Clean Energy Standard Annual Progress Report: 2022 Compliance Year

Final Report | January 2024

NEW YORK STATE | NYSERDA

NYSERDA's Promise to New Yorkers:

NYSERDA provides resources, expertise, and objective information so New Yorkers can make confident, informed energy decisions.

Our Vision:

New York is a global climate leader building a healthier future with thriving communities; homes and businesses powered by clean energy; and economic opportunities accessible to all New Yorkers.

Our Mission:

Advance clean energy innovation and investments to combat climate change, improving the health, resiliency, and prosperity of New Yorkers and delivering benefits equitably to all.

Cover Image: Coeymans Solar Project Courtesy of NYSERDA

Clean Energy Standard Annual Progress Report: 2022 Compliance Year

Final Report

Prepared by:

New York State Energy Research and Development Authority

Albany, NY

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Abstract

This Clean Energy Standard Progress Report is intended to summarize progress toward New York State's Clean Energy Standard (CES) as of December 31, 2022. Renewable Energy Certificate (REC) trading closes at the end of June following the Compliance Year (i.e. REC trading closes at the end of June 2023 for the 2022 Compliance Year). This annual report is issued in January covering the most recently completed Compliance Year. It includes a description of initiatives launched in response to the Climate Leadership and Community Protection Act (Climate Act), which was signed into law in July of 2019. The Climate Act requires electricity consumed in the State to be 70% renewable by 2030 and zero-emission by 2040 (2030 and 2040 targets), sets procurement targets for various resource types, and establishes an investment goal for programs that benefit disadvantaged communities. The Climate Act directed the New York Public Service Commission (PSC) to create programs for achieving the 2030 and 2040 targets.[1] The PSC initiated that effort by expanding the Clean Energy Standard (CES).[2]

This report includes procurement results and aggregate Load Serving Entity (LSE) compliance obligations over the 2022 compliance period and discusses the results of additional means to achieve the expanded CES mandate, including accounting for baseline renewable and voluntary market activity.

This report is intended to provide policymakers and interested stakeholders with the information necessary to make informed decisions on the program and the policy's status and effectiveness as well as to inform any necessary programmatic adjustments.

Keywords

Renewable electricity, clean energy, large-scale renewables, energy programs, Clean Energy Standard, Climate Act

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Acronyms and Abbreviations

ACP	Alternative Compliance Payment
APP	Assistance Program Participants
BOEM	Bureau of Ocean Energy Management
CCA	Community Choice Aggregation
CES	Clean Energy Standard
CHPE	Champlain Hudson Power Express
CPNY	Clean Path NY
Climate Act	Climate Leadership and Community Protection Act
CST	Customer-Sited Tier
DER	Distributed Energy Resources
DPS	Department of Public Service
EDP	Environmental Disclosure Program
GHG	Greenhouse gas
GWh	Gigawatt-hours
LIPA	Long Island Power Authority
LSE	Load Serving Entity
MW	Megawatts
MWh	Megawatt-hour
NYGATS	New York Generation Attribute Tracking System
NYCA	New York Control Area
NYISO	New York State Independent System Operator
NYPA	New York Power Authority
NYS	New York State
NYSERDA	New York State Energy and Research Authority
OREC	Offshore Wind Renewable Energy Certificates
OSW	Offshore Wind
PSC	Public Service Commission
PSEG	Pacific Service Enterprise Group
RPS	Renewable Portfolio Standard
REC	Renewable Energy Certificate
RES	Renewable Energy Standard
SCC	Social Cost of Carbon
TBtu	Trillion British Thermal Units
VDER	Value of Distributed Energy Resources
ZEC	Zero-Emissions Credit

Summary and Progress to Date

This annual Clean Energy Standard (CES) Progress Report summarizes compliance with the Renewable Energy Standard (RES) and Zero-Emissions Credit (ZEC) requirements for 2022 and reports on the cumulative clean energy activities in New York State that contribute to the achievement of the CES mandate.[3]

The annual CES Progress Report is intended to inform the New York State Public Service Commission (PSC), Department of Public Service (DPS), market participants, and other interested parties on the annual and cumulative progress toward the State's clean energy goals. Policymakers and interested stakeholders can use this information, along with other supporting facts, to make informed decisions on the policy's status and effectiveness as well as to inform any necessary programmatic adjustments. Annual progress reporting also provides actionable information to market participants, bolstering the development of a competitive renewable energy market.

The purpose of the CES Progress Report is as follows:

- Report on progress toward New York State's CES mandate as of December 31, 2022.
- Summarize aggregate Load Serving Entity (LSE) compliance with RES and ZEC obligations.
- Inform consumers, policymakers, and stakeholders regarding the characteristics of the State's electricity fuel mix.
- Describe outcomes of State programs, regulatory obligations, and voluntary market activity.
- Describe support for Maintenance Tier 2 at-risk eligible facilities.
- Report on Build-Ready Program activity.
- Document trends in key measures of renewable energy market activity.

S.1 Clean Energy Progress to Date

For the 2022 CES compliance year, the contribution from renewable energy resources to meet the State's electric load was 25.1%.[4] In 2022, New York State electric load served increased by approximately 1.3 million megawatt-hours (MWh) compared to 2021, while hydroelectric generation imported from adjacent control areas decreased by approximately 2.6 million MWh. Although imported electricity overall remained relatively flat, the decrease in imported hydroelectric generation was replaced with imported fossil-fueled generation. In 2022, exports of baseline renewables and total in-State renewable energy generation remained relatively stable compared to 2021.

It is anticipated that the State will see a significant acceleration in its progress over the coming years as many renewable energy projects enter operation from several procurement programs, including annual solicitations for new land-based renewables, offshore wind, solar incentive programs, and other State procurements.

In December 2022, the New York State Department of Environmental Conservation published the New York State Statewide Greenhouse Gas Emissions Report[5] which provided a detailed account of greenhouse gas (GHG) emissions in the State from 1990–2021. The report found that Energy Sector emissions were 19% lower in 2021 than in 1990 (the report classifies the Energy Sector as emissions associated with the energy system, including electricity, transportation, and buildings/industrial heating).

S.2 Large-Scale Renewable Tier 1 (Land-Based) Projects under Construction and Entering Operation

In 2021, 18 large-scale renewable generation projects were under construction in New York State totaling 856 megawatts (MW). These projects are expected to create more than 1,800 jobs, generate more than $1.2 billion in private investment, and more than $280 million in incremental economic benefits to the State. Additionally in 2021, five of these large-scale renewable projects entered operation, totaling over 250 MW, and expected to generate enough energy to power over 75,000 homes annually.

In 2022, five additional large-scale renewable generation projects started construction in New York State totaling 281 MW. These projects will create more than 600 jobs and generate more than $0.4 billion in private investment and more than $85 million in incremental benefits to New York State. Additionally in 2022, three large-scale renewable projects from the projects that commenced construction in 2021 entered operation, totaling 42 MW, and expected to generate enough energy to power over 8,000 homes annually.

In 2023, one additional large-scale renewable generation project started construction in the State totaling 177 MW. Additionally, in 2023, nine large-scale renewable projects entered operation totaling 631 MW.

S.3 NY-Sun

In addition to the CES, the NY-Sun initiative was created to expand distributed solar photovoltaic (PV) capacity throughout New York State, utilizing public funds in a strategic manner to build a self-sustaining solar market. The initiative included an original goal of installing 3 gigawatts (GW) of PV capacity by 2023. The Climate Act set a 6-GW by 2025 mandate to help obtain 70% of the State's electricity from

renewable resources by 2030 and 100% from emissions-free resources by 2040. Following the passage of the Climate Act, NYSERDA filed a petition in September 2019 requesting an additional $573 million to support the expanded 6-GW policy goal and the extension of NY-Sun through 2025. The Commission approved this petition by issuing the Order Extending and Expanding Distributed Solar Incentives on May 14, 2020, authorizing an additional $573 million in funding for NY-Sun. In December of 2021, NYSERDA and DPS filed the 10-GW Distributed Solar Roadmap.[6] In response to the Roadmap, the Commission issued an Order expanding NY-Sun with a new target of 10 GW of distributed solar by 2030, enough to power nearly 700,000 homes annually.[7] In 2023, the NY-Sun initiative had a record-setting year with 755.5 MW of NYSERDA-supported projects beginning operation.

S.4 New York Power Authority and Long Island Power Authority

The Long Island Power Authority (LIPA) has continued its clean energy initiatives, including its Integrated Resource Plan, transmission enhancements, rate structures and South Fork Wind, which was first approved by the LIPA Board of Trustees in 2017, began construction in February 2022, and began delivering clean energy from its first turbine in late 2023. All 12 turbines are anticipated to be operational in 2024.

The New York Power Authority (NYPA) is also coordinating with NYSERDA to implement procurement programs for land-based renewable energy and to facilitate behind the meter customer-sited distributed energy resources. As part of the VISION2030 strategic plan, NYPA will continue to focus on expanding new transmission across the State to facilitate the delivery of renewable resource generation to consumers. NYPA also operates the State's two largest hydroelectric power projects, which provide a substantial portion of New York State's clean energy supply.

S.5 Voluntary Clean Energy Activity

In 2022, enrollment in Community Choice Aggregation (CCA) programs declined due to market challenges. Two different electricity suppliers defaulted with the NYISO resulting in the suspension or termination of the service agreement between NYISO and the supplier and caused the return of 13 municipalities back to the incumbent utility while other communities did not renew their contracts due to unfavorable market conditions. At the beginning of the service year in January, there were 73 municipalities receiving electricity supply through CCA programs, and by December 2022 this number had decreased to 52 municipalities (32 of those municipalities choosing 100% clean energy supply).[8] Notably, most of the municipalities involved in the supplier defaults and lapse of contract

renewals have since re-enrolled in the program under new contracts in the 2023 program year, and participant numbers have increased as a result. Aside from this situation, customer counts remained relatively stable throughout the rest of the program. Two opt-Out Community Distribution Generation (Community Solar) projects continued to provide 10% savings to 1,651 program participants, with 110 of those customers falling in the Assistance Program Participants (APP) category.

S.6 New York Generation Attribute Tracking System

Much of the information in this report is obtained through the New York Generation Attribute Tracking System (NYGATS), which uses data provided by NYISO and other market participants to track the generation of renewable energy in the State, a function that supports the CES program and the voluntary renewable energy market. In addition, NYGATS supports the administration of the Environmental Disclosure Program (EDP),[9] which reports on the environmental characteristics of the electricity consumed in the State.

S.7 Load Serving Entity Obligations

LSEs met 81.9% of the 2022 Renewable Energy Standard (RES) obligation, while LSEs under the jurisdiction of the Public Service Commission (PSC) met 99.9% of their RES obligations using a variety of methods including purchases from NYSERDA, other renewable supply, and/or the provision of alternative compliance payments (ACP).

Statewide, LSEs met 99.7% of the 2022 ZEC obligation, while LSEs under the jurisdiction of the PSC met 99.9% of their 2022 ZEC obligations.

For LSEs that had a Tier 2 obligation, 100% met their Tier 2 obligations.

Background

On August 1, 2016, the New York Public Service Commission (PSC) issued its Order Adopting a Clean Energy Standard (2016 CES Order).[10] The Clean Energy Standard (CES) was designed to fight climate change, reduce air pollution, and ensure a diverse and reliable low-carbon energy supply by implementing the 2015 State Energy Plan goal, stating that 50% of the State's electricity must come from renewable energy sources by 2030, as part of a strategy to reduce statewide greenhouse gas (GHG) emissions by 40% by 2030.[11]

Upon adoption, the CES included a Renewable Energy Standard (RES) and a Zero-Emissions Credit (ZEC) requirement. In July of 2018, the PSC established an Offshore Wind Standard to further contribute to the 50% renewable energy requirement.[12] All renewable energy consumed by end-use customers in New York State contributes to the CES, including generation supported by past, present, and future State renewable energy policies as well as voluntary renewable energy purchases.

In July of 2019, the Climate Leadership and Community Protection Act (Climate Act)[13] was signed into law. The Climate Act mandates that (1) at least 70% of New York State electricity will come from renewable energy sources such as wind and solar by 2030 and (2) the State power system achieve zero-emissions by 2040.

In addition to the CES, the NY-Sun initiative was created to expand distributed solar photovoltaic (PV) capacity throughout New York State, utilizing public funds in a strategic manner to build a self-sustaining solar market. The initiative included an original goal of installing 3 gigawatts (GW) of PV capacity by 2023. The Climate Act set a 6-GW by 2025 mandate to help obtain 70% of the State's electricity from renewable resources by 2030 and 100% from emissions-free resources by 2040. Following the passage of the Climate Act, NYSERDA filed a petition in September 2019 requesting an additional $573 million to support the expanded 6-GW policy goal and the extension of NY-Sun through 2025. The PSC approved this petition by issuing the Order Extending and Expanding Distributed Solar Incentives on May 14, 2020, authorizing an additional $573 million in funding for NY-Sun. In December of 2021, NYSERDA and DPS filed the 10 GW Distributed Solar Roadmap.[14] In response to the Roadmap, the PSC issued an Order expanding NY-Sun to a 10 GW program and authorizing $1,473 million in new funding.[15]

On April 2, 2020, the Accelerated Renewable Energy Growth and Community Benefit Act (Accelerated Renewable Act) was signed into law. The bill established a new large-scale renewable siting process to be managed by a new office within the Department of State and created a Build-Ready Program through which underutilized sites would be developed as renewable generation projects for private market construction and operation.[16]

On June 18, 2020, to implement the Climate Act, the staff of the DPS and NYSERDA jointly filed a white paper on Clean Energy Standard Procurements to Implement New York State's Climate Leadership and Community Protection Act.[17] On October 15, 2020, the PSC issued its responsive Order Adopting Modifications to the Clean Energy Standard (2020 CES Order) in Case 15-E-0302.[18] In the 2020 CES Order, the PSC adopted several modifications to the CES to align it with the Climate Act mandates. The 2020 CES Order also adopted a competitive procurement program under Tier 2 of the CES to secure the continued availability of existing renewable resources and authorized a new Tier 4 to support renewable energy projects that deliver energy to New York City. The Tier 4 procurement resulted in the largest transmission projects contracted in New York State in the last 50 years. These projects are expected to deliver up to $5.8 billion in societal benefits statewide including GHG reductions and improved air quality, and $8.2 billion in economic development across the State. The contracts were submitted to the Public Service Commission in December 2021 for approval, and subsequently approved in April 2022.

On October 15, 2020, the PSC also issued its Order Approving the Build-Ready Program.[19] The program allows NYSERDA to obtain underutilized properties and prepare them for the construction of renewable energy projects. The properties will ultimately be made available to private developers through competitive auctions, after which the private developers will construct and operate renewable energy systems on the properties.

On November 29, 2021, the staff of DPS and NYSERDA jointly submitted the 2021 Divergence Test and Target Setting Filing (Divergence Test). The Divergence Test provided an evaluation performed by the staff of DPS and NYSERDA which determined a persistent undersupply situation existed. DPS and NYSERDA recommended that the LSE percentage obligation be reduced for upcoming years. The Commission approved this recommendation on March 16, 2022. The table below provides the updated LSE obligation percentages.

Table S-1. Tier 1 REC Annual Obligations

Year	LSE Tier 1 Obligation	Updated LSE Obligation (03/16/22)
2017	.035%	.035%
2018	.15%	.15%
2019	.78%	.78%
2020	2.84%	2.84%
2021	2.04%	2.04%
2022	5.61%	3.25%
2023	8.20%	6.16%
2024	N/A	6.45%

On April 20, 2023, the PSC issued its Order Modifying Clean Energy Standard (CES) Tier 1 Obligations[20] which approved, with modifications, NYSERDA's petition to transition the CES Tier 1 Renewable Energy Standard (RES) compliance obligation for Load Serving Entities (LSEs) from the predetermined percentage-based obligation to a load share obligation similar to other existing LSE obligations under the CES. Under the load share obligation, LSEs will be obligated to procure all Tier 1 RECs made available by NYSERDA, after the completion of sales to the voluntary market, in a proportion equivalent to their share of the State load. The Phase 5 Implementation Plan filed by NYSERDA on August 30, 2023, details the new approach.[21] The Tier 1 load share obligation will take effect for the 2025 Compliance Year.

On May 10, 2023, the Federal Energy Regulatory Commission (FERC) approved the New York Independent System Operator (NYISO) Capacity Accreditation Rules, which take effect in May 2024 and are designed to better reflect the capacity value of resources, based on their marginal contribution to resource adequacy. In response, NYSERDA filed a petition on June 29, 2023, seeking to revise the way in which future Renewable Energy Certificate (REC) and Offshore Wind Renewable Energy Certificate (OREC) agreements that utilize Index REC and Index OREC pricing mechanism calculate the Reference Capacity Price (RCP). On November 20, 2023, the PSC issued its Order Addressing Capacity Accreditation Rules[22], removing the obligation that resources include a set production factor in their bids to ensure that future CES solicitations can accommodate the new NYISO Capacity Accreditation Rules.

On June 7, 2023, the Alliance for Clean Energy New York (ACENY), Sunrise Wind, and Empire Offshore Wind/Beacon Wind filed separate petitions collectively asking the Commission to authorize NYSERDA to amend existing contracts for 86 land-based large scale renewable projects and four offshore wind projects. The petitions stated that the projects have been exposed to unprecedented global and regional supply chain bottlenecks, high inflation, and increases in the cost of capital, driven by rising interest rates. In addition, the petitions identified impacts associated with the war in Ukraine, including increased global demand for renewable energy and resulting shortages and price increases for key components and equipment. On October 12, 2023, the PSC issued its Order Denying Petitions Seeking to Amend Contracts with Renewable Energy Projects[23] on the grounds that competitive solicitations remain the best mechanism by which to meet the PSC's obligation to establish just and reasonable rates for renewable generation on the path to meeting the renewable energy targets of the Climate Act. Following the Commission's Order denying the petitions, New York State released a 10-Point Renewable Energy Action Plan[24] to support continued interest and growth for large-scale renewable energy development in the State.

As part of the 10-Point Action Plan, NYSERDA launched expedited competitive solicitations for both the Tier 1 (land-based) and Offshore Wind programs:

- On January 25, 2024, NYSERDA received responses to New York's fourth offshore wind solicitation (ORECRFP23-1) with six total bids for three projects from three offshore wind developers, including Community Offshore Wind LLC with the Community Offshore Wind 2 project, Empire Offshore Wind LLC with the Empire Wind 1 project, and Sunrise Wind LLC with the Sunrise Wind project.
- Bid Proposals under the 2023 Tier 1 large-scale renewables solicitation (RESRFP23-1) are due January 31, 2024, with awards expected in April 2024.

NYSERDA provides data updates regarding all CES procurements through the large-scale renewables dataset on Open-NY.[25] NYSERDA remains optimistic that that the expedited 2023 solicitations will see a robust response, helping to ensure New York State's continued progress toward our clean energy goals and competitive business climate.

At the time of publishing, NYSERDA's seventh Tier 1 solicitation (RESRFP23-1) under the Clean Energy Standard had garnered a significant level of competitive interest from the private market. NYSERDA received Step One Eligibility Applications to the 2023 expedited Tier 1 solicitation for 68 unique renewable energy facilities submitted by 24 different proposers.

The applications submitted to Step One of the solicitation comprise:

- Over 5,600 MW of new renewable capacity, enough renewable energy to power over 1.6 million New York homes
- Over 12 million annual megawatt hours of renewable generation.

In total, 60 of the 68 projects submitted for the Step One eligibility process are projects that were previously awarded NYSERDA Renewable Energy Certificate (REC) contracts and were required to have terminated or rescinded their previous Tier 1 contract to participate in this solicitation.

1 New York State's Clean Energy Standard

The Clean Energy Standard (CES) requires that 70% of New York State electricity will come from renewable energy sources by 2030. All renewable energy consumed by end-use customers in the State contributes to the CES, including energy supported by past, present, and future State renewable energy policies such as:

- Renewable Energy Standard (RES)
- Renewable Portfolio Standard (RPS)
- NY-Sun initiative
- Clean Energy Fund (CEF)
- Value of Distributed Energy Resources (VDER)
- Offshore Wind
- Renewable energy procurements by Long Island Power Authority (LIPA) and New York Power Authority (NYPA)
- Voluntary renewable energy purchases

Lowering overall demand through energy efficiency is also an important contributor in achieving the CES. The Zero-Emissions Credit (ZEC) requirement ensures continued operation of certain existing at-risk upstate nuclear power plants, which produce emissions-free generation. Each of these components is described in detail in the following sections.

1.1 Renewable Generators

The CES establishes several tiers of programs under which eligible renewable energy generators may be awarded long-term agreements with NYSERDA. These include Tier-1, Tier-2 Maintenance, Tier-2 Competitive, Tier-3 (ZECs), Tier-4, and Offshore Wind Renewable Energy Certificate (OREC).

NYSERDA provides data updates regarding all CES procurements through the large-scale renewables dataset on Open NY.[26]

1.1.1 Tier 1—New Renewable Energy Resources

RES Tier 1-eligible RECs[27] are those generated by renewable energy projects that qualify as eligible resources under appendix A of the CES Order or the clarified renewable energy systems definition expanded in the 2020 CES Order with a commercial operation date on or after January 1, 2015. These

sources must also meet the eligibility guidelines described in the RES Tier 1 Certification Submission Instructions and Eligibility Guidelines.[28] Only renewable energy projects certified by NYSERDA as Tier 1 eligible can be issued Tier 1 RECs in NYGATS. Tier 1 certified renewable energy projects are publicly reported in the Operational Eligibility[29] report in NYGATS.

The CES Order authorized NYSERDA, as central procurement administrator, to award long-term contracts to Tier 1-eligible generators through annual competitive solicitations for the purchase of Tier 1-eligible RECs, in the form of Tier 1 NYGATS certificates. These RECs are then sold to obligated LSEs for use toward their Tier 1 compliance obligations.

NYSERDA's first RES solicitation was issued in June of 2017; awards were announced in March 2018.[30] The first RES solicitation resulted in agreements with 26 facilities that, once operational, would generate more than 3.2 million megawatt-hours (MWh) of renewable electricity per year. The weighted average award price for the 2017 solicitation was $21.71 per MWh of production over the 20-year term of the awarded contracts.

NYSERDA's second RES solicitation was issued in June 2018 with awards announced in January 2019.[31] The 2018 RES solicitation resulted in agreements with 20 facilities which, once operational, would generate more than 3.8 million MWh of renewable electricity per year. The weighted average award price for the 2018 solicitation was $18.77 per MWh of production over the 20-year term of the awarded contracts.

The third RES solicitation was issued in April 2019 and resulted in agreements with 21 facilities which, once operational, would generate more than 2.6 million MWh of renewable electricity per year. The weighted average price for these agreements was $18.59 per MWh over the 20-year term.

The fourth RES solicitation, and the first to utilize the innovative Index REC pricing structure, was issued in July of 2020 and resulted in 22 agreements which, once operational, would contribute 4.1 million MWh of renewable electricity per year. Under the Index REC price structure, projects receive a variable payment for their RECs that responds inversely to an index comprised of zonal market energy and capacity prices; as market energy and capacity prices rise, the REC payment is reduced, and vice versa.

In August of 2020, NYSERDA filed a petition requesting authorization to provide developers with existing Fixed REC Tier 1 Renewable Energy (REC) agreements that had not yet reached commercial operation with a one-time option to substitute Index REC pricing for the existing Fixed-REC terms, based on a take-it-or-leave-it offer. NYSERDA's petition was granted by a November 2020 Commission Order.[32] Sixty of the sixty-two offers were accepted in 2021.

The fifth RES solicitation was issued in April 2021, the first to seek an expanded target of 4.5 million RECs per year to support the Tier 1 procurement trajectory identified in the CES White Paper needed to achieve the Climate Act target of 70% renewable energy by 2030. The fifth RES solicitation resulted in awards for 22 facilities which, once operational, would contribute 4.5 million MWh of renewable electricity per year. The weighted average strike price for these awards was $63.08 per MWh over the 20-year term.

The sixth RES solicitation was issued on September 21, 2022, and resulted in awards for 22 solar, wind and hydroelectric projects, to develop 2,410 MW of new and repowered, renewable energy capacity throughout New York State. The agreements will also support the development of 20 MW of utility-scale energy storage. These awards constitute enough megawatts of new renewable capacity to power over 560,000 households. The weighted average strike price of the awarded projects over the life of the contracts is $60.93 per megawatt hour in 2023 (real) dollars, which equates to a nominal weighted average strike price of $80.96 per megawatt hour. The strike prices comprising the weighted averages cited above are subject to certain adjustments in accordance with the terms of the awarded contracts based on certain price indices.

In late 2023, NYSERDA issued the seventh annual Renewable Energy Standard (RES) request for proposals, RESRFP23-1[33], to continue progress toward the Climate Act target of generating 70% of New York State's electricity from renewable sources by 2030. Through the 2023 solicitation, NYSERDA seeks to procure Tier 1 eligible Renewable Energy Certificates (RECs) from eligible facilities that enter commercial operation on or after January 1, 2015, and on or before May 31, 2026, unless extended to May 31, 2029. Award announcements are expected by the end of April 2024.

NYSERDA remains optimistic that the expedited 2023 solicitations will see a robust response, helping to ensure New York's continued progress towards our clean energy goals and competitive business climate.

At the time of publishing, NYSERDA's seventh and expedited Tier 1 solicitation (RESRFP23-1) under the Clean Energy Standard had garnered a significant level of competitive interest from the private market. NYSERDA received Step One Eligibility Applications to the 2023 expedited Tier 1 solicitation for 68 unique renewable energy facilities submitted by 24 different proposers.

The applications submitted to Step One of the solicitation comprise:

- Over 5,600 MW of new renewable capacity, enough renewable energy to power over 1.6 million New York homes
- Over 12 million annual megawatt hours of renewable generation.

In total, 60 of the 68 projects submitted for the Step One eligibility process are projects that were previously awarded NYSERDA Renewable Energy Certificate (REC) contracts and were required to have terminated or rescinded their previous Tier 1 contract to participate in this solicitation.

1.1.1.1 Tier 1 LSE Obligation

To comply with the Tier 1 obligation, each LSE must demonstrate the delivery of renewable energy from certified facilities in quantities sufficient to meet a Public Service Commission (PSC)-specified percentage of its annual load served. LSEs include the investor-owned utilities, energy services companies (ESCO), jurisdictional municipal utilities, and direct customers of the New York Independent System Operator (NYISO). NYPA and LIPA are voluntarily undertaking activities to meet RES goals proportional to their respective loads and notifies NYSERDA annually by sending a report on how they have contributed to the achievement of the Climate Act targets in the prior year (see section 1.5).

Each LSE's Tier 1 obligation is a function of its actual load in the subject compliance year and the PSC-determined compliance obligation percentage for that same compliance year. An LSE may satisfy its RES Tier 1 obligation through the acquisition and retirement of Tier 1 RECs. Tier 1 RECs can be purchased from NYSERDA, a third-party supplier, or through self-supply. Tier 1 RECs are retired by transferring them into the Environmental Disclosure Program (EDP) subaccount associated with the obligated load in the LSE's NYGATS account. In addition, LSEs may make alternative compliance payments (ACP) to NYSERDA or use a combination of both ACPs and Tier 1 REC retirements to achieve compliance. LSEs with RES Tier 1 RECs in excess of the current year obligation may bank such excess compliance for use toward RES Tier 1 obligations in either of the following two years, subject to certain limitations.

On April 20, 2023, the PSC issued its Order Modifying Clean Energy Standard (CES) Tier 1 Obligations[34] which approved, with modifications, NYSERDA's petition to transition the CES Tier 1 RES compliance obligation for LSEs from the predetermined percentage-based obligation to a load share obligation similar to other existing LSE obligations under the CES. Under the load share obligation, LSEs will be obligated to procure all Tier 1 RECs made available by NYSERDA, after the completion of sales to the voluntary market, in a proportion equivalent to their share of the State load. The load share approach both allows for REC sales to the voluntary market and eliminates ACPs as a compliance mechanism. The Phase 5 Implementation Plan,[35] filed by NYSERDA on August 30, 2023, details the new approach. The Tier 1 load share obligation will take effect for the 2025 Compliance Year.

1.1.2 Tier 2 Maintenance and Competitive

Tier 2 provides financial support to maintain the commercial operation of qualifying, renewable energy generation facilities that were operational prior to the Tier 1 eligibility date of January 1, 2015. Tier 2 includes both the Maintenance and Competitive Tier 2 programs as described below.

1.1.2.1 Maintenance

A March 2018 Order[36] refined the Tier 2 eligibility rules for renewable resources to receive maintenance financial support over a standard contract term of three years, executed between NYSERDA and the renewable energy facility. To be eligible for maintenance Tier 2, the renewable energy facility must have delivered energy to New York State consumers in 2014 as part of the CES renewable energy baseline. Maintenance resources must otherwise meet the same eligibility and delivery requirements as Tier 1 resources, except for hydroelectric facilities, which are eligible only up to 10 MW. Facilities eligible for maintenance support include all non-State-owned, run-of-river hydroelectric equal to or less than 10 MW; wind resources[37] that are not currently under contract to sell the environmental attributes associated with the generated energy; and were in operation prior to January 1, 2015.

There is no LSE compliance obligation related to Maintenance Tier 2. In accordance with PSC orders, NYSERDA has funded these agreements through its previously collected but unspent funds.[38]

1.1.2.2 Competitive

On January 27, 2020, NYSERDA submitted a petition (Tier 2 petition), which was adopted by the PSC in the CES Order, for a Competitive Tier 2 program to provide support to certain existing baseline renewable resources that are selected as part of three annual solicitations. Competitive Tier 2 eligibility is limited to non-state-owned, run-of-river hydroelectric facilities and wind facilities that entered commercial operation prior to January 1, 2015. Facilities selected in the solicitations received a standard three-year Tier 2 REC contract from NYSERDA. There is an LSE compliance obligation related to the Competitive Tier 2 Program which is annually calculated on a per megawatt-hour rate that is applied to each LSE's actual wholesale load.[39]

Additionally, NYSERDA filed a Final Tier 2 Re-Sale Implementation Plan in October 2021.[40] This plan includes a description of the Competitive Tier 2 REC resale process, timing, and NYSERDA's interaction with the LSE obligations and reconciliation process.

NYSERDA issued its first Competitive Tier 2 Request for Proposals[41] in January 2021; awards were announced in May 2021.[42] The first Competitive Tier 2 solicitation resulted in agreements with three hydroelectric facilities.

NYSERDA issued its second Competitive Tier 2 Request for Proposals[43] in August 2021; results were announced in October 2021. No awards were made under the second Tier 2 Request for Proposals as all bids exceeded the Confidential Maximum Bid Price.

NYSERDA issued its third and final Competitive Tier 2 Request for Proposals[44] in August 2022; results were announced in October 2022. No awards were made under the third Tier 2 Request for Proposals as all bids exceeded the Confidential Maximum Bid Price.

NYSERDA launched a Request for Information in October 2022 and acquired feedback to assist NYSERDA in assessing current conditions and future needs of the baseline renewable energy fleet and the non-Tier 1 REC market.

1.1.3 Tier 4—New York City Renewable Energy

The PSC's 2020 CES Order established a new Tier 4 within the CES. This program aims to increase the penetration of renewable energy in New York City and thereby reduce reliance on fossil fuel generation in this densely populated area. Eligible Tier 4 resources include electricity generated through the use of the following technologies: solar thermal, solar PV, on-land wind, hydroelectric, geothermal electric, geothermal ground source heat, tidal energy, wave energy, ocean thermal, and fuel cells that do not utilize a fossil fuel resource in the process of generating electricity. Non-hydroelectric resources must have entered commercial operation on or after October 15, 2020, and hydroelectric resources must be existing or already under construction as of October 15, 2020. All eligible resources must be either located in New York City, or their energy must be delivered through a new transmission interconnection to the City.

NYSERDA issued a Tier 4 Request for Proposals[45] on January 13, 2021, and evaluated bids from seven proposers. On September 20, 2021, the selection of two projects was announced, the Clean Path NY project (CPNY) and the Champlain Hudson Power Express (CHPE) project. Following contract negotiations, two executed contracts were submitted by petition[46] for Commission approval on November 21, 2021, followed by a public comment period that ran through February 21, 2022. The Commission issued an approval Order[47] for the 25-year contracts for CPNY and CHPE on April 22, 2022, under Case 15-E-0302.

These are the largest transmission projects contracted in New York State in the last 50 years and will add 2,550 MW to the State's grid using high-voltage direct current (HVDC) technology. The CPNY project leverages the State's portfolio of large-scale renewable energy projects, while CHPE will deliver clean, reliable, hydropower from Quebec. The projects are expected to deliver 18 million MWh of renewable energy to Zone J annually, more than a third of New York City's annual electric consumption and will greatly reduce the City's fossil fuel use for electricity.

NYSERDA's contracts with each project are for the purchase of renewable energy certificates for clean energy delivered into New York City. NYSERDA's purchase of these RECs will commence for each respective project once the project has (1) obtained all required permits and local approvals, (2) completed construction, and (3) is delivering power to New York City. The CHPE project began construction in late 2022 and is expected to begin operation in 2026. The CPNY project is actively moving though the required permitting processes and is expected to begin operation in 2027.

1.1.4 Offshore Wind Standard

New York State is actively pursuing the development and procurement of offshore wind as an additional mechanism toward satisfaction of the CES. In 2017, New York State announced a commitment to support the installation of up to 2,400 MW of offshore wind capacity by 2030, a goal that was expanded to at least 9,000 MW by 2035 through the Climate Act in 2019.

In early 2018 NYSERDA released the award-winning New York Offshore Wind Master Plan and the Offshore Wind Policy Options paper to provide a roadmap to fulfill the State's goals through cost-effective and responsible offshore wind development. NYSERDA issued its first Offshore Wind Request for Proposals (ORECRFP18-1) in November 2018.[48]

Offshore Wind Renewable Energy Certificates, or ORECs, represent the positive environmental attributes associated with one megawatt-hour of electricity generated from offshore wind resources and consumed by retail customers in New York State. ORECs represent an important source of revenue to enable renewable energy development from offshore wind, recognizing that the State's electricity markets do not directly value the environmental attributes associated with clean electricity generation. As part of NYSERDA's contracts with offshore wind developers, NYSERDA will purchase ORECs from project developers as renewable energy is delivered to the State's electricity grid and resell them to the load serving entities (LSEs) for compliance with their OREC obligations. Each year, LSEs will be obligated to purchase the pro rata percentage of ORECs that represents the portion of the electric energy load served by the LSE in relation to the total electric energy load served by all LSEs.

In October 2019, NYSERDA finalized contracts for its first two offshore wind projects, Empire Wind (816 MW, Equinor US Holdings, Inc., a joint venture with bp) and Sunrise Wind (880 MW Sunrise Wind LLC, a joint venture of Ørsted A/S and Eversource Energy) as the largest competitive procurement for offshore wind in the nation at that time.[49]

In pursuit of the nation-leading goal of at least 9,000 MW of offshore wind energy in January 2020, NYSERDA submitted a petition with the PSC requesting authority to conduct a 2020 solicitation for at least 1,000 MW of ORECs, with flexibility to accept bids up to 2,500 MW. On April 23, 2020, the PSC issued an order approving NYSERDA's petition. In July 2020, NYSERDA issued the second solicitation[50] (ORECRFP20-1) seeking to procure ORECs associated with 1,000 MW or more of offshore wind energy, coordinated with a potential $200 million opportunity in public and private investments in port infrastructure.

In January 2021,[51] NYSERDA selected two offshore wind projects for contract negotiation under its second solicitation for offshore wind: Empire Wind 2 and Beacon Wind from Equinor Wind US LLC (Equinor joint venture with bp). Combined, the projects total nearly 2,500 MW and leverage almost $3 of private funding for every $1 of public funding for a combined $644 million in investments for resilient port facilities.

Located approximately 35 miles off Montauk, South Fork Wind will be a 12-turbine farm delivering clean energy into the Long Island electric grid. The South Fork Wind Farm, under contract with the Long Island Power Authority, began construction in late 2022 after receiving federal permits earlier that same year. Onshore cable laying was completed in spring of 2022 and horizontal directional drilling to bring the offshore cable to land in Wainscott, NY (Long Island) was completed in December 2022. Offshore turbines are currently being installed and first power reached the New York energy grid in early December 2023. Full commercial delivery of this project will be completed in early 2024. This project will be the first commercial sized offshore wind farm in the United States bringing 130 MW of offshore wind power to New York State's grid in early 2024.

This robust portfolio of offshore wind projects is currently supported by five State ports contributing to the localization of supply chain and economic benefits via two manufacturing facilities on the Hudson River—the Ports of Albany and Coeymans, a premier 60 acre staging and assembly port at South Brooklyn Marine Terminal, and operations and maintenance hubs at Port Jefferson and Port of Montauk on Long Island, NY.

To further the New York State's renewable energy goals, in July 2022, NYSERDA issued its third solicitation (ORECRFP22-1) seeking a minimum of 2,000 MW of offshore wind energy. The highly anticipated solicitation included the first phase of a nation-leading $500 million supply chain investment that will secure the State's position as the hub of offshore wind energy by establishing major ecosystems for workforce development, manufacturing, and operations and maintenance to support the region's offshore wind projects and the development of a green economy. Proposals were received on January 26, 2023, and updated offer prices were due on August 24, 2023.[52] In November 2023, New York State announced awards totaling 4,032 MW of offshore wind energy to Attentive Energy One (1,404 MW), Community Offshore Wind (1,314 MW), and Excelsior Wind (1,314 MW). These three awarded projects were associated with Supply Chain Investment Plans (SCIPs) that will use $300 million

in State investments to leverage more than $600 million in private investment to enable the development of two marquee supply chain facilities, including nacelle manufacturing and assembly by GE Vernova, along with blade manufacturing developed by LM Wind Power Blades USA, both planned for New York State's Capital Region. Together, these two facilities, which represent nearly $1 billion in State and private investments, will have the capacity to supply almost one-third of the total regional demand for offshore wind by 2035.

Due to inflationary pressures from supply chain shortage and high-interest rates, due in part to a global pandemic and Russia's invasion of Ukraine, offshore wind developers holding contracts with New York State, petitioned the Public Service Commission in June 2023 for financial relief to defray increasing costs of renewable energy projects. In response to the Public Service Commission's Order on October 11, 2023 rejecting the requests based in a long history of relying on competitive procurements to secure the best prices, New York State issued the 10-Point Renewable Energy Action Plan[53], reinforcing the State's commitment to renewable energy development. The Plan called for expedited OREC RFPs, and the completion of Master Plan 2.0 for new federal lease areas to ensure competitive energy procurement at the lowest possible cost, greatest value to ratepayers and the State, among other initiatives.

On November 30, 2023, NYSERDA issued its fourth offshore wind solicitation (ORECRFP23-1) on an accelerated timeline with proposals due January 25, 2024. Following the release of the solicitation, mutual termination agreements were reached between NYSERDA and the Empire Wind 2 and Beacon Wind 1 projects, which were selected under NYSERDA's second offshore wind solicitation (ORECRFP20-1). The two projects selected in the first solicitation (ORECRFP18-1), Empire Wind 1 and Sunrise Wind, both re-bid their projects into the fourth solicitation (ORECRFP23-1), along with a new project, Community Offshore Wind 2. Conditional awards are planned for February 2024. The first round of Master Planning site assessment studies and a request to Bureau of Ocean Energy Management (BOEM) for additional lease areas is also planned for release in 2024.

1.2 Renewable Portfolio Standard

New York State, through regulations adopted by the PSC, first enacted its RPS in 2004 with the goal of increasing the amount of renewable electricity used by consumers to 25% by 2013. In January 2010, the PSC expanded the RPS target to 30% and extended the terminal year of the program to 2015. The PSC established two tiers of resource types under the RPS. The Main Tier consisted primarily of medium- to large-scale electric generation facilities that delivered their electrical output into the power market administered by the NYISO. The Customer-Sited Tier (CST) consisted of smaller,

behind-the-meter resources, such as photovoltaic systems, fuels cells, customer-sited wind facilities, anaerobic digester gas, and similar technologies that mostly produce electricity for use on site. The RPS also included a Maintenance Resource program, which was similar in nature to the current Tier 2 program, but with different eligibility criteria.

Under the Main Tier, NYSERDA also served the role of central procurement administrator, to award long-term contracts to eligible generators through periodic competitive solicitations for the purchase of the associated RECs. A portion of these projects are Tier 1 eligible as defined in PSC Order by their in-service date; therefore, NYSERDA sells the associated RECs in a manner similar to those from other Tier 1 RES projects. Information regarding RPS agreements is reported in the annual New York State Clean Energy Standard and Renewable Portfolio Standard Solicitations for Long-Term Contracts report[54] as well as Open NY.[55]

NYSERDA's continued support for CST renewables is now housed within the CEF, which includes the NY-Sun initiatives for solar resources. Separate reporting[56] in regard to the installed renewable energy generation capacity supported through the CEF can be found on NYSERDA's website. The annual NY-Sun Performance Report[57] contains a holistic representation of historic and ongoing support for distributed solar.

1.2.1 Baseline Generators

A DPS white paper,[58] which preceded the CES Order, cited data from EDP regarding the amount of renewable energy consumed in the State in 2014 to establish a baseline amount of renewable generation serving the State's load to measure progress. NYGATS is now used to calculate the Statewide Fuel Mix for EDP, referred to as the New York System Mix.

The generation associated with renewable energy facilities that delivered energy to State consumers in 2014 is referred to as the CES Renewable Energy Baseline or baseline.[59] This baseline includes NYPA hydropower assets, Main Tier, and CST facilities, RPS Maintenance Resources, imported renewable energy, voluntary renewable energy purchases, and other independently owned renewable energy generation resources. The renewable energy baseline in 2014 was calculated as 41,296 gigawatt hours (GWh) or 25.9% of the 2014 EDP Statewide Fuel Mix. The 2014 baseline has been adjusted to 40,292,056 GWh or 25.3% of the 2014 EDP Statewide Fuel Mix due to the removal of biomass and biogas resources no longer considered renewable per the Climate Act and CES Order.

Baseline facilities generating RECs that are retired in the State are counted toward CES achievement. Due to the nature of energy market transactions across borders, the 2020 baseline renewable energy may include or exclude imported renewable generation that was part of the 2014 baseline calculation. Differences between years may also be attributable to the variations in climatic conditions each year as generation from renewable resources (also referred to as intermittent resources) is weather-dependent.

Additionally, some baseline renewable resources have the opportunity to export energy and the associated attributes into adjacent markets. Policymakers will continue to monitor the amount of baseline resource exports. Accordingly, this report summarizes and tracks baseline generation by technology over the years of the CES, including the amount of baseline renewable energy exported.

1.3 Value of Distributed Energy Resources and NY-Sun Initiative

In 2017, the Commission established a mechanism to transition to a new way to compensate distributed energy resources (DER). This mechanism, called the Value of Distributed Energy Resources (VDER), established tariffs to replace the compensation mechanism of net energy metering (net metering or NEM). The transition was initiated to encourage the location, design, and operation of DER in a manner that maximizes benefits to the customer, the electric system, and society, while also ensuring the development of the clean generation needed to meet the necessary and aggressive goals embodied in the CES. Under VDER, the compensation paid to eligible generation resources is based on a set of value elements referred to as the Value Stack. One component of the Value Stack is compensation for the environmental value of the generation. This value is based on the higher of the latest Tier 1 REC procurement price published by NYSERDA or the Social Cost of Carbon (SCC) as calculated by DPS.[60] Since the utility companies that must implement VDER tariffs are providing Environmental Value, the PSC ordered that the Tier 1 RECs created by DER would flow to the utility company and be eligible for use toward that utility's Tier 1 compliance obligations.[61]

In April 2019, the PSC released an updated Value Stack Order,[62] which allowed projects under 750 kilowatts (kW) AC exclusively serving a host load to have a choice of Value Stack or Phase 1 Net Metering. Projects that previously opted into the Value Stack by default converted to Phase 1 NEM and are no longer Tier 1 eligible. On December 9, 2019, DPS issued a new whitepaper[63] describing potential successor tariffs for mass market projects, but no action was then implemented, with DPS requesting an extension of Phase 1 NEM for new projects (both mass market and on site under 750 kW AC) until January 1, 2021, and later until January 1, 2022. At the beginning of 2022, the Customer Benefit Contribution (CBC) went into effect, with new mass market PV customers

paying into a new monthly collection fee based on the size of their solar project. While many DER installations have been supported by the State through CST incentive programs or NY-Sun, NYSERDA makes no claim to the environmental attributes of that generation. Through PSC action in the VDER proceeding, NYSERDA relinquished all rights to any environmental claims or RECs for NY-Sun and RPS CST projects to which it may have made claims under previous policies.[64]

On November 25, 2019, NYSERDA filed a petition[65] requesting additional NY-Sun funding and an extension of the initiative through 2025. The petition sought to expand the program and build on its success to meet the target established under the Climate Act, to develop a total of 6 GW of distributed solar by 2025. In May 2020, the PSC issued an order[66] approving NYSERDA's petition to expand the program and to increase participation by and benefits to low-income individuals and disadvantaged communities.

In September of 2021, Governor Kathy Hochul announced the expansion of the NY-Sun initiative[67] to achieve at least 10 GW of solar energy by 2030. The projects resulting from the expanded goal are expected to power nearly 1.7 million homes and will be advanced comprehensively, including serving those in disadvantaged communities. In December of 2021, a new Solar Roadmap was submitted by NYSERDA and DPS staff to the New York State Public Service Commission.[68] In response to the Roadmap, the PSC issued an Order expanding NY-Sun to a 10 GW program and authorizing $1,473 million in new funding.[69] In June 2022, NYSERDA implemented changes to the NY-Sun program as authorized by the Order, including updated MW Block incentives. The program expansion includes $239 million to support the transition to a new Prevailing Wage requirement, and incremental $252 million in Solar Energy Equity Framework funding to support projects providing benefits to disadvantaged communities.

On June 23, 2023, the Commission issued an additional Order, authorizing further changes to the NY-Sun program.[70] This Order provided NYSERDA increased flexibility in adjusting incentive rates (including the Prevailing Wage Adder), authorized a new incentive adder for floating PV, and simplified the process of incentive payment for certain projects. The Order also directed NYSERDA to file a forthcoming proposal on how capacity beyond 10 GW could be procured with the existing authorized budget.

1.4 Build-Ready Program

NYSERDA's Build-Ready Program identifies sites and advances pre-construction development activities for large-scale renewable energy projects on underutilized lands prior to competitively auctioning and transferring the sites, along with a Renewable Energy Certificate (REC) Agreement (REC Agreement), to the private sector for final construction and operation. The Build-Ready Program is currently developing a pipeline of projects on brownfields, landfills, and abandoned and existing commercial and industrial sites across New York State. The Build-Ready Program made significant progress in achieving the Program's goals including:

- **Advanced Build-Ready's Pipeline:** Since the program launched, Build-Ready has screened over 10,820 sites across 35 counties in New York State. Build-Ready is focused on advancing over a dozen potential sites from the pipeline into project development. Build-Ready is implementing several new site origination strategies to expand the program's pipeline. This includes originating sites in lower risk interconnection areas,1 significant outreach to key channel partners2 to identify and vet sites, identifying large publicly owned parking lots that could host solar carports/canopies, aggregating distributed energy resources (DER) projects into large wholesale projects, and locating multiple Build-Ready projects near an area of the electric grid where a Build-Ready project is already requiring an upgrade to utility infrastructure. Build-Ready also continued to coordinate with State and federal agencies and supported Governor Hochul's Prison Redevelopment Commission report on potential redevelopment opportunities for 12 recently or soon to be closed prisons. Build-Ready attended several conferences where it shared program insights, met with key channel partners, and stayed abreast of broader renewable energy market developments.
- **Increased the Number of Projects in Development:** Build-Ready has over a dozen sites in development—about double the number of sites in 2021. The sites are at different stages of development with the BR Benson Mines Solar PV Project as the most mature with the auction planned for 2023. All sites are advancing through diligence activities, and several have secured initial site control through memorandums of understanding (MOU) between NYSERDA and the landowner. The sites include a mix of landfills, mines, underutilized/commercial properties, parking lots, and airports.
- **Advanced the Auction Process:** Build-Ready plans to issue the first auction for the BR Benson Mines Solar PV project in 2023. To inform the auction development, Build-Ready issued Request for Information (RFI) 5034 in the spring of 2022 to private solar PV developers to gather feedback on the proposed auction process, the program's project development plans for BR Benson Mines Solar PV project, and to solicit interest in participating in a voluntary Market Advisory Group (MAG) that Build-Ready will engage to gather feedback on programmatic and project specific questions and issues. Build-Ready received 13 responses to the and is incorporating the feedback into the auction process and the remaining project development milestones for BR Benson Mines Solar PV project. In the fall of 2022, Build-Ready began the development of the auction solicitation, contracts, and the mechanism for recouping project costs. For the solicitation and the contracts, this included competitively selecting consultants to help build the auction RFP, developing the Member Interest

Purchase Agreement (MIPA) used to transfer the development vehicle to the awarded bidder, and revising NYSERDA's Standard Form REC Agreement for a Build-Ready project transaction. To recoup costs, the program is charging a project development fee for each project that is auctioned. The project development fee includes all direct project development costs associated with BR Benson Mines Solar PV project as well as a portion of Build-Ready programmatic and NYSERDA administrative costs. As more projects are auctioned, Build-Ready will recoup all costs and aims to establish an evergreen fund to support future project development.

- **Managed Public Funds Responsibly:** In 2022, Build-Ready expenditures decreased compared to 2021 due to two full-time equivalent (FTE) staff departures including the program director and a senior project manager. The lower expenditures reflect a partially staffed program. For the remainder of 2022, the Build-Ready Program prioritized recruiting and hired a new Build-Ready Director in August of 2022 and competitively selected an existing Build-Ready Project Manager to replace the senior project manager. There are no Build-Ready Program proceeds to report because the Build-Ready Program did not auction any sites in 2022. As mentioned above, the Build-Ready Program anticipates auctioning its first site in 2023 and will report the proceeds recouped in the applicable annual report.

More details on the Build-Ready Program's progress and accomplishments can be found in the Build-Ready Annual Report.[71]

1.5 Long Island Power Authority and New York Power Authority

LIPA and NYPA have committed to adopting renewable targets that will achieve the CES mandate and provide updates to NYSERDA annually as summarized in this section.

1.5.1 Long Island Power Authority

LIPA is the third-largest public power utility in the United States, serving 1.2 million customers on Long Island and the Rockaway Peninsula in Queens. LIPA's purpose is to serve customers and the community by providing clean, reliable, and affordable energy to Long Island and the Rockaways. This past year LIPA celebrated its 25th anniversary of proudly serving customers and commitment to LIPA communities.

1.5.1.1 Integrated Resource Plan

LIPA periodically conducts an Integrated Resource Plan (IRP) to study the need for generation, transmission, and demand-side resources to provide clean, reliable, and affordable energy throughout the service territory. The 2023 IRP, issued in November, aims to provide an action plan through 2030 to meet the interim milestones established in the Climate Act while framing resource decisions that need to be

made to achieve 100% zero-emission electricity in 2040. Transitioning to an entirely carbon-free grid involves adding new clean energy sources, investing in transmission, and retiring older, fossil-fueled power plants. A key finding of the IRP is that by 2030 the addition of solar and offshore wind resources will cause LIPA's carbon footprint to decline by over 70% from 2010 levels.

1.5.1.2 Offshore Wind

In January 2017, the LIPA Board of Trustees approved a contract to buy energy from what was at the time the first offshore wind farm to be contracted, and then built in federal waters. In December 2023, LIPA's South Fork Wind project—developed by Orsted and Eversource—achieved the delivery of clean power to Long Island from the first operational wind turbine, marking the historic milestone as the first utility-scale offshore wind farm in federal water. The wind farm, which is located 35 miles east of Montauk Point, consists of 12 Siemens wind turbine generators, running 318 feet in blade length and spanning over 656 feet in rotor diameter – about the length of two football fields. The 130-megawatt South Fork Wind Farm will deliver power to the local substation in the Town of East Hampton through undersea and underground transmission cables from the offshore wind farm. Once completed, it will add enough renewable electricity to the Long Island grid to power 70,000 homes and offset 300,000 tons of carbon emissions annually.

1.5.1.3 Building Out the Long Island Transmission Grid

With the influx of new clean energy from offshore wind, it was recognized that the region's transmission backbone must be expanded. LIPA and Con Edison conducted technical studies in 2020 to assess the need for system expansion and based on the results recommended that additional transmission cables would be needed to enable offshore wind to be transmitted from Long Island to the rest of the State. In June NYISO selected the Propel New York Energy transmission project (a consortium of NYPA and Transco LLC) that will greatly enhance the ability of the Long Island grid to integrate offshore wind as well as import firm energy during wind lulls.

1.5.1.4 Progress Toward Long Island's Portion of New York State Clean Energy Goals

LIPA is transitioning electric generation in step with the State's goal of an entirely carbon-free electric grid by 2040. This transition involves both adding new clean sources of energy and retiring older fossil fuel plants. LIPA has initiatives that directly contribute to the State's clean energy goals including solar, storage, offshore wind, energy efficiency, electric vehicles, building decarbonization and retirement of fossil fuel generating plants.

Long Island has a thriving solar industry as LIPA's incentives have led to hosting 38.7% of all distributed solar system installations and 20.3% of the capacity (MWs) in the State, which is reflective of the continued growth in business and community solar projects across the service territory.

New York's buildings produce nearly one-third of the State's carbon emissions, making homes and businesses a major contributing factor to climate change. An effective way to decarbonize homes and businesses is heat pumps. LIPA's near-term goal is to install 30,000 heat pumps on Long Island. LIPA offers incentives for customers to install heat pumps with an enhanced rebate for low- and moderate-income customers.

Long Island and the Rockaways have 45,000 registered electric vehicles (EVs), which is approximately 24% of the EVs in the State. LIPA has a variety of programs to support adoption of EVs, including bill savings through Time-of-Day rates, EV hosting maps to assist developers find suitable locations for fast charging, and incentives and rebates to developers to install EV level two and fast chargers.

LIPA invests approximately $100 million per year in energy efficiency programs. This investment has achieved a savings of 5.26 trillion British Thermal units (TBtu) toward its energy efficiency goal of 7.9 TBtu by 2025 by offering a wide selection of incentives, rebates, and programs to both residential and commercial customers to assist them in reducing their energy usage.

LIPA has 10-MW of 8-hour utility battery storage at two locations in eastern Long Island and was the first region of the State to offer residential storage incentives with about 2,000 installations. LIPA has also launched a procurement for at least 175 MW of bulk energy storage projects with negotiations ongoing with several developers for completion in 2025.

1.5.1.5 New Time of Day Rates

This initiative builds on LIPA's deployment of smart meters, new customer information tools, and Time of Day Rates (TOD) rate pilots. These foundational steps have positioned LIPA to become the first major utility in the State to transition residential customers to a standard, smart-meter-enabled, TOD rate. The adoption of TOD rates supports LIPA customers' robust adoption of advanced technologies like rooftop solar, heat pumps, home energy storage, and EVs. TOD rates are designed to encourage customers to conduct more energy-intensive tasks during off-peak hours by offering discounted rates at those times. While the TOD rate will be the standard offering, customers will have the option of maintaining a conventional flat rate. Customers who try the TOD rate will also receive a "best price guarantee" for the first year, meaning they will be credited the difference if a conventional flat rate would have been lower for them. When customers choose to shift their usage to less costly times of the day, it decreases the amount of energy production and delivery infrastructure needed during peak times of the day—reducing carbon emissions and lowering system cost.

1.5.1.6 Assistance for Vulnerable Customers

LIPA offers electric bill discounts to low- and moderate-income customers with a goal that energy bills should be no greater than 6% of household income. In 2022 and 2023, LIPA increased its base low-income discounts to adjust for cost-of-living increases experienced by customers. In 2024 there will be an increase in funding with an expected increase in participants from 40,000 to 50,000 by the end of the year.

LIPA offers enhanced heat pump incentives of up to $11,000 for low-income households as well as enhanced support to make home efficiency improvements, including home energy audits, free or discounted energy efficient appliances, and weatherization improvements.

LIPA is collaborating in the LI Clean Energy Hub, which will serve as a clearinghouse of outreach, awareness, and education to help foster residents' participation in New York State's clean energy transition. Especially fostering those in underserved or otherwise disadvantaged communities as a way to help advance an equitable clean energy transition for all New Yorkers.

1.5.1.7 Making a Difference in Communities

As a public power utility, LIPA's purpose is to serve our customers and community by, for example, supporting community events, educational programs, and selected grants that further clean, reliable and affordable energy. Here are a few initiatives form the past year:

- In 2020 LIPA together with NYS Parks, Recreation and Historic Preservation opened a new Energy & Nature Center at Jones Beach State Park. The 12,000 square-foot complex is a net-zero energy building featuring hands-on and accessible indoor and outdoor exhibits, educational programming, and public events. During 2023, new exhibits—scheduled to open to the public in 2024—are being developed to inform visitors about electricity and the clean energy transition, including what they can do to reduce their carbon footprint and energy bill.
- Community College Scholarships to fund 50 scholarships over five years for students attending either Nassau or Suffolk Community College seeking education and training in careers related to the utility industry.
- In partnership with the IBEW Local 1049 LIPA and PSEG LI will be expanding efforts with our local community colleges to include a Lineworker Certification Program to help students develop the fundamental skills required to build and maintain LIPA's electric grid.
- Island Harvest received a grant to install rooftop solar at their Melville facility to reduce their carbon footprint and operating costs, enabling savings to be reinvested to benefit those in need.
- United Way of Long Island received a grant to support the transformation of its 31,000 square foot headquarters into a "net zero" building with solar, high-performance air source heat pumps, and electric vehicle charging. Construction began in 2023 and is expected to be completed in 2024.

1.5.1.8 New York Clean Transportation Prize

Over the next three years LIPA has pledged $7 million to the New York Clean Transportation Prize program for innovative projects that enhance clean transportation, improve mobility options, and lower vehicle emissions. LIPA's grant funds "Circuit Transit," who will be implementing a micro-EV transportation system in the Rockaways and Brentwood. This shared shuttle service aims to provide convenient and affordable connections for short trips, reducing congestion and emissions, using battery electric vehicles, and operates in collaboration with community partners.

1.5.2 New York Power Authority

NYPA operates the largest hydroelectric power projects in New York State—the 2,441 MW Niagara Power Project in Lewiston and the 800 MW St. Lawrence-Franklin D. Roosevelt Power Project in Massena, providing a reliable base of renewable generation. NYPA also owns and operates the Blenheim-Gilboa Pumped Storage Power Project, several small hydro units and more than 1,400 circuit miles of transmission lines around the State supporting the integration and conveyance of renewable energy.

NYPA provides power to State and local governments with comprehensive energy portfolio options to meet individual customer needs while partnering with them to advance the overall clean energy goals of the State. NYPA is collaborating closely with its customers to achieve the CES goals in ways that best meet their varying needs. As customer contracts are renewed, NYPA is including provisions to allow for recovery of costs associated with the CES.

In addition, to advance the State's energy infrastructure, NYPA has just completed the more than $600 million Central East Energy Connect (CEEC) transmission improvement project, which upgraded energy transmission capacity along an existing 93-mile transmission line in the Mohawk Valley and Capital Region, a heavily congested corridor for energy transmission. A joint project by LS Power Grid New York and the New York Power Authority (NYPA), the upgrades allow for the flow of more renewable energy across the State and help put New York on track to meet its nation leading clean energy goals under the Climate Leadership and Community Protection Act, which includes a zero-emissions electricity sector by 2040, 70% renewable energy generation by 2030, and economy-wide carbon neutrality. The project is part of a larger buildout of transmission projects across the State, including more than 1,000 miles of planned transmission investments that will maximize the use of renewable energy for parts of the State that rely heavily on fossil fuel plants.

Along with the completion of the CEEC project, several other New York State transmission projects are progressing toward completion or are completed and in service, including NYPA's Smart Path which was completed earlier this year and Smart Path Connect, a transmission rebuild project in the North Country and Oneida County that NYPA is working on with National Grid. Two recently energized transmission lines are New York Transco's New York Energy Solution, which recently completed the rebuild of approximately 54 miles of transmission lines in the Hudson Valley, and NextEra Energy Transmission New York's Empire State Line Project which completed approximately 20 new transmission miles in Western New York.

As part of NYPA's VISION2030 strategic plan,[72] NYPA has committed to supplying customers with 70% renewable energy by 2030. To achieve this goal, NYPA is undertaking efforts to enhance its hydroelectric resources, decarbonize its natural gas plants and support the build out of new and upgraded transmission systems to ensure the effective integration of renewables. NYPA is also actively advancing the contracting and construction of customer-sited distributed renewables with a pipeline of more than 200 MW of solar and energy storage projects complementing its long-standing efficiency program and growing a statewide public electric vehicle fast charging infrastructure via its EVolveNY initiative.

NYPA celebrated its 100th EVolve NY direct current fast charger installation in September 2022 and has surpassed that milestone as its EVolve NY charging infrastructure program continues to install chargers along key corridors and in downtowns across the State. As part of its VISION2030, NYPA is working to transition its fossil fuel power plants to cleaner energy technologies to achieve zero carbon emissions by 2035.

1.6 Voluntary Renewable Energy Activities

Opportunities for consumers of all types to voluntarily purchase renewable energy emerged during the earliest days of electric industry restructuring in many states, including New York. During the years of the RPS program, there was a small but consistent contribution from voluntary market activities to its renewable energy goals. The 2016 CES Order contemplated voluntary contributions from renewable energy to continue to provide a portion of the renewable energy supply to meet the CES goals, in tandem with LSE compliance obligations under the RES. Voluntary purchases can be made by both large and small end users, and may derive from green tariffs offered by utilities, renewable energy products offered by competitive LSEs, Community Choice Aggregation (CCA), or customized solutions coordinated directly between large end users and renewable energy generators. Corporate interest in renewable energy purchases has increased in recent years on a global basis, and it is expected that voluntary market activities in the State will increase throughout the course of the CES. Customers who choose to participate in behind-the-meter renewable generation projects are another example of a voluntary activity that increases the amount of renewable energy serving the State's electricity needs.

A CCA gives a municipality the ability to pool their electrical load in order to negotiate supply on behalf of residents, businesses, and municipal accounts. CCA also allows a municipality to design a program that reflects local preferences and needs, including a preference for cleaner power sources. At the end of 2022, there are 52 municipalities in New York State that are receiving electricity supply from CCA and 32 have chosen 100% renewable energy as their default product mix. As CCA continues to grow, it is expected to become a significant source of voluntary renewable energy purchasing.

In 2022, CCAs procured and retired RECs to offset 1,194,280 MWh of electrical load served by CCA. These RECs were primarily produced by in-state hydroelectric generators.

1.7 Zero Emissions Credit Requirement

The CES includes a ZEC requirement with a compliance period that occurs from April 1 through March 31 of each year. The associated LSE ZEC obligation ensures the continued operation of certain existing in-state nuclear power plants. Although the ZEC obligation is part of the CES, the generation represented by ZECs, while carbon free, is not counted toward the renewable mandate.

ZEC obligations are satisfied exclusively through the purchase of ZECs from NYSERDA. The ZEC supply is largely fixed according to a maximum quantity included in the CES Order, and the price at which NYSERDA purchases ZECs from the generators is administratively determined for each two-year tranche, by formula, as defined in appendix E of the PSC's August 1, 2016, CES Order. LSE ZEC obligations are determined by their load share of the total New York State load served by LSEs. The PSC approved the ZEC Implementation Plan[73] which modified how LSE payments to NYSERDA are determined. Since the number of ZECs are capped and LSEs are required to purchase ZECs from NYSERDA, there is no need for ongoing adjustments or flexibility mechanisms. As a result, there is no ACP option for fulfilling the ZEC obligation, and ZECs may not be banked or traded.

1.8 Energy Efficiency Targets

New York State re-affirmed commitments to energy efficiency in the 2018 State of the State address, while recognizing much work remained to realize the full potential of energy efficiency for New Yorkers. Meeting the energy efficiency target will deliver nearly one-third of the GHG emissions reductions needed to meet the State's climate goal of 40% GHG reduction by 2030. The State's investor-owned utilities have been called on to achieve more in both scale and innovation through their energy efficiency activities.

On December 13, 2018, the PSC issued an Order Adopting Accelerated Energy Efficiency Targets.[74] The order adopts a goal of 31 trillion British thermal units (TBtu) of additional site energy reduction by the State's utilities above existing efficiency goals and toward the achievement of a 2025 target. The energy efficiency target for investor-owned utilities will more than double utility energy efficiency progress by 2025, relative to maintaining their prior goals.

The historic Climate Act signed into law in July 2019 requires the State to achieve a carbon-free electricity system by 2040 and to reduce GHG emissions at least 85% below 1990 level by 2050. Implementation of the Climate Act will target investments to benefit disadvantaged communities,

create tens of thousands of new jobs, improve public health and quality of life, and provide all New Yorkers with more robust clean energy choices. Through the Climate Act, the New Efficiency New York goal is to achieve 185 TBtu of on-site energy savings by 2025, double the State's distributed solar goal to 10 GW by 2025, and strengthen the energy storage target of 3 GW by 2030—which are now codified in law, along with a proposed increase in the storage target to 6 GW. These Climate Act goals reinforce the importance of the CEF as a foundation for statewide emission reductions progress.

While NYGATS contains data on total load and changes can be observed through annual reporting, these changes may not reflect or be solely related to energy efficiency activities. Reporting on progress toward the achievement of the energy efficiency goals is provided separately.

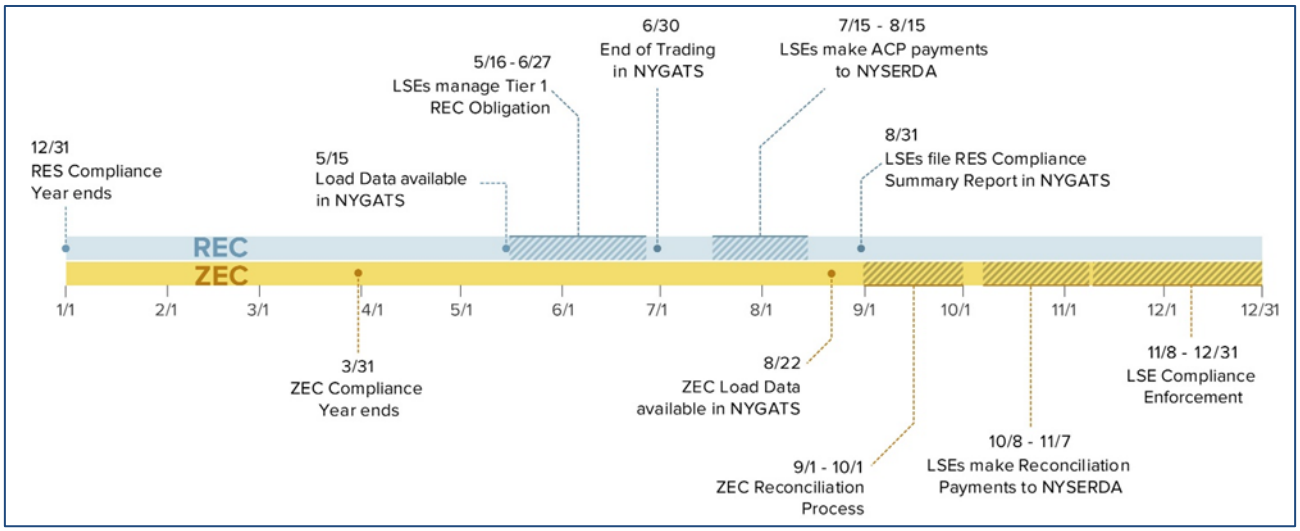
2 System and Timeline

2.1 New York Generation Attribute Tracking System

The New York Generation Attribute Tracking System (NYGATS) is an online certificate-tracking system that records information about electricity generated, imported, and consumed within the State. Using data provided by the NYISO and unique serial numbers, NYGATS issues, tracks, and manages energy attribute certificates and RECs. Registered NYGATS users can trade, retire, or verify and substantiate ownership of RECs to support compliance or voluntary claims. Certificates can be bundled and traded with megawatt-hours of energy, but this is not a requirement in NYGATS.

NYGATS supports reporting of the environmental characteristics of electricity consumed in the State through the EDP[75] and the CES and raises market confidence by preventing double counting of RECs, providing public reports, and recording a full audit trail of all transactions to support the integrity of the RECs issued and held in the system. All energy generated in, imported into, or exported out of the State is tracked and verified through NYGATS. NYGATS also contains data on the load served by State LSEs and is used as the basis for achieving and verifying LSE compliance with CES obligations. NYGATS is the primary data source for this report and much of the source data is publicly available on its website.[76] Figure 1 provides key dates for both REC and ZEC NYGATS timelines.

Figure 1. CES and NYGATS Timeline



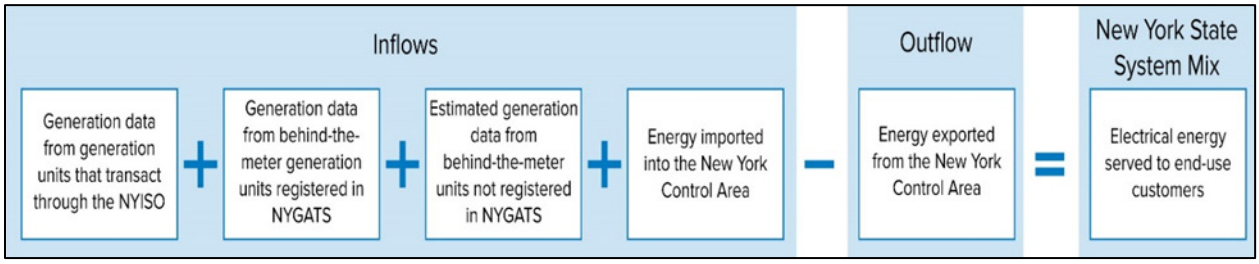
3 Progress Toward New York State's Policy Goals: 2022

In 2022, the contribution from renewable energy resources to meet the State's electric load was 25.1%.[77] New York State's electric load served increased by 1.3 million MWh in 2022 which is a 0.87% increase compared to 2021. Furthermore, hydroelectric generation imported from adjacent control areas decreased by approximately 2.6 million MWh in 2022 compared to 2021. Although imported electricity overall remained relatively flat, the decrease in imported hydroelectric generation was replaced with imported fossil-fueled generation. Exports of baseline renewables remained relatively stable compared to 2021 as was total in-State clean energy generation.

3.1 Statewide Fuel Mix for Electricity Generation

The New York System Mix represents the electric energy served to end-use customers and is based on the inputs shown in Figure 2, which include both inflows and outflows of energy. Progress toward the CES mandate is measured by tracking the renewable energy contributing to the New York System Mix throughout the years of the CES.

Figure 2. New York System Mix Calculation



Using these inputs, NYGATS calculates the average amount of each fuel type used to generate electricity and the associated average emissions. Fuel type and emission information is then matched to the generation used by electricity customers. The output of the New York System Mix represents the average characteristics of the electricity consumed in the State each year. This is different from, but inclusive of, the unique mix that electricity providers deliver to their customers. The New York System Mix can be used to track progress toward State energy and emission goals, and to assess the performance of electricity providers, generators, and policies.

Table 1 summarizes the 2022 New York System Mix from NYGATS, displaying data on the types and quantities of fuels used to supply New York State's electric load. The New York System Mix uses NYGATS certificate data for energy that served New York State's load in 2022, including certificates that were retired for voluntary or compliance purposes or banked for future use. Renewable energy resources contributed 25.1% of the electrical energy consumed in 2022 (see Table 2).

Table 1. Summary of New York System Mix, 2022

Source: NYGATS

Mix Type	Control Area	Fuel Type	Fuel Type %	MWh
System	NYISO	BAT	0.0071	10,749.33
System	NYISO	Biomass	0.2076	315,103.49
System	NYISO	Coal	2.2032	3,345,301.40
System	NYISO	Hydroelectric	20.0516	30,445,712.68
System	NYISO	Natural Gas	48.132	73,081,848.07
System	NYISO	Nuclear	20.9864	31,865,034.89
System	NYISO	Oil	0.9264	1,406,653.00
System	NYISO	Renewable Biogas	0.0707	107,391.46
System	NYISO	Solar	2.792	4,239,229.72
System	NYISO	Solid Waste	2.3995	3,643,248.27
System	NYISO	Wind	2.2236	3,376,212.66

3.2 Progress toward CES Mandate

Progress toward the CES mandate is summarized in Table 2, including sources of renewable energy supply (by eligibility) and total electric load. The quantities represent all compliance year renewable energy supply settled in the State, through NYGATS, and considers all renewable energy imports and exports. The Climate Act's definition of "renewable energy systems" does not include biomass and biogas; as early eligibility determinations previously allowed for biomass and biogas resources, to align with policy established through the Climate Act and for future reporting, 2014 has been adjusted to classify these fuel types as non-renewable.[78]

Table 2. Summary of 2014 and 2022 New York System Mix

Source: NYGATS

	2014	2022
Generation from Baseline Renewable Energy (MWh)	40,292,056	35,045,955[c]
Generation from Tier 1-Eligible Energy (MWh)[a]	N/A	3,141,766[d]
Total Renewable Energy (MWh)	40,292,056	38,061,155
Total Load (MWh)[b]	159,146,663	151,836,485
% Renewable Energy serving Load (%)	25.3%	25.1%

[a] Tier 1 Energy includes generation from fuel cells that utilize natural gas as a fuel source as were previously eligible under Tier 1. Since these generation projects are fired with natural gas, their megawatt hours are reported as natural gas in the New York System Mix, which is consistent with the fuel reporting in the 2014 Statewide Fuel Mix. Therefore, the Baseline Renewable Energy plus Tier 1-Eligible Energy will not equal the Total Renewable Energy.

[b] Includes LSEs, municipal utilities, and direct customers. Pursuant to the NYGATS Operating Rules, load is calculated by using NYISO version 2 settlement data and adding generation from load modifiers utilized by distribution utilities. The load modifier data adjusts the total load as well as the total load served by the LSE utilizing the load modifier(s). The adjusted total load served by each LSE is then divided by the adjusted total statewide load to determine the percentage of total load served by each LSE. The total quantity of renewable energy serving State load includes both baseline and Tier 1 energy supply.

[c] Excludes biogas and biomass and fuel cells.

[d] Includes fuel cell and biogas.

Figure 3 represents the total load compared to the percentage associated with renewable energy and the portion of the renewable generation from Tier 1 resources for 2014 and 2022.

Figure 3. New York System Mix—Total Load and Renewable Energy

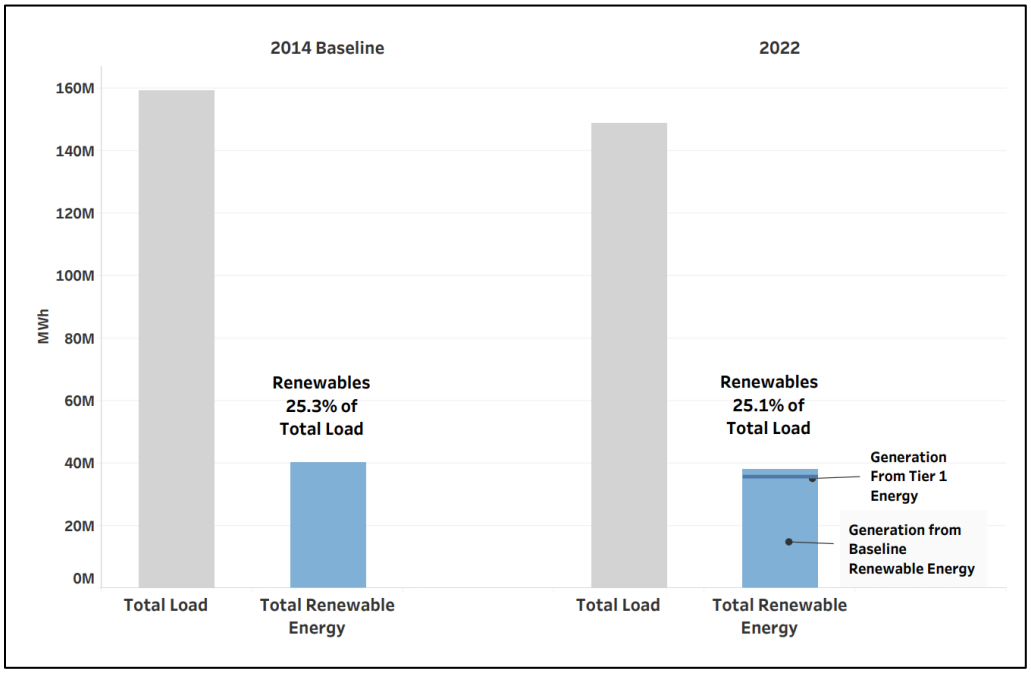


Figure 4 breaks down the renewable portion of the 2022 New York System Mix by type. This figure illustrates that baseline renewables, which include generation from NYPA hydroelectric[79] facilities, and imported renewables comprise the largest amount of renewable energy in the 2022 New York System Mix.

Figure 4. Renewables in the 2022 New York System Mix

Source: NYGATS

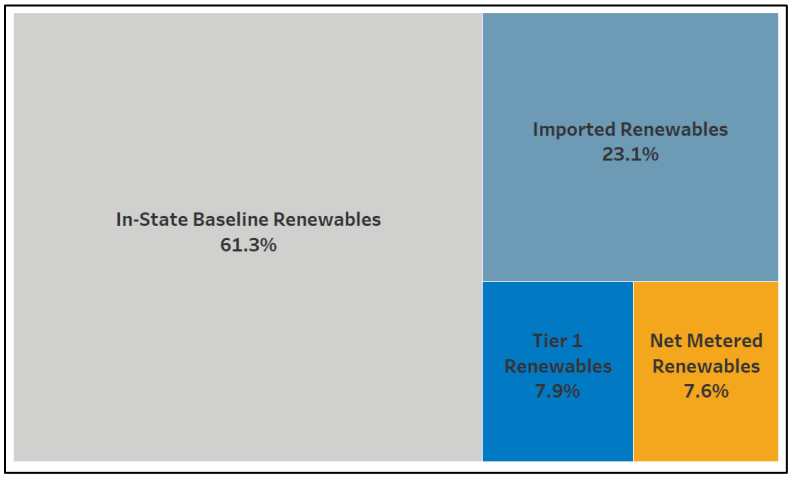


Table 3 shows renewable energy in the New York System Mix by technology as well as the differential contribution between 2014 and 2022. Contributions from solar increased while hydroelectric and wind technologies decreased. Variations in climatic conditions in a given year can result in increases or decreases in generation from renewable resources as they are weather-dependent.

Table 3. New York System Mix Renewable Energy by Technology[80]

Source: NYGATS

Fuel Type[a]	2014 MWhs	2022 MWhs	MWh Change
Hydroelectric	35,834,762	30,445,713	-5,389,049
Solar	681,610	4,239,230	3,557,620
Wind	3,775,684	3,376,213	-399,471
Total	**40,292,056**	**38,061,155**	**-2,230,901**

[a] The Climate Act's definition of "renewable energy systems" does not include biomass and biogas.

3.3 Composition of Baseline Renewable Energy

Table 4 shows the contribution from baseline renewable energy generators by technology and the changes between years 2014 and 2022. For 2022, the contribution from the baseline renewable energy generators includes all the non-Tier 1 certified energy in the New York System Mix and demonstrates that the overall contribution from baseline renewable energy resources decreased from 2014 to 2022.[81]

Table 4. Baseline Generation Contribution to New York System Mix

Note that the baseline generation contributions shown here excludes Tier 1 Renewable Energy.[82]

Source: NYGATS

	2014[a]		2022 (New York System Mix)	
	CES Baseline MWhs	**Percentage**	**Non-Tier 1 MWhs**	**Percentage**
Battery Storage[b]	-	-	10,749	0.0%
Biogas	394,314	0.2%	103,402	0.1%
Biomass	609,293	0.4%	315,103	0.2%
Coal	7,205,000	4.5%	3,345,301	2.2%
Natural Gas	58,454,000	36.7%	72,959,271	49.1%
Nuclear	49,409,000	31.0%	31,865,035	21.4%
Oil	708,000	0.4%	1,406,653	0.9%
Solid Waste	2,075,000	1.3%	3,643,248	2.5%
Non-Renewable Energy	**118,854,607**	**74.7%**	**113,648,764**	**76.4%**
Hydroelectric	35,834,762	22.5%	30,396,584	20.4%
Solar	681,610	0.4%	2,497,966	1.7%
Wind	3,775,684	2.4%	2,151,406	1.4%
Renewable Energy[c]	**40,292,056**	**25.3%**	**35,045,955**	**23.6%**
Total (Baseline)	**159,146,663**	**100.0%[d]**	**148,694,719**	**100.0%[e]**

[a] The Climate Act's definition of "renewable energy systems" does not include biomass and biogas; therefore, 2014 has been adjusted to classify these fuel types as non-renewable.

[b] Battery Storage—non-renewable projects are the Long Island Power Authority (LIPA), Montauk and East Hampton Storage Center whose commercial operation dates were February and April 2022, respectively. The megawatt hours represent the energy that was injected into the grid.

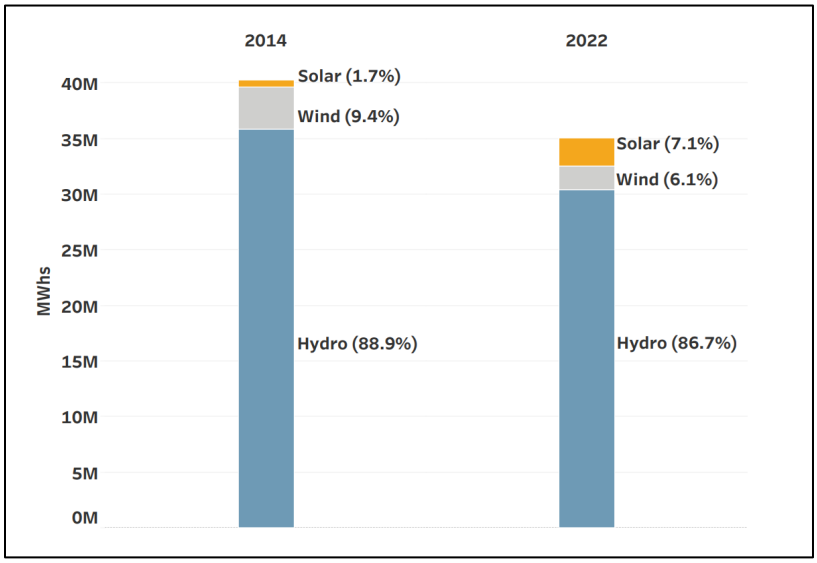
[c] Tier 1 Energy includes generation from Fuel Cells that are fired by Natural Gas as this technology is eligible under Tier 1. Since these generation projects are fired with Natural Gas their MWhs are reported as Natural Gas in the New York System Mix, which is consistent with the fuel reporting in the 2014 Statewide Fuel Mix. Therefore, the Baseline Renewable Energy plus Tier 1 Energy will not equal the Total Renewable Energy.

[d] Numbers may not add up to 100% due to rounding.

[e] Numbers may not add up to 100% due to rounding.

Figure 5 depicts renewable energy generation by technology for the years 2014 and 2022.

Figure 5. New York System Mix Baseline Renewable Generation Energy Comparison



3.3.1 Baseline Renewable Energy Exports

Table 5 displays in aggregate the number of RECs exported from baseline renewable generation units located in the State during the compliance year. Since there was no tracking system in place at the time the CES baseline was calculated, a comparison cannot be made to the level of renewable energy exports that occurred in the CES baseline year of 2014. Comparing 2022 to 2021, exports from hydroelectric generators increased slightly while exports from wind generators decreased slightly resulting in net reduction of exports of 28,080 MWh.

Table 5. Renewable Energy Exports by Baseline New York State Generators

Installed Prior to January 1, 2015.[83]

Source: NYGATS

Technology	2018 REC Exports	2019 REC Exports	2020 REC Exports	2021 REC Exports	2022 REC Exports	MWh Change from 2021–2022
Hydroelectric[a]	178,056	433,611	483,963	641,165	651,970	10,805
Wind	949,885	1,480,582	2,109,533	1,965,922	1,927,037	-38,885
Total Baseline Renewable Energy Exports[b]	1,127,941	1,914,193	2,593,496	2,607,087	2,579,007	-28,080

[a] Number exclude exports from NYPA hydroelectric facilities.

[b] Excludes Biogas for 2020-2022.

4 Tier 1

4.1 Tier 1 Annual Compliance Summary

Table 6 summarizes the results of the NYSERDA and DPS review of Tier 1 compliance for 2022. Tier 1 compliance mechanisms are summarized, in aggregate, for all jurisdictional LSEs as well as for LIPA and NYPA. A full list of LSEs active during the year can be obtained through NYGATS, via the EDP Label Reports.[84]

The data is inclusive of NYSERDA Tier 1 REC activities. In 2022, NYSERDA purchased Tier 1 RECs through its long-term contracts. These 2022 Tier 1 RECs were offered for sale to jurisdictional LSEs toward their Tier 1 compliance. The 2022 Tier 1 REC obligation percentage for all LSEs participating in the CES was 3.25%.

As of the date of this report's issuance, the jurisdictional LSEs used a combination of current and banked vintage Tier 1 RECs as well as ACPs to reach 99.9% compliance. A small number of LSEs did not meet their compliance obligations due to bankruptcy, ceasing operation during the compliance year, or no longer providing retail energy in New York State. LIPA used 340,215 vintage 2022 Tier 1 RECs to reach 56.4% RES Tier 1 compliance for 2022. While NYPA did not procure Tier 1 RECs in 2022, NYPA anticipates meeting its anticipated proportion of the RES goals in the coming years through different means as discussed in section 1.5.

Table 6. Summary of 2022 Tier 1 RES Compliance Status

	Jurisdictional	LIPA	NYPA	Total
Tier 1 Obligated Load (MWh)	113,793,595	18,981,653	19,061,237	151,836,485
Tier 1 Compliance Obligation (MWhs) (3.25% of Obligated Load)	3,698,218	616,903	619,490	4,934,611
2022 Tier 1 RECs Used for Compliance	866,686	340,215	-	1,206,901
2022 VDER Tier 1 RECs Used for Compliance	899,246	7,536[b]	-	906,782
2022 Imported Tier 1 RECs Used for Compliance	334,391	-	-	334,391
Banked Tier 1 RECs Used for Compliance	206,706	-	-	206,706
Banked VDER Tier 1 RECs Used for Compliance	189,122	-	-	189,122
Total Tier 1 RECs Used for 2022 Compliance[a]	2,496,151	347,751	-	2,843,902
Number of ACPs Used for 2022 Compliance	1,198,092	-	-	1,198,092
Total 2022 Compliance	3,694,243	347,751	-	4,041,994
Total Compliance	**99.9%**	**56.4%**	**0.0%**	**81.9%**

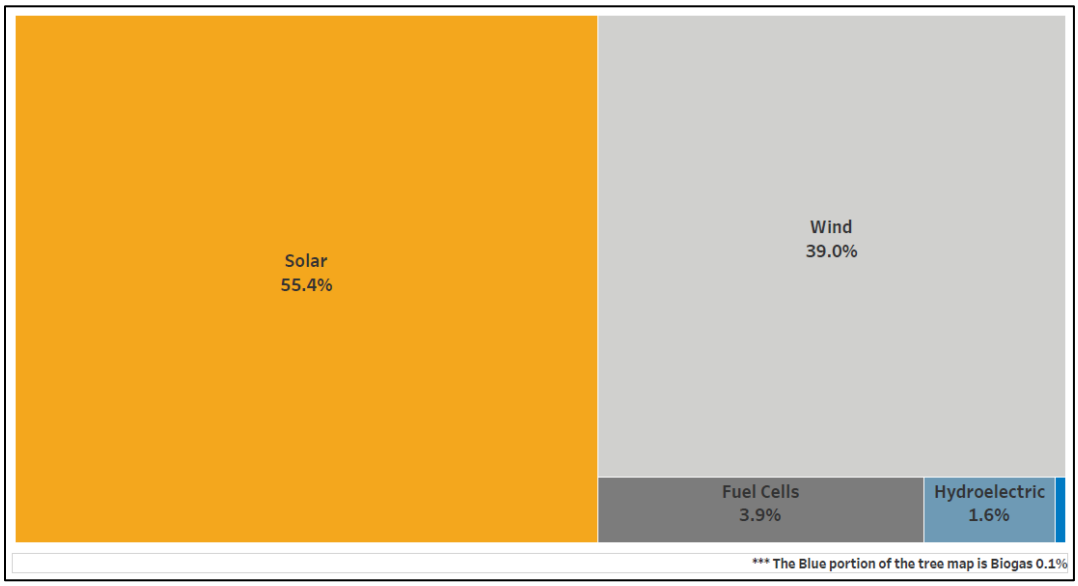
[a] As articulated in section 1.5, NYPA is fully committed to meet the goals and requirements of the PSC's Clean Energy Standard (CES) Order. Pursuant to the New York Public Authorities Law, the rates, services, and practices relating to the generation and sale of power by NYPA is not subject to the provisions of the New York Public Service Law nor its regulations. NYPA continues to work closely with its customers to ensure that its power supply contracts are addressing the requirements of the CES Order with respect to the procurement of RECs and ZECs. NYPA is amending its power contracts for its customers in a manner that authorizes NYPA to purchase RECs and ZECs in proportions corresponding to the load served under these contracts and recover the costs of these purchases from customers through supplemental charges.

[b] Through LIPA's adoption of the VDER framework, projects were completed in 2022 which generated VDER RECs.

Figure 6 summarizes Tier 1 RECs created in 2022 by technology. This figure includes Tier 1 RECs that were minted in the State but exported. In 2022, 344,905 Tier 1 RECs were imported.

Figure 6. Tier 1 Renewable Energy Certificate by Technology, 2022

Source: NYGATS



4.2 Tier 1 Renewable Energy Certificate Banking Activity

The PSC orders afford LSEs and NYSERDA the option to bank excess Tier 1 RECs from the current compliance year for use in two subsequent compliance years. Banking is a flexibility mechanism intended to increase market liquidity and reduce REC price volatility—by allowing renewable energy surpluses (if applicable) to be used for compliance in a future year. Banking is limited to Tier 1 RECs for compliance purposes, and only by NYSERDA or obligated LSEs who are compliant with the RES for all previous compliance periods. To be eligible for banking, excess NYGATS certificates must not have been previously used for compliance with the RES or transferred to other parties. The number of RECs an LSE may bank is capped at 60% of the current compliance year's REC obligation. However, the PSC, in response to a Joint Utilities Petition, suspended the 60% banking cap for VDER resources through 2022.[85]

Table 7 summarizes Tier 1 RECs, which are banked by category, including LSE banked RECs, VDER Tier 1 banked RECs, and NYSERDA's Tier 1 banked balance. Tier 1 RECs which remain unsold from NYSERDA quarterly sales are banked and then made available in subsequent NYSERDA sale events. LSEs with excess Tier 1 RECs must bank them prior to the end of certificate trading in NYGATS. For 2022 vintage RECs, trading closed on June 30, 2023.

Table 7. Tier 1 Renewable Energy Certificate Banking Summary

Source: NYGATS

2022	
LSE Tier 1 REC Banking (non-VDER Tier 1 RECs)	
Aggregate LSE Tier 1 Bank Balance, 6/30/2021	16,497
Aggregate LSE Tier 1 Bank Balance, 6/30/2022	164,157
Aggregate LSE Tier 1 Bank Balance, 6/30/2023	116,155
2020 Tier 1 RECs	16,497
2021 Tier 1 RECs	164,157
2022 Tier 1 RECs	116,155
VDER Tier 1 REC Banking	
Aggregate VDER Tier 1 Bank Balance, 6/30/2021	-
Aggregate VDER Tier 1 Bank Balance, 6/30/2022	189,122
Aggregate VDER Tier 1 Bank Balance, 6/30/2023	551,013
NYSERDA Tier 1 REC Banking	
NYSERDA Bank Balance, 6/30/2021	4,661
NYSERDA Bank Balance, 6/30/2022	39,272
NYSERDA Bank Balance, 6/30/2023	11,893
Total Balance of Banked Tier 1 RECs	**679,061**

5 Compliance with Zero-Emission Credit Obligations

At the time of this report's issuance, 99.7% of the ZECs have been purchased by LSEs from NYSERDA to meet their ZEC obligation. Table 8 summarizes the progress that has been made in meeting the obligations under the CES for the 2022 compliance year.[86]

Table 8. Summary of 2022 ZEC Compliance

ZEC Compliance Year	Jurisdictional	LIPA	NYPA	Total
Total Obligated Load (MWh)[a]	112,373,795	18,714,670	19,095,951	150,184,416
ZEC Obligation	20,378,934	3,393,896	3,463,042	27,235,872
Total ZECs Purchased for 2022 Compliance	20,357,350	3,393,896	3,398,792	27,150,038
Compliance with ZEC Obligation	**99.9%**	**100.0%**	**98.1%**	**99.7%**

[a] Note: ZEC Compliance Year is from April 1 to March 31, so there may be a difference in the number of obligated LSEs and the obligated load when compared to RES Compliance Year reporting.

[b] Data as of 11/27/2023.

6 Compliance with Tier 2 Obligations

At the time of this report's issuance, 100% of the Tier 2 RECs have been purchased by LSEs from NYSERDA to meet their Tier 2 obligation. Please note that NYPA elected not to participate in Tier 2 obligation and is not included. Table 9 summarizes the progress that has been made in meeting the obligations under the CES for the 2022 compliance year.[87]

Table 9. Summary of Tier 2 Compliance

Tier 2 Compliance Year	Jurisdictional	LIPA	Total
Total Obligated Load (MWh)[a]	113,793,595	18,981,653	132,775,248
Tier 2 Obligation	12,065	2,013	14,078
Total Tier 2 Purchased for 2022 Compliance	12,065	2,013	14,077
Compliance with Tier 2 Obligation	**100.0%**	**100.0%**	**100.0%**

[a] NYPA is exempt from participating in the Tier 2 Program.

[b] Data as of 11/27/2023.

7 Contribution of Voluntary Renewable Energy Activities to CES Progress

The CES Order recognized that many market actors are motivated to purchase renewable energy beyond what is required by regulatory compliance. Such voluntary market activity is encouraged and tracked and does not alter existing LSE obligations.

Table 10 provides information on 2022 RECs retired for voluntary purposes. These voluntary actions include, but are not limited to, green power products sold by LSEs, customer sited DER generation retirements, and corporate or individual retirements. NYGATS account holders may retire RECs without the associated energy for corporate or individual renewable energy claims. The reported corporate and individual retirements only include RECs retired with the associated energy; REC-only retirements have been excluded as these do not contribute to CES progress, which is measured by energy consumed in the State.

The reported LSE voluntary activity reflects REC retirements by LSEs for EDP label purposes. The total does not include the retirement of RECs from NYPA hydroelectric facilities made by NYPA and municipal utilities that have long-term hydropower contracts with NYPA or Tier 1 RECs retired for compliance toward RES obligations. The resulting number represents RECs retired by LSEs for retail renewable energy products delivered to customers in 2020.

The customer sited DER retirements represent RECs from NEM projects that were retired in NYGATS. Generation from customer sited DER projects that are not registered in NYGATS is estimated annually using information from the New York State Standardized Interconnection Requirements (SIR) inventory reporting.[88] NYSERDA enters this information into NYGATS and retires the resulting RECs on behalf of the project owner.

Table 10. Voluntary Activity in NYGATS

Source: NYGATS; Data is not static. Table 10 reflects activity as of 11-27-2023. Refer to public reports for current figures.

	2022 RECs
Total Voluntary Activity in LSE EDP Subaccounts	4,622,918
Corporate or Individual Retirements	367,523
Customer-sited DER Retirements	2,817,758
Non-Tier 1 RECs Banked	203,892

Note: See New York Generation Attribute Tracking System:
https://nygats.ny.gov/ng/Report/getdto_view_Report_PublicVoluntaryRetirements

8 Key References and Links

The Clean Energy Standard Orders, reports, and filings can be found on NYSERDA's website:

- https://www.nyserda.ny.gov/All-Programs/Clean-Energy-Standard/Clean-Energy-Standard-Resources/Filings-Orders-and-Reports

Information on NYSERDA-funded large-scale renewable projects can be found on the Open NY website:

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

Endnotes

[1] PSL § 66-p(b)(2).

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

[3] The requirement for this CES Progress Report was set forth in the CES Order; subsequent CES Implementation plans further defined the content and structure, along with reporting requirements. Case 15-E-0302, supra, Order Approving Phase 1 Implementation Plan (issued February 22, 2017), Order Approving Phase 2 Implementation Plan (issued November 17, 2017), Order Approving Phase 3 Implementation Plan (issued December 14, 2018).

[4] Total load represents MWh in 2022 as reported in NYGATS.

[5] New York State Statewide Greenhouse Gas Emissions Report https://www.dec.ny.gov/energy/99223.html

[6] 10 GW Distributed Solar Roadmap: https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7b4C42AAFF-0EB9-4890-AA0D-21C70B088F4B%7d

[7] Case 21-E-0629; Order Expanding NY-Sun Program, (issued and effective April 14, 2022).

[8] See Matter No. 17-00974, In the Matter of Financial Reports for Community Choice Aggregation Programs.

[9] NYSERDA. Environmental Disclosure (Label) Program: https://dps.ny.gov/environmental-disclosure-labels-load-serving-entity

[10] Case 15-E-0302, Proceeding to Implement a Large-Scale Renewable Program and a Clean Energy Standard, Order Adopting a Clean Energy Standard (issued and effective August 1, 2016). (CES Order) See Appendix A for eligible technologies.

[11] New York State Governor's 2019 State of the State, proposed the Green New Deal, a nation-leading clean energy and jobs agenda that puts New York on a path to carbon neutrality through a globally unprecedented ramp-up of renewable energy including doubling the state's distributed solar goal from 3,000 MWs to 6,000 MWs by 2025, obtaining 70% of its electricity from renewables by 2030, increasing New York's offshore wind target to 9,000 MWs by 2035, and achieving 100% of its electricity from clean sources by 2040. Each of these proposals will likely lead to implementation proceedings at the New York State Public Service Commission, which may amend the requirements currently stated in orders and described in this document."

[12] Case 18-E-0071, In the Matter of Offshore Wind Energy, Order Establishing Offshore Wind Standard and Framework for Phase 1 Procurement (issued and effective July 12, 2018).

[13] New York State Senate Open Legislation: https://legislation.nysenate.gov/pdf/bills/2019/S6599

[14] Solar Roadmap. 10 GW Distributed Solar Roadmap.

[15] Ibid.

[16] Passage of Accelerated Renewable Energy Growth; https://www.nyserda.ny.gov/-/media/Project/Nyserda/Files/Publications/Fact-Sheets/Accelerated-Renewables-Fact-Sheet.pdf

[17] White Paper on Clean Energy Standards Procurements to Implement New York's Climate Leadership and Community Protections Act: https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={E6A3B524-6617-4506-A076-62526F8EC4CB}

[18] State of New York Public Service Commission: Order Adopting Modifications to the Clean Energy Standard: https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={EAAF1A1E-2A05-49A7-A4D1-C5755E5BE536}

[19] Order Approving Build Ready Program; https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={B0F6CC45-490C-48A7-B0FB-6D3C7924993C}

[20] Order Modifying Clean Energy Standard Tier 1 Obligations: https://www.nyserda.ny.gov/-/media/Project/Nyserda/Files/Programs/Clean-Energy-Standard/Order-Modifying-Tier-1-Obligation-2023-04.pdf

[21] Phase 5 Implementation Plan: https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={C0B3478A-0000-C512-B8A3-08608162BC90}

[22] Order Addressing Capacity Accreditation Rules: https://www.nyserda.ny.gov/-/media/Project/Nyserda/Files/Programs/Clean-Energy-Standard/Addressing-Capacity-Accreditation-Rules.pdf

[23] Order Denying Petitions Seeking To Amend Contracts With Renewable Energy Projects: https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7bE0C7248B-0000-C91F-9B56-50CC9643132E%7d

[24] 10-Point Renewable Energy Action Plan: https://www.nyserda.ny.gov/About/Newsroom/2023-Announcements/2023-10-12-Governor-Hochul-Announces-New-10-Point-Action-Plan-to-Expand

[25] Open NY Large-scale Renewable Projects Reported by NYSERDA: Beginning 2004. https://data.ny.gov/Energy-Environment/Large-scale-Renewable-Projects-Reported-by-NYSERDA/dprp-55ye

[26] Ibid.

[27] Renewable Energy Certificates include any and all reductions in harmful pollutants and emissions, such as carbon dioxide and oxides of sulfur and nitrogen to catalog and recognize environmental attributes of generation.

[28] NYSERDA Clean Energy Standard. https://www.nyserda.ny.gov/All-Programs/Programs/Clean-Energy-Standard/Renewable-Generators-and-Developers/RES-Tier-One-Eligibility/Eligibility

[29] New York Generation Attribute Tracking System. https://nygats.ny.gov/ng/Report/getdto_view_Report_PublicOperationalEA

[30] 2017 Solicitation Results: https://www.nyserda.ny.gov/All-Programs/Large-Scale-Renewables/RES-Tier-One-Eligibility/Solicitations-for-Long-term-Contracts/2017-Solicitation

[31] 2018 Solicitation Results: https://www.nyserda.ny.gov/All-Programs/Large-Scale-Renewables/RES-Tier-One-Eligibility/Solicitations-for-Long-term-Contracts/RFP-Resources

[32] Order Authorizing Voluntary Modification of Certain Tier 1 Agreements: https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={D2C22BFD-33BF-447C-8319-17EC4F82A851}

[33] 2023 Solicitation: https://www.nyserda.ny.gov/All-Programs/Large-Scale-Renewables/RES-Tier-One-Eligibility/Solicitations-for-Long-term-Contracts

[34] Order Modifying Tier 1 Obligation 2023-04: https://www.nyserda.ny.gov/-/media/Project/Nyserda/Files/Programs/Clean-Energy-Standard/Order-Modifying-Tier-1-Obligation-2023-04.pdf

[35] Phase 5 Implementation Plan: https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={C0B3478A-0000-C512-B8A3-08608162BC90}

[36] Ca se 15-E-0302, supra, Order Adopting Measures for the Retention of Existing Renewable Baseline Resources, (issued March 16, 2018).

[37] The Climate Act, and in turn the PSC, revised the list of resources that qualify as renewable for purposes of the CES.

[38] The PSC authorized the financial backstop to recover these costs from delivery customers. The most recent agreements have used uncommitted funds.

[39] Per the 2020 CES Order, the PSC does not require NYPA to support other existing baseline renewable resources under the Competitive Tier 2 Program in recognition of NYPA's ownership of existing baseline renewable resources.

[40] Final Tier 2 Re-Sale Implementation Plan. https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={2E667143-F786-496E-BAA9-2BD54D8521EF}

[41] NYSERDA Clean Energy Standard: Competitive Tier 2 Program. https://www.nyserda.ny.gov/All-Programs/Large-Scale-Renewables/Tier-Two-Competitive-Program

[42] NYSERDA Clean Energy Standard: Competitive Tier 2 Program. https://www.nyserda.ny.gov/All-Programs/Large-Scale-Renewables/Tier-Two-Competitive-Program

[43] NYSERDA Clean Energy Standard: Competitive Tier 2 Program. https://www.nyserda.ny.gov/All-Programs/Large-Scale-Renewables/Tier-Two-Competitive-Program

[44] NYSERDA Clean Energy Standard: Competitive Tier 2 Program. https://www.nyserda.ny.gov/All-Programs/Large-Scale-Renewables/Tier-Two-Competitive-Program

[45] NYSERDA Clean Energy Standard: Tier 4-New York City Renewable Energy. https://www.nyserda.ny.gov/All-Programs/Large-Scale-Renewables/Tier-Four

[46] Tier 4 Petition: https://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterCaseNo=15-e-0302

[47] Order Approving Contracts For The Purchase Of Tier 4 Renewable Energy Certificates:: https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={4DB09036-1CEF-42CB-B9E0-F0ED88848311}

[48] NYSERDA Offshore Wind 2018 Solicitation: https://www.nyserda.ny.gov/offshore-wind-2018-solicitation

[49] Ibid.

[50] NYSERDA Offshore Wind 2020 Solicitation: https://www.nyserda.ny.gov/offshore-wind-2020-solicitation

[51] NYSERDA 2021 Announcements. https://www.nyserda.ny.gov/About/Newsroom/2021-Announcements/2021-01-13-Governor-Cuomo-Outlines-2021-Agenda-Reimagine-Rebuild-Renew

[52] NYSERDA Offshore Wind 2022 Solicitation: https://www.nyserda.ny.gov/All-Programs/Offshore-Wind/Focus-Areas/Offshore-Wind-Solicitations/2022-Solicitation

[53] 10-Point Renewable Energy Action Plan: https://www.nyserda.ny.gov/About/Newsroom/2023-Announcements/2023-10-12-Governor-Hochul-Announces-New-10-Point-Action-Plan-to-Expand

[54] New York State Clean Energy Standard: Results of Renewable Energy Standard and Renewable Portfolio Standard Solicitations for Long-Term Contracts through December 31, 2018. Final Report. March 2019. https://www.nyserda.ny.gov/-/media/Project/Nyserda/Files/Programs/Clean-Energy-Standard/2019-CES-2018-annual-procurement.pdf

[55] Open NY Large-scale Renewable Projects Reported by NYSERDA: Beginning 2004. https://data.ny.gov/Energy-Environment/Large-scale-Renewable-Projects-Reported-by-NYSERDA/dprp-55ye

[56] NYSERDA. Clean Energy Fund Reports. Clean Energy Fund Performance Reports. https://www.nyserda.ny.gov/About/Publications/Program-Planning-Status-and-Evaluation-Reports/Clean-Energy-Fund-Reports

[57] NYSERDA. NY-Sun Performance Reports. https://www.nyserda.ny.gov/About/Publications/Program-Planning-Status-and-Evaluation-Reports/NY-Sun-Performance-Reports

[58] New York State Department of Public Service. Staff White Paper on Clean Energy Standard: Case 15-E-0302. January 25, 2016. http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7b930CE8E2-F2D8-404C-9E36-71A72123A89D%7d

[59] Case 15-E-0302, Staff White Paper on Clean Energy Standard (filed January 25, 2016).

[60] SCC is an estimate of the societal benefits of reducing greenhouse gas emissions. VDER uses the value published annually by the US EPA which represents, in dollars, of the long-term damage done by a ton of carbon dioxide emissions in a given year.

[61] Case 15-E-0082, Policies, Requirements, and Conditions for Implementing a Community Net Metering Program (issued and effective March 9, 2017).

[62] State of New York Public Service Commission. Case 15-E-0751: In the Matter of the Value of Distributed Energy Resources. Order Regarding Value Stack Compensation. Issued and Effective: April 18, 2019. https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={06B07A5A-893A-48CB-BB0E-E8B3ABF4A7C6}

[63] New York State Department of Public Service Whitepaper On Rate Design For Mass Market Net Metering Successor Tariff: https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={67DC3354-F3D6-4618-AB75-F098A2906E12}

[64] Case 15-E-0751 and Case 15-E-0082; supra, Order on Net Energy Metering Transition, Phase One of Value of Distributed Energy Resources, and Related Matters, (issued and effective March 9, 2017).

[65] NY-Sun Petition dated 11/25/19 Petition: http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={5836DFE2-BB55-40D4-842E-6D46DCAE4EEF}

[66] NY-Sun Extension Order dated 5/14/20 Order: http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={A67E946F-40B0-49C4-93CD-7BC454987CDF}

[67] Expanded NY-Sun Program Announcement; https://www.governor.ny.gov/news/governor-hochul-announces-expanded-ny-sun-program-achieve-least-10-gigawatts-solar-energy-2030

[68] Solar Roadmap https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7B4C42AAFF-0EB9-4890-AA0D-21C70B088F4B%7D

[69] Ibid.

[70] Order Adopting NY-Sun Mid-Program Modifications: https://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?Mattercaseno=21-E-0629

[71] Build-Ready Annual Progress Report; https://www.nyserda.ny.gov/-/media/Project/Nyserda/Files/Programs/Clean-Energy-Standard/LSR-BRP-2022-annual-r-1-v3-acc.pdf

[72] New York Power Authority Vision and Mission: https://www.nypa.gov/about/vision2030

[73] Final ZEC Implementation Plan. https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={D26676C9-3705-42FB-99AE-9D3B6C8803BE}

[74] Order Adopting Accelerated Energy Efficiency Targets: https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={B330F932-3BB9-46FA-9223-0E8A408C1928}

[75] Environmental Disclosure (Label) Program. https://dps.ny.gov/environmental-disclosure-labels-load-serving-entity

[76] New York Generation Attribute Tracking System. Active Projects. https://nygats.ny.gov/ng/Report/getdto_view_Report_PublicProjectsAll

[77] Total load represents MWh in 2022 as reported in NYGATS.

[78] Case 15-E-0302, Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Program and Clean Energy Standard, Order Adopting Modifications to the Clean Energy Standard (“ CES Order”)(issued and effective Oct. 15, 2020).

[79] Hydroelectric generation facilities owned by NYPA including the Niagara and the Saint Lawrence Generating Stations.

[80] Due to the nature of energy market transactions across borders, the 2021 baseline renewable energy may include or exclude imported renewable generation that was part of the 2014 baseline calculation. Differences between years may also be attributable to the variations in climatic conditions in a given year as generation from renewable resources is weather-dependent. Biomass and Biogas removed for 2019.

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[82] Tier 1 energy from Fuel Cells are included in Natural Gas.

[83] The 2017 figure included unbundled exports.

[84] New York Generation Attribute Tracking System. EDP Label. https://nygats.ny.gov/ng/Report/getdto_view_Report_PublicEDPLabel

[85] Case 15-E-0302, Proceeding on Motion of the PSC to Implement a Large-Scale Renewable Program and a Clean Energy Standard (issued and effective July 16, 2018).

[86] NYSERDA completed the ZEC reconciliation process and issued statements to LSEs in October 2020 with payment due to NYSERDA by November 2020. LSEs whose load share ratio decreased from their historical amount received a refund from NYSERDA, those LSEs whose load share increased received an invoice to purchase the additional ZECs necessary to meet their obligation.

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[88] Department of Public Service. SIR Inventory Information. https://dps.ny.gov/distributed-generation-information

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New York State Energy Research and Development Authority

17 Columbia Circle
Albany, NY 12203-6399

toll free: 866-NYSERDA
local: 518-862-1090
fax: 518-862-1091

info@nyserda.ny.gov
nyserda.ny.gov

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