve the EE levels forecast by the NYISO, let alone the levels needed to cost-effectively achieve the State’s climate and clean energy mandates. Market signals can attract merchant (not utility) EE resources providers that do not rely on utility system benefit charge (SBC) funding to provide private capital to facilitate additional verified, measurable EE deployments.

V. Energy Efficiency Resources are “Technically Capable” of Directly Participating in Capacity Markets as Supply-Side Resources

A. Energy efficiency resources can be accounted for on the supply side or demand side of the capacity market

Like many of the DERs that fall within the scope of Order No. 2222, including demand response and behind-the-meter distributed generation, EE resources theoretically can be accounted

\textsuperscript{79} See id. at 51.  
\textsuperscript{80} See id. at 57.  
\textsuperscript{81} See Brattle, The Benefits of Energy Efficiency Participation in Capacity Markets at i.  
\textsuperscript{82} Id.
for on the supply or demand side of capacity markets. In practice, limiting EE resources to the demand side creates barriers to entry and undercounts their value to the system.

Under a demand-side-only model, EE investments are accounted as reducing the end-use electric load to develop the forecasts, thereby reducing the need for capacity procurement in the capacity markets. Under this model, end-use customers can capture the capacity value of EE resources only insofar as specific measures reduce their peak load contribution, thereby reducing the capacity charges allocated to them; however, there is no direct market mechanism for compensating aggregators who enable the EE. Indeed, under demand-side-only models, the mechanism to compensate EE aggregators is typically the utility or state programs for EE that are approved by utility regulators that occur outside of the RTO/ISO market, which provide incentives to end-use customers and utility shareholders to achieve reductions in load (focused primarily on reducing energy (MWh) rather than peak demand (MW)).

Under a supply-side model, EE investments are interpreted as providing discrete, verifiable capacity supply commitments that EE providers can qualify for and then offer as supply into the capacity markets. Savings produced through investment in EE are generally measured against a “baseline,” which represents the amount of energy or capacity that would have been used in the absence of the specified EE resources. This requires rigorous measurement and verification of savings provided by EE commitments, and setting the capacity procurement target based on the (higher) demand that excluded the committed EE measures. Under this model, aggregators

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83 Id. at i.
84 See id. at ii.
85 Id. at 1.
86 Such participating EE customers also save on energy costs as they reduce consumption (kWh) through EE.
87 Id.
88 Id.
89 Id. at 1 fn 3.
90 Id. at 1-2.
selling EE into the capacity market are directly compensated through capacity revenues (and penalized if they fail to do so), while end-use customers accrue electric bill cost savings from their reduced energy and capacity use.91

Importantly, the two models are not mutually exclusive. While it is critical that specific EE savings are not double counted (i.e., they are accounted for on either the supply-side or the demand-side, but not both), it is common for some portion of the total amount of EE that supports resource adequacy to be reflected on the supply side and some on the demand side. Indeed, under supply-side models, rigorous accounting guidelines are established to ensure that savings are reflected on only one side of the market and to ensure that the “baseline” against which EE savings are measured is properly set.

The RTOs/ISOs with capacity markets each take different approaches to accounting for EE. NYISO, for example, only accounts for EE on the demand side as a load modifier92—its tariffs prohibit supply-side participation of EE resources in the capacity market because they are not dispatchable.93 Specifically, NYISO accounts for load-reducing impacts of energy efficiency programs, building codes, and appliance efficiency standards.94 In contrast, every other RTO/ISO with a capacity market (i.e., ISO-NE, PJM, and MISO) allows EE resources to participate directly in the markets as supply-side resource aggregations; however, their participation models and capacity market designs have material differences, which carry implications for the rates of EE supply-side participation.95

91 Id.
92 See NYISO 2021 Gold Book at 21 (NYISO’s NYCA Baseline Summer Coincident Peak Demand Forecasts is the sum of its - Econometric Summer Peak Demand forecast, which reflects impacts of projected weather trends and economic growth, less its forecast of Energy Efficiency and Codes & Standards Summer Coincident Peak Demand Reductions).
93 See NYISO Compliance filing at 20.
94 NYISO 2021 Gold Book at 12.
B. Arguments against EE supply-side participation in capacity markets are typically based on flawed economic theory that relies on idealized assumptions

Limiting EE to demand-side accounting, at the exclusion of supply-side participation in the capacity market, is often premised on the economic theory that either supply or demand side accounting would result in the same efficient outcomes.\textsuperscript{96} Indeed, both supply-side and demand-side approaches produce the same effect on price under idealized assumptions in which the exact amount of EE savings is accounted for on either side of the market. This is because the EE serves to shift either the supply curve or the demand curve, but the two curves ultimately cross at the same price point under the idealized assumptions.

The two approaches, however, are not actually equivalent because demand side-only approaches present barriers to entry for merchant (non-utility) EE resource aggregators, load forecast challenges, and other practical limitations that obstruct the participation of EE resources.\textsuperscript{97} In contrast, supply-side participation unlocks additional EE demand reductions, unlocking capacity value by enabling EE aggregators to earn capacity revenues, which bridges the gap between the low marginal price that consumers face for capacity and the higher marginal value of that capacity on the system.\textsuperscript{98} The result is enhanced competition and more efficient market outcomes that help ensure just and reasonable rates.

VI. Supply-Side Participation of Energy Efficiency Resource Aggregations Produces Distinct Benefits for All Market Customers

Attracting the EE necessary to maintain reliability at low costs during the clean energy transition of New York’s power system requires a good wholesale market design. Allowing supply-side participation removes barriers that prevent deployment of capable EE resources, as

\textsuperscript{96} Id. at 2.
\textsuperscript{98} Id.
required by FERC Order 2222, with the goal of achieving efficient market outcomes and reducing overall costs.  

A. Supply-side participation of EE reduces market barriers to merchant EE providers, which facilitates additional cost-competitive EE deployment

Supply-side participation of EE reduces market barriers to EE participation and aggregation, increasing the amount of EE that can be deployed in the region. Deploying effective EE resources requires time, effort, and cost. EE resource deployment requires financing, construction and/or installation, operation and maintenance of the capacity resource, and measurement and verification of the EE program energy and capacity savings. EE aggregators make investments—and take on risk—to aggregate and deliver reliable reductions in demand that help satisfy resource adequacy requirements. The benefit of the electricity bill savings typically accrues to the end-use customer, not the EE aggregator. Like a developer of any resource, there must be a return on the investment to make the effort feasible. Retail price signals alone are seldom sufficient to end-users to deploy all cost-effective EE resources. While the demand-side model may enable well-designed state-funded utility and NYSERDA, which rely on SBC funds to cover the costs of their EE programs, to effectively deploy EE resources at scale, a demand side–only model essentially prohibits merchant (non-utility) EE providers from having a viable business model.

EE aggregation is not possible for merchant EE providers without supply-side participation in the capacity market. Merchant EE providers do not collect SBC funds through utility rates to

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99 Id. at 3.
100 Id. at 8
101 Id. at ii.
102 Id.
103 Id.
104 Id at 8.
105 Id.
fund the EE resources that they deploy. Because participating EE customers generally retain the bill savings, capacity market revenues from supply-side participation provide a critical revenue stream that enables the merchant EE provider’s business model.\textsuperscript{106} If merchant EE providers do not receive supply-side treatment, they have little incentive to present the market operator with accurate estimates—and certainly not with financially binding commitments—for the peak load reductions that they deliver, and which help maintain resource adequacy.\textsuperscript{107}

Ultimately, demand side–only models present barriers to EE resource entry that inhibits the development of additional, cost-competitive EE and produces less efficient market outcomes. If merchant EE providers are not enabled to participate in the capacity market, there is no incentive to fully inform and commit to the ISO about EE activity, which leads to the procurement of unnecessary and more costly alternative capacity, and thus higher rates.\textsuperscript{108} Merchant EE provider participation in the capacity market as supply side resources facilitates more efficient market outcomes that reduce the overall cost burden on ratepayers.

\textbf{B. Supply-side participation of EE resources facilitates integrated deployment of EE with other DERs, which produces synergistic effects that enhance their capacity value}

Supply-side participation of EE resources and DERs through aggregations addresses a barrier to financing the integrated deployment of EE with other DERs. Integrating EE and other DER solutions produces compound savings and creates synergies that amplify the benefits of DERs to customers and utilities.\textsuperscript{109}

\begin{flushleft}\textsuperscript{106} Id. at 8. \\
\textsuperscript{107} Id. \\
\textsuperscript{108} Id. \\
At the customer level, EE improvements reduce building energy loads, allowing customers to install smaller and less costly distributed generation systems such as solar plus battery systems (solar+) than they would otherwise need. By planning and installing efficiency measures first, customers can use their monthly energy bill savings to help finance the costs of their solar+ system. Integrated deployment of EE with other DERs can also reduce soft costs by offering customers a one-stop-shop for energy-saving technologies and may help them better identify the best systems to fit their needs and budget. Accordingly, integrated EE/DERs solutions helps facilitate additional, more effective DER deployment.

At the utility level, EE/DERs deployment has the potential to integrate DERs solutions seamlessly into the grid and better manage supply and demand of electricity at specific times in stressed locations. Supply-side participation for all DERs, including EE resources, can open new value streams by introducing customers to energy solutions they may not have otherwise considered. At the same time, integrated deployment of EE with other DERs gives utilities more control over customer-sited energy generation to ensure it benefits the grid.

Despite the above advantages, very few utilities offer integrated EE/DERs programs and pilots. Regulators often require utilities to offer EE and solar in separate, siloed programs with different funding sources, cost-effectiveness tests, and reporting requirements. In contrast, independent service providers have been particularly successful in integrating EE with other DERs in both the commercial building sector and low-and medium-income housing. Independent service providers use technical knowledge, innovative financing, and sales experience to optimize

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110 Id.
111 Id.
112 Id.
113 Id.
114 Id.
115 Id.
116 Id at 6.
EE/DERs and identify additional savings opportunities.\textsuperscript{117} Because these providers are not bound by siloed EE and DER program approaches like many regulated utilities, they have more freedom to design projects that include multiple measures.\textsuperscript{118}

Importantly, because combining EE and other DERs may increase upfront project costs, robust financing is key to the success of deploying integrated EE/DER solutions. Energy savings can help offset project and financing costs,\textsuperscript{119} but capacity market revenues provide an important financing stream for overcoming the upfront project costs. Merchant EE/DER aggregators, enabled by a supply-side EE model, can help meet this financing challenge.

\textbf{C. Supply-side participation produces binding commitments to provide EE capacity}

Supply-side participation of EE resources yields binding commitments to provide EE capacity which helps RTOs/ISOs account for the impacts of EE on installed capacity requirements and day-ahead energy demand, thereby reducing uncertainty in load forecasts and the risk of overprocurement of resources and the associated costs, as envisioned by Order No. 2222.\textsuperscript{120} In the event that an EE supplier fails to aggregate, measure, verify, and deliver the load reductions to cover their capacity market commitments, they are financially responsible to cover the shortfall or are subject to penalties for underperformance like any other capacity supplier.\textsuperscript{121} Supply-side EE, therefore, shifts the risks of inaccurate EE accounting from loads (consumers) to EE suppliers.\textsuperscript{122} This improves the alignment of incentives to the parties best suited to mitigate risks.\textsuperscript{123}

The commitment that EE suppliers deliver in a particular time and place also removes uncertainty created by demand-side accounting that relies on forecasts and thus improves the

\begin{footnotesize}
\begin{itemize}
\item[\textsuperscript{117}] Id.
\item[\textsuperscript{118}] Id.
\item[\textsuperscript{119}] Id. at v.
\item[\textsuperscript{120}] See Order No. 2222 at P 29.
\item[\textsuperscript{121}] Brattle, The Benefits of Energy Efficiency Participation in Capacity Markets at 4.
\item[\textsuperscript{122}] Id.
\item[\textsuperscript{123}] Id.
\end{itemize}
\end{footnotesize}
reliability and accuracy of EE accounting. The baseline accounting used for supply-side participation also makes it possible to develop more accurate load forecasting processes that reflect the impact of EE resources in both historical and forecasted load data. In combination with improved load forecasts, binding supply-side EE commitments increase system reliability.

**D. Supply-side participation improves load forecasts by reducing uncertainty and statistical bias**

Supply-side participation improves peak load forecasts by addressing two challenges that occur when EE is only accounted for on the demand side: (1) it reduces uncertainty in the demand forecasting models, and (2) it addresses inherent conservatism in the load forecasting process. Addressing these two challenges helps avoid unnecessary costs that raise rates.

First, “demand-side statistical forecasting models generally struggle with unexpected, idiosyncratic decreases in demand due to outside events such as natural disasters, economic shocks, and rapid adoption of new behind-the-meter technologies such as generation, storage, or electrified appliances.” The impact of EE resources can thus be difficult to measure on the demand side because they get lost among many other fluctuations in load. Enabling EE to participate on the supply side, and enforcing measurement and verification for that EE, reduces the overall uncertainty in the demand forecasting models and yields better forecasts.

Second, accounting for EE entirely on the demand side tends to understate the volume of EE measures forecasted by the RTO/ISO due to the inherent conservatism in the load forecasting process. Load forecasters are rightly cautious about making speculative assumptions about how

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124 *Id.*
125 *Id.*
126 *Id.*
127 *Id.* at 5.
128 *Id.* at 6.
129 *Id.*
130 *Id.*
131 *Id.*
much EE might materialize if there are no binding obligations to implement the measures; however, the outcome is typically an over-forecast of capacity needs, which leads to unnecessary capacity procurement.\textsuperscript{132} Importantly, even outside of the context of the capacity market, improving load forecasts through supply-side participation of EE is valuable because it enables improved planning of the transmission and distribution systems and other utility planning.\textsuperscript{133}

E. Supply-side accounting supports just and reasonable rates for customers

Through a combination of the factors discussed above, supply-side participation mobilizes additional cost-competitive EE resources than demand-side-only accounting models and, thus, tends to create more efficient capacity-market clearing prices. The additional EE resources enabled by supply-side participation also serve to reduce the likelihood of over-procurement, leading to avoided capacity procurement and the associated infrastructure costs. The additional EE resources further reduce load across most hours, which leads to material production cost savings and further helps avoid grid upgrades, producing savings that accrue to all market participants. Importantly, supply side participation of EE resource aggregations is a win-win strategy since EE can only be awarded a successful bid in the NYISO’s capacity market if EE demonstrates that it is a lower cost resource than alternative supply sources.

VII. NYISO’s Compliance Filing Does Not Comply with Order No. 2222

A. NYISO prohibits EE resources from directly participating in the capacity market in violation of Order No. 2222

As discussed in section III, Order No. 2222 requires each RTO/ISO to allow any DER, which it defined to include EE resources, to provide all services that they are technically capable of providing through aggregation.\textsuperscript{134} Order No. 2222 also expressly requires that “each

\begin{itemize}
\item \textsuperscript{132} Id.
\item \textsuperscript{133} Id. at 8.
\item \textsuperscript{134} See Order No. 2222 at P 114.
\end{itemize}
RTO’s/ISO’s rules do not prohibit any particular type of [DER] technology from participating in [DER] aggregations.\textsuperscript{135} As Order No. 2222 confirmed and as discussed in sections IV and V, EE resources provide verifiable demand reductions that contribute to resource adequacy and are “technically capable” of directly participating in the capacity market as a supply-side resource. Indeed, EE resources have participated in capacity markets as supply-side resources for many years in every RTO/ISO with a capacity market other than NYISO. Accordingly, Order No. 2222 requires NYISO to have tariff provisions that allow EE resource aggregations to participate directly in its capacity market as a supply-side resource.

NYISO’s Compliance Filing, however, fails to fully comply with Order No. 2222—as well as its own statements about leveraging markets to drive achievement of state policy goals—because it fails to address barriers in its tariff to the direct participation of EE resource aggregations in the capacity market as supply side resources. Indeed, NYISO prohibits EE from supply side participation in the capacity market because EE resources are not dispatchable at the control of the NYISO.

Specifically, NYISO asserts, “A general eligibility rule for nearly all Resources seeking to qualify as Installed Capacity Suppliers, other than Responsible Interface Parties, is that they must be able to participate in the NYISO’s Energy market and be able to respond to and perform in a manner consistent with the directions and control of the NYISO.”\textsuperscript{136} NYISO would require aggregations to satisfy all the proposed requirements found in Sections 2 (Definitions), 4 (Market Services: Rights and Obligations), and 5 (Control Area Services: Rights And Obligations) of the Market Services Tariff (MST) to be eligible to participate as Installed Capacity Suppliers.\textsuperscript{137}

\textsuperscript{135} Order No. 2222 at P 141.
\textsuperscript{136} See NYISO Compliance Filing at 20.
\textsuperscript{137} \textit{Id.}
These sections of the MST contain unnecessarily stringent requirements that do not “accommodate the physical and operational characteristics” of EE resource aggregations. For example, NYISO’s MST defines “Capacity” as “[t]he capability to generate or transmit electrical power, or the ability to control demand at the direction of the ISO, measured in megawatts (“MW”).” Similarly, NYISO defines “Demand Side Resource” to include the ability to reduce load “at the direction of the ISO, in a responsive, measurable and verifiable manner within time limits.” NYISO’s DER participation model also expressly prohibits Behind-The-Meter Net Generation (“BTM:NG”) Resources from participating in an aggregation utilizing the rules that NYISO developed to accommodate the physical and operational characteristics of these resources. Accordingly, NYISO premises supply-side capacity market participation on its ability to dispatch or otherwise control the resource during real-time operations.

EE resources contribute to resource adequacy by reliably reducing end-user load across most hours, with the added benefit of inherently greater savings during peak periods. The contribution of specific EE resources can be measured and verified according to rigorous standards that determine savings by comparing measured consumption or demand before and after implementation of a program, making suitable adjustments for changes in conditions. Because EE provides reliable reductions in use during peak hours, it does not need to be measured or dispatched in real time. Indeed, even demand side accounting implicitly relies on EE reductions being “available” during the peak hour, but in the amount forecasted rather than which has been measured and verified. Ultimately, NYISO’s requirement that capacity supply be able to be controlled in real time at the direction of the ISO does not “accommodate the physical and

138 See Order No. 2222 at P 6.
139 NYISO MST at Section 2.3 (emphasis added).
140 Id. at Section 2.4.
141 NYISO Compliance Filing at 22.
operational characteristics” of EE resource aggregation. In contrast, it provides a barrier to entry that prevents EE resources from directly participating in the capacity market in violation of Order No. 2222.

B. The Commission has previously required an RTO/ISO to engage in a collaborative stakeholder process to rectify barriers to the supply-side participation of EE in the capacity market

In examining the performance of PJM’s initial Reliability Pricing Model (“RPM”) capacity market, the Commission found “that RPM does not treat investment in [EE] as a type of capacity resource eligible to participate in the capacity market and, that to the extent possible, [EE] solutions should be able to compete on an equal footing with demand response, generation, and transmission solutions” however, it also determined that stakeholders had “not put forward a sufficiently detailed description of how energy efficiency can be included in RPM.”142 Accordingly, the Commission required PJM to establish a forum for discussions dedicated to increasing coordination among PJM, state siting authorities, regulatory commissions, and PJM stakeholders to identify, evaluate, and rectify barriers to entry of demand response and energy efficiency, and to report to the Commission on the status of the process on and it results and conclusions.143

In a 2008 FERC order examining the performance of the RPM capacity market, the Commission stated that “PJM should develop and implement provisions to enable energy efficiency resources to participate in the RPM auctions” as another form of capacity resource, based, in part, upon a Brattle Report recommendation that came out of the above-mentioned forum.144

142 PJM Interconnection, L.L.C., 119 FERC ¶ 61318, at P 202 (June 25, 2007).
143 Id. at P 204.
In a 2009 order, the Commission approved PJM’s implementation of EE resource provisions in its tariff, stating:

We commend PJM for developing a proposal to incorporate energy efficiency into its capacity markets. We believe that energy efficiency is a critical part of efficient energy markets, and should be treated comparably to other types of resources, by being allowed to participate in base residual auctions and be paid the auction clearing price when they are accepted in the auction.145

In that 2009 order, the Commission expressly noted that only an aggregator of EE resources can provide meaningful benefit to EE resources through the “supply side” of the wholesale market operated by an RTO; otherwise, the “demand” side reduction (by retail customers) likely will not be able to “capture the capacity benefit of the resources they install.”146 Accordingly, the Commission has a history of expressly supporting EE resources as being part of an RTO’s capacity market construct by being treated “comparably to other types of resources, by being allowed to participate in base residual auctions and be paid the auction clearing price when they are accepted in the auction.”147

C. The Commission should direct NYISO to initiate a collaborative stakeholder process to identify, evaluate, and rectify barriers to EE participation in the capacity market

Order No. 2222 requires NYISO to have tariff provisions that allow EE resources aggregations to participate directly in the capacity market as a supply-side resource; however, developing a model for EE resources to participate in NYISO’s capacity market in a manner that is appropriate for its unique market design is a complicated undertaking that is best informed by a robust stakeholder process. Such a process need not, and should not, delay implementation of the

145 PJM Interconnection, L.L.C., 126 FERC ¶ 61,275, at P. 130 (March 26, 2009).
146 Id. at P. 131.
147 Id. at P. 130.
rest of NYISO’s DER participation model to the extent the model is otherwise found to be complainant with Order No. 2222.

Clean Energy and Consumer Advocates recommend that the Commission, like it did in PJM more than a decade ago, direct NYISO to initiate a collaborative stakeholder process to examine EE applications and to identify, evaluate, and rectify barriers to entry of EE resource aggregations. It should further direct NYISO, within six months of the issuance of its order, to report to the Commission on the status of the process on energy efficiency, and the results and conclusions from the forum for rectifying barriers to entry of EE resource aggregations.

Respectfully submitted,

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Dated: August 23, 2021
Chicago, Illinois

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Dated: August 23, 2021
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Dated: August 23, 2021
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Dated: August 23, 2021
Washington, D.C.
CERTIFICATE OF SERVICE

Pursuant to Rule 2010 of the Commission’s Rules of Practice and Procedure, 18 C.F.R. §385.2010, I hereby certify that I have this day served the foregoing document upon each person designated on the official service list compiled by the Secretary in this proceeding by electronic means.

Dated this 23rd day of August, 2021.

/s/ Christopher Casey

Christopher Casey
Attachment A

Letter of Support for Protest of Clean Energy and Consumer Advocates
August 23, 2021

Honorable Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

Re: Letter of Support for Protest of Clean Energy and Consumer Advocates

Dear Secretary Bose:

This Letter of Support is being filed in this docket to support the ‘protest filing’ being made by Sustainable FERC Project, Natural Resources Defense Council, Advanced Energy Economy, and the City of New York (collectively, “Clean Energy and Consumer Advocates”) requesting the FERC to order New York Independent System Operator (NYISO) to develop a ‘participation model’ for Energy Efficiency (EE) resources to participate in the NYISO wholesale capacity markets.

The undersigned organizations work throughout New York to advocate for and support the reduction of our energy needs through energy efficiency and the transition to a sustainable energy system through renewable energy.

The State of New York passed nation leading laws that contain very aggressive greenhouse gas reduction goals for the State to address the threat of climate change. For example, the Climate Leadership and Community Protection Act\(^1\) (CLCPA) passed in 2019 contains the following goals: 85% reduction in GHG emissions economy-wide by 2050; 100% zero-emission electricity by 2040; 70% renewable energy by 2030; 9,000 MW of offshore wind by 2035; 3,000 MW of energy storage by 2030; 6,000 MW of solar by 2025; and 22 million tons of carbon reduction through EE and electrification. The CLCPA also requires that the New Yorkers reduce their energy use in buildings by 185 trillion Btus by 2025. Buildings use over 60% of the energy consumed in the

\(^1\) [https://www.nysenate.gov/legislation/bills/2019/s6599](https://www.nysenate.gov/legislation/bills/2019/s6599)
State and emit 30% of the State’s greenhouse gases (GHG)\(^2\). Major cities like New York City also passed climate related laws that contain specific goals to help reduce carbon emissions.

The NYISO has consistently advocated the use of market forces to support achievement of New York’s clean energy goals.\(^3\) That is exactly what NRDC seeks with its protest. NRDC’s goal is to support achievement of New York’s clean energy goals through the development of a model that would facilitate greater private sector investment in energy efficiency through competitive participation in the NYISO’s capacity market.”

In New York State, EE is being counted on as a major contributor to meeting the clean energy goals. For example, the NYISO is counting on a peak load reduction of 8,229 MW and 47,768 GWH from EE and Codes and Standards, by 2040. The 2040 goal is almost 10 times the corresponding estimates for 2022. Accomplishment of a such massive increase in EE would require significant ramp up of current and new EE programs and the use of all tools in the toolbox.

The State has long recognized that EE is one of the cheapest supply resources. Currently, the EE programs in NY are administered primarily by investor-owned utilities and New York State Research and Development Authority (NYSERDA). The utilities and NYSERDA collect Systems Benefit Charge (SBC) from retail customers to help fund the EE program costs. The SBC levels that can be collected from retail ratepayers are approved by the NY State Public Service Commission (PSC). However, there are virtually no merchant players offering EE services.

To accomplish the ambitious EE goals, just relying on ratepayer funded utility and NYSERDA programs will not suffice. There is a need for other players to enter the EE space to identify and offer incremental EE. These other players, who do not have access to SBC collections from customers, will need a revenue stream to support their investments. Merchant players should be allowed to offer the incremental EE resources into the wholesale capacity markets and receive capacity payments for the EE that clears the market.

Allowing EE to participate in the wholesale capacity markets will lead to benefits of Distributed Energy Resource (DER) integration that FERC identified in Order 2222, including: (i)


it will lead to enhanced competition producing lower market prices (and ultimately reducing energy burdens for end use customers), and (ii) it will improve load forecast, which will help avoid unnecessary infrastructure and their associated costs, and thus to lower customer costs. This would be a win-win strategy since EE can only be awarded a successful bid in the NYISO’s capacity market if EE demonstrates that it is a lower cost investment than alternative supply sources.

We respectfully urge the FERC to support the ‘protest filing’ being made by the NRDC and order the NYISO to develop a ‘participation model’ for EE resources to allow them to participate in the NYISO wholesale capacity markets.

Sincerely,

All Our Energy
George Povall, Executive Director

Alliance for a Green Economy
Jessica Azulay, Executive Director

Association for Energy Affordability
David Hepinstall, executive Director

Big Reuse
Justin Green, Executive Director

Catskill Mountainkeeper
Katherine Nadeau, Deputy Director

Central New York Regional Planning and Development Board
Chris Carrick, Energy Program Manager

Church Women United in New York State
Mary Smith, Communications Director

Citizen Action of New York
Bob Cohen, Policy Director

Citizens for Local Power
Susan H Gillespie, President of the Board

CNY Solidarity Coalition
Peter McCarthy, Coordinating Committee
Council on Intelligent Energy & Conservation Policy (CIECP)
Michel Lee, Chair

Dutchess County Progressive Action Alliance
Maria Quackenbush, Founder

Environmental Advocates NY
Conor Bambrick, Director of Climate Policy

Food & Water Watch
Alex Beauchamp, Northeast Regional Director

Fossil Free Tompkins
Irene Weiser, Coordinator

Gas Free Seneca
Joseph Campbell, President

Grassroots Environmental Education
Patti Wood, Executive Director

LEAF of Hudson of Valley
Susan Shapiro, President

Long Island Progressive Coalition
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Caroline Fenner, Communications & Outreach

Mothers Out Front NY Leadership Team
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Nassau Hiking & Outdoor Club
Guy Jacob, Conservation Chair

Network for a Sustainable Tomorrow
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Ruth Foster, Director
New York Communities for Change
Johnathan Westin, Executive Director

New Yorkers for Clean Power
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Seneca Lake Guardian
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Bomee Jung, Principle

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Attachment B

The Brattle Group - *The Benefits of Energy Efficiency Participation in Capacity Markets*
The Benefits of Energy Efficiency Participation in Capacity Markets

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April 2021

PREPARED FOR
Advanced Energy Economy
ACKNOWLEDGEMENTS AND NOTICE

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This white paper reflects the perspectives and opinions of the authors and does not necessarily reflect those of The Brattle Group’s clients or other consultants.

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Executive Summary

US capacity markets have evolved substantially since their inception. The earliest capacity markets were aimed at attracting and retaining conventional, dispatchable “steel in the ground” resources like coal-, gas-, and oil-fired thermal generation. Later, the participation of demand response resources in these markets proved to be an unexpected success. Today, as capacity markets prepare for a clean energy future, they will need to evolve and reposition themselves to rely on an increasing share of emerging resources like utility-scale wind, solar, battery storage, and distributed energy resources (DERs). These include demand response (DR) and energy efficiency (EE) resources, which reduce demand for electricity. Evolving capacity markets must maintain reliability while coordinating entry and exit decisions, sending technology-neutral price signals to conventional and distributed resources alike to mobilize efficient, cost-effective investments. In support of this goal, FERC’s Order 2222 requires full accommodation of DER participation and competition in wholesale capacity markets.

The EE resources that fall under the umbrella of Order 2222 play a vital role in the US energy sector, providing a low-cost way to meet customers’ electricity needs and meet environmental policy goals. The reduction in load that EE delivers provides a range of economic and social benefits, such as improved air and water quality, greater grid resilience, a lessening of inequitable energy burdens, and improved health and comfort. As a result, EE plays a central role as an increasing number of cities, states, and regions set ambitious clean energy and decarbonization goals.¹

Policy requirements for greater EE are amplified by the fact that the transition to clean energy for heating and transportation will have a significant impact to increase total demand for electricity across the United States. By one estimate, even accounting for increases in EE and other technological improvements, electrification could lead to a 5% to 15% increase in demand by 2030, and an increase of 25% to 85% by 2050.² Consequently, reductions in demand achieved through verified, measurable EE deployments represent a fundamental component of the successful, economy-wide transition to clean energy. The challenge currently facing policymakers and market operators is how to most effectively enable EE for maximum participation and impact.

Theoretically, EE, DR, and other DERs can be accounted for either on the supply or the demand side of capacity markets. In practice, however, there are numerous frictions and barriers to demand-side accounting that reduce entry of these resources even at the lowest costs, and under-counts DERs that are

on the system. Good wholesale market design allows these resources, including EE, to participate on the supply side and can reduce barriers, thereby improving outcomes and reducing costs.

Enabling efficient deployment of EE requires effort and cost. The EE aggregator makes a large investment in aggregating and delivering the EE measures but only the customer sees the benefit on their electric bill. Like a developer of any resource, there must be a return on the investment involved to make the effort feasible and worthwhile. This business model is not possible without supply-side participation.

After first describing the business model for EE providers in this paper, we identify several interrelated reasons for why supply-side participation of EE will yield more predictable and efficient outcomes. These include supply-side participation’s ability to:

- **Yield Binding Capacity-Market Commitments:** Supply-side participation of EE requires binding forward contract commitments, which enable the market operator to have more confidence in the quantity and delivery of EE measures relative to demand-side participation, which does not require any binding supplier commitments. This improves reliability by increasing the incentives for EE performance and enabling penalties for non-performance.

- **Improve Load Forecasts:** Accounting for EE entirely on the demand side understates the volume of EE measures forecasted by the ISO due to the inherent conservatism in the load forecasting process. More specifically, this process often underestimates the pace of technology advancement, the lack of binding commitments behind the implementation of future EE measures, and the time it takes before realized EE impacts are reflected in the historical data used for forecasting. Moving EE to the supply side reduces EE uncertainty as a contributor to demand forecast uncertainty, further improving reliability and lowering costs.

- **Reduce Barriers to EE:** Allowing supply-side participation of EE reduces market barriers for merchant EE providers, which means certain cost-effective EE resources targeted by merchant providers would not be developed without supply-side treatment. Supply-side participation of EE also ensures that all resources are able to compete to provide capacity service in the same time horizon. Procuring generation resources on a one-month to three-year forward basis, but accounting for EE approximately 10 years after it is installed (the length of time most load forecasting methodologies take to fully account for reductions in any one year) cannot yield efficient results. Such mismatched time horizons lead to higher-cost market outcomes and no corresponding market benefit.

- **Yield More Cost-Effective Capacity Market:** The combination of the above factors results in: more cost-effective market outcomes under supply-side participation by avoiding over-forecasting loads and the over-procurement of unnecessary capacity resources; a lower price for all capacity because of less expensive capacity procured on the margin; and the deferral of transmission investments that would have been needed under too-high load forecasts that did not properly account for the effects of EE.
I. Energy Efficiency Participation in Capacity Markets

In contrast to generation resources, which increase the energy and ancillary services provided in the market during scarcity conditions, EE contributes to resource adequacy by reducing end-user load. Even though the mechanism is different, the resource adequacy value of these resources is real, just as it is for other demand-side resources like demand response and rooftop solar. In other words, EE makes the system more reliable.

Enabling efficient deployment of EE requires effort, cost, and risk. This is the role of the EE aggregator. Building a resource comprised of EE takes years of effort to build and maintain a program of thousands of individual EE measures. Furthermore, the EE aggregator must work with vendors to enable the plan, continually gather data on installed measures, conduct measurement and verification studies to demonstrate savings, and report these data to the relevant RTO for inclusion in the capacity market. Finally, EE aggregators must offer their resources into the wholesale markets, incurring participation and collateral costs, and take on the financial risk that the EE resources may face.

This substantial effort and investment to enable a cost-effective resource should be able to earn a return on investment, like any other developer and owner of a capacity resource. Unlike the customer, the EE aggregator (either merchant or utility) does not save money on a bill as a benefit of their investment in EE. Instead, their compensation must come from the value of the newly enabled EE through energy and/or capacity cost savings.

The resource adequacy value of EE needs to be accounted for in the capacity markets. There are two possible competing frameworks for doing so:

- **Under a demand-side model**, EE investments are interpreted as reducing the end-use electric load in the applicable years of historic load used to develop the forecasts, thereby reducing the need for capacity procurement in the capacity markets. Under this model, end customers can capture the capacity value of the EE only insofar as the EE measure reduces their peak load contribution, thereby reducing the share of capacity charges allocated to them; there is no direct mechanism for compensating aggregators who enable the EE.

- **Under a supply-side model**, EE investments are interpreted as providing discrete, verifiable capacity supply commitments that EE providers can qualify for and then offer as supply into the capacity markets. This requires rigorous measurement and verification of savings to baseline provided by EE
commitments,\(^3\) and setting the capacity procurement target based on the (higher) demand that excluded the committed EE measures. Under this model, aggregators selling EE into the capacity market are directly compensated through capacity revenues, while end customers enjoy cost savings from reduced electric load.

Allowing only demand-side participation, to the exclusion of supply-side participation, represents an overly narrow view of the participation of demand-side resources based on the idea that either supply or demand side accounting would result in the same efficient outcomes. These approaches could be equivalent under certain idealized assumptions but are not equivalent because of barriers to entry, load forecast challenges, and other practical limitations that are further discussed in the following section.\(^4\)

The result is that under demand side-only participation, EE would be under-counted and underutilized relative to the efficient market outcome. By unlocking the capacity value of EE and selling it in the capacity market, EE aggregators earn capacity revenues, which bridge the gap between the low marginal price that consumers face for capacity and the higher marginal value of that capacity on the system.

**EE PARTICIPATION PATTERNS**

Today most US jurisdictions with capacity markets enable EE to participate as supply-side resources. However, there are substantial differences in the rules governing EE participation, as well in other areas of market design. These invariably have led to differences in the rates of supply-side participation. For example, the high penetration of EE in ISO-NE is due in part to the fact that EE resources there are allowed to participate in the capacity market up to their full measure life, in contrast to PJM and MISO, which impose limitations of four years each.\(^5\) The average measure life in ISO-NE is approximately seven years, but resources can participate for a maximum of 30 years (pending annual M&V).\(^6\) EE benefits only accrue to the EE aggregator for the maximum allowed measure life, after which time the EE is accounted for in the load forecast and reduces capacity purchases system-wide.

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3 Savings produced through investment in EE are generally measured against a “baseline,” which represents the amount of energy or capacity that would have been used in the absence of the specified EE resources.

4 Enabling EE aggregators to choose either accounting approach would be theoretically possible but we assume few or no entities would use that option given the practical disadvantages we outline.


### TABLE 1: EE PARTICIPATION IN US CAPACITY MARKETS

<table>
<thead>
<tr>
<th></th>
<th>ISO-NE</th>
<th>PJM</th>
<th>MISO</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Forward Timeframe of Capacity Market</strong></td>
<td>3 years</td>
<td>3 year</td>
<td>Prompt</td>
</tr>
<tr>
<td><strong>EE Measure-Life Maximum Supply-side Participation</strong></td>
<td>30 years</td>
<td>4 years</td>
<td>4 years</td>
</tr>
<tr>
<td><strong>Supply-Side EE Portion of Total Capacity</strong></td>
<td>9.8%</td>
<td>1.7%</td>
<td>0.5%</td>
</tr>
<tr>
<td><strong>Number of Historical Years Included in Peak Demand Forecast</strong></td>
<td>15 years</td>
<td>10 years</td>
<td>Up to 29 years</td>
</tr>
</tbody>
</table>

Sources:
- MISO, “2020/2021 Planning Resource Auction (PRA) Results,” April 14, 2020; “2020 MISO Energy and Peak Demand Forecasting for System Planning,” November 2020. Note: We report the number of historical years used to prepare the MISO independent load forecast by the Purdue University State Utility Forecasting Group. However, LSEs’ and MISO’s PRA requirement is based on forecasts of coincident peak demand submitted by LSEs and EDCs; those forecasts are prepared using a range of different methodologies and historical years.

Regardless of market differences, trends in all three markets point to the growing penetration of EE. Cleared EE supply has increased by 170% in ISO-NE and by more than 300% in PJM in the last ten years. In MISO, it has increased from zero supply in the 2016-17 planning year to its present level.

## II. Why Energy Efficiency Should Participate on the Supply Side of Capacity Markets

We have identified how EE measures could theoretically be accounted for on either the supply side or the demand side of the market. To attract cost-effective EE requires good wholesale market design, with EE on the supply side. This removes barriers to prevent participation of capable EE resources or that result in unduly discriminatory treatment of EE, as required by FERC Order 2222, with the goal of achieving efficient market outcomes and reducing overall costs. Supply-side participation of EE will yield more predictable and efficient outcomes thanks to this and several other reasons. As described below, these include the ability of supply-side accounting to:

- Yield binding commitments
- Improve load forecasts
• Reduce barriers to EE adoption and participation
• Yield a more cost-effective capacity market

A. Supply-Side Accounting Yields Binding Commitments to Provide EE Capacity

Supply-side participation offers a number of advantages by virtue of its binding commitment to reliably deliver on EE capacity commitments in capacity markets, especially in jurisdictions with a forward capacity market. In the event that an EE provider fails to aggregate, measure, verify, and deliver the load reductions to cover their capacity market commitments, they are financially responsible to cover the shortfall or be subject to fees and penalties for underperformance like any other capacity market supplier. This ensures that the ISO can count on the delivery of committed future EE measures, making those resources known and verifiable in a way. This would not be possible through demand-side participation which requires no commitments. The commitment that EE providers deliver in a particular time and place removes uncertainty created by demand-side treatment. The baseline accounting used for supply-side participation also makes it possible to develop more accurate load forecasting processes that reflect the impact of EE resources in both historical and forecasted load data. In combination with improved load forecasts, these binding commitments increase system reliability.

Furthermore, supply-side EE shifts the risks from loads (consumers) to EE providers. When EE is on the demand side, customers face the risk of under-performance of EE relative to the expected level: if less than the anticipated amount of EE is available in the delivery year, reliability risks are increased. With EE on the supply side, the risk of under-performance of EE (relative to the quantity sold forward in the auction) is transferred to the under-performing suppliers directly, who face significant financial penalties. This improves the alignment of incentives to the parties best suited to mitigate risks.

Supply-side EE providers have a demonstrated and proven track record of delivering on their commitments. Data from ISO-NE and PJM show that EE resources have been as reliable in meeting capacity market commitments, if not more so, than generation and demand response resources. In ISO-NE, EE resources have consistently exceeded commitments. This was documented as early as the summer of 2012, when EE delivered 120% of what was bid into the capacity market.\(^7\) This pattern continues through the current delivery year, when EE resources in ISO-NE had an audited performance of 3.5% above their capacity supply obligation in 2020.\(^8\) In PJM, specific data on excess capacity delivery by EE resources is not available, but data does indicate that there were only minor commitment shortages (failure to satisfy capacity commitments) for EE resources (averaging less than 0.25% since EE resources

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were first allowed to provide capacity in 2011). It is also important to note that commitment shortages do not necessarily lead to decreased reliability, but are generally resolved through financial transactions in adjustment auctions designed to allow resources to adjust their market positions.

B. Supply-Side Accounting Improves Load Forecasts by Reducing Uncertainty and Statistical Bias

When allowing for EE participation only on the demand side, accurately forecasting peak load is significantly more challenging, especially in jurisdictions with a forward capacity market that procures capacity three years before the delivery period. If EE participation was only accounted for on the demand side, there would be no binding forward commitments to implement measurable and verifiable EE programs. The ISO’s ability to forecast peak load, net of estimated EE activity, would be impaired.

In contrast, supply-side aggregation of EE measures creates the supply side resource that has helpful attributes: more specific measurement and verification; binding commitments with financial assurance; and bottom-up accounting. This improves load forecast in two main ways. First, it reduces the overall uncertainty (variance) of the load forecast estimate. Second, it reduces the systematic bias (consistent error) of the load forecast that results from systematic undercounting of EE when it is on the demand side. We explore these two drivers separately below.

REDUCING UNCERTAINTY

Having EE on the supply side of the capacity market reduces its contribution to demand forecast uncertainty: identifying the amount of non-EE capacity that is needed to meet reliability targets under uncertain load is much easier when the amount of EE is knowable and verifiable (as it is when on the supply side) than when the amount of EE is uncertain. A simple analogy is that it would be easier to forecast the average return of the S&P 500 (“total load”) if you could know with certainty the return of some of the individual component stocks (“EE supply”).

This effect is primarily a result of the structure of the econometric load forecasting models used in all jurisdictions with capacity markets in North America. These models rely on historical data about load and the various drivers of load (including population, GDP, weather, etc.) to statistically infer the relationship between each driver and the resulting system load. However, these models are never perfect. The overall uncertainty of the model increases when the relationship between the individual drivers and the resulting

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9 Monitoring Analytics, “Analysis of Replacement Capacity for RPM Commitments: June 1, 2007 to June 1, 2019,” September 13, 2019, Table 8.
historical load is weaker, and there is more “unexplained variation” in the historical load—that is, increases or decreases in the historical load that are not well explained by changes in the drivers.

Demand-side statistical forecasting models generally struggle with unexpected, idiosyncratic decreases in demand due to outside events such as natural disasters, economic shocks, and rapid adoption of new behind-the-meter technologies such as generation, storage, or electrified appliances. Without quantified EE resources in the market that have commitments to deliver on the supply side, there are little means to separate the distinct load reduction effects of EE from other drivers of load changes. For example, COVID produced a precipitous drop in load but coincident EE load reductions are unaffected by the pandemic. Peak load will likely rebound when the impact of COVID is eliminated, but absent EE on the supply side, demand reductions from increased EE installations cannot be disaggregated from the significant load reductions in 2020–2021.

In summary, the impact of EE measures can be difficult to measure on the demand side, because they can become lost among many other fluctuations in load. Enabling EE to participate on the supply side, and enforcing measurement and verification for that EE, reduces the overall uncertainty in the demand forecasting models and yields better forecasts.

REDUCING SYSTEMATIC BIAS

Beyond the uncertainty effect described above, load and peak demand forecasts that account for EE on the demand side will tend to undercount EE, yielding load forecasts that are systematically biased. Moving to supply-side accounting resolves this issue.

Without an accurate adjustment for EE impacts in the load forecast, the demand-side entry of incremental EE would not be reflected in ISO load forecasts for a long time, which results in more forward procurement of other capacity resources. This is especially true in PJM and ISO-NE, which have a three-year forward capacity market and consequently must forecast load around four years before the delivery year. Because load is charged the full cost of the capacity procured on a three-year forward basis, any added EE measures that were not reflected in the load forecast would thus not provide any capacity market savings to load for several years—not until the actually realized EE measures are fully incorporated into historical load data and fully reflected in load forecasts. The capacity markets we reviewed use at least 10 years of historical data in the econometric load forecast models. This leads to a 10-plus year delay between EE measure installation and the point that the full amount of load reduction is reflected in the historical dataset. With new EE measures being installed every month, the load forecast would always lag reality by the timeframe of the historical data period.

Further, another four years (the capacity market forward period) would be needed to realize the savings associated with reduced ISO capacity procurement. This adds even more time to fully account for EE measures. All the while, the market would continue to procure excess capacity at extra expense to customers. Although adjustments to the load forecast for expected demand-side EE impacts can be made
proactively, such adjustments would rest on judgment and be subject to greater uncertainty compared to the binding forward commitments made when EE participates on the supply side.

Developing a reliable four-year forward load forecast net of likely demand-side EE deployments is more challenging than relying on EE commitments that have been cleared as supply in the capacity market. It would require the ISO to have an accurate accounting of total installed EE capability, account for historical load with and without these EE deployments, and adjust forecast load based on the rate at which EE growth may change. Because over-forecasting future EE growth would result in under-procuring capacity and potential resource adequacy challenges, ISOs would try to avoid such outcomes. The result of not having firm forward EE commitments through supply-side capacity market participation would be an under-forecasting of EE to avoid resource adequacy risks.

The ISOs are rightly cautious about making speculative assumptions about how much EE might materialize if there are no binding obligations to implement the measures. However sensible it is to be conservative in forecasting demand-side EE impacts, the outcome is an over-forecast of capacity needs. Even though some public information on EE measures installed is available from EE providers, there is no guarantee that it would capture all installed EE. To obtain a more accurate forecast with demand side accounting, the ISO would need to invest in expensive measures such as surveys and EE adoption studies to attempt to support more realistic assumptions and modeling.

A multi-year delay in fully reflecting demand-side EE participation in the load forecast and ISO capacity procurement makes it difficult for load serving entities (LSEs), their customers, and third-party EE providers to capture capacity market savings associated with peak load reductions in a timeframe that is feasible from a business perspective. Enabling supply-side participation addresses these issues by requiring forward commitments from qualified EE resources, ensuring a robust system of accounting for measurable investments, holding sellers accountable for performance, and accelerating the return on investment for both the EE investor and end user.

The difficulties of accurately forecasting EE on the demand side are illustrated by PJM’s example. PJM over-forecasted load consistently and repeatedly over more than ten years, as illustrated in Figure 1. The pattern of over-forecasting can be partially attributed to the effect of the Great Recession beginning in 2008, underestimating the decoupling between GDP growth and energy consumption, and other modeling issues; however, issues with accounting for EE also contributed. Even though PJM enables supply-side EE in the capacity market for a duration of four years, the load forecasts did not capture the existing EE that was not bid into the market, nor any new EE programs predicted beyond the capacity market’s three year forward period. An earlier Brattle Group report on the cost of “missing EE” in PJM estimated additional capacity procurement costs of $200–$500M per year.10 While the load forecast has been slowly improved over time, and now the forecasts attempt to more directly account for future EE,

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the pace of load forecast reductions was not fast enough to eliminate over-forecasting, as demonstrated by the following figure.

**FIGURE 1: UNDERCOUNTING EE IN PJM CONTRIBUTED TO SYSTEMATIC OVER-FORECASTING**

Sources and Notes:

- Based on data collected from PJM’s annual Load Forecast Reports.
- In 2016, PJM changed its weather-normalization procedure, which increased historical peaks prior to 2009. PJM forecasts prior to the additions of ATSI, Cleveland Public Power, and DEOK in 2011–12, EKPC in 2013, and OVEC in 2018 were adjusted upwards to be comparable with forecasts from later years.

The difficulties in forecasting demand-side EE are exacerbated in ISOs such as MISO, where the overall capacity requirement is based on decentralized load forecasts provided to MISO by each individual LSE. There is considerable variation in the load forecasting procedures used across LSEs, including how EE is accounted for on the demand side. Supply-side participation removes this additional layer of uncertainty and variability across LSE load forecasts by standardizing the treatment of EE resources.

Finally, even outside of the context of the capacity market, improving load forecasts through supply-side participation of EE is valuable. More accurate supply/demand accounting can, for example, also enable improved planning of the transmission and distribution systems and other utility planning.

**C. Supply-Side Accounting Reduces Barriers to Merchant Energy Efficiency Providers**

Supply-side participation of EE yields reduced market barriers to EE participation and aggregation, increasing the amount of cost-effective EE that can be mobilized in the region. This reduction in market
barriers occurs because supply-side participation in capacity markets provides EE aggregators with a revenue stream from the wholesale capacity market that monetizes the value of the delivered load reductions on a delivery year basis. In contrast, allowing only demand-side participation creates a barrier to market-based EE providers by both delaying and reducing compensation for EE measures’ capacity value. Further, misalignment of rates with marginal system costs of capacity systematically undervalues reductions in peak load enabled by EE. This results in lower EE implementation and higher customer costs under a demand-side participation model.

For merchant (non-utility) EE providers who do not receive any state EE program funding, supply-side participation is particularly important because these providers use capacity market revenues as part of their business model. Under these business models, customers keep their retail bill savings and aggregators receive the capacity market revenues, which they can use to implement their programs. Given the competitive nature of their business models, these providers can cost-effectively expand the pool of EE savings. If merchant EE did not receive supply-side treatment, the EE providers would have little incentive to present the market operator with accurate estimates—and certainly not with financially binding forward commitments—for their anticipated peak load reductions.

If merchant EE providers are not enabled in the capacity market, there is no incentive to fully inform and commit to the ISO on a forward basis about EE activity they may pursue. This leads to the procurement of unnecessary and more costly other capacity. Thus, while the demand-side model may work for some state-funded EE programs to the extent that EE impacts are predictable and the broader social benefits of avoided capacity procurement can be seen from a statewide perspective, demand side-only participation essentially excludes merchant EE as a viable business model in the capacity market.

Finally, given the intent of the capacity markets to facilitate and enable innovative market participants and business models to find low-cost solutions to meet system resource adequacy needs, the markets should offer opportunities to obtain full capacity value via market mechanisms. Even if demand side participation works for some, mostly state-funded programs, the merchant EE sector would largely be left out. Enabling additional competition by merchant EE in the capacity market facilitates competition and innovation.

**D. Supply-Side Accounting Reduces Capacity Costs to Customers**

The combination of the factors discussed above will mean that supply-side participation mobilizes more cost-effective resources and, thus, tends to create more efficient capacity-market clearing prices. Reducing the likelihood of over-procurement will further add to achieving a more cost-effective overall outcome under supply-side EE participation. The main drivers of the cost advantage of supply-side participation are:
• The individual customers participating save by paying lower electricity costs;

• Those customers and others benefit through more cost-effective EE as a result of reduced barriers to entry;

• All customers (including non-participating customers) benefit by having more cost-effective EE in the market because it will only clear if it is cheaper than other capacity resources; this yields lower prices and lower costs for all customers;

• All customers benefit from an improved load forecast by avoiding over-procurement of capacity resources. Avoiding over-procurement also reduces the need for transmission investments associated with excess capacity resources.

Further, EE benefits are only privately captured by the participating customer or EE aggregator for a limited time. After that, the EE will still exist and be built in to load forecasts and properly be accounted for as reduced capacity purchases for all customers. The sum total of the benefits of accounting for all EE and unlocking new EE potential are large—and enabling supply-side participation for EE is the only way to maximize that opportunity.
Attachment C

NRDC Presentation to NYISO Stakeholders:

*Energy Efficiency (EE) Participation in NYISO's Capacity Market*
Energy Efficiency (EE) Participation in NYISO’s ICAP Market

NYISO ICAP Working Group Meeting
June 30, 2021
Christopher Casey – NRDC
Doug Hurley - Synapse Energy Economics, Inc.
“One thing that will not change is the NYISO’s . . . view that wholesale electricity markets continue to provide the strongest, most powerful platform from which we can meet the needs of the grid in transition.”

“Leveraging wholesale electricity markets, which minimize costs and investment risks to consumers while promoting innovation, is the most powerful means to drive needed energy infrastructure investment to achieve the CLCPA goals.”
• “Competitive wholesale electricity markets provide a powerful platform to attract and use new technologies essential to achieving the transformation envisioned by the CLCPA.”

• “As the NYISO collaborates with asset owners, stakeholders, and policymakers to take the aggressive actions necessary to build the grid of the future, we must continue to leverage these competitive markets that shield customers from investment risk.”
Energy Efficiency is a Critical Resource for Achieving CLCPA Goals

• CLCPA short-term goals for clean energy resources include 185 TBtu of customer-level energy reduction statewide by 2025.
  • The PSC identified EE as playing “a key role in the achievement of New York State’s clean energy goals” (NENY order).
  • Need for energy efficiency is amplified by the transition to clean energy for heating and transportation, which will have a significant impact to increase total electric demand.
Energy Efficiency is a Critical Resource for Achieving CLCPA Goals

- Energy efficiency provides a variety of economic and social benefits by *reliably and permanently reducing demand* and thereby avoiding infrastructure costs.
  - EE lowers customer bills and lessens inequitable energy burdens.
  - EE can enhance effectiveness of other DERs, like solar and batteries.
  - EE creates non-energy benefits, such as positive health impacts from lower emissions, improved comfort and satisfaction in buildings, and increase property values.
  - EE is a tool for driving clean energy solutions into environmental justice communities.
FERC Order 2222 Definition of Distributed Energy Resource Includes Energy Efficiency

• “[We] define a distributed energy resource as ‘any resource located on the distribution system, any subsystem thereof or behind a customer meter.’ These resources may include, but are not limited to, resources that are in front of and behind the customer meter, electric storage resources, intermittent generation, distributed generation, demand response, energy efficiency, thermal storage, and electric vehicles and their supply equipment – as long as such a resource is ‘located on the distribution system, any subsystem thereof or behind a customer meter.’” (para 114)

• “we require that each RTO’s/ISO’s rules do not prohibit any particular type of distributed energy resource technology from participating in distributed energy resource aggregations.” (para 141)
NYISO Forecasts a Significant Role for EE

• NYISO currently considers EE as a load modifier in NYISO forecasts.
• In its baseline forecast, NYISO estimates that EE and codes and standards (EE/C&S) contribution will grow ~10x between 2022 and 2040.
  • In its 2021 Gold Book, NYISO estimates peak load reduction of 8,229 MW (column b in table i-1c) and 47,768 GWh (column b in table i-1b) from EE/C&S by 2040. Compare with the 2022 forecast of 860 MW and 5,096 GWh. The 2040 goal estimate is almost 10 x the estimate for 2022.
• The difference between the EE/C&S contribution in the Low Load Scenario and High Load Scenario by 2040 is 2,605 MW and 15,075 GWh, which demonstrates how EE plays a critical role for avoiding significant infrastructure costs.
  • EE/C&S in Low Load Scenario = 9,221 MW (column b in Table I-16b) and 53,529 GWh (column b in Table I-16a) by 2040; EE/C&S in High Load Scenario = 6,616 MW (column b in Table I-16b) and 38,454 GWh (column b in Table I-17a) by 2040.
Role For Merchant EE Providers

• While the TO and NYSERDA programs will help fulfill some of the State’s EE goals, merchant EE providers can contribute to the effort if they are allowed to participate in NYISO’s competitive capacity market.

• Merchant investors in EE do not rely on captive ratepayers for SBC type charges.

• Merchant EE providers participation in the capacity market could lead to more competitive and cost-effective solutions and reduce the overall cost burden on ratepayers.
EE Participation in ICAP Market Facilitates Full Compliance with Order 2222

• The current method of treating EE as a load modifier is one method to account for this resource in the ICAP market.
  • This method should continue as one viable option.
  • However, EE as a reduction in demand for capacity as the only option does not comply with FERC Order 2222.

• ICAP market design should also allow EE to participate as a supply resource in ICAP auctions, if an EE provider decides to choose this option.

• An efficient capacity market should allow investors in EE as a capacity supply resource the opportunity to compete with other resources to provide the required capacity.

• As a clean and reliable resource needed for NY’s energy transition, if EE resources can compete on price, they should be allowed to clear and earn capacity revenue.
Supply-Side Participation Provides Operational Benefits and Improves Market Outcomes

• **Yield Binding Capacity-Market Commitments:** Supply-side participation of EE requires binding forward contract commitments, which enable the market operator to have more confidence in the quantity and delivery of EE measures relative to demand-side participation, which does not require any binding supplier commitments.

• **Improve Load Forecasts:** Accounting for EE entirely on the demand side understates the volume of EE measures forecasted by the ISO due to the inherent conservatism in the load forecasting process.

• **Reduce Barriers to EE:** Allowing supply-side participation of EE reduces market barriers for merchant EE providers, which means certain cost-effective EE resources targeted by merchant providers would not be developed without supply-side treatment.

The Brattle Group prepared two new papers that highlight the importance of EE participation as a supply-side resource in capacity markets


Proven Experience in Other RTOs

• Several adjacent RTOs have a track record of more than 15 years of successful integration of EE as a capacity resource.

• Regional variations exist, but all allow EE to participate as capacity supply.

• Sufficient requirements must and do exist to ensure reliable capacity delivery.

• Implementation in NYISO should look similar, with appropriate specifics to account for unique ICAP market design.
Design Components of EE Proposal

The following design elements need to be developed further:

• **Qualification** of EE providers;

• **Participation criteria** in various capacity auctions;

• **Verification**: Proof of Delivery, adequate tracking and reporting, financial penalties for non-performance; and

• **Proper Accounting** of EE resources.
Qualification of Merchant EE Providers

• Like other new capacity supply resources, new EE resources should be subject to qualification for upcoming auctions.

• Proponents of EE should demonstrate industry experience, availability of funding, and valid plan to deliver proposed MW at or before start of delivery year.

• Only qualified organizations with clear plans should be allowed to qualify.
Participation of Merchant EE Providers

• Once qualified, EE providers should be allowed to participate in all auctions like any other capacity resource.

• EE providers should be allowed to gain or shed capacity obligations, or trade with other qualified capacity resources, in the same manner applied to any capacity resource.

• Once obligated, EE provider must demonstrate performance for entire life of the resource, in amounts up to or exceeding obligated quantity.
Verification of Merchant EE Providers

• EE resource owner must demonstrate delivery of obligated MW.

• Although Measurement & Verification (M&V) of EE may be new to many market participants, the M&V industry has existed for several decades with a track record of proven results.

• M&V activities include verification of measure installation, calculation of electrical savings, impact of various factors on total savings, and coincidence with season peak hours.

• M&V requirements already in use in NY may be suitable. Neighboring RTOs use protocols consistent with the International Performance Measurement and Verification Protocol (IPMVP®).
Proper Accounting of Energy Efficiency

• Each MW of EE must be accounted for in *either* the supply-side or the demand-side, *but not both*.

• Neighboring regions take different approaches to reconstitute (or “add-back”) some amount of supply-side EE to correctly account for MWs of EE to be served.

• The approach used in NY should be tailored to the timing and specifics of NYISO’s ICAP market.
Summary of the Benefits of EE Participation in ICAP Market

• Consistent with NYISO’s commitments to leverage markets to drive needed energy infrastructure investment to achieve the CLCPA goals.

• Full compliance with FERC Order 2222.

• A more efficient ICAP market that sets and meets more accurate capacity requirements.

• Allows the opportunity for additional merchant investment in the ICAP market, producing a more efficient market for the ultimate end-use customers.
Next Steps

• NYISO should indicate in its Order 2222 compliance filing with FERC in July 2021 that EE is not currently included in its DER participation model, but that it commits to expeditiously working with stakeholders to expand the model to facilitate EE participation in the capacity market, which it will include in a separate filing with FERC by a specific date.

• A participation model for EE (whether an independent model or in conjunction with other DER participation) should be developed.