STATE OF NEW YORK
PUBLIC SERVICE COMMISSION

CASE 18-E-0130 - In the Matter of Energy Storage Deployment Program.

ORDER ESTABLISHING UPDATED ENERGY STORAGE GOAL AND DEPLOYMENT POLICY

Issued and Effective: June 20, 2024

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LIST OF ACRONYMS

BTM	-	Behind-the-meter
BTW	-	Bridge-to-Wires
CAF	-	Capacity Accreditation Factors
CES	-	Clean Energy Standard
CLCPA	-	Climate Leadership and Community Protection Act
CRF	-	Cost Recovery Fee
CSR	-	Co-located Storage Resource
DEC	-	Department of Environmental Conservation
DER	-	Distributed Energy Resource
DPS	-	New York State Department of Public Service
EV	-	Electric Vehicle
FDNY	-	Fire Department of New York
FERC	-	Federal Energy Regulatory Commission
GHG	-	Greenhouse gas
GW	-	Gigawatt
HSR	-	Hybrid Storage Resource
ICAP	-	Installed Capacity
IRA	-	Inflation Reduction Act
ISC	-	Index Storage Credit
ISO	-	Independent System Operator
ITC	-	Investment Tax Credit
kW	-	Kilowatt
LDES	-	Long Duration Energy Storage
LIPA	-	Long Island Power Authority
LSE	-	Load Serving Entity
MW	-	Megawatt
MWh	-	Megawatt hour
NNYESP	-	Northern New York Energy Storage Project
NYGB	-	New York Green Bank
NYISO	-	New York Independent System Operator
NYPA	-	New York Power Authority
NYSERDA	-	New York State Energy Research and Development Authority
PSL	-	Public Service Law
PV	-	Photovoltaic
RCP	-	Reference Capacity Price
REAP	-	Reference Energy Arbitrage Price
REC	-	Renewable Energy Credit
RES	-	Renewable Energy Standard
RFP	-	Request for Proposals
RTE	-	Round Trip Efficiency
RTO	-	Regional Transmission Organization
SGEIS	-	Supplemental Generic Environmental Impact Statement
UDR	-	Utility Dispatch Rights
VDER	-	Value of Distributed Energy Resources

STATE OF NEW YORK
PUBLIC SERVICE COMMISSION

At a session of the Public Service Commission held in the City of Albany on June 20, 2024

COMMISSIONERS PRESENT:

Rory M. Christian, Chair
James S. Alesi
David J. Valesky
John B. Maggiore, concurring
Uchenna S. Bright
Denise M. Sheehan, recusing

CASE 18-E-0130 - In the Matter of Energy Storage Deployment Program.

ORDER ESTABLISHING UPDATED STORAGE GOAL AND DEPLOYMENT POLICY

(Issued and Effective June 20, 2024)

BY THE COMMISSION:

INTRODUCTION

New York State is committed to developing a zero-emission electric grid. Over the next five to ten years, large, planned increases in the amount of intermittent renewable generation at both the bulk and distribution level, primarily in the form of on- and off-shore wind and photovoltaic (PV) solar, will require new methods and resources to balance supply and demand, including the use of energy storage. As discussed in more detail below, energy storage technologies are a key piece of the solution to ensure the reliability of New York's electric system during this historic transition.

On December 13, 2018, the New York State Public Service Commission (Commission) issued the Order Establishing

Energy Storage Goal and Deployment Policy (Energy Storage Order). The Energy Storage Order, among other things, outlined a framework of programs intended to spur the development and deployment of 3 gigawatts (GW) of energy storage projects in New York through the creation of competitive solicitations by each of the State's investor-owned utilities.[1] Since the issuance of the Energy Storage Order, the Climate Leadership and Community Protection Act (Climate Act or CLCPA) has become law. The CLCPA requires 70 percent of New York's electricity generation to come from renewables by 2030 and 100 percent by 2040.[2] Additionally, in 2022, New York announced a new goal of 6 GW of energy storage by 2030. The enactment of the CLCPA and the new energy storage goal only further accentuate the need for increased development of energy storage in New York.

In compliance with the periodic review requirements of the Energy Storage Order, to update previous analyses, and to respond to New York's expanded 6 GW energy storage target, New York State Department of Public Service Staff (DPS or Staff) and the New York State Energy Research and Development Authority (NYSERDA) jointly filed "New York's 6 GW Energy Storage Roadmap: Policy Options for Continued Growth in Energy Storage" (Roadmap) on December 28, 2022, in this proceeding. The Roadmap makes several recommendations aimed at achieving the 6 GW goal, discussed in detail below. Broadly speaking, the Roadmap proposes general program design considerations, market rule

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[1] New York's investor-owned utilities are: Central Hudson Gas & Electric Corporation (Central Hudson), Consolidated Edison Company of New York, Inc. (Con Edison), New York State Electric & Gas Corporation (NYSEG), Niagara Mohawk Power Corporation d/b/a National Grid (National Grid), Orange and Rockland Utilities, Inc.(O&R), and Rochester Gas and Electric Corporation (R&G) (collectively, the Joint Utilities).

[2] CLCPA §66-p(2).

changes, and procurement strategies, with specific considerations for both bulk and retail/residential storage in order to meet the 6 GW target.

In the Roadmap, Staff indicates that New York will need approximately 12 GW of energy storage by 2040 to support a decarbonized and reliable electric system. The target of 6 GW by 2030 is an important steppingstone to achieve the amount of energy storage that will ultimately be needed, and makes it clear to developers that New York values investments in energy storage. Through the Commission's continued collaboration with NYSERDA, the Long Island Power Authority (LIPA), the New York Independent System Operator, Inc. (NYISO), the New York Power Authority (NYPA), the New York Green Bank (NYGB), the New York State Department of Environmental Conservation (DEC), New York's investor-owned utilities, and other stakeholders, New York is poised to effectively transition to an emissions-free energy future.

By this Order, the Commission adopts an updated statewide deployment goal of 6 GW of energy storage resources by 2030, with an interim goal of 1.5 GW by 2025. As further discussed below, with consideration for the numerous stakeholder comments, the Commission adopts many of the Staff recommendations from the Roadmap. The successful implementation of the programs and recommendations contained herein will move the State closer to reaching its climate goals.[3]

[3] Codified in the Environmental Conservation Law (ECL), the CLCPA established the target of reducing greenhouse gas emissions 40 percent by 2030 and 85 percent by 2050, compared to 1990 levels. ECL §75-0107.

BACKGROUND

Enacted in 2017, Public Service Law (PSL) Section 74 required the Commission to establish a statewide energy storage goal for 2030 alongside a deployment policy to support this goal. In response, DPS Staff and NYSERDA filed the "New York State Energy Storage Roadmap and DPS/NYSERDA Recommendations" (2018 Roadmap) on June 21, 2018, in this proceeding. The 2018 Roadmap made several recommendations for Commission consideration that were intended to help spur the growth of the energy storage market in New York. Those recommendations focused around seven areas: (1) retail rate actions and utility programs; (2) utility roles and business models; (3) direct procurement; (4) market acceleration incentives; (5) soft-cost reductions; (6) clean peak actions; and (7) wholesale market actions. The Energy Storage Order adopted many of the recommendations specified in the 2018 Roadmap.

In the years since the Commission issued the Energy Storage Order, there has been a tremendous effort to effectuate the ambitious energy storage deployment, coordination, and market rule changes needed to successfully build out the robust storage network that is crucial to New York's energy transition. Energy storage procurement programs include a combination of NYSERDA market acceleration incentives and utility dispatch rights (UDR) contract solicitations.

The Energy Storage Order directed NYSERDA to implement an Energy Storage Market Acceleration Bridge Incentive (Bridge Incentive) using uncommitted ratepayer funds capped at $310 million.[4] The purpose of the Bridge Incentive is to provide revenue certainty for a predetermined timeframe, by providing a fixed, upfront incentive rate in dollars per kilowatt hour (kWh)

[4] Energy Storage Order, p. 65.

of energy storage capacity during the nascent stage of energy storage development, to make projects economically viable. As the energy storage market matures and incentives are no longer required, the level of support declines.

The Energy Storage Order also directed the Joint Utilities to issue a Request for Proposals (RFP) in 2019, and subsequent RFPs as-needed on an annual basis, to competitively procure dispatch rights for bulk-level energy storage projects.[5] The selection of projects is intended to address the local needs of the area in which the projects are located, including local reliability needs, load relief, environmental benefits through the reduction of use of peaking plant units and associated emissions, and wholesale market services such as Frequency Regulation, Spinning Reserves, Energy, and Capacity.[6] The Commission directed the Joint Utilities to procure a total of 350 megawatts (MW) of energy storage projects statewide, broken down into utility-specific goals with 300 MW targeted for Con Edison and 10 MW for each of the other five investor-owned utilities.[7] The Energy Storage Order required any projects procured in the RFP to be in-service by December 31, 2022, with a seven-year maximum dispatch rights contract.[8] Subsequent petitions and orders modified the in-service date of contracted projects to December 31, 2028, and increased the maximum dispatch rights contract term length to fifteen years for any future solicitation rounds.[9]

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[5] Energy Storage Order, p. 53.

[6] Energy Storage Order, p. 54.

[7] Energy Storage Order, p. 55.

[8] Energy Storage Order, p. 54.

[9] Case 18-E-0130, Order Directing Further Modifications to Energy Storage Solicitations (issued March 26, 2023) (2023 Modification Order).

In addition to direct storage procurement strategies, the Commission also encouraged actions in the wholesale market to facilitate the integration of storage onto New York's bulk power system.[10] These actions included eliminating the application of buyer-side mitigation rules for public policy resources, including energy storage resources, and development and deployment of a distributed energy resource (DER) aggregation model. Since the issuance of the Energy Storage Order, the NYISO has implemented tariff revisions filed with the Federal Energy Regulatory Commission (FERC) to eliminate buyer-side mitigation for energy storage and other public policy resources, as well as launched its DER Participation Model.[11]

In parallel to the actions taken at the NYISO, Staff has lead the development of distribution and wholesale market coordination protocols for DERs by way of the Market Design and Integration Working Group.[12] The working group efforts will help define the clear delineation and establishment of coordination procedures for the dispatch of DERs, including energy storage resources, which is critical to ensuring both the reliability of the electric system and to maximize the benefits and services that energy storage can provide.

Thereafter, on December 28, 2022, DPS and NYSERDA jointly filed the Roadmap, which recommends updates to the programs established in the Energy Storage Order and examines how to best achieve the increased energy storage goal. The

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[10] Energy Storage Order, p. 94.

[11] On May 10, 2022, FERC issued an Order accepting NYISO's tariff revisions related to the elimination of buyer-side mitigation, New York Independent System Operator, Inc., 179 FERC ¶ 61,102.

On April 15, 2024, FERC issued an Order accepting NYISO's tariff revisions related to DER Participation, New York Independent System Operator, Inc., 187 FERC ¶ 61,022.

[12] Energy Storage Order, pp. 102-103.

Roadmap looks at necessary market reforms, procurement mechanisms, research and development needs for long duration storage, and optimal approaches to energy storage deployment in addition to summarizing progress made since the issuance of the Energy Storage Order. The Roadmap also analyzes the current market for energy storage in New York State, thereby serving as the basis for the Commission's triennial review of storage markets, policies and programs as required in the Energy Storage Order.[13]

The analysis used to inform the recommendations contained within the Roadmap shows a large need for energy storage in the future, with approximately 12 GWs required by 2040 and more than 17 GWs by 2050. The Roadmap concludes that updating the current 3 GW goal to 6 GW is necessary to ensure that the pace of development for energy storage is sufficient to meet the State's future energy needs.

On March 14, 2024, DPS and NYSERDA filed an update to the Roadmap. The update accounts for increased costs related to inflation that were not present at the time the Roadmap was filed in 2022.

NOTICE OF PROPOSED RULE MAKING

Pursuant to the State Administrative Procedure Act (SAPA) §202(1), a Notice of Proposed Rulemaking (Notice) was initially published in the State Register on January 18, 2023 [SAPA No. 18-E-0130SP13]. The time for submission of comments pursuant to the Notice expired on March 20, 2023. Moreover, in the Secretary's Notice Announcing Webinars and Soliciting Comments, issued on February 6, 2023, stakeholders were invited to submit written comments by March 20, 2023, and reply comments by April 3, 2023.

[13] Energy Storage Order, p. 12.

A Notice of Revised Rulemaking (Revised Notice) was published in the State Register on April 3, 2024 [SAPA No. 18-E-0130SP13]. The time for submission of comments pursuant to the Revised Notice expired on May 20, 2024.

In response to the Notice, the Secretary's Notice, and the Revised Notice, numerous comments and reply comments were filed by organizations and individuals. A complete summary of these comments is included in the Appendices, and responses to specific comments are addressed in the relevant sections of the discussion below.

LEGAL AUTHORITY

The Commission has broad jurisdiction, power, and duties over the "[m]anufacture, conveying, transportation, sale, or distribution of ... electricity ...." Furthermore, PSL §5(2) instructs the Commission "[t]o encourage all persons and corporations subject to its jurisdiction to formulate and carry out long-range programs ... with economy, efficiency, and care for the public safety, the preservation of environmental values and the conservation of natural resources." The Commission's supervision of electric corporations includes the responsibility to ensure that all charges made by such corporation for any service rendered shall be just and reasonable. Public Service Law §66 empowers the Commission to "[p]rescribe from time to time the efficiency of the electric supply system." The Commission may exercise this broad authority to direct regulatory standards to execute the provisions contained in the PSL. Additionally, the Commission has the authority to direct the treatment of DERs by electric corporations.

Pursuant to PSL §74, the Commission is required, by December 31, 2018, to establish, in consultation with NYSERDA and LIPA, a statewide energy storage goal for 2030, and a deployment policy to support that goal. As prescribed therein,

the energy storage deployment policy shall address the following:

1) avoided or deferred costs associated with transmission, distribution, or generation capacity;
2) minimization of peak load in constrained areas;
3) systems that are connected to customer facilities and systems that are directly connected to transmission and distribution facilities;
4) cost-effectiveness;
5) the integration of variable-output energy resources;
6) reducing GHG emissions;
7) reducing demand for peak electrical generation;
8) improving the reliable operation of the electrical transmission or distribution systems; and
9) any other issues deemed appropriate.

The Commission is also required to submit annual reports on the achievements and effectiveness of the policy to the Governor, the Temporary President of the Senate, and the Speaker of the Assembly.[14] The actions directed by this Order are within the Commission's regulatory authority indicated above, and fulfill the requirement that the Commission establish a statewide energy storage goal and deployment policy.

STATE ENVIRONMENTAL QUALITY REVIEW ACT

On September 15, 2023, in compliance with the State Environmental Quality Review Act (SEQRA), the Commission accepted, as complete, a Draft Supplemental Generic Environmental Impact Statement (SGEIS) which analyzed the possible environmental impacts related to potential actions

[14] PSL §74(4).

recommended in the Roadmap.[15] A Notice of Completion of the Draft SGEIS was issued by the Secretary on September 15, 2023, the Notice announced that comments on the Draft SGEIS will be accepted until October 27, 2023. Additionally, a Notice was posted in the Environmental Notice Bulletin (ENB) on October 4, 2023. Two parties submitted comments in support of the Draft SGEIS and suggested the Commission consider additional topics in the Final SGEIS. The Final SGEIS expanded upon, and responded to, the topics recommended by the commenters. The Commission accepted the Final SGEIS as complete on December 14, 2023. A Notice of Completion of the Final SGEIS was posted in the ENB on December 27, 2023.

The Commission has considered the information in the Final SGEIS with respect to the decisions made in this Order, and hereby adopts the SEQRA Findings Statement, attached to this Order as Appendix C, prepared in accordance with Article 8 of the Environmental Conservation Law and 6 NYCRR Part 617.

TRIENNIAL REVIEW

The Commission conducts this triennial review to help provide certainty to market participants, as directed in the Energy Storage Order. Based on this review, and the recommendations in the Roadmap, the Commission expands the energy storage goal and policies supporting that goal, as discussed below.

Current Progress and Market Overview

It has been more than five years since the Energy Storage Order was issued. Since that time, New York has made

[15] Case 18-E-0130, Order Accepting Draft Supplemental Generic Environmental Impact Statement as Complete (issued September 15, 2023).

significant strides towards achieving its energy storage targets. The Bridge Incentive, which was created in the Energy Storage Order with the goal of providing revenue certainty to the energy storage market for a defined period and deployment level, accounts for 811 MW of the total energy storage contracted, with the rest coming from a variety of sources including the utility bulk storage dispatch rights procurement process and projects that resulted from the Renewable Energy Standard (RES).

Today there are more than 40 GWs of energy storage projects that are in either wholesale or distribution interconnection queues in New York. Over 38 GWs of these proposed projects seek to interconnect into the bulk power system. Although it is possible that many of these proposed projects will not progress to the construction and operation stage, the large number of projects that developers are seeking to construct signals that New York has established itself as a place where energy storage is highly valued and desired.

The Energy Storage Order established numerous programs, as discussed above, including the Bridge Incentive and RFP process for UDR contracts. Each program came with its share of successes and shortcomings. As of April 24, 2024, the Bridge Incentive has procured 400 MW of bulk storage projects. Revenue certainty on the part of developers remains a critical prerequisite for bulk storage projects to come to fruition. Through this Order, the Commission aims to maintain this certainty in the face of challenges such as supply chain issues and changing market forces.

On the retail side, the Bridge Incentive proved successful with 320 MW procured on the distribution system

statewide using a declining block structure.[16] Even with this success, there remains room for improvement by providing longer-term certainty for funding allotments and block incentive levels, as discussed in the procurement section below.

The Long Island Residential Incentive is a pilot residential energy storage incentive program administered by NYSERDA.[17] This program is intended to spur the deployment of solar PV coupled with energy storage for use in the LIPA's Dynamic Load Management (DLM) program. In addition to the benefits related to load management, the residential energy storage incentive provides direct resiliency benefits for the household during blackout events. After two blocks of incentives, a total of 1,125 residences on Long Island installed 25.3 megawatt hours (MWh) of energy storage projects.[18] Though small on an individual level, continued residential adoption of energy storage on Long Island and all areas of New York will undoubtedly improve resilience for those homes and the grid in general.

LIPA has also been in the process of procuring bulk storage projects. It currently has 10 MW of 8-hour duration battery storage at two installations on the South Fork of Long Island.[19] In addition, LIPA has an active bulk energy storage

[16] Roadmap, p. 14.

[17] NYSERDA, Incentives for Long Island Residents, available at: https://www.nyserda.ny.gov/All-Programs/Energy-Storage-Program/Energy-Storage-for-Your-Home/Incentives-for-Long-Island-Residents.

[18] Roadmap, p. 15.

[19] LIPA, 2023 Integrated Resource Plan, IRP Summary Guide, available at: https://www.lipower.org/irp/.

solicitation for at least 175 MW that was issued in 2021.[20] Currently, contract negotiations are nearing the final stages for three projects (79 MW at Kings Substation, 50 MW at Shoreham Substation, and 50 MW at West Babylon Substation) totaling 179 MW of 4-hour duration energy storage capability. LIPA board consideration of the final contracts is expected in June 2024 for the Kings project, November or December 2024 for the Shoreham project, and March 2025 for the West Babylon project.[21]

As discussed above, the UDR contract procurement process has been refined in order to better attract competitive bids from developers, through subsequent Commission actions, resulting in more contracted energy storage MWs and ultimately built projects.[22] Over time, as the market matures and projects can expect predictable market revenues, the cost of bids from developers will likely decrease, increasing the chances of a successful dispatch rights contract. The dispatch rights contract framework allows for both new bulk-level energy storage projects to be deployed in a timelier manner than otherwise would happen, as well as gives the utility hands-on experience in operating and dispatching the energy storage resource.

The RES established the requirement that NYSERDA administer annual solicitations that allow for the pairing of energy storage resources with large-scale renewable generation

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[20] PSEG Long Island, 2021 Bulk Energy Storage RFP, available at: https://www.psegliny.com/aboutpseglongisland/proposalsandbids/2021bulkenergystoragerfp.

[21] LIPA Board Meeting Presentation, Briefing on Energy Storage RFP, May 22, 2024, available at: https://www.lipower.org/wp-content/uploads/2024/05/4.-Briefing-on-Energy-Storage-RFP-1.pdf.

[22] See Case 18-E-0130, Order Directing Modifications to Energy Storage Solicitations (issued April 16, 2021) (2021 Modification Order); see also 2023 Modification Order.

to increase the value of the proposed project.[23] As of April 1, 2024, the RES awarded a total of 20 MW of energy storage projects, primarily solar and energy storage facilities. The current solicitation seeks proposals for energy storage and offshore wind facilities to help integrate the thousands of megawatts of offshore wind generation that is expected to come online over the next fifteen years.[24]

A New York-sponsored investment fund, the NYGB works to accelerate the deployment of clean energy in the State by working with the private sector to transform energy financing.[25] Through this collaborative effort, the NYGB has invested $25 million of its committed $50 million to support energy storage projects statewide as of December 31, 2023.[26] The primary finance method utilized by developers so far has been a project loan where a lender relies on the revenues of the individual project as the means of repayment and security of the loan. The NYGB offers alternative finance methods depending on which stage of development a storage project is in. Products offered by the NYGB include equipment financing and interconnection loans, tax equity and incentive bridge loans, and senior term loans. Combined, these tools help to spur the energy storage market in New York. This alternative strategy recognizes that a vetted creditworthy developer, with a long-term contracted project that

[23] Case 15-E-0302, et al., Large-Scale Renewable Program and a Clean Energy Standard, Order Adopting a Clean Energy Standard (issued August 1, 2016) (CES Framework Order).

[24] NYSERDA, Solicitations for Large-Scale Renewables, available at: https://www.nyserda.ny.gov/All-Programs/Large-Scale-Renewables/RES-Tier-One-Eligibility/Solicitations-for-Long-term-Contracts.

[25] New York Green Bank, available at: https://greenbank.ny.gov/.

[26] Case 13-M-0412, NY Green Bank, Metrics, Reporting & Evaluation Quarterly Report No. 38 (filed February 29, 2024).

is operational, presents less risk than a proposed project early in its development that will rely primarily on merchant revenues in a market that is not yet well tested.

The FERC issued Order No. 841 in February 2018, requiring Independent System Operators (ISOs) and Regional Transmission Organizations (RTOs) to revise their tariffs to enable energy storage resources to participate in the wholesale markets.[27] Later on, as part of the NYISO's effort to reform capacity accreditation values for all resources, FERC approved its capacity accreditation changes which determine the capacity value of 4-hour energy storage resources and other 4-hour duration limited resources based on their marginal capacity contribution. This new capacity accreditation methodology was implemented starting in May 2024. Each resource is assigned its applicable Capacity Accreditation Factor based on its resource classification.

In addition to the actions the NYISO has taken to comply with Order No. 841, the NYISO has also implemented a co-located storage resource (CSR) participation model that allows an energy storage resource to pair with an intermittent solar or wind resource behind a single point of interconnection.[28] Each of the resources operate and are compensated under their respective participation model, but both are allowed to proceed in the interconnection process under a single interconnection request, which saves interconnection costs. The CSR participation model allows storage and renewables to efficiently

[27] Electric Storage Participation in Markets Operated by Regional Transmission Organizations and Independent System Operators, Order No. 841, 162 FERC ¶ 61,127 (2018).

[28] FERC Docket No. ER21-1001, New York Independent System Operator, Inc., Proposed Tariff Revisions to Implement Co-located Storage Resources (filed January 29, 2021).

interconnect and maximizes the benefits of both energy storage resources and renewable generation effectively.

Building off the CSR model, the NYISO developed a hybrid storage resource (HSR) model in its stakeholder process.[29] The HSR model design is intended to allow an energy storage resource and intermittent power resource to participate in the NYISO markets under a single point identifier, bid, schedule, and settlement and effectively act as one single resource. Like the CSR model, the HSR model will allow this combination of resources to share a single interconnection request.

The NYISO further advanced the integration of energy storage resources into the wholesale market through FERC's acceptance of its DER participation model in January 2020. This model enables DER aggregations between 100 kW and 20 MW, including aggregations that contain energy storage, to participate in the market as one resource. The model also specifies that each individual resource within a DER aggregation must be a minimum of 10 kW. FERC also issued Order No. 2222 in 2020, which requires all ISOs and RTOs to revise their tariffs to allow for the full participation of DERs in the wholesale market to the maximum extent of their capabilities.[30] As a result of FERC Order No. 2222, the NYISO was required to revise its already accepted DER model in order to fully comply with FERC's directives. Deployment of the NYISO's DER model occurred

[29] NYISO, Co-located Storage Resource Model Updates (March 20, 2024), available at: https://www.nyiso.com/documents/20142/43713211/4%20Co-located%20Storage%20Resource%20Model%20Updates%20032724%20mc.pdf/f6247348-5c8d-8f90-9691-9aa2ea013ad4.

[30] Participation of Distributed Energy Resource Aggregations in Markets Operated by Regional Transmission Organizations and Independent System Operators, Order No. 2222, 172 FERC ¶ 61,247 (2020).

in April 2024. Full implementation of an aggregation model compliant with Order No. 2222 is estimated in 2026.

On the distribution side of the electric system, the Commission issued the VDER Order in March 2017.[31] The VDER Order created a new compensation structure for DERs 5 MWs or smaller, including energy storage, termed the Value Stack. The Value Stack is comprised of several components which use price and locational signals to incent desired operation of the resource. These components include Energy and Capacity Values based on NYISO pricing, Demand Reduction Value, Environmental Value, and Locational System Relief Value. A Market Transition Credit and Community Credit are also available for Community Distributed Generation (CDG) projects, although at present each utility has fully utilized their respective credits. Energy storage projects benefit from the VDER Order's compensation structure by incenting a shift in their output to higher priced hours.

In August 2022, President Biden signed the Inflation Reduction Act of 2022 (Inflation Reduction Act) into law. Embedded within this wide-ranging piece of legislation is the modification of the existing investment tax credit (ITC) that will help drive development of stand-alone energy storage projects.[32] Previously, only energy storage projects paired with solar were eligible to receive the credit. Now, qualified

[31] Case 15-E-0751, In the Matter of the Value of Distributed Energy Resources, Order on Net Energy Metering Transition, Phase One of Value of Distributed Energy Resources, and related Matters (issued March 9, 2017) (VDER Order).

[32] "The Investment Tax Credit is a tax credit that reduces the federal income tax liability for a percentage of the cost of a qualified system that is installed during the tax year." Department of Energy, Overview of Inflation Reduction Act Incentives for Federal Decarbonization, available at: https://www.energy.gov/femp/overview-inflation-reduction-act-incentives-federal-decarbonization.

stand-alone residential and commercial storage systems are eligible for the ITC, which is equal to 30 percent of the cost of the installed equipment for the energy storage project. Projects are eligible to receive more than the 30 percent credit under certain circumstances, such as if the project is located near a brownfield site or if the energy storage project is paired with renewable generation and benefits a low-income community or Native American territory. Further guidance from the Department of Treasury is forthcoming regarding the specific use cases where a credit of more than 30 percent is available, which in turn will inform developer investment decisions in New York.

NYPA is responsible for generating and transmitting zero-carbon power to several commercial, industrial, municipal, and governmental customers. To support this effort, NYPA built a 20 MW energy storage project in Chateaugay, New York.[33] The Northern New York Energy Storage Project (NNYESP) takes advantage of the wind energy in the North Country and St. Lawrence hydropower plant and has the capacity to power approximately 3,000 homes. The NNYESP further demonstrates how storage can help maximize the integration of renewable generation into New York's grid. The project became operational in summer 2023.

The Roadmap recognizes the value and importance of long-duration energy storage (LDES) in helping maintain a reliable system. To help spur the development and demonstrate the efficacy of LDES, NYSERDA has made over $33 million

[33] Governor Hochul Announces New York's First State-Owned Utility-Scale Energy Storage System Now Operating in North Country, August 25, 2023, available at: https://www.governor.ny.gov/news/governor-hochul-announces-new-yorks-first-state-owned-utility-scale-energy-storage-system-now.

available in funding for LDES demonstration projects, through its Innovation Program. Currently, four projects that are aimed at renewable integration and emission reductions have received funding.[34] NYSERDA conducted an additional solicitation to contract with LDES projects with the aim to highlight cost, performance, siting, and renewable integration difficulties.[35]

Role of Energy Storage

The development, installation, and operation of energy storage in New York is imperative to meet the emission reduction targets outlined in the CLCPA, and codified in the ECL.[36] As the State's electric grid transitions from one historically dominated by large, fossil-fueled baseload generation to one comprised of DERs and intermittent renewable generation, energy storage is one of the key ingredients to ensure this transition takes place in a reliable manner.

Currently, the peak demand for electricity in New York usually occurs in the summer months on hot and humid days, when consumers are maximizing air conditioning use. Over the next 20 years, as electric heat pumps and electric vehicles (EV) become more prevalent, this historical consumption pattern is expected to shift towards a winter peak. This shift in demand, coupled with the expected retirement of high-emitting peaking power plants downstate, further highlights the need and role for

[34] NYSERDA, Nearly $15 Million Awarded to Four Demonstration Projects to Advance Long Energy Duration Energy Storage Technology Solutions, August 17, 2023, available at: https://www.nyserda.ny.gov/About/Newsroom/2023-Announcements/2023-08-17-Governor-Hochul-Announces-Nearly-15-Million-in-Long-Duration-Energy-Storage.

[35] NYSERDA Long Duration Energy Storage Technology and Product Development, Product Opportunity notice 5472, available at: https://portal.nyserda.ny.gov/servlet/servlet.FileDownload?file=00P8z0000034APIEA2.

[36] ECL §75-0107.

energy storage.[37] With the retirement of peakers, energy storage will help meet future peak demand statewide, regardless of the season, especially in load pockets in New York City and Long Island.

The transition of the fleet of generation in New York, from one that can be dispatched for long durations to one in which there are large quantities of intermittent renewable generation, requires solutions, such as energy storage, to fill in the generation gaps. Short-duration energy storage can help to manage this intermittency on an hourly basis, as well as store renewable generation and inject it back onto the grid during high demand and priced hours, or the ability of LDES to shift renewable generation across days, weeks, or seasons.

Analysis completed for the Climate Action Council projects that over 60 GWs of solar capacity, 16-19 GWs of offshore wind, and 16-17 GWs of land-based wind could be added onto New York's electric system by 2050.[38] These large, projected increases in renewable generation highlight the need for energy storage deployment in order to keep pace. The analysis completed for the Roadmap indicates that 12 GWs of short-duration energy storage by 2040 and more than 17 GWs by 2050 are needed to decarbonize the grid in a cost effective and reliable way. This projected amount of installed energy storage is a multi-fold increase compared to the current amount of energy storage in the state; as such, a more aggressive goal of

[37] In 2019, DEC established the "Peaker Rule" which requires owners or operators of simple cycle and regenerative combustion turbines that are electric generating units with a nameplate capacity of 15 MW or greater (peaking plants) and that inject power into the transmission or distribution systems to comply with emission limits by either retrofitting controls or shutting down. Six NYCRR Part 227-3.

[38] New York Climate Scoping Plan, Chapter 13, p. 221, available at: https://climate.ny.gov/resources/scoping-plan/.

6 GW by 2030, double the current mandate of 3 GW, is not only prudent but necessary to ensure that sufficient resources are online and available by 2030.

It remains the case that the pattern of energy storage deployment in New York will vary by region, duration, and over time. Downstate, in New York City and Long Island, energy storage will help to integrate offshore wind onto the grid and help solve local reliability needs as decades-old peaking plants retire. In upstate New York, land is cheaper and more plentiful for land-based wind turbine development which will drive the need for energy storage. Through 2030, most energy storage is expected to be installed downstate, with increasing amounts located upstate over time; more than half of the projected needed 17.2 GW of energy storage is expected to be sited upstate by 2050. Over time, the importance of LDES will grow as the ability to discharge stored energy across all peak hours is necessary to help maintain reliability, with the Roadmap's analysis indicating that over 70 percent of energy storage projects will be located in New York City and Long Island.

The size and scope of energy storage projects, associated development lead time, and interconnection complexity vary depending on whether the project is residential, retail, or bulk. Each of these market segments exist at different scales and provide unique benefits to New Yorkers. Residential energy storage is usually small, at an average of less than 10 kW, and can be developed and installed quickly, giving the customer added resiliency during black outs and the ability to participate in utility demand response programs. Retail projects, sized under 5 MWs, have a considerably longer development time, averaging three years; despite the long development time, attrition in retail projects is low. Bulk projects, considered 5 MWs and larger, are expected to make up

the most installations in the state on a capacity basis, highlighting the need for this critical resource, with development and installation timelines of bulk projects taking up to six years; these bulk storage facilities can replace peaking plants and integrate a large amount of renewable generation.

Storage Deployment Barriers

New York made it clear in the CLCPA that encouraging the development and installation of energy storage is paramount to transiting the electric system from one primarily fueled by fossil fuels to one powered by zero-emission resources. In furtherance of the policy goals in the CLCPA, progress towards storage deployment in New York is underway, with a number of energy storage projects coming online and many more in the interconnection queue. Despite this progress, there are certain barriers remaining that prevent energy storage from reaching its full potential.

One barrier that has hindered the timely development of energy storage resources is the rise in supply costs for lithium-ion batteries since 2022. The materials that are used in battery manufacturing are in high demand as battery use in all facets of society has proliferated, such as increased battery demand for EVs. Supply and demand dynamics are impacting the ease and speed with which energy storage developers can move energy storage projects from the design phase to the construction phase. While New York cannot control all the factors that go into construction costs, by remaining technology neutral in energy storage deployment and funding, the State can encourage a variety of technology types to compete for project incentive awards, which may potentially drive down costs.

Currently, the revenues available to energy storage resources in the wholesale electricity markets are not adequate for merchant storage resources to be economic.[39] The continued replacement of retired fossil generation with intermittent, renewable energy on the bulk power system may lead to periods of low or even negative prices, giving energy storage an opportunity to charge cheaply and then discharge into the grid later when energy prices are higher. On the capacity market side, the final values for capacity accreditation will impact how much capacity revenue an energy storage resource can expect to receive. The NYISO's recent implementation of an Operating Reserve requirement in New York City provides energy storage resources with a locationally specific price signal and provides an opportunity for additional market revenue that energy storage resources are well situated to compete for. The NYISO is currently evaluating the need for other geographic specific Operating Reserve requirements for load pockets in the state. The Operating Reserve requirements may provide further wholesale market revenue opportunities to energy storage resources.

Obtaining adequate financing terms for energy storage projects remains a challenge for developers and impacts the viability of those projects. The uncertainty of revenue available under wholesale and distribution tariffs makes incentives and funding programs critical to getting energy storage projects from concept to reality. Over time, as revenue predictions become more accurate due to historical performance and availability of data, the level of incentives required for energy storage resources should decrease.

Based on this triennial review, the Commission finds that while we have made progress, there is a significant amount

[39] Merchant storage resources are those that are developed without receiving subsidies or other outside support.

of work before us. The Roadmap has provided us with many options to consider that will help us to build upon our success and to achieve our clean energy targets. We address those options and next steps forward below.

DISCUSSION

Bulk Energy Storage Procurement Program Design

As the Roadmap notes, bulk scale energy storage is expected to play the largest role in terms of nameplate capacity in New York achieving the 6 GW by 2030 goal. The Roadmap describes six potential paths towards achieving 3 GWs of bulk level energy storage needed by 2030. These six options are summarized below.

Bulk Program Design Summary

Upfront Rebate/Standard Offer Incentive: The Upfront Rebate/Standard Offer Incentive would offer payments to developers on a per kW or kWh of installed capacity basis. Projects would receive a contract for a fixed dollar amount over the contract term length.

Index Storage Credit: The Index Storage Credit (ISC) would function similarly to the Index Renewable Energy Credit (REC) approach used in the large-scale renewable procurements.[40] Storage developers would bid in a "Strike Price" which reflects the developer's assumption of revenue for the energy storage project and compare that to a "Reference Price" which would be calculated based on price indices representing expected revenue from the NYISO's Energy and Capacity Markets. The ISC would be

[40] Case 15-E-0302, supra, Order Adopting a Clean Energy Standard (CES Order) (issued August 1, 2016). More information on RECs can be found at: NYSERDA, FAQs for Load Serving Entities, available at: https://www.nyserda.ny.gov/All-Programs/Clean-Energy-Standard/LSE-Obligations/FAQs-for-Load-Serving-Entities.

equal to the Strike Price minus the Reference Price. If the Strike Price exceeds the Reference Price, then NYSERDA would pay out the difference to the developer. On the other hand, if the Strike Price was lower than the Reference Price, the project would owe NYSERDA a payment.

Preset Hourly Revenue Support/"Clean Peak Credit": This option would give energy storage resources the opportunity to receive additional compensation for discharging during predefined peak hours, determined by NYSERDA, to incent operation during the most critical times for the system.

Utility Ownership with Traditional Market Participation: In this option, the utility would seek contracts for market-based projects where the utility would solicit developers to build the energy storage resource to the utility's requirements, and then transfer the project to the utility to own and operate either immediately or after a period specified in the contract.

Utility Dispatch Rights Contract: This would continue the existing framework approved in the Energy Storage Order for the utilities to enter into contracts for operational control of an energy storage resource developed and owned by a third party.[41]

Utility Ownership for Transmission and Distribution Services: This option recognizes that certain revenue streams, including transmission and distribution services, are not currently available to energy storage resources. This option would give the utilities an opportunity to study their systems and identify where specific transmission and distribution services are needed, with the end result being the ability to develop and provide energy storage resources in appropriately targeted areas.

[41] Energy Storage Order, p. 53.

Roadmap Recommendations

In determining which of the above program designs offers the best path forward, the Roadmap examined implementation feasibility, development effectiveness, efficiency, and compatibility/acceptability. Based on these criteria, the Roadmap recommends pursuing a program design based on the ISC mechanism to procure 3,000 MWs of bulk energy storage through three procurement solicitations, targeting 1,000 MWs in each solicitation.[42]

The proposed ISC mechanism is similar in structure to the already-approved and in-use Index REC structure where NYSERDA purchases RECs created by the generation of each MWh of clean energy by renewable resources. For the proposed ISC program, an ISC would be generated for each MWh of energy storage capacity that is operational and available on a given day (i.e., not during an outage or during maintenance) and not how much the energy storage resource discharges, to incent prudent injections to the grid when needed. The relationship between the Strike Price and Reference Price, as described above, would ensure that energy storage owners remain exposed to market prices and maintain an incentive to inject energy when wholesale prices are high.

Based on historical and previous program data, the Roadmap recommends a contract term of 15 years. The Roadmap reasons that this length of time is long enough to reduce financial risks for the energy storage resource and short enough that the contract would not extend beyond the useful life of the asset.

The Roadmap recommends that any electric, chemical, mechanical, or thermal-electric energy storage technology be

[42] Roadmap, p. 49.

eligible for the bulk program. Additionally, the Roadmap recommends that the Commission require projects to electrically interconnect into New York's transmission and distribution systems.

The Roadmap suggests giving NYSERDA flexibility to determine specific duration requirements for bulk solicitations. In the near term, the solicitations are expected to attract energy storage resources with durations ranging from 4 to 8 hours, with the Roadmap recognizing the value that energy storage with an 8-hour or more duration adds in maintaining reliability and integrating large amounts of renewable energy in later years. Giving flexibility for NYSERDA to determine if specific durations are necessary in a bulk procurement would help drive the investment of the type of required energy storage resource when they are needed.

The Roadmap recommends against applying a payment cap in the ISC program. A payment cap establishes a maximum payment level that can be paid from a project to NYSERDA or vice versa. The Roadmap describes the benefits of the ISC design (e.g., being able to avoid incentive payments when unnecessary and provide ratepayer benefits by reducing financing costs for projects) and therefore a payment cap would interfere with this mechanism.

Similar to NYSERDA's onshore and offshore large-scale renewable procurement program, the Roadmap recommends allowing a one-time inflation adjustment for pre-determined cost indices in the time between the project's bid and when it commences construction. This inflation adjustment would reduce the risk that inflation and cost uncertainties have on bulk energy storage projects that have multi-year development timelines.

The Roadmap recommends that the NYISO zonal locational based marginal pricing (LBMP) day-ahead energy market pricing be

used for the energy price component of the Reference Price calculation, consistent with the Index REC structure, as day-ahead pricing is more stable and easier to implement than real-time pricing.

Energy storage is uniquely situated in that it is not solely a generation resource, as it needs to charge by using grid or other site-generated power. As such, an energy storage resource's ability to earn energy revenue derives from its ability to capitalize on arbitrage opportunities by charging during low energy price periods and discharging when prices are high. The Roadmap recognizes this and recommends establishing a Reference Energy Arbitrage Price (REAP) that calculates the arbitrage opportunity using the difference between the prices in the top and bottom 4 hours in the day-ahead market for a 4-hour duration resource and in the same manner for longer duration resources (e.g., top and bottom 8 hours for an 8-hour energy storage resource). The use of a REAP gives flexibility to allow for more hours for longer duration resources; the average of this daily calculation would apply over the calendar month. The Roadmap notes the presence of round-trip efficiency losses but recommends excluding these losses from the REAP due to the additional complexity of determining roundtrip losses that vary by project and the fact that this incents the most efficient energy storage technology to participate in the bulk procurement program.

The other component of the Reference Price is the Reference Capacity Price (RCP). The Roadmap recommends utilizing the NYISO locational-specific Installed Capacity (ICAP) spot auction prices to calculate the RCP due to its ease of implementation and high level of participation in the auction which results in an optimal hedging structure. The Roadmap further recommends calculating the RCP by adjusting the monthly

spot NYISO ICAP auction locality price according to the relevant Capacity Accreditation Factor for each duration length of energy storage. The Roadmap contemplates that NYSERDA would publish the final RCP formula that will be used in the solicitations after the NYISO's accreditation process concludes. To balance administrative efforts with maintaining sufficient value for selected bulk energy storage projects, the Roadmap recommends monthly settlements, consistent with previous program designs. The Roadmap also recommends that ISC contracts be designed in a way that allows them to be modified if future wholesale market rule changes alter the available revenue streams to energy storage resources.

The Roadmap recommends that NYSERDA evaluate both price and non-price factors when evaluating bulk energy storage solicitation bids. Price factors would include ISC costs based on zonal energy and spot capacity price forecasts, while non-price factors could include the viability of a project, economic and social benefits, or ability of the project to displace peaking plants. The Roadmap contemplates that NYSERDA would describe such qualitative evaluation criteria in each solicitation. The Roadmap also recommends that the ISC procurements apply a maximum bid price evaluation metric, in the form of a maximum levelized ISC cost, to help protect ratepayers and help in the screening of bids, similar to the Clean Energy Standard (CES) large-scale renewable program procurements.

The Roadmap also recognizes the value of energy storage statewide but notes particular importance in the near-term of locating storage assets in New York City and Long Island. These densely populated areas are home to many of the oldest and highest-emitting peaking power plants in the State, presenting an opportunity for energy storage to help replace these high-pollution-emitting resources.

The most valuable attribute for energy storage resources on the electric system is the ability to quickly provide energy to the grid when needed, including for periods over multiple hours. The Roadmap's analysis indicates that over 4 GWs of 8-hour storage will be needed by 2035, with 70 percent of this sited in New York City and Long Island.

Lastly, the Roadmap suggests that the contract terms for bulk energy storage projects can be renegotiated if there are market rule changes that make the existing terms obsolete or unworkable.

Comments

Most stakeholders, representing various sectors including developers, trade organizations, and utilities, expressed support for adoption of the ISC mechanism. Multiple Intervenors (MI), an unincorporated association of over 55 of New York State's industrial, commercial, and institutional energy consumers, opposes the ISC and adoption of the Roadmap in general, stating the Commission needs to take a holistic look at the cost of the proposed energy storage programs and other Commission approved programs and the negative impact this has on large power consumers and businesses in New York. Alliance for Clean Energy New York (ACE NY), AES Clean Energy Development (AES), New York City (City), the investor-owned utilities, Convergent Energy and Power (Convergent Energy), Hydrostor, Key Capture Energy, New York Solar Energy Industry Association (NYSEIA), NY-BEST, and Rise Light & Power all request that the Commission approve the ISC mechanism. New York City recommends that a performance metric that evaluates energy storage operations be implemented as part of the bulk procurement program, as battery performance is more important than installed MWs of energy storage capacity.

Several stakeholders including NY-BEST, ACE NY, Hydrostor, and Alsym Energy disagree with the Roadmap's recommendation to not include Round Trip Efficiency (RTE) as part of the REAP calculation, as RTE can greatly impact an energy storage resource's charging costs and is reflective of how an energy storage resource operates. NY-BEST suggests an assumed 85 percent RTE for 4-hour energy storage.

Commenters note that one of the biggest unknowns in the bulk storage solicitation process is how much of the contracted MWs will actually proceed through the development and interconnection phase and enter commercial operation. Attrition remains a large problem for bulk energy storage.[43] Noting both the need for 3,000 MWs of bulk energy storage and the historically high attrition rates of bulk energy storage projects, several commenters, including ACE NY, Key Capture Energy, and NY-BEST, recommend accounting for potential attrition as part of the solicitation process. Commenters suggest procuring more than the proposed 1,000 MWs in each of the three planned solicitations and in the event that a project is cancelled, the project's expected MW can be re-allocated to a future solicitation. The City recommends yearly assessments of attrition to ensure sufficient bulk energy storage, especially in New York City, is timely developed.

To help better gauge how likely an energy storage project is to advance from concept to development to operation, several commenters including BlueWave, Convergent Energy, ACE NY, Strategic Project Management (SPM), and NY-BEST recommend implementing maturity milestone requirements as part of the bid evaluation process. These milestones could include having the necessary permits to begin construction or making

[43] 100 MWs of bulk energy storage were withdrawn from NYSERDA's bulk energy storage program during the planning stage.

interconnection queue deposits. The idea behind maturity milestone requirements is that less project attrition occurs because projects that are more advanced in their development and have the necessary permits are more likely to continue to construction and eventual operation.

AES recommends location specific carveouts as part of the bulk procurement process to help direct development of energy storage where they are most needed.

Several commenters, including Bloom Energy, Nucor Steel, AES, Form Energy, and NineDot Energy (NineDot) recognize that long duration storage is critical to New York's clean energy transition and recommend special consideration be given to procuring sufficient amounts of these long duration energy storage resources.

Key Capture Energy comments that limiting ISCs to only days when an energy storage resource is operational may result in unwanted market behavior, and suggests that ISCs should be generated each day an energy storage resource is interconnected to the electric system.

The 15-year contract term proposed in the Roadmap for bulk resources is based on best available information for the typical useful lifespans of common energy storage technologies. Clearway Energy Group and Hydrostor recommend increasing the allowable contract length to at least 20 years or longer to reflect that different energy storage technologies have varied lifespans. Clearway Energy Group also notes that the longer contract term allows developers to amortize their costs over a longer period and in turn receive more favorable financing terms.

NY-BEST, ACE NY, the Independent Power Producers of New York (IPPNY), and Key Capture Energy agree that there should be an avenue available to alter contract terms in the event of a

major new market rule change but cautions that only long-term, sustained price changes should trigger a contract renegotiation, rather than the short-term price spikes and falls, for which the ISC is designed to take into account. Commenters state that any change of contract provisions should be structured to minimize adverse financing outcomes.

Commission Determinations

Index Storage Credit

The Commission is persuaded that the ISC mechanism is a viable path forward for the State to meet its bulk energy storage deployment goals. The ISC mechanism balances the need to provide developers with revenue certainty, so that energy storage projects progress from concept to commercial operation, while protecting ratepayers from overspending on this bulk energy storage program if developer revenues from the wholesale market are more than anticipated. The Commission therefore adopts the ISC mechanism for bulk energy storage procurements as described in the Roadmap and directs NYSERDA to conduct a minimum of three bulk energy storage procurements, to be held no less than annually, to procure 3 GW of bulk energy storage. The Commission directs NYSERDA to issue the first RFP no later than June 30, 2025. NYSERDA shall publish the final RCP formula with its bulk energy storage solicitations, using NYISO's capacity accreditation, and describe the qualitative factors it will evaluate when ranking bids.[44]

Inclusion of Round-Trip Efficiency in the Reference Energy Arbitrage Price

The Commission notes multiple parties' comments advocating for the inclusion of RTE as part of the REAP calculation. After consideration of these comments, the

[44] NYISO, Capacity Accreditation, available at: https://www.nyiso.com/accreditation.

Commission declines to adopt RTE as part of the REAP calculation. The inclusion of RTE creates added complexity as each project, depending on technology and individual operation, will have a different RTE. Instead, developers should incorporate RTE losses and associated revenue impacts as part of their Strike Price bid.

Geographic Carveouts

The Roadmap's analysis made clear, and the Commission recognizes, that different areas of New York State vary in terms of timing and quantity of energy storage. Certain regions, such as Long Island and New York City, are especially ripe for the replacement of peaker plants with energy storage resources and the associated emission reduction directly benefiting those communities. The Roadmap acknowledges the need to carve out 35 percent of program funding for regions with peaker plants in accordance with CLCPA guidelines for disadvantaged communities.[45] Therefore, we address specific geographic carveouts later in this Order where we discuss requirements for disadvantaged communities under General Program Design Considerations.

Duration Carveouts

NYSERDA and Staff's analysis in the Roadmap recognizes that longer duration energy storage resources will be needed to help replace retiring fossil-fueled generation, meet peak demand, and maintain reliability. The Roadmap estimates that over 4 GW of 8-hour energy storage will need to be deployed by 2035 and 6.8 GW by 2050. Acknowledging this need for long duration bulk energy storage in New York, and the amount of lead

[45] The CLCPA defines "disadvantaged communities" as communities that bear burdens of negative public health effects, environmental pollution, impacts of climate change, and possess certain socioeconomic criteria, or comprise high-concentrations of low- and moderate-income households. ECL §75-0101(5).

time it takes to develop these types of projects, the Commission directs NYSERDA to include in each bulk procurement a target of 20 percent of long-duration, 8-hour energy storage resources, to move New York towards installing the necessary amount of LDES by the mid-2030s. This 20 percent target is meant to send a clear signal to developers that LDES is needed in the State and to recognize the amount of time needed for these resources to proceed through the planning, development, and interconnection processes. The Commission also recognizes that, presently, LDES may not be as competitive compared to shorter duration energy storage solely based on cost, but that there are attributes and benefits of LDES that are important to New York's energy transition. Therefore, the Commission directs NYSERDA to include how it would procure and account for the additional attributes and benefits of LDES in its Implementation Plan, as discussed in more detail below.

Operational Requirements

The Roadmap contemplates only crediting ISCs on days when the energy storage resource is operational and available for dispatch. The Commission agrees with this approach. The intent of building out energy storage resources statewide is so that they are available to inject power when it makes economic sense to do so, or soak up excess renewable output. Generating ISC credits for energy storage resources on days when there is no chance for them to benefit the electric system runs counter to this goal. Projects are incented to discharge when it makes economic sense due to the Reference Price component of the ISC calculation; if an energy storage resource does not discharge when market prices are high it will lose out on that revenue and potentially be required to make a payment to NYSERDA. The Commission directs NYSERDA to adopt this operational requirement for the ISC mechanism when calculating the ISC payment.

Additionally, NYSERDA shall describe this requirement in its Implementation Plan.

Contract Term

The ISC contract term proposed in the Roadmap is 15 years. In the Roadmap, Staff and NYSERDA reason that the proposed term of 15 years is appropriate given that it matches the typical lifespan of the lithium-ion batteries frequently utilized for bulk energy storage. The Commission acknowledges that lithium-ion batteries are likely to be the most prevalent energy storage technology type at this point in time, but also recognizes the diversity of energy storage technologies that currently exist, including iron-flow batteries and compressed air energy storage, among others, as well as future technologies that do not yet exist.

Technology neutrality is one of the core principles guiding the State's energy storage deployment policy. In this vein, the Commission does not want to artificially limit contract length terms for technologies that have longer lifespans than lithium-ion batteries. Many of these non-lithium-ion technologies are geared towards achieving long duration output which, as discussed above, are critical to reliably transition New York's energy system. Therefore, the Commission directs NYSERDA to ensure that contract terms for lithium-ion batteries be allowed for terms of no more than 15 years, while contract terms for non-lithium-ion storage technologies be allowed for terms of up to 25 years.

Inflation Adjustment

Consistent with the Commission's finding in the onshore and offshore large-scale renewable energy procurement programs, the Commission adopts the Roadmap's recommendation to allow for a one-time inflation adjustment as part of the bulk energy storage program design. This one-time inflation

adjustment, between the time a project developer submits its Strike Price and the commencement of construction, gives developers an opportunity to reflect new cost realities that were not present at the time of submission of their initial Strike Price bid, such as increased material and labor costs. The long development timeframe of bulk scale energy storage resources, similar to that in the large-scale renewables program, makes this one-time inflation adjustment reasonable. The Commission directs NYSERDA to implement the one-time inflation adjustment as it implements the ISC procurement contracts. Additionally, NYSERDA shall include this requirement in its Implementation Plan.

Maturity Requirement

The Commission wants to minimize the risk of project attrition; each project that fails jeopardizes the achievement of the energy storage goal. A maturity requirement is one way to help reduce project attrition and delay of the deployment of energy storage resources. Given the importance of reducing project attrition, the Commission directs NYSERDA to include certain project maturity requirements in its bulk energy storage solicitations and in its Implementation Plan. At a minimum, the maturity requirements shall include that projects must demonstrate: (1) proof of a completed Coordinated Electric System Interconnection Review; (2) a record of making a 25 percent interconnection deposit or have a signed and executed interconnection agreement if there are no network upgrades needed; (3) possession of all non-ministerial permits; and (4) a review of the project pursuant to the State Environmental Quality Review Act, including a full environmental review if the project does not meet the criteria for a negative declaration. NYSERDA may, in consultation with DPS Staff, choose to require additional maturity milestones in later bulk energy storage

solicitations based on attrition rates from contracted projects in earlier solicitations.

Utility Dispatch Rights Request for Proposals

The Energy Storage Order established the utility bulk storage dispatch rights RFP process whereby the State's investor-owned utilities were required to conduct bulk energy storage procurements, with the goal of contracting for a minimum of 350 MWs statewide, under the framework that the cost of the contracted megawatts was less than the utility-specific bid ceiling.[46] The utility would then maintain operational control of the energy storage resource for the duration of the contract term, the maximum length of which was originally established in the Energy Storage Order. At the end of the contract term, the energy storage resource asset owner has the option to continue operating as a merchant resource in the market.[47]

The Joint Utilities state their support for the continuation of the bulk solicitation program as another tool to use to procure bulk energy storage, and notes that solicitations are currently underway. NYSERDA currently has approximately $68 million in incentive funding allocated for this program still available; the Commission directs NYSERDA to continue to use these funds for this purpose. Therefore, while today's Order approves the ISC mechanism described in the Roadmap, the Commission affirms that utilities shall continue the bulk storage dispatch rights RFP process, and that they can utilize the NYSERDA incentives for this purpose if necessary. The Commission directs Staff to continue to monitor the need to make

[46] Energy Storage Order, p. 55.

[47] Since the establishment of this paradigm, the Commission has issued two modifying Orders to alter the maximum allowable contract term length and in-service date requirements. See 2021 Modification Order and 2023 Modification Order.

any additional modifications to the RFP process based on the results of the current and future bulk storage solicitations.

Retail Energy Storage Procurement Program Design Roadmap Recommendations

The Roadmap notes the continued importance of retail energy storage as a contributor to reliability and the management of peak energy demand on the utilities' distribution networks. The region-specific, declining block incentives for retail level storage, established in the Energy Storage Order, for projects sized 5 MWs or less was successful in procuring 279 MWs of energy storage projects as of March 2024. Recognizing this success, the Roadmap recommends continuing funding for the Retail Storage Incentive and utilizing the same regional declining block structure as described in the Energy Storage Order, with the goal of procuring an additional 1,500 MWs of retail energy storage by 2030. The Roadmap recommends maintaining a high project maturity requirement to reduce attrition of contracted projects. As part of program implementation, the Roadmap recommends sizing funding blocks based on the system benefits of projects as well as the funding requirements for each region; the analysis of system benefits includes whether the project benefits disadvantaged communities and alleviates system bottlenecks. The Roadmap notes that a backlog of mature retail energy storage projects has developed since program funding ran out and recommends the regional funding block sizes reflect this reality so that these mature projects can be commissioned expeditiously.

The Roadmap recommends that NYSERDA provide stakeholders with a detailed analysis of its region-specific incentive rate and forecasts of future incentive rates. The Roadmap posits that this transparency would provide certainty into how NYSERDA calculates the incentive rate blocks, and would

allow developers to plan based on the projected future incentive blocks. Communicating any changes to the incentive blocks to developers is important to help guide investment decisions. The Roadmap further recommends that NYSERDA develop a public-facing calculator for VDER storage projects statewide, to give developers and other stakeholders more knowledge on where in New York energy storage is most valuable under the VDER standard.

Comments

Commenters are generally in agreement regarding the continuation of the region-specific declining incentive block structure, noting its popularity and success. ACE NY recommends an initial block size of at least 750 MWs, as well as establishing a separate incentive block for solar-plus-storage projects in NYISO Zones A-G, noting that paired projects are not subject to demand charges and have additional revenue streams available to them compared to standalone storage. BlueWave supports the declining block incentive structure and recommends a per-project incentive capped at 20 MWh, not the proposed 15 MWh cap, noting the maximum size of 5 MWs for a project and a minimum of 4-hour duration, in addition to the need for maturity thresholds such as having all necessary permits and demonstration of site control for 15 years to limit attrition. Convergent Energy also recommends increasing the incentive cap to 20 MWh and establishing a separate upstate solar-plus-storage paired incentive. The Indicated Utilities, consisting of Central Hudson, National Grid, and NYSEG/RG&E, support the proposed retail storage incentive and comment that program designs should consider how disadvantaged communities will benefit. NineDot supports the proposed retail storage incentive as necessary to provide the missing money for developers, and recommends that a working group form to examine retail storage deployment on Long Island. NY-BEST recommends increasing the

incentive cap to 20 MWh and including maturity requirements for projects to receive awards. Sunkeeper Solar recommends a carveout in the retail storage incentive for projects sized between 100 kW and 1 MW located in New York City, reasoning that smaller projects move quicker through the interconnection process than 5 MW projects.

Commission Determinations

Regional Declining Block Structure Incentive Design

The Commission approves the proposed region-specific declining block retail storage incentive structure as discussed in the Roadmap, with the goal of procuring an additional 1,500 MWs of retail energy storage across New York by 2030. The regional declining block retail incentive design has been shown to be effective, as evidenced by the more than 275 MWs of retail energy storage resources that have been procured since the issuance of the Energy Storage Order. There is no new evidence that would suggest that a departure from this structure would result in increased procurements. The Commission directs NYSERDA to implement the region-specific declining block retail storage incentive structure.

The Roadmap recognizes that there are several hundred MWs of mature retail storage projects that were unable to access the funding approved in the Energy Storage Order before it ran out, and recommends that the first incentive block be appropriately sized to accommodate this expected interest. The Commission declines to establish a specific MW amount for the first and subsequent incentive blocks, leaving that flexibility to NYSERDA based on the most current market conditions, but otherwise agrees with the Roadmap's recommendations. The Commission directs NYSERDA to provide a description of how incentive amounts are calculated and forecasts of future incentive blocks in its Implementation Plan. This information

will be critical for developers to make informed investment decisions and propose projects that will provide the most value to the state's electric system. In the event that NYSERDA considers changing the incentive blocks, it shall consult with DPS Staff and seek stakeholder input. NYSERDA shall document these changes in an updated Implementation Plan.

The Commission also agrees that NYSERDA should develop a publicly accessible calculator for VDER storage projects statewide to maximize the amount of information available for interested stakeholders. The Commission directs NYSERDA to develop this statewide storage VDER calculator as part of its Implementation Plan, as further discussed below, for retail energy storage.

Maximum Incentive Cap

The Commission agrees with certain commenters that 20 kWh is an appropriate upper cap for retail energy storage projects. Limiting the incentive cap to 15 MWh precludes 5 MW projects with a 4-hour duration from receiving an incentive that covers their entire output. Projects sized at 5 MW with 4-hour durations are likely to be prevalent, as 5 MW is the maximum size allowable under the retail storage program, and a 4-hour duration is an industry standard. Given that proposed retail energy storage projects are likely to exceed 15 MWh, the Commission directs NYSERDA to increase the cap for project eligibility to 20 MWh and detail this change in its Implementation Plan. This 20 MWh incentive cap is in line with the size and duration of expected retail energy storage energy and will encourage larger retail-sized projects to apply for the incentive because they will have the ability to inject and withdraw energy to their maximum technical capabilities.

Establishment of Solar-Plus Storage Incentive

Several commenters, including ACE NY and Convergent Energy, request that the Commission create a solar-plus-storage incentive for paired projects located in NYISO Zones A-G. These commenters reason that energy storage resources paired with solar are not subject to demand charges, give greater operational flexibility, and allow for more revenue opportunities through load management. Commenters further note that a solar-plus-storage incentive is more appropriate in Upstate New York, where land is more plentiful and affordable, than compared to the metro New York region of the state, where land is at a premium.

The Commission recognizes the value of storage resources paired with solar but declines to establish a separate incentive for this type of resource at this time. The goal of the Energy Storage proceeding is to achieve 6 GW of statewide energy deployment by 2030. There are programs in New York, including the NY-Sun program, that address making solar energy more accessible to homes, businesses, and communities.[48] The programs, incentives, and budget discussed in the Roadmap, including for retail energy storage, can be used towards procuring either standalone storage or storage paired with solar. Establishing a new incentive for storage-plus-solar resources would be duplicative of already-established programs.

Size Carveout

Sunkeeper Solar advocated for a retail energy storage carveout for projects sized between 100 kW and 1 MW in Zone J, explaining that smaller sized projects can proceed through development and interconnection faster than larger projects. Sunkeeper Solar reasoned that a carveout incentive is needed for

[48] NYSERDA, NY-Sun, available at: https://www.nyserda.ny.gov/All-Programs/NY-Sun.

retail energy storage projects of this size in New York City in order to encourage the installation of more projects. They state that the installation of more projects would lead to the Fire Department of New York (FDNY) gaining additional experience with evaluating energy storage safety issues.

The Commission declines to establish a retail energy storage carveout incentive for 100 kW- to 1 MW-sized projects in Zone J at this time. While smaller sized projects historically have had shorter development and interconnection timelines than their larger counterparts, deployment of retail sized energy storage of all sizes, up to the 5 MW limit, is important not only in Zone J but statewide as well. Establishing a carveout incentive for smaller sized retail energy storage would send the signal that this sized project is preferable in New York City, which is not the case. All retail energy storage, regardless of size, will be important in getting the State to meet its energy storage deployment goals. The additional challenges with permit acquisitions and interconnection for larger projects in New York City will need to be worked through with the appropriate stakeholders and will serve as learning opportunities for future retail energy storage deployments. Similarly, FDNY's experience with evaluating energy storage safety is paramount. However, as there are other avenues to address these concerns, these factors do not warrant a carveout incentive for smaller resources.

Residential Energy Storage Procurement Program Design Roadmap Recommendations

The Roadmap notes that, up until this point, the focus on residential energy storage deployment in New York has been on Long Island, where LIPA's tariff allows for residential storage to provide system services such as peak load management. However, demand for residential storage exists across New York. Although its potential contribution to achieving the statewide

storage deployment goal is relatively small, residential storage is important as it can provide local service benefits, including improving resiliency for residential customers in disadvantaged communities. Given the benefits of residential energy storage, the Roadmap recommends launching a statewide residential storage program with a focus on maximizing local benefits, especially for disadvantaged communities, with funding for 200 MWs available through 2030. The Roadmap recognizes that this program would require coordination across existing programs at NYSERDA and the need to design and plan the program specifics with the State's investor-owned utilities.

Long-term visibility of funding will be important for residential energy storage developers to maximize deployment and educate customers on its benefits. The Roadmap therefore recommends the program design allow for the availability of large blocks of funding at stable incentive rates over a minimum of one year. Any changes to the incentive levels should be communicated with plenty of lead time so that developers and homeowners can make informed decisions about whether or when to participate. The Roadmap further recommends that incentives be provided to the project developer upfront, rather than as a rebate, so that homeowners do not have to pay for the full cost of the project before installation.

The Roadmap recommends that program funding come from ratepayers statewide. To that end, the Roadmap recommends exploring how residential energy storage can provide system-wide benefits through aggregations for demand response programs, and that the Joint Utilities should examine opportunities for residential storage in their respective service territories that will maximize the storage resource's value. Participation in the NYISO's wholesale markets in a DER aggregation is an additional potential avenue for residential storage to achieve

statewide system benefits. No operational or aggregation requirements are recommended in the Roadmap. Instead, the focus is on projects that benefit disadvantaged communities and building out the network of residential energy storage as a flexible grid asset.

Comments

Commenters generally support the creation of a statewide residential storage program, with some offering recommendations for changes to specific aspects of the Roadmap's proposal for a residential energy storage program. ACE NY recommends that the initial block size for residential and retail incentives be at least 750 MWs, noting that NYSERDA has discretion to change as needed. It also recommends that 35 percent of the 200 MW residential storage projects be located in disadvantaged communities, consistent with CLCPA directives. DER Parties, composed of Sunrun Inc, PosiGen Inc, SunPower Corp, and Tesla, support the Roadmap recommendation to expand the residential storage program statewide and to provide an upfront incentive for developers to support early adoption, with an added incentive for projects located in disadvantaged communities. DER Parties and the NYSEIA highlight the need for the Joint Utilities to explore programs such as "bring-your-own-device" that would allow customers to participate in utility load reduction programs, like the program that is currently approved in LIPA's service territory. DER Parties agree with NYSEIA that the Roadmap's target of procuring 200 MWs of residential energy storage is too low, and recommend increasing it to 400 MW to reflect the need and demand for this resource more accurately.

Commission Determinations

Installation of residential energy storage provides numerous benefits to New Yorkers, including providing backup

power during power loss events, allowing for participation in utility load management programs, and charging power for electric vehicles. The potential for residential energy storage to positively impact disadvantaged communities further highlights the importance of establishing a statewide residential energy storage program. Therefore, the Commission adopts the Roadmap's recommendation to launch a statewide residential energy storage program, to be administered by NYSERDA. Funding for the program will be available until at least 2030 to support the buildout of 200 MWs of residential energy storage across New York, with a minimum of 35 percent of funding dedicated for projects in disadvantaged communities. NYSERDA shall include the details of this program in its Retail/Residential Implementation Plan.

Size of Program

The Commission declines to increase the residential energy storage target to 400 MWs, as was requested by DER Parties and NYSEIA. As described in the Roadmap, 200 MWs is an appropriate statewide target, balancing the need for deploying residential energy storage statewide to maximize benefits for homeowners and disadvantaged communities, with achieving sufficient energy storage buildout to meet the 6 GW goal by 2030. Experience gained through this first iteration of a statewide residential energy storage program will inform any subsequent modifications to size and incentive structure. As such, the adopted 200 MW target should be viewed as an initial goal, and if additional funding allotments for residential energy storage is necessary based on demand and pace of deployment, the Commission may consider such requests and increase the target and funding at that time.

Residential Energy Storage in Disadvantaged Communities

The Commission agrees with the Roadmap's observation, and Commenters' suggestion, that residential energy storage can play a role in maximizing local benefits in disadvantaged communities. The small size of residential energy storage makes it a potential tool for residential customers to participate in utility demand response programs, allowing customers to earn money for shifting their electricity demand to off-peak hours while helping the utility company manage their distribution system. Additionally, the Commission is already considering the participation of residential energy storage in demand response programs.[49] The Commission notes that the Joint Utilities were directed to submit proposals for including energy storage in their Direct Load Control Programs in their 2024 annual report and expects that this process will help to enable a path for residential energy storage to participate in utility demand response programs.

WHOLESALE MARKET ACTIONS

Roadmap Recommendations

It is vital that wholesale market rules and revenue opportunities work in conjunction with retail-level programs and revenue streams to help achieve state policy goals for energy storage at a just and reasonable cost. The Roadmap notes that the ITC, available under the Inflation Reduction Act, will provide significant support for storage projects, but is still insufficient to cover the costs of developing energy storage. The Roadmap further states that wholesale market revenues are currently inadequate to support the energy storage development needed. Wholesale market revenue is a key input into the

[49] Case 14-E-0423, Dynamic Load Management Programs, Order Directing Dynamic Load Management Program Changes (issued March 15, 2024), pp. 18-9.

calculation of the REAP and RCP, highlighting the need to ensure wholesale prices accurately reflect system needs. Working with the wholesale market operator and its stakeholders to close these gaps and align market rules with state policy goals remains a critical part of achieving these goals most efficiently.

The Roadmap states that energy storage projects can increase efficiency on existing transmission lines by injecting and absorbing energy, which could defer the need for system upgrades. Storage resources can also help stabilize power flows, allowing operators to avoid more costly operations. Energy storage can also be incorporated into planning processes to reduce the cost of transmission investment.

The NYISO and its stakeholders are currently working on a project, Storage as Transmission, which was originally proposed by NYSERDA.[50] This project seeks to evaluate potential use cases and market rules for storage to participate and receive compensation for participating as a transmission asset. Current market rules only allow storage to act as a generation asset that can both inject and withdraw energy; there are no wholesale market rules that would facilitate a storage project that wishes to act as, supplement, or replace the need for transmission investment. The Roadmap recommends that any storage as transmission projects deployed in the NYISO transmission planning processes count toward the 6 GW target.

The Roadmap also notes that from 2023 to 2025, significant amounts of fossil fuel plants are likely to retire due to the DEC Peaker Rule. The retirement of these plants will

[50] NYISO, Storage as Transmission, November 2023, available at: https://www.nyiso.com/documents/20142/41393553/Storage%20as%20Transmission%20Report.pdf/5c4d7649-2fb7-e165-2aae-999863f7f9cf.

tighten supply and increase supply scarcity. However, as more renewable resources enter the market, this may also lead to periods of low or negative pricing. These pricing outcomes may provide opportunities for energy storage resources to charge from the grid.

The Roadmap notes that the elimination of buyer-side mitigation for storage resources has been a large step in reducing barriers and providing more certainty to storage projects. However, other considerations in the capacity market remain. For example, the NYISO recently updated its capacity accreditation model for all resources, including storage. The Roadmap states that long-duration storage maintains high value over time with increased penetration on the grid, while the value of short-term storage declines more rapidly with increased penetration on the grid. This increased penetration of renewables on the grid over the course of several years has the opportunity to provide synergistic effects to the value of storage which could be accounted for as part of the accreditation process.

The Roadmap acknowledges that the New York State Reliability Council will have to consider changes to the Installed Reserves Margin process.[51] The current methodology for scaling load shapes and load forecast uncertainty can result in unreasonably high and long peak forecasts, which could lead to undervaluing shorter-duration resources, including storage.

Improvements to NYISO ancillary services market pricing and market products can give opportunities to better compensate storage for the value they can provide to the grid.

[51] The New York State Reliability Council is a not-for-profit that develops rules for participation in the New York State Power System. New York State Reliability Council, available at: https://www.nysrc.org.

The Roadmap notes that the external market monitor for the NYISO has proposed ancillary service market enhancements that would benefit storage.

The Roadmap states that, while the capacity market plays a role in valuing storage, the most significant focus should be on improvements to the energy and ancillary services market. Specifically, as more renewables come online, new market products are likely to be necessary including a ramping product, reactive power, synthetic inertia, and more granular energy or reserve products. The need for these products is already being investigated by the NYISO and its stakeholders in its Balancing Intermittency project, and in other efforts.

Comments

The NYISO supports storage resources participating in its wholesale markets and states that wholesale market signals "provide the foundation for economically efficient storage." However, it cautions that, while storage will play a vital role in the energy transition, long-duration energy needs will materialize that require long-duration solutions. The NYISO also states that deploying energy storage resources in excess before sufficient renewable generation is online could lead to inefficient charging scenarios and ultimately result in higher electric demand and potentially higher prices. The NYISO also requests that Staff and NYSERDA encourage energy storage resources to provide ancillary services to the grid in its markets. Finally, the NYISO encourages Staff and NYSERDA to participate in the stakeholder process in the Storage as Transmission project.

Form Energy notes deficiencies in ability of the NYISO markets to value storage and allow full participation. It states that there is currently no market incentive for multi-day

storage and there is no way for a storage asset to participate as both a transmission and a generation asset.

ACE-NY, EnSynchrony, NY-BEST, and SPM all support allowing storage to participate as a transmission asset, such as in the NYISO's Storage as Transmission project. NY-BEST and SPM do not support the counting of any energy storage resources as transmission projects toward the 6 GW goal. NY-BEST states that such projects are fulfilling needs beyond what originally drove the 6 GW goal and should not be used to reduce storage programs outlined in the Roadmap. If storage as transmission is counted against the goal, NY-BEST asks that reductions in programs be based solely on contracted projects, not just planned projects.

Commission Determinations

The Commission recognizes the importance of aligning incentives and goals with the wholesale markets as well as utilizing all options to enable energy storage to both participate and offer its full value to the grid. Staff and NYSERDA already engage in coordination efforts with the NYISO and participate in NYISO stakeholder meetings. The Commission directs Staff and NYSERDA to continue these efforts; specifically, Staff and NYSERDA shall help facilitate the recommendations and goals described in this Order with focus on the items discussed below.

The Commission recognizes that the NYISO is currently working on projects that will affect energy storage participation in the wholesale markets, including the Storage as Transmission and Balancing Intermittency projects. The Commission supports the NYISO's efforts to evaluate potential new participation options for energy storage resources. For example, the Storage as Transmission project has the potential to provide a new participation option for energy storage resources that will further allow energy storage resources to

provide services to the grid beyond generation. The Commission encourages the NYISO to continue efforts on this project. The Commission directs Staff and NYSERDA to continue their participation and engagement on the NYISO's efforts related to the participation of energy storage as transmission.

The Roadmap recommends that any energy storage projects that are developed and participate as a transmission asset count toward the 6 GW goal. The Commission recognizes that an energy storage project providing a transmission service is helping meet electric system needs in New York. The Commission disagrees with those commenters that characterize storage-as-transmission as fulfilling needs beyond what was originally intended with the 6 GW goal. The Commission believes that we should recognize that energy storage helps to meet New York's renewable and zero-emissions energy goals in ways beyond simply acting as a generation asset. Therefore, any future storage as transmission projects shall be counted toward the 6 GW goal.

The NYISO's Balancing Intermittency project seeks to evaluate the future need for ancillary service products as more intermittent renewable generation connects to the grid.[52] This project has the potential to help New York find further value of energy storage in its ability to meet ancillary service needs. The Commission supports this project and encourages the NYISO to continue work on this effort. The Commission encourages the NYISO to take advantage of the capabilities of energy storage resources to help meet any ancillary service needs of the

[52] NYISO, Balancing Intermittency, January 25, 2024, available at: https://www.nyiso.com/documents/20142/42590322/BI%202024%20MIWG%20Kick%20Off_final.pdf/ac2f0112-f542-f4da-3c9c-f43d0309868f.

system. The Commission directs Staff and NYSERDA to continue their participation and engagement on this project.

GENERAL PROGRAM DESIGN CONSIDERATIONS

The program designs described within this section apply to the bulk, residential, and retail programs discussed above.

Prevailing Wage

Roadmap Recommendations

The Roadmap describes the Inflation Reduction Act and its provision dictating that commercial energy storage systems with a capacity of 1 MW alternating current (AC) or greater are eligible for an up to 30 percent ITC rate if the project complies with federal prevailing wage and apprenticeship requirements; such projects would otherwise only be eligible for a 6 percent ITC rate. Given the substantial financial support offered by the ITC if a project follows federal prevailing wage and apprenticeship requirements, the Roadmap notes the likelihood that a large majority of the energy storage developers, if not all, will adhere to these requirements and obtain the full ITC credit.

Comments

NineDot and NY-BEST support a prevailing wage requirement that aligns with federal standards.

Commission Determination

A requirement for developers to pay the prevailing wage is already in place for NYSERDA's Large-Scale Renewable REC procurements, and for NY-Sun projects 1 MW AC and above. The Commission finds that this requirement is also appropriate for this updated energy storage goal and deployment policy. Therefore, the Commission directs NYSERDA to ensure that developers of any energy storage project with a capacity of 1 MW AC or more that participates in a NYSERDA energy storage

incentive program pay the New York State Prevailing Wage, and that this requirement be explicit in any awarded contract, with quarterly certifications by a New York State-licensed Certified Public Accountant during the construction of the project. NYSERDA shall include details of this requirement as part of its Implementation Plan.

Periodic Review
Roadmap Recommendations

In compliance with PSL §74, the Energy Storage Order established a process by which DPS Staff prepares an annual report and a triennial review for Commission consideration. These processes are intended to provide stakeholders with regular updates on the status of energy storage deployment in New York and potential market and policy changes. The importance of providing periodic reports to stakeholders should continue in the coming years, as federal rules evolve, and the Coordinated Grid Planning Process and Grid of the Future proceedings play out.

Comments

Con Edison and O&R support a periodic review of the energy storage proceeding to keep current with current market trends and energy storage installation progress. NineDot, NY-BEST, and SPM recommend an annual review process to evaluate the progress towards the 6 GW target.

Commission Determination

Recognizing the success of the review process established in the Energy Storage Order and its continued importance in the future, the Commission directs Staff to continue the annual reporting and triennial review requirement. The Commission directs Staff to continue to report on both the successes and barriers to energy storage deployment in New York and offer solutions, as appropriate.

Rollover of Project Funds
Roadmap Recommendations

The Roadmap notes that retail and residential storage projects historically have had low rates of attrition. However, even if a project is cancelled, it is possible that the funds that were allocated to the cancelled project could be reallocated to a different project in a timely manner. The Roadmap therefore recommends that any funding from cancelled retail and residential energy storage projects be made available to new projects. For bulk projects, where there is a longer development time, rolling over funds to a new project may not result in a timely completion of a new bulk energy storage project by the 2030 target; therefore, the Roadmap does not recommend the same reallocation of funds for bulk storage projects.

Comments

NY-BEST and SPM recommend that if any projects that are under contract in the existing energy storage programs drop out, those MWs and funding be rolled into the new program.

Commission Determination

The Commission notes that the goal is to install 6 GW of energy storage statewide by 2030. If projects drop out, leaving unclaimed funding, it is appropriate for other qualified projects to step in and make use of that funding in order to move the State closer to its goal. Considering the recommendations in the Roadmap, and stakeholder comments, the Commission directs that any funding from cancelled retail and residential projects be rolled over to new projects.

Disadvantaged Communities
Roadmap Recommendations

The CLCPA is clear that in determining what path to take to reach its ambitious climate goals, New York must

consider how such actions impact disadvantaged communities.[53] The Roadmap's vision and plan of reaching 6 GW of storage statewide by 2030 aims to benefit disadvantaged communities by bolstering resiliency through local system benefits and help maximize the use of intermittent renewable generation. Bulk and off-site retail energy storage projects will inject energy directly onto the transmission and distribution systems, which provides zonal benefits, including helping reduce the emissions associated with peaker plants. The Roadmap recommends that 35 percent of program funding be used in areas which benefit disadvantaged communities the most and target peaker plant replacement with clean energy alternatives, consistent with the requirements of the CLCPA.[54]

Comments

Multiple parties commented on the importance of designing energy storage programs with explicit attention given to how these projects will improve quality of life in disadvantaged communities. AES supports the Roadmap's proposal to allocate at least 35 percent of program funding to energy storage projects that will benefit disadvantaged communities. BlueWave states the importance of allocating 35 percent of funding for the bulk storage program to disadvantaged communities to achieve equity. DER Parties comment that increased rebates may be necessary for projects located in disadvantaged communities due to higher financing, electrical upgrade, and marketing costs. The Indicated Utilities state their support for retail and residential projects to locate in disadvantaged communities and encourage engaging these communities to receive input, and possibly create additional

[53] ECL §75-0109.

[54] ECL §75-0117.

incentives to encourage development of energy storage in disadvantaged communities. IPPNY supports 35 percent of funding for bulk energy storage projects locate in disadvantaged communities that can help displace fossil-fuel generation. Jupiter Power recommends that any project located in Con Edison's service territory or LIPA be considered as benefiting a disadvantaged community. PowerFlex agrees with the Roadmap's recommendation to allocate 35 percent of program funding for energy storage projects that benefit disadvantaged communities and suggests an appropriate $/kWh adder for these projects to incentivize grid resources in these areas. The PEAK Coalition advocates for at least half of the 6 GW of proposed energy storage, with a minimum of 2 GW of bulk energy storage, to be located in New York City where there is a large portion of the population that live in disadvantaged communities near high polluting peaker plants. The PEAK Coalition also states that this investment of energy storage in New York City will help reduce the amount of pollutants to which residents are exposed.

Commission Determination

The Commission remains committed to transforming New York's energy system in a way that invests in disadvantaged communities to improve air quality in these areas of the State. Consistent with this commitment, the Commission agrees with the Roadmap's recommendation to allocate a minimum of 35 percent of program funding for energy storage projects in areas of the State that will most benefit disadvantaged communities and reduce reliance on high-emitting peaking plants. As broken down below, the Commission expects that these projects will be located within disadvantaged communities themselves, as defined by the Climate Justice Working Group and adopted in March 2023, but recognizes that energy storage projects need not be located directly in a disadvantaged community to provide benefits to

that community. The Commission directs NYSERDA to include details in its Implementation Plans that address disadvantaged community considerations as part of program participation.

Bulk and off-site retail energy storage can help reduce emissions in disadvantaged communities and therefore the Commission directs that a minimum of 35 percent of procurements for bulk and off-site retail energy storage projects be located in NYISO's G-K Capacity Zones, as they are most likely to benefit disadvantaged communities and reduce peaker plant emissions. The Commission expects Zone J to be the largest source of potential peaker plant replacement and disadvantaged community benefits. Therefore, the Commission further specifies that of the minimum of 35 percent of energy storage procurements allocated for bulk and off-site retail energy storage projects in Zones G-K, at least 30 percent of total procurements shall be in Zone J and at least 5 percent shall be in Zones G, H, I, and/or K. These carveouts recognize that the largest potential pool of peaking plant replacement is in New York City, while also acknowledging that other areas of the State are deserving of energy storage investment based on benefits to disadvantaged communities and associated emission reductions.

On-site retail and residential energy storage projects will provide benefits directly where they are installed. The Commission therefore directs that a minimum of 35 percent of procured energy storage for residential and on-site retail energy storage projects be located within disadvantaged community census tracts, consistent with CLCPA requirements and findings from the Climate Justice Working Group.

In-Service Date
Roadmap Recommendations

The Roadmap proposed that any energy storage projects procured through the bulk, retail, and residential programs

discussed above be required to be in-service by December 31, 2030, but noted that projects procured after the three initial bulk energy storage solicitations with an in-service date after 2030 should still be eligible to participate.

Comments

No stakeholders commented on an in-service date requirement.

Commission Determination

The Roadmap was designed with the intent to procure 3 GW of bulk energy storage, 1,500 MWs of retail energy storage, and 200 MWs of residential energy storage by 2030. The remaining 1,700 MWs, as stated in the Roadmap, is already under contract or has been awarded by NYSERDA. The 2030 date originated in the CLCPA which requires that 70 percent of electricity generation come from renewables by 2030, and 100 percent by 2040. This necessitates the interconnection of energy storage resources onto the grid to help meet load when renewable generation is not producing energy. As such, the Commission requires that any bulk, retail, or residential energy storage projects that access funds made available through this Order be in-service by December 31, 2030. This required in-service date is consistent with the State's energy policy and goals and language of the CLCPA. The Commission does recognize the uncertainty inherent with energy storage development at this time, and therefore gives NYSERDA the ability to extend this in-service deadline for projects that have been delayed due to conditions beyond the control of the developer, based on proof that the project construction has commenced on or before December 31, 2030. This flexibility is geared towards achieving an effective buildout of energy storage in New York.

The Commission also recognizes that there may be certain projects that either received or may receive funding as

part of the Energy Storage Order that are not yet in-service. These projects, under the parameters of the Energy Storage Order, are required to be in-service by December 31, 2025. Employing the same rationale as above, the Commission grants NYSERDA the flexibility to allow for an in-service date beyond the December 31, 2025 deadline for energy storage projects receiving funding through the Energy Storage Order that have been delayed due to conditions beyond the control of the developer, based on proof that the project construction has commenced on or before December 31, 2025. The objective of the energy storage programs is to help transition New York to a zero-emissions generation future, and therefore allowing energy storage projects to come in-service beyond prescribed deadlines based on proof of construction progress is consistent with this objective.

The Commission directs NYSERDA to reflect these in-service dates in its Implementation Plan and program manuals.

OTHER ISSUES

The issues discussed in this section are not specific to the bulk, residential, or retail programs but are relevant to the Commission's energy storage policies as a whole. Additionally, several parties raised specific topics and issues that warrant the Commission's consideration.

NYPA and LIPA Participation in Storage Procurement Programs Roadmap Recommendations

The Roadmap recommends that NYPA and LIPA voluntarily participate in the bulk energy storage procurement programs, by accepting ISC allocations in proportion to their share of statewide load in the bulk program. Consistent with the approach in the Offshore Wind Standard, in the event that LIPA or NYPA directly procure or develop bulk energy storage projects outside of the NYSERDA procurement program, NYSERDA would take

such independent storage procurement into account in its assessment of amounts of bulk storage needed through its solicitations. Such projects, subject to meeting the requirements of the storage program, could be credited towards their load share compliance obligation.

For the retail and residential procurement programs, the Roadmap recommends that NYPA and LIPA voluntarily participate in collections on a MWh load share basis as well, consistent with previous programs.[55]

Comments

The City states that if NYPA agrees to voluntarily participate in the energy storage programs, then the Commission should make clear that NYPA customers are eligible to participate in the programs and access the relevant incentives. Convergent Energy, NY-BEST, and FreeWire Technologies (FreeWire) support the inclusion of NYPA in the energy storage programs.

In its comments, NYPA states its opposition to voluntary participation, claiming that it has no way to recover program costs through its existing contracts with customers. Instead, NYPA requests that the Commission consider alternative ways for NYPA to recover the program costs.

LIPA recommends that the bulk energy storage program allow for participation by tax-exempt utilities. LIPA states that, if it decides to participate in the proposed bulk program by purchasing its allocated ISCs, it would enter into a contract with NYSERDA and have its cost share reduced by the amount of bulk energy storage capacity separately procured by LIPA through its own solicitations.

[55] Case 20-M-0082, Proceeding on Motion of the Commission Regarding Strategic Use of Energy Related Data, Order Implementing an Integrated Energy Data Resource (issued February 11, 2021), p. 19.

Commission Determination

The Commission recognizes that NYPA and LIPA are involved in many activities that move New York closer to meeting its CLCPA targets, including the development of energy storage, and notes that NYPA and LIPA are non-jurisdictional Load Serving Entities (LSE). Accordingly, the Commission adopts the Roadmap's recommendation that both NYPA and LIPA voluntarily participate and accept ISC allocations proportional to its share of Statewide load for the bulk program. That said, recognizing that NYPA and LIPA have the demonstrated ability to develop/procure bulk storage projects, NYSERDA shall take such independent storage procurement into account in its assessment of amounts of bulk storage needed through its solicitations. Such projects, subject to meeting the requirements of the bulk storage program, shall be credited towards NYPA and LIPA load share compliance obligation. This process shall be described in NYSERDA's Implementation Plan.

As for the residential and retail programs, the Commission encourages LIPA to voluntarily participate in both by accepting its MWh load share cost allocation as described in more detail later in this Order. Doing so would make LIPA customers eligible for the NYSERDA residential and retail storage program incentives. As for NYPA participation in these programs, the Commission shall allow participation by requiring cost recovery through electric utility delivery rates that NYPA customers are subject to, as described in more detail later in this Order.

New York Municipal Power Association (NYMPA)
Roadmap Recommendations

The Roadmap recommends a funding mechanism for the bulk energy storage procurement program that would impose a

payment obligation for all jurisdictional LSEs proportional to their share of statewide load.

Comments

NYMPA opposes the load-ratio share funding mechanism and claims it would have a disproportionately negative effect on its members, citing the already high costs of Clean Energy Standard compliance on its overall small size of member systems. NYMPA further comments that all of the power its members consume comes from zero-emissions sources, the bulk of which is from renewable energy. NYMPA states that, if the Commission does keep the load-ratio share methodology, only NYMPA load not served by renewables should be counted.

Commission Determination

The Commission disagrees with NYMPA that its members should not be allocated costs based on the load-ratio share methodology discussed in the Roadmap. The benefits of transitioning to an energy system comprised of renewable energy will accrue to all New Yorkers, including the NYMPA's member systems. Because its members will receive the benefits of increased renewable generation output, such as decreased emissions from electric generation, it stands to reason that its members should be allocated costs in the same manner as other Commission-jurisdictional LSEs. The Commission therefore declines to exclude NYMPA load from the cost allocation of the NYSERDA bulk energy storage procurement program.

Utility Ownership of Energy Storage Systems

Roadmap Recommendations

The Energy Storage Order reaffirmed the policy of prohibition against utility ownership, except in limited circumstances, as adopted in the Reforming the Energy Vision

(REV) Framework Order.[56] The Roadmap recommends that the Joint Utilities study the potential of energy storage to provide non-market transmission and distribution services and identify energy storage projects that can provide cost-effective services compared to alternatives. The Roadmap further details how the Advanced Technology Working Group should address this topic, potentially in a newly formed subgroup focused on energy storage's future role in providing grid services.

Comments

IPPNY, NY-BEST, and ACE NY all state their opposition to utility-owned storage, arguing that there is a growing and robust private storage market emerging in New York and that utility-owned storage would negatively impact this burgeoning industry.

The Indicated Utilities propose that utility-owned storage for non-market applications be allowed and count towards the 6 GW goal. The Indicated Utilities highlight the ability of utility-owned storage to lower cost of capital, quickly address system constraints, and bolster reliability and resiliency as reasons why it should be allowed under the energy storage program. The Indicated Utilities reiterate comments they submitted in the CLCPA Proceeding, in which they highlight five utility ownership use cases in support of the transmission and distribution system, including co-locating at utility infrastructure, operationally complex reliability/resiliency projects, real-time operations/controls integration,

[56] Energy Storage Order, p. 43; see also Case 14-M-0101, Reforming the Energy Vision, Order Adopting Regulatory Policy Framework and Implementation Plan (issued February 26, 2015) (REV Framework Order).

transmission applications/system integration, and mobile energy storage systems.[57]

Commission Determination

The Commission agrees with certain commenters that presently there is no reason to reverse precedent on utility-owned storage. The Energy Storage Order examined the issue of utility ownership of energy storage. Referring to the REV Framework Order, the Energy Storage Order confirmed the following four limited situations where utility ownership of energy storage may be considered: (1) Procurement of DER has been solicited to meet a system need, and a utility has demonstrated that competitive alternatives proposed by non-utility parties are clearly inadequate or more costly than a traditional utility infrastructure alternative; (2) a project consists of energy storage integrated into distribution system architecture; (3) a project will enable low or moderate income residential customers to benefit from DERs where markets are not likely to satisfy the need; or (4) a project is being sponsored for demonstration purposes.[58] The rationale in the REV Framework Order and Energy Storage Order continues to hold, and the Commission finds no need to stray from that established precedent.

That notwithstanding, the Commission does recognize the potential of energy storage as a transmission and distribution asset. According, consistent with the Roadmap's recommendation, the Commission directs the Joint Utilities to conduct a study of the non-market transmission and distribution services that energy storage projects can provide. This should include an in-depth engineering and economic review of the

[57] Case 22-M-0149, Proceeding Implementing CLCPA Requirements and Targets, JU Comments (filed August 10, 2022).

[58] Energy Storage Order, p. 43; REV Framework Order, p. 69.

applications that energy storage could provide to the utility as it fulfills is obligations to provide safe and reliable service in the most efficient and effective manner. The results of the study shall be filed with the Commission within 120 days of this Order. The study should include how utilities' system planning and operating procedures would be modified to incorporate energy storage as an alternative tool in the toolbox if applicable. In addition, the filing should include a proposed process for the review and approval for such projects, as well as a cost recovery mechanism, if such a process does not align with the normal rate case schedules.

Vehicle-to-Grid
Roadmap Recommendations

The Roadmap recognizes the potential value of vehicle-to-grid (V2G) services. V2G is the allowance of power stored in EV batteries to discharge back onto the grid and act as a power resource. If there are two million EVs in New York by 2030, there may be up to 14 GW of stored energy, collectively, in the vehicles' batteries. Even on a small scale, the energy from participating EVs could equate to hundreds of MWs of available capacity to inject into the grid when most needed. The Roadmap notes that NYSERDA's Clean Transportation Program, federal initiatives such as the New Electric Vehicle Infrastructure program, and New York's Make-Ready Program are focused on EV infrastructure development and opportunities for V2G integration. The Roadmap suggests that those venues are more appropriate for further work on this topic than the Commission's energy storage proceeding.

Comments

Fermata Energy and Nuvve recommend that the Commission consider adopting a V2G deployment target and incentives for bidirectional charging infrastructure. They explain that

bidirectional charging infrastructure can help increase grid flexibility. NineDot recommends that V2G project charger costs be eligible for incentives through the retail storage program. NY-BEST recommends that DPS and NYSERDA collaborate with the industry to create new programs or develop existing ones, such as those approved in the Make Ready Program, to incentivize bidirectional chargers and update utility tariffs that reflect the value of V2G services. The Indicated Utilities recognize the potential value of V2G but do not recommend establishing a specific V2G target or incentive through this proceeding.

Commission Determination

The Commission recognizes that establishing pathways for V2G services would be an opportunity for New York to harness the full capability of EVs to provide electric capacity to the grid during high stress times. However, the Commission agrees with the Roadmap that there are existing forums that are more appropriate for advancing this technology, including through other proceedings underway at this Commission. Therefore, at this time, the Commission declines to establish a V2G deployment target or incentive for bidirectional charging infrastructure in this proceeding.

Establishment of a BTM Energy Storage Incentive
Roadmap Recommendation

The Roadmap made no recommendation on the establishment of a Behind-the-Meter (BTM) energy storage incentive for the retail energy storage program.

Comments

Con Edison and O&R (collectively, the Companies) recommend that the Commission direct the Companies to develop a BTM energy storage incentive under the retail program, with input from Staff and NYSERDA. The Companies state that the creation of a BTM incentive will benefit disadvantaged

communities by giving customers a better opportunity to manage their electric load, especially when paired with DERs. The Companies state the importance of education and outreach in the communities where these projects may be located, and for developers that are able to implement these projects. The Companies note that BTM installations generally have lower interconnection costs because they are behind an existing meter. The Companies request that the Commission direct them to file a BTM storage incentive implementation plan within 90 days of this Order, and that implementation and incentive costs for the program be recovered over 15 years as a regulatory asset.

FreeWire comments on the importance of BTM storage at commercial and industrial facilities and recommends establishing BTM retail energy storage procurement targets and incentives specific to BTM storage at non-residential sites. FreeWire states that BTM energy storage has a number of benefits including energy use and cost management, increased site resiliency, allowance for load shifting, the ability to aggregate into a Virtual Power Plant, integration of renewable energy output, and helping defer location-specific system upgrades.

Convergent Energy strongly agrees with the Companies' assessment of the value of BTM energy storage and recommends a separate adder for BTM energy storage in the retail program. Convergent Energy also states that retail BTM energy storage larger than 5 MW is beneficial for the local grid and that the Commission should consider incentivizing larger sized BTM projects.

NineDot recognizes the potential value of BTM energy storage but does not recommend a separate incentive be established for this resource class, highlighting that the technology type is still in its nascency and that the market for

this technology is relatively immature. NineDot recommends community-scale front-of-the-meter projects as a better investment of ratepayer funds.

NY-BEST opines on the value of BTM energy storage for ratepayers and the grid. It is supportive of the Companies' proposal to create a new BTM storage incentive, assuming that the program would be funded by the utilities and so long as the program is in addition to the Roadmap's proposal for the retail energy storage program.

Commission Determination

The Commission understands that BTM energy storage can provide reliability and resiliency value to disadvantaged communities and other segments within the proposed retail energy storage program, but declines to establish a BTM energy storage incentive, as requested by the Companies. The proposed retail energy storage program, as described in the Roadmap, provides more direct system benefits than a BTM program would, since the retail projects are expected to be standalone storage projects built in locations that provide the most economic price signals, and therefore system value, via the Value Stack mechanism. Conversely, larger retail customers have customer-specific retail rate options that provide incentives to install BTM storage for peak load management via reduced bills. The Commission believes that the front-of-the-meter retail program will provide system benefits in a more efficient manner as it builds upon the successful CDG model. That said, the Commission directs that Staff, as part of its annual reporting requirement discussed above, capture the status of deployment of retail BTM energy storage to the extent possible, and highlight any challenges, barriers, and successes.

Bridge-to Wires
Roadmap Recommendations

The Companies proposed a Bridge-to-Wires (BTW) mechanism under the existing UDR framework. The proposed BTW mechanism intends to target energy storage development in specific areas of the Companies' service territory, add capacity when and where needed, and relocate the energy storage resource as needed and appropriate to aid in the electrification of other areas of the Companies' service territory. The Roadmap made no recommendation on the establishment of a BTW mechanism under the existing UDR framework.

Comments

The Companies propose the creation of a new BTW mechanism under the UDR framework. The Companies explain that BTW procurements under UDR would add peak capacity at constrained locations on their system, enabling faster end-use electrification compared to building out traditional infrastructure meant to serve increased load. The Companies state that such storage systems could be relocated as necessary to other locations on their system to further enable electrification. The Companies cite increased opportunities for developers to propose projects under their proposed BTW mechanism and request authorization from the Commission to submit an Implementation Plan detailing the BTW proposal.

NY-BEST responds in its reply comments that, while it recognizes that energy storage can play an important role in enabling faster electrification, it remains opposed to utility ownership of storage.

Commission Determination

The Commission sees the potential value of the Companies' proposed BTW mechanism in maximizing the benefits of energy storage by relocating energy storage resources as needed on the Companies' system. However, at this time, the Commission

declines to authorize the Companies' BTW proposal. While the Companies did describe their proposed BTW proposal in their comments, more information is needed before the Commission can approve, modify, or deny such proposal. Instead, the Commission directs the Companies, and invites the other Joint Utilities, to include this as a use case in the study described earlier on utility ownership of energy storage. The use case shall include details such as the criteria used to determine when an energy storage resource would be used as a BTW solution, and how such criteria would be integrated into utility system planning and operating procedures.

Rate Design

Roadmap Recommendations

The Roadmap suggests that the Joint Utilities could examine the need for new tariffs or storage-specific rate structures to incent the development of residential energy storage.

Stakeholder Comments

ACE NY requests that NYSERDA provide more clarity on the path for distribution-connected bulk energy storage projects larger than 5 MWs to enter the market. ACE NY states that these distribution-connected energy storage resources would be subject to distribution charging rates that equivalent transmission-connected energy storage will not and therefore would likely be uncompetitive in the ISC solicitation process. Key Capture Energy also requests the Commission open a new docket to promptly address the application of distribution rates to bulk storage projects and urges the Commission to provide FERC the necessary information to approve a rate that is consistent with state policy. BlueWave agrees with the sentiments of ACE NY and adds that distribution-connected bulk energy storage can be sited closer to load and provide more distribution benefits

compared to transmission-connected bulk energy storage. NY-BEST agrees with ACE NY and further recommends that the Commission direct the Joint Utilities to remove surcharges and riders from delivery rates for charging load of front-of-the-meter energy storage, and in the short-term to exclude these costs from price calculation thresholds and in price comparisons during bid evaluations. The Institute for Policy Integrity states that the Commission needs to develop and deploy more cost-based rate designs to encourage the development of distribution-level energy storage.

NineDot requests that Con Edison restart its Modified High-Tension program, and that the Commission allow Con Edison to work with energy storage host sites to select this service rate. NineDot also urges the Commission to reinstate Con Edison's Rider Q pilot program, which was designed to encourage energy storage to charge during optimal times, while also advocating for Con Edison to adjust the program so that costs align with local grid constraints. NineDot further states that Rider Q should be modified so that the designated "off peak" hours are adjustable based on the results from interconnection studies rather than have a global definition for "off peak hours."

Commission Determination

The Commission recognizes that prudent rate design is necessary to help achieve the 6 GW storage target. The Commission is aware that charging load of energy storage systems connected at the distribution level will generally pay different rates than otherwise equivalent transmission-connected energy storage systems. This issue was raised by ACE NY in its comments. However, we are also aware of the need for distribution costs to be fairly recovered from all users of the system. During charging, energy storage systems will add to

load on the distribution system just like any other load. The FERC determined that the sale of charging energy to an electric storage resource that is then resold into the ISO markets is a sale for resale in interstate commerce and thus subject to FERC jurisdiction.[59] The Commission understands that utilities are filing Wholesale Distribution Service (WDS) rates with the FERC that will be applicable to energy storage projects that are distribution connected that discharge via the wholesale markets. The Commission directs Staff to actively participate in the FERC process to help ensure that the WDS rates are developed appropriately.

In response to NY-BEST's comments related to the removal of surcharges and riders from delivery rates for charging load of front-of-the-meter projects, the Commission notes that these surcharges and riders were developed to recover variable costs or return revenues associated with a variety of distribution functions, including but not limited to reconciliations of storm costs, recovery of payments made through the Value Stack, recovery of Non-Wire Alternative (NWA) and DLM program costs, as well as Clean Energy Fund costs recovered through the System Benefits Charge. The Commission does not find NY-BEST's requests for front-of-the-meter energy storage systems to be exempted from delivery surcharges to be compelling for three reasons. First, many of the project and program costs recovered through delivery surcharges are related to initiatives which benefit all utility customers, such as NWA projects and DLM programs, or are intended to benefit society as a whole, such as the Clean Energy Fund. Application of the "beneficiaries pay" principle – the theory that all customers

[59] FERC Order No. 841, issued on February 15, 2018, in Dockets RM16-23-000 et al., paragraph 300.

that benefit from a project or program should pay for its costs – would require front-of-the-meter storage facilities to help pay for these projects and programs as they benefit from them. For example, NWA projects and DLM programs reduce an electric utility's need to invest in infrastructure, thereby reducing revenue requirement. NY-BEST's comments do not provide sufficiently compelling arguments to reject this principle for front-of-the-meter energy storage customers.

Second, the Commission has a longstanding policy of avoiding technology-specific rate design. Approval of exclusions to certain delivery surcharges solely on the basis of which technology a customer utilizes amounts to, in essence, a technology-specific rate. We are not aware of any instances where the Commission has approved a technology-specific exemption to responsibility for delivery surcharges, and we do not find the information presented in this case to be compelling enough to revise our general policy against technology-specific rate design.[60]

Third, while most of the components of delivery surcharges are designed to recover costs which are not included in base rates, some elements are designed to return revenues to customers, for example, revenues received through the sale of Regional Greenhouse Gas Initiative Allowances and sale of energy and capacity to the wholesale market from utility-owned energy storage facilities. Completely exempting front-of-the-meter energy storage customers from delivery surcharges, as NY-BEST suggests, would unreasonably deprive those customers of their fair share of the revenues collected and returned to customers. For these reasons, NY-BEST's suggestion to exempt front-of-the-

[60] NYPA load is exempt from certain surcharges; however, such exemption is broadly based on all NYPA load and not on the basis of the presence of any particular technology.

meter energy storage customers from delivery surcharge responsibility is rejected.

The Institute for Policy Integrity's recommendation that the Commission develop and deploy more cost-based rate designs to encourage the development of distribution-level energy storage is rejected. Beginning with the REV Track Two Order issued in 2016, the Commission set out on an initiative to improve standby service rates.[61] This initiative culminated with the October 2023 Standby Rates Order.[62] As part of that process, our March 16, 2022 Order addressed the need for a methodology to develop the most cost-based delivery rates possible, as well as thoroughly considered delivery rate exemptions for energy storage projects.[63] The standby rates designed and filed following the guidance of the October 2023 Standby Rates Order reflect the most cost-based rate designs that will encourage the development of distribution-level energy storage, as the Institute for Policy Integrity requests.

In the May 16, 2019 Order, the Commission recognized the importance of Con Edison's Rider Q rate pilot, then the only available option for granular As-Used Daily Demand charges with a less than 10-hour super-peak period, and directed each of the other utilities to develop similarly granular As-Used Daily

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[61] Case 14-M-0101, supra, Order Adopting a Ratemaking and Utility Revenue Model Policy Framework (issued May 19, 2016), pp. 125-132 (REV Track Two Order).

[62] Case 15-E-0751, supra, Order Establishing Updated Standby Service Rates and Implementing Optional Mass Market Demand Rates, (issued October 13, 2023) (October 2023 Standby Rates Order).

[63] Case 15-E-0751, supra, Order Establishing an Allocated Cost of Service Methodology for Standby and Buyback Service Rates and Energy Storage Contract Demand Charge Exemptions, (issued March 16, 2022) (March 16, 2022 Order).

Demand Charges.[64] The Commission later adopted four- and five-hour super-peak periods proposed by Central Hudson, National Grid, NYSEG, and RG&E, and rejected O&R's proposed 10-hour period and directed O&R to develop a meaningfully shorter period to more closely match the applicable period of peak demands.[65] For Con Edison, the Commission accepted the company's proposed 10-hour super-peak period, on the basis that peak demand periods in various areas of the Con Edison service territory range from 11 a.m. to 11 p.m. depending on the characteristics of load in those areas, but identified that "Rider Q remains a viable option for customers to participate in for a more temporally and locationally granular As-Used Daily Demand Charge."[66] While it is true that customers already participating in Rider Q will continue to be able to do so through the end of the remaining pilot period, which includes a customer-specific 10-year period, new customers have been unable to join Rider Q since January 1, 2022.[67] Under present conditions, new energy storage customers in the Con Edison service territory would be the only customers interconnecting to an investor-owned utility in New York State without access to a granular As-Used Daily Demand Charge.

NineDot opined that Con Edison's Rider Q program may be one potential path forward for energy storage resources. The Commission generally agrees that the design of Rider Q provides storage resources a desirable rate option as Option B of Rider Q offers participants a locational based on Daily As-used Demand

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[64] Case 15-E-0751, supra, Order on Standby and Buyback Service Rate Design and Establishing Optional Demand-Based Rates (issued May 16, 2019), p. 33 (May 16, 2019 Order).

[65] October 2023 Standby Rates Order, pp. 70-73.

[66] Id. at 71.

[67] P.S.C. No. 10, Consolidated Edison Company of New York, Inc. Schedule for Electricity Service, Leaf 239 (Con Edison Electric Tariff).

Pricing rate option comprised of both a peak period and a four-hour period applicable during the summer months (Super-Peak Period).[68] However, the Commission acknowledges Rider Q would need to be refined to remain a viable option. First, Rider Q was established as a rate pilot.[69] As such, participation in Rider Q was limited in both duration and size. Regarding duration, Rider Q was opened to new entrants until January 2022, and all participants may remain in the program for up to 10 years. Regarding size, Rider Q was available to 125 MW of nameplate rated capacity.

Assuming Option B of Rider Q were to be re-opened to new participants, the Super-Peak Periods would need to be re-evaluated, since at the time of Rider Q implementation, the periods were directly tied to the applicable Con Edison Commercial System Relief Program (CSRP) demand response event call-windows.[70] However, the call-windows for certain load areas, or Networks, have shifted somewhat in recent years, and are likely to continue shifting as New York undergoes transition in both generation and customer usage patterns.[71] Processes need to be in place to allow for adjustment to CSRP call windows to meet the evolving needs of the grid and the dynamic load management programs for which the call windows are primarily designed, independent of potential adjustments to Rider Q. While the CSRP call window periods may remain a reasonable basis

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[68] Id.

[69] Case 16-E-0060 et al., Con Edison – Electric and Gas Rates, Order Approving Electric and Gas Rate Plans (issued January 25, 2017), p. 7.

[70] Con Edison regularly updates and maintains a list of CSRP call windows by Network and load area on its website.

[71] Leaf 207 of the Con Edison Electric Tariff specifies that "Network" refers to a distribution network or load area designated by the Company.

for setting the geographically varying and temporally granular As-Used Daily Demand Charge under Rider Q, any modification to CSRP call windows should trigger an evaluation of Rider Q Super-Peak Periods.

Therefore, the Commission directs Con Edison to submit, within 60 days of this Order, a draft tariff filing that modifies Option B of Rider Q based on the discussion above. The filing shall include a re-opening of Option B redesigned with appropriate Super-Peak Periods, subject to re-evaluation and potential adjustment based on modification to CSRP call windows. The filing will be subject to a SAPA public notice and comment period, in order to give stakeholders an opportunity to weigh in on Rider Q's applicability and recommend any improvements. This filing, as well as subsequent comments and stakeholder feedback, will assist the Commission in determining under what parameters Con Edison's Rider Q program should be reinstated.

Fire Safety

In response to three fires that originated at energy storage facilities in New York in the summer of 2023, Governor Hochul announced the creation of an Inter-Agency Fire Safety Working Group (Fire Safety Working Group). The purpose of the Fire Safety Working Group is to help ensure the safety of energy storage systems across the state by examining the energy storage fires and reviewing fire safety standards.[72] The Fire Safety Working Group's analysis will include review of emergency

[72] The Fire Safety Working Group consists of the Division of Homeland Security and Emergency Services, Office of Fire Prevention and Control, NYSERDA, DEC, DPS, and Department of State.

NYSERDA, New York's Inter-Agency Fire Safety Working Group, available at: https://www.nyserda.ny.gov/All-Programs/Energy-Storage-Program/New-York-Inter-Agency-Fire-Safety-Working-Group.

response protocols, fire safety standards, and current fire code. The analysis done by the Fire Safety Working Group will culminate in recommendations to help prevent fires at energy storage systems in New York.

On December 21 2023, the Fire Safety Working Group released its initial findings which included that there were no harmful levels of toxins detected in the soil or water at each of the three energy storage locations where fires occurred in 2023.[73] The Fire Safety Working Group is also negotiating to obtain the Root Cause Analyses for the fires; once available, subject matter experts will review and analyze. NYSERDA is also targeting the end of Q2 2024 for site reviews of energy storage sites in New York to improve best practices.

On February 6, 2024, NYSERDA released the draft Fire Code Recommendations Report. Updated recommendations, reflecting comments received in response to the draft, will be issued in June 2024. The Fire Safety Working Group continues to run in parallel with the energy storage proceeding.

One of the core mandates of the Commission is to ensure the safe delivery of energy. As energy storage becomes a more common and critical source of power in New York, the safety of these facilities is paramount. The Commission is committed to fire safety, even if the Fire Safety Working Group recommendations are not adopted at the time of the issuance of this Order. Accordingly, the Commission directs NYSERDA to include which of the applicable recommendations that come out of the Fire Safety Working Group will be included in its Implementation Plan. When considering fire safety requirements,

[73] NYSERDA, Initial Findings Released From Inter-Agency Fire Safety Working Group on Emergency Response, December 21, 2023, available at: https://www.nyserda.ny.gov/About/Newsroom/2023-Announcements/2023-12-21-Governor-Hochul-Announces-Results-of-Fire-Safety-Working-Group.

NYSERDA is not limited to the recommendations issued by the Fire Safety Working Group and may include more stringent requirements. If the Fire Safety Working Group recommendations are adopted in the future, NYSERDA shall file an updated Implementation Plan reflecting those requirements as necessary.

IMPLEMENTATION PLANS

The energy storage programs in the bulk, retail, and residential sectors, as described above, will be administered by NYSERDA. This section discusses the Implementation Plans to be developed by NYSERDA, with consultation from Staff, that will detail the implementation strategies and program goals of the energy storage programs. Due to the differences in structure between the various proposed programs, NYSERDA shall file two Implementation Plans. One Implementation Plan will address the bulk energy storage program (Bulk Storage Implementation Plan) and the other will address the retail and residential programs (Retail/Residential Implementation Plan). The Bulk Storage Implementation Plan shall be filed with the Commission for approval within 120 days of this Order. The Bulk Storage Implementation Plan shall be subject to a public notice and comment period, pursuant to SAPA, and subsequent consideration by the Commission. The Retail/Residential Implementation Plan shall be filed within 60 days of this Order. This Implementation Plan will also be subject to a SAPA public notice and comment period and subsequent consideration by the Commission. The Energy Storage Order required a similar process for NYSERDA to develop an Implementation Plan which detailed program requirements; NYSERDA may use the previously prepared Implementation Plan as a framework, to be updated as appropriate to reflect the new program designs discussed above.

At a minimum, NYSERDA shall include the following topics within the Implementation Plans:

1. Budget details for each of the bulk, retail, and residential programs;
2. Performance metrics;
3. Incentive Structure for each energy storage program;
4. Project Application Submission Process;
5. Quality Assurance;
6. Measurement and Verification;
7. Technical and Other Requirements;
8. Disadvantaged community access considerations; and
9. Any other topics throughout this Order that the Commission has directed to be included.

In addition to the topics discussed above, within the Bulk Storage Implementation Plan, NYSERDA shall detail how duration and geographic considerations will be evaluated, consistent with the Commission directives discussed in the Bulk Energy Storage Program section of this Order. NYSERDA shall also describe in its Implementation Plans how it will incorporate any recommendations that come out of the Fire Safety Working Group. Additionally, as discussed above, NYSERDA shall specify a 20 MWh cap for retail energy storage projects in the Retail Energy Storage Program section.

Following Commission review of the Implementation Plans, NYSERDA shall also develop and file two program manuals, one for the retail/residential programs and one for the bulk storage program, based upon the respective approved Implementation Plan that sets forth specific program provisions and requirements. These manuals may be updated as needed, after consultation with Staff.

LONG DURATION ENERGY STORAGE AND INNOVATION

Roadmap Recommendations

The Roadmap discusses the future importance of LDES. The forecasted peak load period coupled with expected low renewable output highlights the need for LDES resources. The Roadmap's analysis identifies a need for 24 GW of 100-hour battery storage with 50 percent RTE and 13 GW of in-state incremental new renewable resources to provide the necessary energy to charge these energy storage resources. The Roadmap recommends that NYSERDA's Innovation Program prioritize research in LDES that can provide grid value and is likely to be developed due to strong supply-chain dynamics by 2040. The Roadmap further recommends that the Innovation Program examine funding needs within the existing framework with a focus on enabling large scale LDES demonstration projects sized between 50-100 MWs. These projects are intended to provide insight into use cases for LDES and information for the utilities and NYISO to integrate into their planning and operational procedures.

Comments

ACE NY agrees that demonstrating LDES technologies before 2030 is important to gain experience with this resource class and recommends that NYSERDA establish a funded demonstration program to facilitate LDES deployment and develop a program to support commercial deployment of LDES. Convergent Energy supports research and development initiatives to help stimulate LDES development and states that any opportunity to participate in such a program be transparent and competitive. Form Energy recommends that multi-day storage be included in all grid planning processes and be eligible for the ISC, and supports multiple large-scale long duration energy storage projects. Hydrostor supports additional funding for innovative long-term energy storage technologies with a focus on non-lithium-ion 100 MW+ projects. Plug Power advocates for

incentivizing commercially available hydrogen fuel technology for LDES.

Commission Determination

As discussed above, the Commission sees the important role that LDES will have in enabling a reliable energy transition. NYSERDA's Innovation Program has several LDES demonstration and pilot programs currently underway that utilize a variety of technologies including iron-air batteries, zinc alkaline batteries, and hydrogen storage. The Commission directs NYSERDA to continue to work on establishing pilot projects that span a variety of LDES technologies as part of its Innovation Program to best position New York to timely develop and deploy LDES assets when the electric power system requires it.

PROGRAM COSTS AND RECOVERY

Roadmap Recommendations

The Roadmap recognizes the need for new funding to deploy energy storage to achieve the goal of 6 GW by 2030. The Roadmap estimates the cost of deploying 200 MWs of residential energy storage at $75 million on a net present value basis, or $100 million on a nominal basis, and the cost of deploying 1,500 MWs of retail energy storage at $489 million on a net present value basis, or $675 million on a nominal basis. For the bulk program, cost estimates range between $701.5 million and $1.42 billion on a net present value basis or $1.33 billion to $2.94 billion on a nominal basis to procure 3,000 MWs. The large range of estimated costs for the bulk program is primarily due to the uncertainty of future wholesale energy and capacity prices which are used to estimate the future costs of the indexed storage credits.

The Roadmap also recommends separate funding for administrative costs, including costs related to program

administration, implementation support, program evaluation, and the New York State Cost Recovery Fee. The Roadmap notes that most of these costs relate to the residential and retail programs, with a smaller portion going towards startup costs of the bulk program. Therefore, the Roadmap recommends that bulk program start-up costs use legacy funding from storage programs approved in the Energy Storage Order.

The Roadmap estimates total program administration costs to total $29 million, $14.5 million of which is already available through the previously approved Bridge Incentive and the remaining $14.5 million of which is requested from the Commission. Program administration costs include staffing requirements, contract management, policy engagement, analysis to support the energy storage programs, data management and reporting, and various support services including legal, marketing, and information technology.

Implementation support costs for the programs are estimated at $15 million, $1.9 million of which is available through existing uncommitted funds and the remaining $13.1 million of which is requested from the Commission. Implementation support costs include costs for technical support for wholesale and distribution market analysis, interconnection and hosting capacity, power system modeling, as well as quality assurance including field and photo inspections, and measurement/verification.

The Roadmap calls for $3 million in funding for program evaluation activities. Program evaluation activities include impact assessments to verify portfolio performance, market characterization studies needed to uncover market barriers that slow market transformation, and process evaluation activities to help understand customer satisfaction with the program processes.

The New York State Cost Recovery Fee (CRF) is a fee assessed to NYSERDA and other public authorities by New York for an allocable share of state governmental costs attributable to the provision of services to public benefit corporations, pursuant to Public Authorities Law §2975. NYSERDA's CRF for the past six fiscal years averaged 1.1 percent and when applied across their programs weighted by the average program expenditures, the proposed retail and residential energy storage programs account for $8.9 million in new funding related to the CRF.[74] In total, the Roadmap calls for $30.0 million on a net present value basis or $39.6 million on a nominal basis in new funding relating to administration, implementation, program evaluation, and CRF costs.

Total incentives for the residential, retail, and bulk program, inclusive of administrative costs, on a net present value basis, are estimated to cost between $1.29 billion and $2.01 billion, paid out and collected from ratepayers over 21 years. The Roadmap presented electric customer bill impacts for residential customers estimated between 0.38 percent and 0.59 percent on average across the 21-year period, which equates to about $0.40-$0.64 per month for the average residential customer. The range in estimate is attributable to forecast uncertainty in wholesale energy and capacity payments which are used to estimate the future costs of the indexed storage credits.

The analysis performed for the Roadmap estimated that deployment of 6 GW of storage by 2030 will yield an estimated $1.94 billion (net present value) in net societal benefits to New York, due to increased delivery of renewable energy and reduced reliance on other more expensive firm capacity

[74] Roadmap, pp. 66-7.

resources. These benefits reflect the value of avoided electricity system expenditures. Further societal benefits, not quantified here, would include improved air quality in communities impacted by fossil generation.

The Roadmap contemplates two different funding mechanisms for the energy storge programs, one for the bulk program and one for the retail and residential programs. The different funding mechanisms reflect the variance in program structure. For the bulk program, the Roadmap recommends a funding mechanism akin to the one employed for Tiers 2,3, and 4 of the Clean Energy Standard and Offshore Wind Standard, which would require jurisdictional LSEs to pay in proportion to their share of statewide load and be collected from customers through the supply charge over the period 2029 to 2044.[75]

The retail and residential energy storage programs are structured such that payments to awarded projects are made at the time of commissioning using a fixed-rate incentive. The Roadmap recommends using a pay-as-you-go methodology, like what is done in other Clean Energy Fund programs, such as NY-Sun, collected from jurisdictional electric utilities on a statewide MWh load ratio share basis and expected to be collected from customers through the delivery charge over the period 2024 to 2030.[76] As discussed earlier, the Roadmap recommends that NYPA

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[75] See CES Framework Order.

More information on how the Clean Energy Standard has been implemented: NYSERDA, Large-Scale Renewables, available at: https://www.nyserda.ny.gov/All-Programs/Large-Scale-Renewables.

[76] Case 14-M-0094 et al., Clean Energy Fund, Order Authorizing the Clean Energy Fund Framework (issued January 21, 2016), p. 98 (Clean Energy Fund Order). The Clean Energy Fund Order authorized the Bill-As-You-Go approach to better match collections with expenditures. This is the exact methodology referred to in the Roadmap as “pay-as-you-go”.

and LIPA, as non-jurisdictional LSEs, voluntarily participate in collections for all three programs.

Comments

NineDot supports the budget proposal described in the Roadmap as a prudent use of ratepayer funds that will provide environmental, financial, and social-equity benefits to New York ratepayers. NYSEIA recommends the Commission approve the budget for the energy storage programs discussed in the Roadmap. MI opposes the total proposed cost of the energy storage programs and urges the Commission to view the proposed energy storage programs in conjunction with other high-cost initiatives the Commission has previously authorized.

In response to the Updated Roadmap, Sierra Club states that the higher cost estimates are modest compared to alternative methods to achieve the State's climate goals. The City explains that the cost estimates in the Updated Roadmap are likely to increase over time, accelerating the need for the Commission to approve the Roadmap so that energy storage procurements can commence. NY-BEST, ACE NY, the Solar Energy Industries Association, and NYSEIA support the Updated Roadmap's revised estimated costs as necessary to build out 6 GW of energy storage statewide by 2030 and assert that the benefits of doing so justify the increased costs.

Commission Determination

Retail and Residential Program Costs

The Commission approves the $814.6 million in funding requested in the Roadmap for the continued expansion of the retail and residential energy storage programs necessary to meet our goals. This includes $775 million in program incentives and $39,648,139 for program administration, implementation support, program evaluation and the CRF expense as detailed in the Roadmap. This funding is critical to successfully implement the

retail and residential energy storage programs and will give developers certainty into what resources are available for the pursuit of energy storage projects. The NYSERDA retail and residential program costs collections undertaken in accordance with this Order shall be allocated across the electric utilities and LIPA based on a MWh load ratio share. This is an equitable approach since the programs are intended to achieve statewide climate goals that will benefit all ratepayers equally. The pro-rata share allocated to each electric utility and LIPA is shown in Appendix F. LIPA is encouraged to voluntarily participate and accept its allocation of the retail and residential program costs. With this approach, both NYPA and LIPA customers are eligible to participate in the programs. The costs for these programs are expected to be incurred over the period 2024 to 2032. Therefore, electric utilities are directed to collect their proportional share of the costs, as identified in Appendix G, annually, over the period 2024 through 2032. For 2024, the amounts shown shall be collected over the remaining months of 2024 once the applicable tariff changes become effective.

To effectuate the cost recovery from NYPA customers as discussed earlier, the electric utilities shall recover NYSERDA's retail and residential program costs from all customers, including NYPA customers that receive delivery service from the electric utility. The delivery surcharge to be used for each electric utility is shown in Appendix E and each has a distinct name, including the System Benefit Charge for NYSEG and RG&E; the Clean Energy Standard Delivery Charge for Con Edison, National Grid, and O&R; and the Clean Energy Standard Surcharge for Central Hudson. Each utility shall file tariff amendments necessary to effectuate the recovery of costs associated with the retail and residential storage programs

through each applicable delivery surcharge. The tariffs are to go into effect on a permanent basis on October 1, 2024, and are to be filed on not less than 30 days' notices.

We authorize the use of the Bill-As-You-Go mechanism to transfer funds for the retail and residential energy storage programs from the utilities to NYSERDA. This mechanism, which the Commission has utilized for the transfer of funds from utilities to NYSERDA for a number of clean energy programs, allows for NYSERDA to bill the utilities for projected expenditures of the program based on maintaining a two-month working capital balance.[77] NYSERDA shall enter into a separate agreement with LIPA to address LIPA's proportional contribution to these programs. NYSERDA is directed to file with the Secretary to the Commission an updated Bill-As-You-Go Summary for the retail and residential energy storage program costs, within 60 days of the issuance of this Order. NYSERDA and the electric utilities are directed to execute any necessary changes to the individual Bill-As-You-Go funding agreements within 90 days of the issuance of this Order.[78] NYSERDA shall file an updated Clean Energy Fund Cash Flow Analysis within 30 days of the issuance of this Order reflecting the collections and projected expenditures associated with the Retail and Residential Energy Storage programs.[79]

While the Roadmap included the levelized bill impacts of the proposed storage programs in total, the Commission also considers the near-term bill impacts on the typical bill of

[77] Clean Energy Fund Order, pp. 96-100.

[78] When filing with the Secretary, the updated Bill-As-You-Go Summary should be filed concurrently within Case-14-M-0094.

[79] When filing with the Secretary, the updated Clean Energy Fund Cash Flow Analysis should be filed concurrently within Case-14-M-0094.

various customer classes of the program being adopted.[80] Table 1 below provides those estimates for the retail and residential storage program, for the expected highest program cost year, 2030.

Table 1

Retail / Residential Storage Program Bill Impacts	2030 Cost: $211 million, or $0.00178/kWh			
	Residential	Commercial	Industrial	Industrial HLF
Increase in Monthly bills	$ 1.07	$ 22.43	$ 1,281.94	$ 2,307.50
Central Hudson	0.7%	1.2%	1.6%	2.0%
Con Ed	0.6%	0.6%	0.8%	1.0%
National Grid	1.0%	1.4%	1.8%	2.4%
NYSEG	1.1%	1.5%	2.0%	2.3%
O&R	0.8%	1.0%	1.5%	1.8%
RG&E	1.1%	1.1%	1.7%	2.2%

Bulk Program Costs

The costs associated with the bulk program are not static due to the nature of the indexed storage mechanism and the fact that the actual results of future competitive procurements are unknown. This results in the need to look at a range of costs associated with the procurement of 3,000 MW of bulk storage projects. The Roadmap presented an estimated

[80] Percentage impacts are based on 2023 typical monthly bills for Residential-600 kWh, Commercial-50 kW; 12,600 kWh, Industrial-2,000 kW; 720,000 kWh, and Industrial High Load Factor (HLF)-2,000 kW; 1,296,000 kWh.

program cost ranging between $701.5 million and $1.42 billion on a net present value basis, which was derived from the range of $1.33 billion to $2.94 billion in program costs on a nominal basis. The forecasted annual amounts expected to be incurred starting in 2028 and continuing through 2044 are shown in Appendix H. Comparing this range of costs, in addition to the fixed costs of the retail and residential program to the expected net benefits, we find it reasonable to approve the 3,000 MW bulk energy storage program. Since the benefits of this program will primarily be to enable the reliable transition to a 100 percent renewable electric system, the proposed cost recovery mechanism described in the Roadmap, which requires jurisdictional LSEs to be allocated costs in proportion to their share of Statewide load, is reasonable and therefore adopted. NYSERDA shall include the processes for calculating and collecting bulk storage program costs from all statewide LSEs and NYPA and LIPA. Each utility shall file tariff amendments necessary to effectuate the recovery of costs associated with the bulk storage program through an applicable supply surcharge.

As described earlier, we recognize that NYPA and LIPA have the demonstrated ability to develop/procure bulk storage projects and therefore NYSERDA shall take such independent storage procurement into account in its assessment of amounts of bulk storage needed through its solicitations. Such projects, subject to meeting the requirements of the bulk storage program, should also be credited towards NYPA and LIPA load share cost allocation. NYSERDA shall propose the details of this crediting process in the bulk storage program implementation plan.

Similar to the bill impact table above, the Commission considered the near-term bill impacts related to the bulk storage program. We provide the high end of the cost range, which we expect customers to experience in 2030 when the program

has achieved the 3,000 MW of procurement. Those bill impacts are shown in Table 2 below.

Table 2

Bulk Storage Program Bill Impacts	2030 Cost: $227 million, or $0.00176/kWh			
	Residential	Commercial	Industrial	Industrial HLF
Increase in Monthly bills	$ 1.05	$ 22.14	$ 1,265.07	$ 2,277.13
Central Hudson	0.7%	1.2%	1.6%	2.0%
Con Ed	0.6%	0.6%	0.8%	1.0%
National Grid	1.0%	1.4%	1.8%	2.4%
NYSEG	1.1%	1.5%	2.0%	2.3%
O&R	0.8%	1.0%	1.4%	1.7%
RG&E	1.1%	1.1%	1.7%	2.1%

CONCLUSION

Today's Order establishes a 6 GW energy storage deployment target in New York by 2030. The programs discussed in the Roadmap and described in this Order will realize a total of 4,700 MWs of incremental installed capacity of energy storage spanning the bulk, retail, and residential sectors and move the State further in its clean energy transition to a reliable electric grid powered by zero-emission resources. The Commission expects that continued collaboration between Staff, NYSERDA, NYPA, LIPA, the NYISO, and other stakeholders in effectuating the energy storage deployment programs will be critical to the success of the New York State energy storage program.

The Commission orders:

1. The New York State Energy Research and Development Authority shall conduct a minimum of three bulk energy storage solicitations, held no less than annually. The New York State Energy Research and Development Authority shall issue the first bulk energy storage Request For Proposals no later than June 30, 2025, meeting the requirements described in the body of this Order.

2. The New York State Energy Research and Development Authority shall apply a procurement target of 20 percent for long duration energy storage projects in each of the bulk energy storage procurement solicitations.

3. The New York State Energy Research and Development Authority shall implement the Index Storage Credit mechanism for bulk storage, as described in the body of this Order.

4. The New York State Energy Research and Development Authority shall allow for a one-time inflation adjustment as it implements the Index Storage Credit mechanism, as directed in the body of this Order.

5. The New York State Energy Research and Development Authority shall adopt the operational requirements for the Index Storage Credit mechanism, as directed in the body of this Order.

6. The New York State Energy Research and Development Authority shall include maturity requirements for its bulk energy storage solicitations as directed in the body of this Order.

7. The New York State Energy Research and Development Authority shall establish a 15-year maximum contract term length for lithium-ion battery bulk energy storage projects and a 25-year maximum contract term length for bulk non-lithium-ion battery energy storage projects.

8. The New York State Energy Research and Development Authority is directed to develop a publicly accessible calculator for Value of Distributed Energy Resources energy storage projects, as directed in the body of this Order.

9. Central Hudson Gas & Electric Corporation, Consolidated Edison Company of New York, Inc., New York State Electric and Gas Corporation, Niagara Mohawk Power Corporation d/b/a National Grid, Orange and Rockland Utilities Inc., and Rochester Gas and Electric Corporation shall continue their bulk storage dispatch rights Request for Proposals process under the previously approved Utility Dispatch Rights framework.

10. The New York State Energy Research and Development Authority shall establish a declining block retail energy storage program to procure 1,500 megawatts of retail energy storage, as discussed in the body of this Order.

11. The New York State Energy Research and Development Authority shall consult with Department of Public Service Staff and conduct stakeholder outreach prior to modifying the incentive blocks for the retail energy storage program, as discussed in the body of this Order.

12. The New York State Energy Research and Development Authority shall establish a 20 megawatt-hour cap for retail energy storage projects.

13. The New York State Energy Research and Development Authority shall establish a residential energy storage program to support the buildout of 200 megawatts of residential energy storage statewide by 2030, as discussed in the body of this Order.

14. The New York State Energy Research and Development Authority shall include language in contracts with energy storage developers that require paying the New York State Prevailing Wage, as discussed in the body of this Order.

15. The Department of Public Service Staff shall prepare an annual report and perform a triennial review for Commission consideration on the status of the energy storage programs and progress to date, as well as barriers to success, consistent with the process initiated in the Energy Storage Order.

16. The New York State Energy Research and Development Authority shall use any funding from cancelled retail and residential projects and apply them to new qualifying projects.

17. The New York State Energy Research and Development Authority shall procure a minimum of 35 percent of bulk and off-site retail energy storage projects in the New York Independent System Operator's G-K Capacity Zones, as discussed in the body of this Order.

18. The New York State Energy Research and Development Authority shall procure energy storage projects in the bulk, residential, and retail programs in disadvantaged communities consistent with the allocations described in the body of this Order.

19. The New York State Energy Research and Development Authority shall ensure that the procurement of energy storage projects is consistent with the in-service date requirements described in the body of this Order.

20. Central Hudson Gas & Electric Corporation, Consolidated Edison Company of New York, Inc., New York State Electric and Gas Corporation, Niagara Mohawk Power Corporation d/b/a National Grid, Orange and Rockland Utilities Inc., and Rochester Gas and Electric Corporation shall study the non-market transmission and distribution services that energy storage can provide, including a bridge to wires use case, as discussed in the body of this Order; the results of this study

shall be filed with the Commission within 120 days of this Order.

21. Consolidated Edison Company of New York, Inc. shall submit a filing within 60 days of this Order detailing the Rider Q Program, including any suggestions for improvement, as described in the body of this Order.

22. The New York State Energy Research and Development Authority shall consider and include fire safety requirements in its Implementation Plans, as discussed in the body of this Order.

23. The New York State Energy Research and Development Authority shall file a bulk storage program Implementation Plan with the Commission within 120 days of this Order, consistent with the requirements outlined in the body of this Order.

24. The New York State Energy Research and Development Authority shall file a retail/residential storage program Implementation Plan with the Commission within 60 days of this Order, consistent with the requirements in the body of this Order.

25. The New York State Energy Research and Development Authority's Innovation Program shall continue efforts to commission Long Duration Storage pilot projects that utilize a variety of technologies spanning of use cases.

26. As discussed in the body of this Order, funding for the Retail and Residential energy storage programs and administrative costs totaling $814.6 million shall be collected in the manner prescribed in the body of this Order and made available to the New York State Energy Research and Development Authority through the Bill-As-You-Go Mechanism.

27. The New York State Energy Research and Development Authority is directed to file an Updated Bill-As-You-Go Summary,

as discussed in the body of this Order, within 60 days of the issuance of this Order, as described in the body of the Order.

28. The New York State Energy Research and Development Authority and Central Hudson Gas & Electric Corporation, Consolidated Edison Company of New York, Inc., New York State Electric and Gas Corporation, Niagara Mohawk Power Corporation d/b/a National Grid, Orange and Rockland Utilities Inc., and Rochester Gas and Electric Corporation are directed to execute any necessary modifications to their individual Bill-As-You-Go Funding Agreements within 90 days of the issuance of this Order.

29. The New York State Energy Research and Development Authority shall file an updated Clean Energy Fund cash flow analysis incorporating the collections and projected expenditures for the Retail and Residential Energy Storage Programs, within 30 days of the issuance of this Order.

30. The New York State Energy Research and Development Authority shall enter into an agreement with the Long Island Power Authority to address its proportional contribution to the Retail and Residential Energy Storage Programs within 90 days of the issuance of this Order.

31. Central Hudson Gas & Electric Corporation, Consolidated Edison Company of New York, Inc., New York State Electric & Gas Corporation, Niagara Mohawk Power Corporation d/b/a National Grid, Orange and Rockland Utilities, Inc., and Rochester Gas & Electric Corporation shall file tariff amendments necessary to effectuate the recovery of costs associated with the New York State Energy Research and Development Authority Bulk, Residential and Retail storage programs, on not less than 30 days' notice, to become effective on a permanent basis on October 1, 2024, as discussed in the body of this Order.

32. Funding for the bulk energy storage program incentives shall be collected by jurisdictional load serving entities in proportion to their share of Statewide load as described in the body of this Order.

33. Bulk, retail, and residential energy storage projects procured under the programs described in this Order shall have an in-service date by December 31, 2030, unless they meet the criteria described in the body of this Order for an extension. Energy storage projects procured under the programs established in the Energy Storage Order may have their in-service date extended after December 31, 2025, if they meet the criteria described in the body of this Order.

34. In the Secretary's sole discretion, the deadlines set forth in this Order may be extended. Any request for an extension must be in writing, must include a justification for the extension, and must be filed at least three days prior to the affected deadline.

35. This proceeding is continued.

By the Commission,

(SIGNED) MICHELLE L. PHILLIPS
Secretary