Clean Energy Standard Annual Progress Report 2023 Compliance Year

Final Report | January 2025

NEW YORK STATE

NYSERDA
New York State Energy Research and Development Authority

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

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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.

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Clean Energy Standard Annual Progress Report: 2023 Compliance Year

Final Report

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Abstract

This Clean Energy Standard Progress Report summarizes the progress toward New York State's Clean Energy Standard (CES) as of December 31, 2023. 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 2024 for the 2023 Compliance Year). This annual report is issued in January covering the most recently completed Compliance Year. It includes a description of initiatives launched in support of the Climate Leadership and Community Protection Act (Climate Act), which was signed into law in July 2019.[1] 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.[2] The PSC initiated that effort by expanding the CES.[3]

This report includes procurement results and aggregate load-serving entity (LSE) compliance obligations over the 2023 compliance period and discusses the results of additional means to achieve the expanded CES mandate, including accounting for baseline renewable and distributed solar activity.

This report provides policymakers and interested stakeholders with the information necessary to make informed decisions on the program and the policy's status and effectiveness and 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
CDG	Community Distributed Generation
CEEC	Central East Energy Connect
CEF	Clean Energy Fund
CES	Clean Energy Standard
CHPE	Champlain Hudson Power Express
COP	Construction and Operations Plan
CPNY	Clean Path NY
Climate Act	Climate Leadership and Community Protection Act
CST	Customer-Sited Tier
DER	Distributed Energy Resources
Divergence Test	Divergence Test and Target Setting Filing
DPS	New York State Department of Public Service
EDP	Environmental Disclosure Program
E-Value	Environmental Value
ESCO	Energy Services Company
FERC	Federal Energy Regulatory Commission
GHG	Greenhouse Gas
GW	Gigawatt(s)
GWh	Gigawatt-hour(s)
HUB	Long Island Clean Energy Hub
HVDC	High-Voltage Direct Current
Kw	Kilowatt(s)
LIPA	Long Island Power Authority
LSE	Load-Serving Entity
MIPA	Membership Interest Purchase Agreement
MOU	Memorandums of Understanding
MW	Megawatt(s)
MWh	Megawatt-hour(s)
NEM	Net Energy Metering
NYGATS	New York Generation Attribute Tracking System
NYCA	New York Control Area
NYISO	New York State Independent System Operator
NYPA	New York Power Authority

NYSERDA	New York State Energy snd Research Authority
OREC	Offshore Wind Renewable Energy Certificate
PSC	New York State Public Service Commission
PV	Photovoltaic
RPS	Renewable Portfolio Standard
REC	Renewable Energy Certificate
RES	Renewable Energy Standard
RFI	Request for Information
RFP	Request for Proposal
SCC	Social Cost of Carbon
SIR	New York State Standardized Interconnection Requirements
S-SFA	Statewide Solar For All
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 2023 and reports on the cumulative clean energy activities in New York State that contribute to the achievement of the CES objectives.[4]

The annual CES Progress Report informs 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 CES objectives. 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 to:

- Report on progress toward the State's CES objectives as of December 31, 2023
- Summarize aggregate load-serving entity (LSE) compliance with RES and ZEC obligations
- Inform consumers, policymakers, and stakeholders about the State's electricity fuel mix characteristics
- 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 2023 CES compliance year, the contribution from renewable energy resources to meet the energy secured by the Load Serving Entities (LSE) to meet customer electric load was 23.2%.[5] Contributions from renewable and nuclear energy sources to meet the energy secured by the by LSEs was 44.9%. In 2023, New York State's electric load served decreased by approximately 4 million megawatt-hours (MWh) compared to 2022, a 2.67% decrease. Tier 1 renewable energy generation increased by 1.1 million MWh, and in-state baseline renewable generation contributing to the state's system mix increased by 250,369 MWh compared to 2022. However, renewable energy generation imported from adjacent control areas decreased by approximately 5.2 million MWh. Furthermore, exports of baseline renewables increased by 296,491 MWh, an 11.5% increase compared to 2022. As

imported electricity overall decreased by just 2.8 million MWh, some previously imported renewable generation was backfilled by imported fossil-fueled generation.

As described above, Tier 1 renewable generation continues to increase year-over-year. Furthermore, the scope of this report is through 2023, and the contributions from significant new renewable generation that entered service in 2024, discussed in Section S.2 below, will not be reflected until the CES Annual Progress Report for 2024. Wind and solar generation set records in New York State multiple times in 2024 including:

- Solar generation set a record on March 12, 2024, generating 3,832 MW and serving 21% of system load.[6]
- Wind generation set a record on December 16, 2024 (besting the previous records from November and March 2024), where 30 wind power facilities, generating 2,309 MW, served 14.4% of the State's energy demand.[7]

In 2024, New York also achieved the major milestone of 6 gigawatts (GW) of installed distributed solar. Distributed solar generates enough energy to power more than one million homes and businesses across the State, including those in disadvantaged communities. Furthermore, achieving this milestone a year early means New York State is ahead of schedule for reaching the expanded 10-GW distributed solar goal.[8]

The Long Island Power Authority's (LIPA's) South Fork Wind Farm, a 132-MW project, delivered energy from its first turbine in December 2023 and became fully operational in 2024.[9] Completion of the South Fork Wind Farm is a major accomplishment and the first utility-scale offshore wind farm in the U.S. South Fork Wind delivers clean, renewable, and reliable energy to Long Island and the Rockaways with enough energy to power approximately 70,000 homes.

In the coming years, additional renewable energy projects from recent procurement programs—including annual solicitations for new land-based renewables, offshore wind, solar incentive programs, and other State procurements—will continue entering operation and driving significant progress toward the State's clean energy goals.

In December 2024, the New York State Department of Environmental Conservation published the New York State Statewide Greenhouse Gas Emissions Report[10] which provided a detailed account of greenhouse gas (GHG) emissions in the State from 1990 to 2022. The report found that energy sector

emissions in 2022 were 18% lower in 2022 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 2023, 14 large-scale renewable generation projects were under construction in New York State, totaling 985 megawatts (MW). Nine of these projects, with a combined capacity of 628 MW and 1,754 gigawatt-hours (GWh) of annual generation, reached commercial operation in 2023, creating over 220 jobs, and are already contributing more than $218 million in incremental economic benefits to the State. Over the next 20 years, these projects are expected to generate enough energy to power over 241,000 homes annually. The remaining five projects, totaling 418 MW and 637 GWh of annual generation, came online in 2024. These projects created over 375 jobs, contributing more than $117 million in incremental economic benefits to the State, and are expected to generate enough energy to power over 87,000 homes annually. Two additional projects began construction in 2024, totaling approximately 840 MW and 1,960 GWh.

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, strategically using public funds to build a self-sustaining solar market. The initiative included an original goal of installing 3 GW of PV capacity by 2023. The Climate Leadership and Community Protection Act (Climate Act) later expanded this mandate to 6 GW by 2025 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, the New York State Energy and Research Authority (NYSERDA) filed a petition in September 2019 requesting an additional $573 million to support this expanded goal and to extend NY-Sun through 2025. The PSC approved this petition on May 14, 2020, by issuing the Order Extending and Expanding Distributed Solar Incentives, authorizing an additional $573 million in funding for NY-Sun. In December 2021, NYSERDA and DPS filed the 10-GW Distributed Solar Roadmap.[11] Responding to the roadmap, the PSC 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.[12] In 2023, the NY-Sun initiative achieved a record year with 755.5 MW of NYSERDA-supported projects beginning operation. By September 2024, NY-Sun met the 6-GW target more than a year ahead of schedule.

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

LIPA advanced its clean energy initiatives, including its Integrated Resource Plan, transmission enhancements, rate structures, and South Fork Wind. Approved by the LIPA Board of Trustees in 2017, South Fork Wind began construction in February 2022 and began delivering clean energy from its first turbine in December 2023. All 12 turbines became 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 (DERs). 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. The 2023–2024 Enacted State Budget, approved by Governor Hochul in May 2023, provided NYPA with new authority to develop, own, and operate renewable energy-generating projects, either alone or in collaboration with other entities. As part of these efforts, in October 2024, NYPA published its draft Renewables Strategic Plan, and in January 2025, NYPA's Board of Trustees approved the final version of the plan. NYPA continues to operate the State's two largest hydroelectric power projects, which contribute significantly to New York State's clean energy supply.

S.5 Voluntary Clean Energy Activity

Renewable voluntary activity remained robust in New York State in 2023. At year-end, 61 municipalities participated in Community Choice Aggregation (CCA) programs. Of these, 40 selected 100% renewable energy as their default product mix, and 12 chose 50% renewable energy. CCAs are expected to continue to be a significant driver of voluntary renewable energy purchases.

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 the New York State Independent System Operator (NYISO) and other market participants to track renewable energy generation 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),[13] which reports on the environmental characteristics of the electricity consumed in the State.

S.7 Load-Serving Entity Obligations

Statewide, LSEs met 78.1.9% of the 2023 RES obligation, while LSEs under the jurisdiction of the PSC met 98.8% 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).

For the 2023 ZEC obligation, LSEs statewide met 99% compliance, while LSEs under the jurisdiction of the PSC met 98.9% of their 2023 ZEC obligations.

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

Background

On August 1, 2016, the PSC issued its Order Adopting a Clean Energy Standard (2016 CES Order).[14] The 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 broader strategy to reduce statewide greenhouse gas (GHG) emissions by 40% by 2030.[15]

Upon adoption, the CES included a RES and a ZEC requirement. In July 2018, the PSC established an Offshore Wind Standard to further contribute to the 50% renewable energy requirement.[16] All renewable energy consumed by end-use customers in New York State contributes to the CES, including generation from past, present, and future State renewable energy policies, as well as voluntary renewable energy purchases.

In July 2019, New York State enacted the Climate Act,[17] which mandates that (1) at least 70% of the State's electricity comes from renewable energy sources such as wind and solar by 2030 and that (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 PV capacity throughout New York State, strategically using public funds to build a self-sustaining solar market. The initiative included an original goal of installing 3 GW of PV capacity by 2023. The Climate Act later expanded this mandate to 6 GW by 2025 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 an additional $573 million to support this expanded goal and to extend NY-Sun through 2025. The PSC approved this petition on May 14, 2020, by issuing the Order Extending and Expanding Distributed Solar Incentives, authorizing an additional $573 million in funding for NY-Sun. In December 2021, NYSERDA and DPS filed the 10-GW Distributed Solar Roadmap.[18] Responding to the roadmap, the PSC issued an Order expanding NY-Sun with a new target of 10 GW of distributed solar and authorizing $1,473 million in new funding.[19]

On April 2, 2020, New York State enacted the Accelerated Renewable Energy Growth and Community Benefit Act. The legislation established a streamlined process for siting large-scale renewable energy projects, managed by a new office within the Department of State. The Accelerated Renewable Energy Growth and Community Benefit Act created the Build-Ready Program through which underutilized sites would be developed as renewable generation projects for private market construction and operation.[20]

On June 18, 2020, to implement the Climate Act, DPS and NYSERDA jointly filed a white paper on Clean Energy Standard Procurements to Implement New York State's Climate Act.[21] In response, the PSC issued the Order Adopting Modifications to the Clean Energy Standard (2020 CES Order) on October 15, 2020, in Case 15-E-0302.[22]

The 2020 CES Order introduced several modifications to align the CES with Climate Act mandates. It also adopted a competitive procurement program under Tier 2 of the CES to ensure the continued availability of existing renewable resources, and it 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, as well as $8.2 billion in economic development across the State. The contracts were submitted to the PSC in December 2021 for approval, and subsequently approved in April 2022.

On October 15, 2020, the PSC issued the Order Approving the Build-Ready Program.[23] This program enables 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, 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. Based on these findings, DPS and NYSERDA recommended reducing the LSE percentage obligations for upcoming years. The PSC approved this recommendation on March 16, 2022. Table S-1 provides the updated LSE obligation percentages.

Table S-1. Tier 1 Renewable Energy Certificate 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 Tier 1 Obligations,[24] approving, 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 this new structure, 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.[25] 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 NYISO Capacity Accreditation Rules, which take effect in May 2024. These rules 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, proposing revisions to how 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,[26] removing the obligation for resources to include a fixed production factor in their bids. This change ensures 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 requesting the PSC to authorize NYSERDA to amend existing contracts for 86 land-based large-scale renewable projects and 4 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,[27] asserting that 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 PSC's Order denying the petitions, New York State released a 10-Point Renewable Energy Action Plan[28] to support continued interest and growth in large-scale renewable energy development in the State. The Action Plan is an action-based set of directives designed to reinvigorate the State's efforts to achieve its renewable energy goals. The highlight of the Action Plan is to continue with offshore wind and onshore renewables solicitations beyond those conducted in 2022 to backfill any previous contracts that were terminated and establish a robust and predictable pathway for developers. Additionally, the plan emphasizes completing an Offshore Wind Master Plan 2.0, which focuses on new federal lease areas to ensure energy procurement remains competitive, cost-effective, and beneficial to both ratepayers and the State, among other initiatives. To implement the plan, NYSERDA launched expedited competitive solicitations for the Tier 1 program (RESRFP24-1) and the Offshore Wind program (ORECRFP23-1).

On June 20, 2024, the PSC approved the 2022 Energy Storage Roadmap, aiming to achieve 6 GW of energy storage capacity by 2030. The approval included issuing the Order Establishing Updated Energy Storage Goal and Deployment Policy,[29] which authorizes NYSERDA to conduct a minimum of three solicitations at least annually, with the first expected no later than June 30, 2025. NYSERDA will use an Index Storage Credit incentive mechanism, modeled on the Index REC and Index OREC used in the Tier 1 and Offshore Wind programs, respectively. This initiative is expected to support an additional 3,000 MW of storage deployed by 2030.

On October 17, 2024, in response to a request filed by several hydroelectric parties that eligibility for the Environmental Value (E-Value) compensation be expanded to include distributed energy resources (DERs), the PSC issued its Order Approving Compensation for Hydroelectric Baseline Generating Facilities.[30] The Order grants hydroelectric facilities, in service before January 1, 2015, with a capacity of up to 5 MW, the opportunity to receive H-Value compensation. This compensation is set at 75% of the current E-Value, with a maximum contract tenor of 25 years. To qualify for the H-Value, facilities must register with the local utility as a Community Distributed Generation (CDG) project and register with DPS as a DER supplier, committing 100% of output to subscribers.

As of publication, NYSERDA's eighth Tier 1 solicitation (RESRFP24-1) under the CES, launched in June 2024, had garnered a significant level of competitive interest from the private market. NYSERDA received bids from 38 projects, comprising 3.5 GW of capacity. The evaluation of bids submitted to RESRFP24-1 concluded in October 2024.

NYSERDA's fifth offshore wind solicitation (ORECRFP24-1) was launched on July 17, 2024. On September 9, 2024, NYSERDA had received 25 proposals from four developers, representing 6,870 MW in total offer capacity. On October 18, 2024, NYSERDA received Offer Pricing for 21 proposals, with Attentive Energy withdrawing its four proposals.

NYSERDA updates data regarding all CES procurements through the large-scale renewables dataset on Open NY.[31] The dataset will reflect the latest solicitation results once all contracts in the award group are finalized.

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. 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 also plays a critical role in achieving the CES. The Zero Emissions Credit (ZEC) requirement ensures the 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 multiple program tiers, enabling eligible renewable energy generators to secure 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 regularly updates data on all CES procurements through the large-scale renewables dataset on Open NY.[32] Open NY will reflect the latest solicitation results once all contracts in the award group have been finalized.

1.1.1 Tier 1 New Renewable Energy Resources

RES Tier 1-eligible Renewable Energy Credits (RECs)[33] are those generated by renewable energy projects that meet eligibility requirements under Appendix A of the CES Order or the updated renewable energy systems definition expanded in the 2020 CES Order. Projects must have a commercial operation date on or after January 1, 2015, and comply with the RES Tier 1 Certification Submission Instructions

and Eligibility Guidelines.[34] Only renewable energy projects certified by NYSERDA as Tier 1 eligible can be issued Tier 1 RECs in New York Generation Attribute Tracking System (NYGATS). Tier 1 certified renewable energy projects are publicly reported in the Operational Eligibility report in NYGATS.[35]

The CES Order authorizes 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. The RECs are then sold by NYSERDA to obligated load-serving entities (LSEs) for use toward their Tier 1 compliance obligations and, starting in 2025, to the voluntary market. As of publication, New York State has conducted eight RES Tier 1 solicitations. Appendix A of this report has additional information on specific solicitations.

1.1.1.1 Tier 1 Load-Serving Entity Obligation

Each LSE must demonstrate compliance with the Tier 1 obligation by delivering renewable energy from certified facilities in quantities specified by the Public Service Commission (PSC). LSEs include the investor-owned utilities, energy services companies (ESCOs), 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 Leadership and Community Protection Act (Climate Act) targets in the prior year (see section 1.5).

The Tier 1 obligations for LSEs depend on their actual load during the compliance year and the PSC-determined compliance obligation percentage for that year. LSEs can meet their RES Tier 1 obligation by acquiring and retiring Tier 1 RECs. They may purchase Tier 1 RECs from NYSERDA, third-party suppliers, or through self-supply. To retire Tier 1 RECs, LSEs must transfer them into the Environmental Disclosure Program (EDP) subaccount associated with the obligated load in their NYGATS account. In addition, LSEs can achieve compliance by making alternative compliance payments (ACP) to NYSERDA or using a combination of both ACPs and Tier 1 REC retirements. LSEs with surplus RES Tier 1 RECs beyond their current year obligation can bank the excess for use in meeting 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 Tier 1 Obligations,[36] approving NYSERDA's petition, with modifications, 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 proportion to their share of the State load. This method enables REC sales to the voluntary market and eliminates ACPs as a compliance mechanism. The Phase 5 Implementation Plan,[37] 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 operational prior to the Tier 1 eligibility date of January 1, 2015. Tier 2 includes both the Maintenance program and the now-concluded Competitive Tier 2 program as described below.

1.1.2.1 Maintenance

A March 2018 Order[38] refined the Tier 2 eligibility rules for renewable resources to receive maintenance financial support over a standard three-year contract 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 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 plants up to 10 MW; wind resources[39] not currently under contract to sell the environmental attributes associated with the generated energy; and facilities operational prior to January 1, 2015. NYSERDA and DPS identified potential revisions to the Maintenance Tier 2 program to be considered as part of the 2024 draft Biennial Review.

There is no LSE compliance obligation related to Maintenance Tier 2. In accordance with PSC orders, NYSERDA funded these agreements through its previously collected but unspent funds.[40]

1.1.2.2 Competitive

The Competitive Tier 2 program ended in the summer of 2022. In October 2022, NYSERDA issued a Request for Information (RFI) in October 2022 to gather feedback to assist the State in assessing current conditions and future needs of the baseline renewable energy fleet and the non–Tier 1 REC market. As part of the 2024 draft Biennial Review process, NYSERDA and DPS solicited additional stakeholder input on current market conditions and strategies to support baseline generators.

1.1.3 Tier 4—New York City Renewable Energy

The PSC's 2020 CES Order established Tier 4[41] within the CES to increase the penetration of renewable energy in New York City and reduce reliance on fossil fuel generation in the State's largest load center.[42] On January 13, 2021, NYSERDA issued a Tier 4 Request for Proposals (RFP), evaluating bids from seven proposers.

On September 20, 2021, NYSERDA announced the selection of two projects: Clean Path NY (CPNY) and Champlain Hudson Power Express (CHPE). After contract negotiations, two executed contracts were submitted by petition[43] for PSC approval on November 30, 2021, followed by a public comment period. On April 14, 2022, the PSC issued an Order[44] under Case 15-E-0302 approving 25-year contracts for CPNY and CHPE. On November 27, 2024, NYSERDA and Clean Path NY mutually agreed to terminate the project's Tier 4 REC Purchase and Sale Agreement.

NYSERDA's contract with CHPE is for the purchase of RECs for clean energy delivered into New York City. The purchase of these RECs will commence once the project (1) has obtained all required permits and local approvals, (2) completed construction, and (3) is delivering power to New York City. Construction on the CHPE project began in late 2022, and operations are expected to begin in mid-2026, allowing ample time for a thoughtful and considered planning process to address the complexities associated with the Tier 4 program without risk to program delivery.

The CHPE project is the largest transmission project contracted in New York State in the last 50 years and will add 1,250 MW to the State's grid using high-voltage direct current (HVDC) technology. The project will deliver clean, reliable hydropower from Quebec and is expected to deliver more than 10 million megawatt-hours (MWh) of renewable energy annually to Zone J—nearly 20% of New York City's annual electric consumption—significantly reducing the City's reliance on fossil fuels.

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, the State committed to supporting the installation of up to 2,400 MW of offshore wind capacity by 2030, later expanding that goal to at least 9,000 MW by 2035 through the Climate Act in 2019.

ORECs represent the positive environmental attributes associated with 1 MWh 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. Under 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 then resell them to LSEs to fulfill OREC obligations. LSEs are obligated to purchase a pro rata percentage of ORECs proportional to their electric energy load compared to the total electric energy load served by all LSEs.

In early 2018 NYSERDA published the award-winning New York Offshore Wind Master Plan and the Offshore Wind Policy Options report, which outlined a roadmap for achieving the State's offshore wind goals through cost-effective and responsible development. A follow-up document, the Offshore Wind Master Plan 2.0, is currently under development, as called for in New York State's 10-Point Renewable Energy Action Plan, released in November 2023.

Since 2018, NYSERDA has issued five offshore wind solicitations. Through these solicitations, as of the time of publication, New York has 1,734 MW of offshore wind generation under development through two projects, Empire Wind 1 and Sunrise Wind. In addition, the South Fork Wind Farm, a 132-MW project contracted to the LIPA, became fully operation in 2024. Updated data on NYSERDA's offshore wind solicitations is available through the large-scale renewables dataset on Open NY;[45] Appendix A of this report has additional information on specific solicitations.

As a result of New York's fourth offshore wind solicitation (ORECRFP23-1), new contracts for Empire Wind 1, a planned 810-MW project developed by Equinor, and Sunrise Wind, a planned 924-MW project developed by Ørsted and Eversource, were announced in June 2024. Together, these projects are expected to produce enough clean energy to power more than one million New York homes.

Sunrise Wind completed all major federal and state permitting milestones and received approval of its Construction and Operations Plan (COP) from the Bureau of Ocean Energy Management (BOEM) in June 2024. Construction started in July 2024. Empire Wind 1 has completed most federal and state permitting milestones, including COP approval from BOEM in November 2023 and approval from the PSC for its plan to connect to New York's electric grid. Construction began in June 2024 at the South Brooklyn Marine Terminal, which will serve as the staging hub for Empire Wind 1. Sunrise Wind and Empire Wind 1 are expected to be operational in 2027.

South Fork Wind, a 12-turbine farm located approximately 35 miles off Montauk, is currently operational and delivering clean energy into the Long Island electric grid. The South Fork Wind Farm, under contract with LIPA, began construction in late 2022 after receiving federal permits earlier that year. South Fork Wind began delivering clean energy from its first turbine in December 2023, and construction concluded in early 2024. This project became the first commercial-scale offshore wind farm in the U.S., providing 132 MW of offshore wind power to New York State's grid.

New York's portfolio of offshore wind projects has also supported the development and utilization of ports in the State, contributing to the localization of supply chain and economic benefits, including two facilities on the Hudson River—one at the Port of Albany and another at the Port of Coeymans—a premier 60-acre staging and assembly port at South Brooklyn Marine Terminal, and an operations and maintenance hub at Port Jefferson on Long Island.

1.2 Renewable Portfolio Standard

In 2004, the PSC adopted regulations to establish New York State's RPS, aiming to increase renewable electricity consumption to 25% by 2013. In January 2010, the PSC expanded the RPS target to 30% and extended the program to 2015. The PSC established two resource tiers:

1. **Main Tier:** Primarily medium- to large-scale electric generation facilities delivering power to the NYISO-administered market.
2. **Customer-Sited Tier (CST)**: Smaller, behind-the-meter resources, such as PV systems, fuel cells, customer-sited wind facilities, anaerobic digester gas, and similar technologies that mostly produce electricity for on-site use.

The RPS also included a Maintenance Resource program, similar to the current Tier 2 program but with different eligibility criteria.

Under the Main Tier, NYSERDA was the central procurement administrator, awarding long-term contracts to eligible generators through periodic competitive solicitations for REC purchases. Some projects qualified as Tier 1 eligible under PSC order based on their in-service date; allowing NYSERDA to sell their associated RECs in the same way as other Tier 1 RES projects. Information on RPS agreements is reported in Open NY.[46]

NYSERDA's continued support for CST renewables is now housed within the CEF, including the NY-Sun solar resources initiatives. Separate reporting[47] on installed renewable energy generation capacity supported by the CEF is available on NYSERDA's website. The annual NY-Sun Performance Report[48] comprehensively overviews historic and ongoing distributed solar support.

1.2.1 Baseline Generators

A DPS white paper[49] preceding the CES Order used data from EDP regarding renewable energy consumption in 2014 to establish a baseline for measuring progress. NYGATS now calculates the Statewide Fuel Mix for EDP, referred to as the New York System Mix.

The CES Renewable Energy Baseline, or baseline, refers to renewable energy facilities that delivered energy to State consumers in 2014.[50] 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 2014 renewable energy baseline was calculated as 41,296 gigawatt-hours (GWh), or 25.9% of the 2014 EDP Statewide Fuel Mix. After removing biomass and biogas resources that were no longer considered renewable under the Climate Act and CES Order, the 2014 baseline was adjusted to 40,292,056 GWh or 25.3% of the 2014 EDP Statewide Fuel Mix.

Baseline facilities generating RECs that are retired in the State count toward CES achievement. Since energy market transactions span borders, the 2020 baseline renewable energy may include or exclude imported renewable generation from the 2014 baseline calculation. Annual differences also arise from climate variations because renewable resources (also referred to as intermittent resources) depend on weather conditions. Some baseline renewable resources export energy and associated attributes to adjacent markets. Policymakers continue to monitor these baseline resource exports. Accordingly, this report summarizes and tracks baseline generation by technology throughout the CES, including the amount of baseline renewable energy exported.

1.3 Value of Distributed Energy Resources and NY-Sun Initiative

In 2017, the PSC established the Value of Distributed Energy Resources (VDER) mechanism to transition DER compensation away from net energy metering (NEM). VDER introduced tariffs designed to encourage the location, design, and operation of DERs to maximize benefits to customers, the electric system, and society, while also ensuring the development of the clean generation needed to meet the CES's ambitious goals. Under VDER, eligible generation resources receive compensation based on the Value Stack, a set of value elements that includes compensation for the environmental value of the generation. This value is determined by the higher of NYSERDA's latest Tier 1 REC procurement price or the social cost of carbon (SCC) as calculated by DPS.[51] Since the utility companies implementing VDER tariffs provide environmental value, the PSC directed that Tier 1 RECs created by DER flow to the utility and count toward its Tier 1 compliance obligations.[52]

In April 2019, the PSC released an updated Value Stack Order[53] allowing projects under 750 kilowatts (kW) Alternating Current that serve only a host load to choose between Value Stack or Phase 1 NEM. Projects that had opted into the Value Stack by default converted to Phase 1 NEM and lost Tier 1 eligibility. On December 9, 2019, DPS issued a new white paper[54] describing potential successor tariffs for mass market projects. However, no immediate action followed, and DPS extended Phase 1 NEM for new projects (both mass market and on-site under 750 kW Alternating Current) first until January 1, 2021, and later until January 1, 2022. In early 2022, the Customer Benefit Contribution (CBC) took effect, requiring new mass market solar PV customers to pay new monthly fee based on project size.

Although CST incentive programs and NY-Sun have supported many DER installations, NYSERDA does not claim the environmental attributes of those projects. Through PSC action in the VDER proceeding, NYSERDA relinquished all environmental claims or RECs for NY-Sun and RPS CST projects it had previously claimed under earlier policies.[55]

On November 25, 2019, NYSERDA petitioned[56] for additional NY-Sun funding and an extension through 2025 to support the development of 6 GW of distributed solar by 2025, as mandated by the Climate Act. In May 2020, the PSC issued an order[57] approving NYSERDA's petition, expanding the program and increasing benefits for low-income individuals and disadvantaged communities.

In September 2021, Governor Kathy Hochul announced the expansion of NY-Sun[58] to achieve at least 10 GW of solar energy by 2030. The expanded program aims to power nearly 1.7 million homes and will be advanced comprehensively, including serving those in disadvantaged communities. In December 2021, NYSERDA and DPS submitted a new Solar Roadmap to the PSC.[59] In response, the PSC authorized the expansion of NY-Sun to a 10 GW program and authorized $1,473 million in new funding.[60] In June 2022, NYSERDA implemented program changes, including updated MW Block incentives, $239 million for the Prevailing Wage requirement transition, and an additional $252 million in Solar Energy Equity Framework to support benefitting disadvantaged communities.

On June 23, 2023, the PSC issued another Order authorizing further changes to the NY-Sun program.[61] This Order allowed NYSERDA greater flexibility in adjusting incentive rates (including the Prevailing Wage Adder), authorizing a new incentive adder for floating PV, and simplifying incentive payment processes for specific projects. The Order also directed NYSERDA to propose a plan for procuring capacity beyond 10 GW within the existing budget.

In May 2024, the PSC approved the Statewide Solar For All (S-SFA) model, which allows distributed solar and energy storage projects to bypass customer acquisition and management costs. Instead, a portion of their generated VDER credits will be allocated to utilities, allocating them among a pool of income-eligible households. The S-SFA program will provide significant utility discounts for thousands of low-income households in New York State.

1.4 Build-Ready Program

NYSERDA's Build-Ready Program identifies underutilized sites and advances preconstruction development activities for large-scale renewable energy projects. Afterward, it competitively auctions and transfers the sites and a REC agreement to the private sector for final construction and operation. The program is developing a pipeline of projects on brownfields, landfills, and abandoned and existing commercial and industrial sites across New York State. In 2023, the Build-Ready Program made progress in achieving its goals. Highlights include:

- **Expanded and advanced the pipeline:** The program engaged with landowners representing 60 potential sites, resulting in the successful execution of four exclusive memorandums of understanding (MOUs) representing 14 potential sites. The MOUs are with the Town of East Hampton for a portfolio of 11 possible sites totaling up to 15 MW of solar PV and battery energy storage projects, Orange County for an 8.5 MW solar PV project on the Orange County Landfill, Tompkins County for a 15 MW solar PV and battery energy storage project on the Caswell Landfill, and a 10 MW solar PV project at the Ithaca Tompkins International Airport.

At year-end, the Build-Ready Program had a pipeline of 33 potential sites at various stages of development and anticipates entering into MOUs for up to nine locations in 2024. The program also completed screening all 62 New York State counties for potential sites, including dormant electric generators, parking lots, mines, landfills, and previously contaminated sites. Finally, the program finished a data normalization and mapping initiative that resulted in an easily accessible and searchable statewide map and database that includes most sites previously identified for review or evaluation by the program.

- **Increased the number of projects in development:** The Build-Ready Program's projects continued to expand and mature, with 21 sites in the development phase in 2023. The projects represent a mix of single sites and portfolios of sites across the State located on mines, landfills, parking lots, airports, former industrial sites, and previously contaminated properties. The sites are in varying stages of development, with all sites advancing through due diligence activities, including site control, environmental assessments, interconnection, engineering, design, permitting, stakeholder engagement, and host community benefit package development.
- **Advanced the auction process:** The program initiated its first auction with the Build-Ready (BR) Benson Mines Solar PV Project. In 2025, the program will complete the award, sale, and transfer of the BR Benson Mines Solar PV Project to an eligible proposer to complete the remaining development milestones and finance, construct, own, and operate the project. The awarded proposer will enter into a Membership Interest Purchase Agreement (MIPA) to acquire the project from the Build-Ready Program and enter into a 20-year agreement to sell Tier 1 RECs generated by the BR Benson Mines Solar PV Project (REC Agreement) to NYSERDA.

More details on the Build-Ready Program's progress and accomplishments can be found in the Build-Ready Annual Report.[62]

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 annual updates to NYSERDA, as summarized in this section.

1.5.1 Long Island Power Authority

LIPA is the third-largest public power utility in the U.S., serving 1.2 million customers on Long Island and the Rockaway Peninsula in Queens. LIPA's purpose is to serve customers by providing clean, reliable, and affordable energy to Long Island and the Rockaways, empowering communities today and in the future.

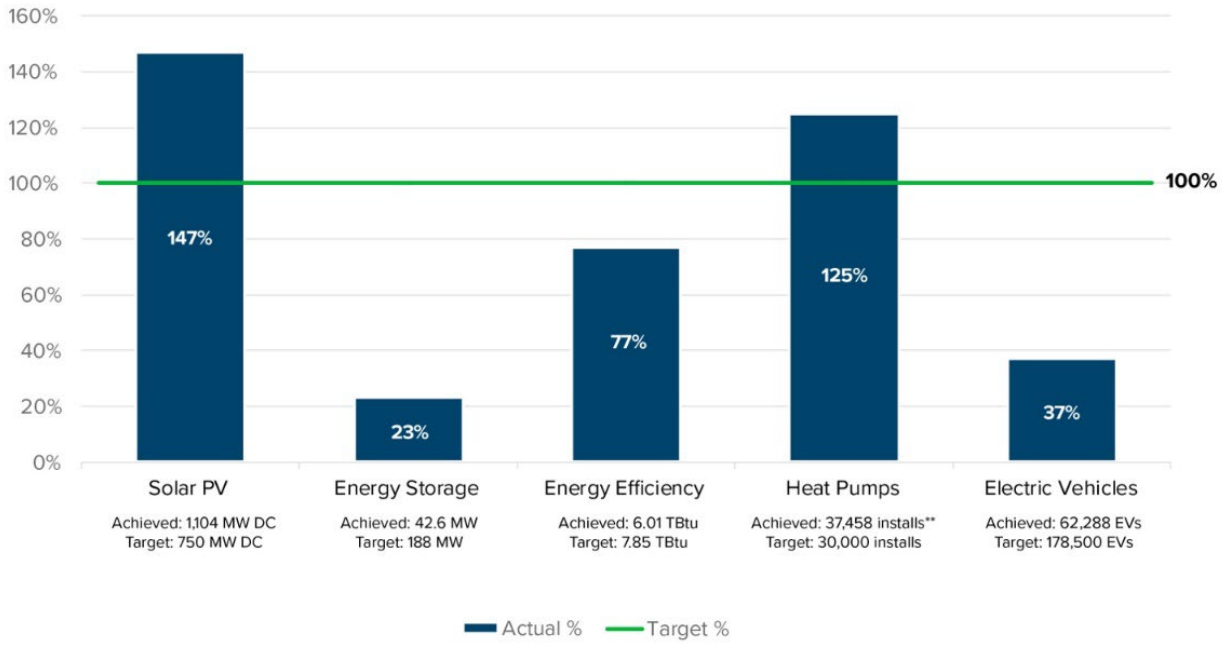
1.5.1.1 Clean Energy and Power Supply Objectives

The key objectives of LIPA's clean energy and power supply initiatives are to:

- Achieve a zero-carbon electric grid by 2040
- Demonstrate innovation and be recognized among the leading utilities in reducing economywide GHG emissions through energy efficiency and beneficial electrification
- Improve equity for disadvantaged communities
- Plan for a power supply portfolio that meets or exceeds industry standards for reliability

Figure 1. Long Island Power Authority's Progress Toward Long Island's Portion of New York State's 2025 Clean Energy Goals

Figures as of third quarter 2024, per LIPA's 2025 Proposed Annual Budget Report.[a]



[a] This target refers to individual heat pump installations and may include heat pumps used for other purposes. LIPA has recalibrated its focus to whole-home heat pump installations to align with the state's goals for electrified or electrification-ready homes by 2030.

Table 1. Long Island Clean Energy Projects Planned to be In-Service by the Early 2030s

Source: LIPA.

Solar (1,419 MW)	**Size** (MW_{AC})	**In-Service** (Est./Act.)
Long Island Solar Farm	32	2011
Eastern Long Island Solar Project	11	2013
Shoreham Solar Commons	25	2018
Riverhead Solar	20	2019
Kings Park Solar 1 and 2	4	2019
Solar Feed-in Tariffs I-III	89	2021-2022
LI Solar Calverton	23	2021
Behind-the-Meter	1,200	2030
Solar Communities (FIT V)	15	2025
Offshore Wind (2,056+ MW)	**Size** (MW_{AC})	**In-Service** (Est./Act.)
South Fork Wind Farm	132	2024
Sunrise Wind	924	2026
Future Offshore Wind Additions	1,000+	2030s
Energy Storage (754 MW)	**Size** (MW_{AC})	**In-Service** (Est./Act.)
East Hampton & Montauk Storage	10	2018 & 2019
2023 RFP Awards (Pending)	179	2028
Future Storage Additions	565	2030
TOTAL	**4,229+** (MW_{AC})	

As these clean energy projects reach commercial operation, Long Island's clean energy capacity will total approximately 4,229 MW, reducing LIPA's carbon footprint by over 70% by 2030. These emissions reductions will enable LIPA to advance the Climate Act goals to achieve economywide carbon neutrality.

1.5.1.2 South Fork Offshore Wind Project

The South Fork Wind project is the result of a LIPA-led initiative to meet the growing energy needs of Long Island's South Fork. In January 2017, the LIPA Board of Trustees approved a power purchase agreement to buy energy from the project, marking the first offshore wind farm to be contracted in federal waters. Developed jointly by Ørsted and Eversource, the project was initially proposed as a 90 MW project, but in November 2018, LIPA agreed to purchase an additional 40 MW of clean energy from the project.

BOEM granted final project approval in January 2022, and commercial operation commenced in December 2023. Located 35 miles east of Montauk Point, the 132-MW wind farm will generate enough renewable energy to power approximately 70,000 homes at full capacity. Over its lifespan, it will eliminate up to 6 million tons of carbon emissions, equivalent to taking 60,000 cars off the road for the next 20 years.

The completion and operation of the South Fork Wind project marked an historic milestone as New York State became home to the first utility-scale offshore wind farm in the United States.

1.5.1.3 Reliability Investments/Building on the Long Island Transmission Grid

Since 2010, LIPA has committed $9.4 billion to improve the electric grid. This unprecedented investment is driving improvements in reliability, boosting resilience, and integrating innovative system designs and technologies to deliver exceptional value to customers.

Long Island's geographical location makes it particularly vulnerable to the impacts of climate change, including rising sea levels, increased storm intensity, and coastal erosion. In response to these challenges, LIPA is actively involved in collaborative efforts, including the Propel Project, through the NYISO, the New York State Reliability Council, and the Electric Power Research Institute. These partnerships focus on integrating climate science into energy planning and enhancing best practices to build a more resilient and adaptable electric grid.

1.5.2 New York Power Authority

NYPA operates New York State's largest hydroelectric power projects—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 renewable generation base. 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 supplies power to State and local governments with comprehensive energy portfolio options to meet individual customer needs while partnering with them to advance the State's overall clean energy goals. NYPA collaborates closely with its customers to achieve the CES goals in ways that best meet their varying needs. As customer contracts are renewed, NYPA includes provisions to allow for recovery of costs associated with the CES.

To advance the State's energy infrastructure, NYPA completed the more than $600 million Central East Energy Connect (CEEC) transmission improvement project in December 2023, upgrading 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 NYPA, the upgrades allow for the flow of more renewable energy across the State and help

put New York State on track to meet its nation-leading clean energy goals under the Climate Act, which includes a zero-emissions electricity sector by 2040, 70% renewable energy generation by 2030, and economywide 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 and Smart Path Connect, a transmission rebuild project in the North Country and Oneida County that NYPA is working on with National Grid, New York Transco's New York Energy Solution, and NextEra Energy Transmission New York's Empire State Line Project.

As part of its VISION2030 strategic plan,[63] NYPA has committed to supply 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 buildout 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, complementing its long-standing efficiency program and growing a statewide public EV fast-charging infrastructure via its EVolve NY initiative. 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.

The 2023–2024 Enacted State Budget, approved by Governor Hochul in May 2023, provided NYPA with new authority to develop, own, and operate renewable energy-generating projects, alone or in collaboration with other entities.

As part of these efforts, in October 2024, NYPA published its draft Renewables Strategic Plan, the final version of which was approved by NYPA's Board of Trustees in January 2025, describing how it will operationalize its renewables work and advance its first tranche of projects.

Building off the expanded authority approved in the 2023–2024 Enacted State Budget, in October 2024 the PSC approved NYPA's request to establish the Renewable Energy Access and Community Help (REACH) program to provide renewable energy bill credits to low-income New Yorkers. Under REACH,

NYPA, either alone or with partners, will develop a portfolio of renewable energy generation projects and distribute a portion of the revenue from these projects to the state's investor-owned utilities, who will use the funds to generate bill credits for middle- and/or low-income energy consumers in disadvantaged communities.

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 State. Throughout the RPS program, voluntary market activities consistently made small yet meaningful contributions 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. Both large and small end users can make voluntary purchases 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 globally in recent years and are expected to grow throughout the CES. Participating in behind-the-meter renewable generation projects is another voluntary activity that increases the amount of renewable energy serving the State's electricity needs.

A CCA allows a municipality to pool its electrical load to negotiate supply for 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 2023, 61 New York State municipalities received electricity from CCAs. Of those municipalities, 40 selected 100% renewable energy as their default product mix, and 12 selected 50% renewable energy as their default product mix. CCAs collectively purchased approximately 1.4 million MWh of renewable energy.

1.7 Zero Emissions Credit Requirement

The CES includes a ZEC requirement with a compliance period from April 1 through March 31 each year. The requirement ensures the continued operation of certain existing in-state nuclear power plants. Although 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 purchases 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,[64] which modified how LSE payments to NYSERDA are determined. Because the number of ZECs is capped and LSEs are required to purchase ZECs from NYSERDA, ongoing adjustments or flexibility mechanisms are unnecessary. As a result, an ACP option does not exist to fulfill the ZEC obligation, and ZECs may not be banked or traded.

1.8 Energy Efficiency Targets

Making buildings more efficient through energy efficiency measures will help to reduce overall demand on the State's energy systems, including the electric grid, and to reduce the amount of new clean generation needed to achieve New York's clean energy goals. New York State reaffirmed commitments to energy efficiency in the 2018 State of the State address, recognizing that much work remained to realize the full potential 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 scale and innovation through their energy efficiency activities.

On December 13, 2018, the PSC issued an Order Adopting Accelerated Energy Efficiency Targets,[65] adopting 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 achieving 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.

In July 2023, the PSC adopted a Strategic Framework to guide Energy Efficiency and Building Electrification proposals to help better align the initiatives with the CLCPA for the 2026 through 2030 period and to make the most efficient use of ratepayer funding, including a $1 billion annual budget. The framework set an expectation that NYSERDA and utility-administered programs be designed to ensure that a minimum of 35% of benefits of spending at the portfolio level be directed to disadvantaged communities and called for proposals to include specific strategies for benefitting disadvantaged communities. NYSERDA and the utilities have since submitted proposals that are currently under review by the PSC.

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 by at least 85% below the 1990 level by 2050. Implementing 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 was set to achieve 185 TBtu of on-site energy savings by 2025, the State's distributed solar goal was set to 6 GW by 2025, and an energy storage target of 3 GW by 2030 was established – which are now codified in law. Some of these goals have since been increased by the PSC, which established new goals of 10 GW of distributed solar by 2030 and 6 GW of energy storage by 2030. These clean energy and energy efficiency goals reinforce the importance of the CEF as a foundation for statewide emission reductions progress.

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

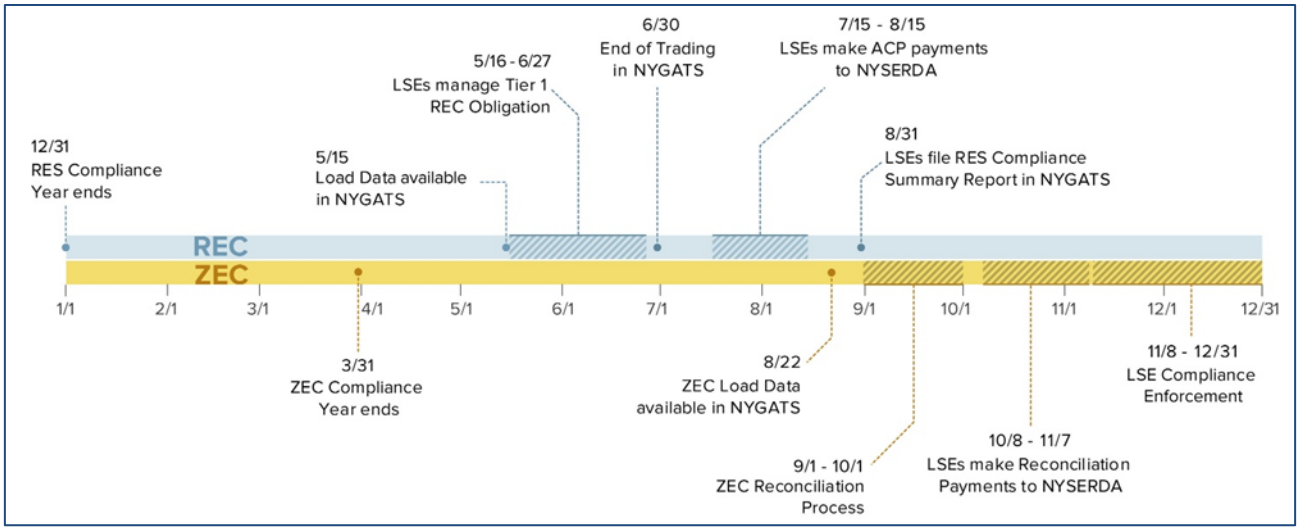
2 System and Timeline

2.1 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 from 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[66] and the CES and raises market confidence by preventing double counting of RECs, providing public reports, and recording a complete audit trail of all transactions to support the integrity of the RECs issued and held in the system. All energy generated, imported, 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 this report's primary data source, and much of the source data is publicly available on its website.[67] Figure 2 provides key dates for both REC and ZEC NYGATS timelines.

Figure 2. Clean Energy Standard and New York Generation Attribute Tracking System Timeline



3 Progress toward New York State's Clean Energy Standard Objectives: 2023

For the 2023 CES compliance year, the contribution from renewable energy resources to meet the energy secured by the Load Serving Entities (LSE) to meet customer electric load was 23.2%.[68] Contributions from renewable and nuclear energy sources to meet the energy secured by the by LSEs was 44.9%. In 2023, New York State's electric load served decreased by approximately 4 million megawatt-hours (MWh) compared to 2022, a 2.67% decrease. Tier 1 renewable energy generation increased by 1.1 million MWh, and in-state baseline renewable generation contributing to the state's system mix increased by 250,369 MWh compared to 2022. However, renewable energy generation imported from adjacent control areas decreased by approximately 5.2 million MWh. Furthermore, exports of baseline renewables increased by 296,491 MWh, an 11.5% increase compared to 2022. As imported electricity overall decreased by just 2.8 million MWh, some previously imported renewable generation was backfilled by imported fossil-fueled generation.

As described above, Tier 1 renewable generation continues to increase year-over-year. Furthermore, the scope of this report is through 2023, and the contributions from significant new renewable generation that entered service in 2024, discussed in Section S.2 below, will not be reflected until the CES Annual Progress Report for 2024. Wind and solar generation set records in New York State multiple times in 2024 including:

- Solar generation set a record on March 12, 2024, generating 3,832 MW and serving 21% of system load.[69]
- Wind generation set a record on December 16, 2024 (besting the previous records from November and March 2024), where 30 wind power facilities, generating 2,309 MW, served 14.4% of the State's energy demand.[70]

In 2024, New York also achieved the major milestone of 6 gigawatts (GW) of installed distributed solar. Distributed solar generates enough energy to power more than one million homes and businesses across the State, including those in disadvantaged communities. Furthermore, achieving this milestone a year early means New York State is ahead of schedule for reaching the expanded 10-GW distributed solar goal.[71]

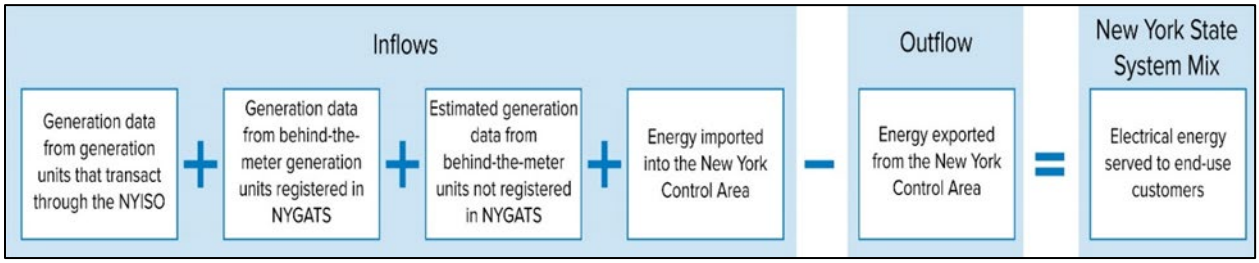
LIPA's South Fork Wind Farm delivered energy from its first turbine in December 2023 and became fully operational in 2024.[72] Completing the South Fork Wind Farm marks the first utility-scale offshore wind farm in the U.S., delivering clean, renewable, and reliable energy to Long Island and the Rockaways, with enough energy to power approximately 70,000 homes.

In the coming years, as additional renewable energy projects from recent procurement programs—including annual solicitations for new land-based renewables, offshore wind, solar incentive programs, and other State procurements—enter operation, the State anticipates significant progress toward its clean energy goals.

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 inputs that include inflows and outflows of energy, as shown in Figure 3. Progress toward the CES objectives is measured by tracking the renewable energy contributing to the New York System Mix throughout the years of the CES.

Figure 3. New York System Mix Calculation



NYGATS calculates the average amount of each fuel type used to generate electricity and the associated average emissions by analyzing inputs such as generation data and fuel characteristics. Estimated renewable energy generation from behind-the-meter units not registered in NYGATS is determined using various resources, such as the Standard Interconnection Report (SIR) filed by the investor-owned utilities with DPS. It then matches this fuel type and emission information to the electricity customers consume. The resulting New York System Mix represents the average characteristics of the electricity consumed in the State each year, encompassing the unique mixes that electricity providers deliver to their customers. This system mix is a tool to track progress toward State energy and emission goals and assess the performance of electricity providers, generators, and policies.

Table 2 summarizes the 2023 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 2023, including certificates retired for voluntary or compliance purposes or banked for future use. Renewable energy resources contributed 23.2% of the electrical energy consumed in 2023 (see Table 3).

Table 2. Summary of New York System Mix, 2023

Source: NYGATS.

Mix Type	Control Area	Fuel Type	Fuel Type %[a]	MWh
System	NYISO	BAT	0.003	4,454
System	NYISO	Biomass	0.0653	96,667
System	NYISO	Coal	2.1306	3,148,694
System	NYISO	Fuel Cells—Renewable	0.031	45,880
System	NYISO	Hydroelectric	18.0435	26,665,974
System	NYISO	Natural Gas	49.8295	73,641,395
System	NYISO	Nuclear	21.6906	32,055,831
System	NYISO	Oil	0.7824	1,156,245
System	NYISO	Biogas	0.0603	89,113
System	NYISO	Solar	3.3788	4,993,433
System	NYISO	Solid Waste	2.2298	3,295,440
System	NYISO	Wind	1.755	2,593,709

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

3.2 Progress toward Clean Energy Standard Mandate

Table 3 summarizes progress toward the CES mandate, including sources of renewable energy supply (by eligibility) and total electric load. The quantities represent all compliance year renewable energy supplies settled in the State through NYGATS, and all renewable energy imports and exports are considered. 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.[73]

Table 3. Summary of New York System Mix, 2014 and 2023

Source: NYGATS.

	2014	2023
Generation from Baseline Renewable Energy (MWh)	40,292,056	30,171,494[c]
Generation from Tier 1-Eligible Energy (MWh)[a]	N/A	4,426,135[d]
Total Renewable Energy (MWh)	40,292,056	34,253,116
Total Load (MWh)[b]	159,146,663	147,786,835
% Renewable Energy serving Load (%)	25.3%	23.2%

[a] Tier 1 Energy includes generation from fuel cells that utilize natural gas as a fuel source, which were previously eligible under Tier 1. Since these generation projects run on natural gas, the New York System Mix reports their megawatt-hours as natural gas, aligning with the 2014 Statewide Fuel Mix fuel reporting. Therefore, the sum of the Baseline Renewable Energy and Tier 1-Eligible Energy does not equal the Total Renewable Energy.

[b] Includes LSEs, municipal utilities, and direct customers. According to NYGATS Operating Rules, load calculation uses NYISO version 2 settlement data and incorporates generation from load modifiers used by distribution utilities. The load modifier data adjusts the total load and the total load served by each LSE using the load modifier(s). To determine the percentage of total load served by each LSE, the adjusted total load served by each LSE is divided by the adjusted total statewide load. The total quantity of renewable energy serving State load includes baseline and Tier 1 energy supply.

[c] Excludes biogas, biomass, and fuel cells.

[d] Includes fuel cell and biogas.

Figure 4 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 2023.

Figure 4. New York System Mix, Total Load, and Renewable Energy

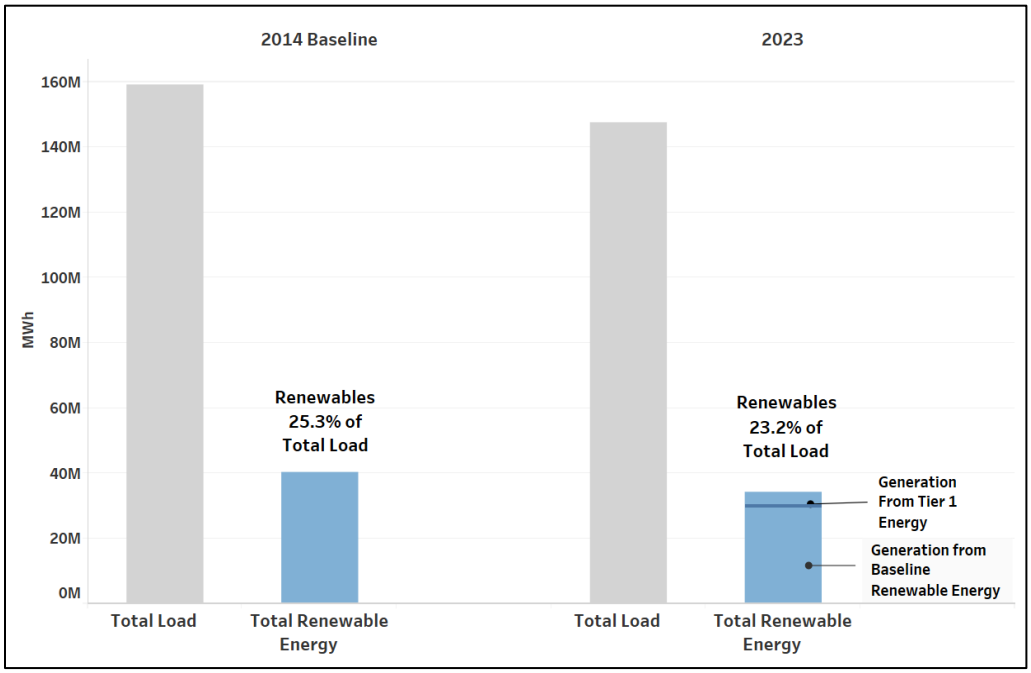


Figure 5 breaks down the renewable portion of the 2023 New York System Mix by type. This figure illustrates that baseline renewables, which include generation from NYPA hydroelectric facilities,[74] comprise the largest amount of renewable energy in the 2023 New York System Mix.

Figure 5. Renewables in the 2023 New York System Mix

Source: NYGATS.

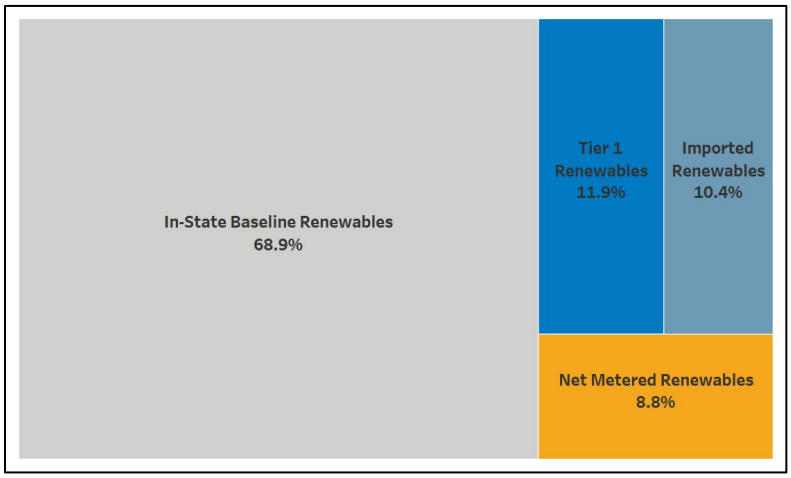


Table 4 shows renewable energy in the New York System Mix by technology and the differential contribution between 2014 and 2023. Contributions from solar increased while hydroelectric and wind technologies decreased. Variations in climatic conditions in a given year can increase or decrease generation from renewable resources because they depend on weather.

Table 4. New York System Mix Renewable Energy by Technology

Source: NYGATS. [75]

Fuel Type[a]	2014 MWh	2023 MWh	MWh Change
Hydroelectric	35,834,762	26,665,974	-9,168,788
Solar	681,610	4,993,433	4,311,823
Wind	3,775,684	2,593,709	-1,181,975
Total	**40,292,056**	**34,253,116**	**-6,038,940**

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

3.3 Composition of Baseline Renewable Energy

Table 5 shows the contribution of technology to baseline renewable energy generators and the changes between 2014 and 2023. For 2023, the contribution from the baseline renewable energy generators includes all the non–Tier 1 certified energy in the New York System Mix. It demonstrates that the overall contribution from baseline renewable energy resources decreased from 2014 to 2023.[76]

Table 5. Baseline Generation Contribution to New York System Mix

Note that the baseline generation contributions shown here exclude Tier 1 renewable energy.[77]

Source: NYGATS.

Energy Source	2014[a]		2023 (New York System Mix)	
	CES Baseline MWh	Percentage	Non–Tier 1 MWh	Percentage
Battery Storage[b]	—	—	4,454	0.0%
Biogas	394,314	0.2%	86,572	0.1%
Biomass	609,293	0.4%	96,667	0.1%
Coal	7,205,000	4.5%	3,148,694	2.2%
Natural Gas	58,454,000	36.7%	73,349,861	51.2%
Nuclear	49,409,000	31.0%	32,055,831	22.4%
Oil	708,000	0.4%	1,156,245	0.8%
Solid Waste	2,075,000	1.3%	3,295,440	2.3%
Non–Renewable Energy	**118,854,607**	**74.7%**	**113,193,764**	**79.0%**
Hydroelectric	35,834,762	22.5%	26,603,320	18.6%
Solar	681,610	0.4%	2,513,993	1.8%
Wind	3,775,684	2.4%	1,054,181	0.7%
Renewable Energy[c]	**40,292,056**	**25.3%**	**30,171,494**	**21.0%**
Total (Baseline)	**159,146,663**	**100.0%[d]**	**143,365,258**	**100.0%d**

[a] The Climate Act's definition of "renewable energy systems" excludes biomass and biogas; therefore, 2014 has been adjusted to classify these fuel types as nonrenewable.

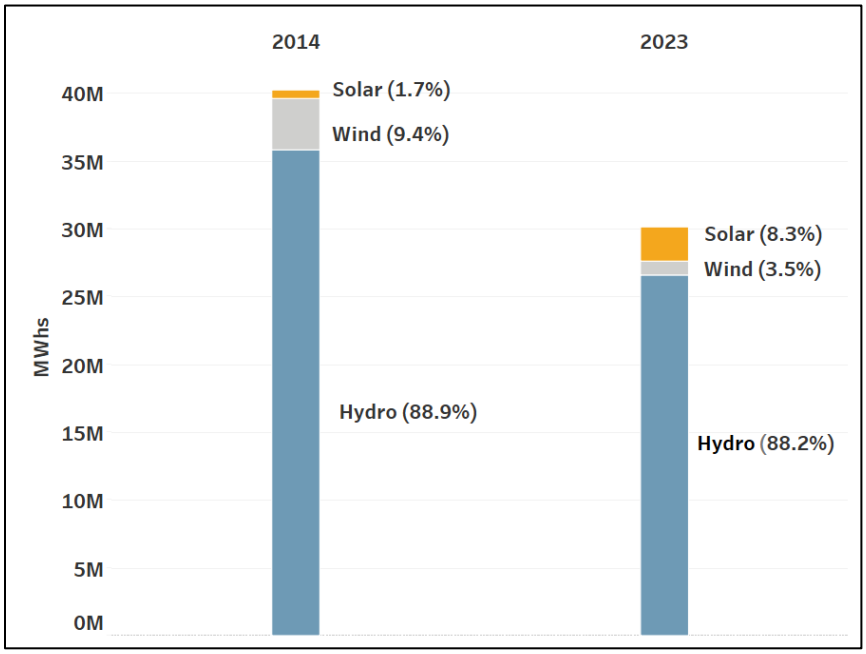
[b] Nonrenewable projects include LIPA, Montauk, and East Hampton Storage Center, with commercial operation dates in February and April 2022, respectively. The megawatt hours represent the energy injected into the grid.

[c] Tier 1 Energy includes generation from fuel cells powered by natural gas because this technology qualifies under Tier 1. Since these generation projects use natural gas their megawatt hours are reported as natural gas in the New York System Mix, consistent with the 2014 Statewide Fuel Mix fuel reporting. Therefore, the sum of 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.

Figure 6 depicts baseline renewable energy generation by technology for 2014 and 2023.

Figure 6. New York System Mix Baseline Renewable Generation Energy Comparison



3.3.1 Baseline Renewable Energy Exports

Table 6 aggregates the number of RECs exported from baseline renewable generation units in the State during the compliance year. Because no tracking system existed when the CES baseline was calculated, a comparison to the level of renewable energy exports in the CES baseline year of 2014 is not possible. Comparing 2022, hydroelectric and wind generator exports increased in 2023, resulting in a net export increase of 296,491 MWh.

Table 6. Renewable Energy Exports by Baseline New York State Generators

Generation installed prior to January 1, 2015.

Source: NYGATS.

Technology	2018 REC Exports	2019 REC Exports	2020 REC Exports	2021 REC Exports	2022 REC Exports	2023 REC Export	MWh Change 2022 to 2023
Hydroelectric[a]	178,056	433,611	483,963	641,165	651,970	789,584	137,614
Wind	949,885	1,480,582	2,109,533	1,965,922	1,927,037	2,085,914	158,877
Total Baseline Renewable Energy Exports[b]	1,127,941	1,914,193	2,593,496	2,607,087	2,579,007	2,875,498	296,491

[a] Excludes exports from NYPA hydroelectric facilities.

[b] Excludes biogas for 2020–2023.

4 Tier 1

4.1 Tier 1 Annual Compliance Summary

Table 7 summarizes the results of the NYSERDA and DPS review of Tier 1 compliance for 2023. It presents Tier 1 compliance mechanisms that are aggregated for all jurisdictional LSEs and LIPA and NYPA. A complete list of LSEs active during the year is available through NYGATS, via the EDP Label Reports.[78]

The data includes NYSERDA's Tier 1 REC activities. In 2023, NYSERDA purchased Tier 1 RECs through long-term contracts and offered them for sale to jurisdictional LSEs for Tier 1 compliance. The 2023 Tier 1 REC obligation percentage for all LSEs participating in the CES was 6.16%.

As of this report's issuance, jurisdictional LSEs achieved 98.8% compliance using a combination of current and banked vintage Tier 1 RECs and ACPs. A few 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 349,714 vintage 2023 Tier 1 RECs to reach 36.3% RES Tier 1 compliance for 2023.

Table 7. Summary of Tier 1 RES Compliance Status, 2023

Category	Jurisdictional	LIPA	NYPA	Total
Tier 1 Obligated Load (MWh)	110,118,657	18,244,929	19,423,249	147,786,835
Tier 1 Compliance Obligation (MWh) (3.616% of Obligated Load)	6,783,246	1,123,887	1,196,472	9,103,605
2023 Tier 1 RECs Used for Compliance	1,499,537	349,714	—	1,849,251
2023 VDER Tier 1 RECs Used for Compliance	1,776,939	58,584[b]	—	1,835,523
2023 Imported Tier 1 RECs Used for Compliance	—	—	—	—
Banked Tier 1 RECs Used for Compliance	112,155	—	—	112,155
Banked VDER Tier 1 RECs Used for Compliance	551,013	—	—	551,013
Total Tier 1 RECs Used for 2023 Compliance[a]	3,939,644	408,298	—	4,347,942
Number of ACPs Used for 2023 Compliance	2,760,849	—	—	2,760,849
Total 2023 Compliance	6,700,493	408,298	—	7,108,791
Total Compliance	**98.8%**	**36.3%**	**0.0%**	**78.1%**

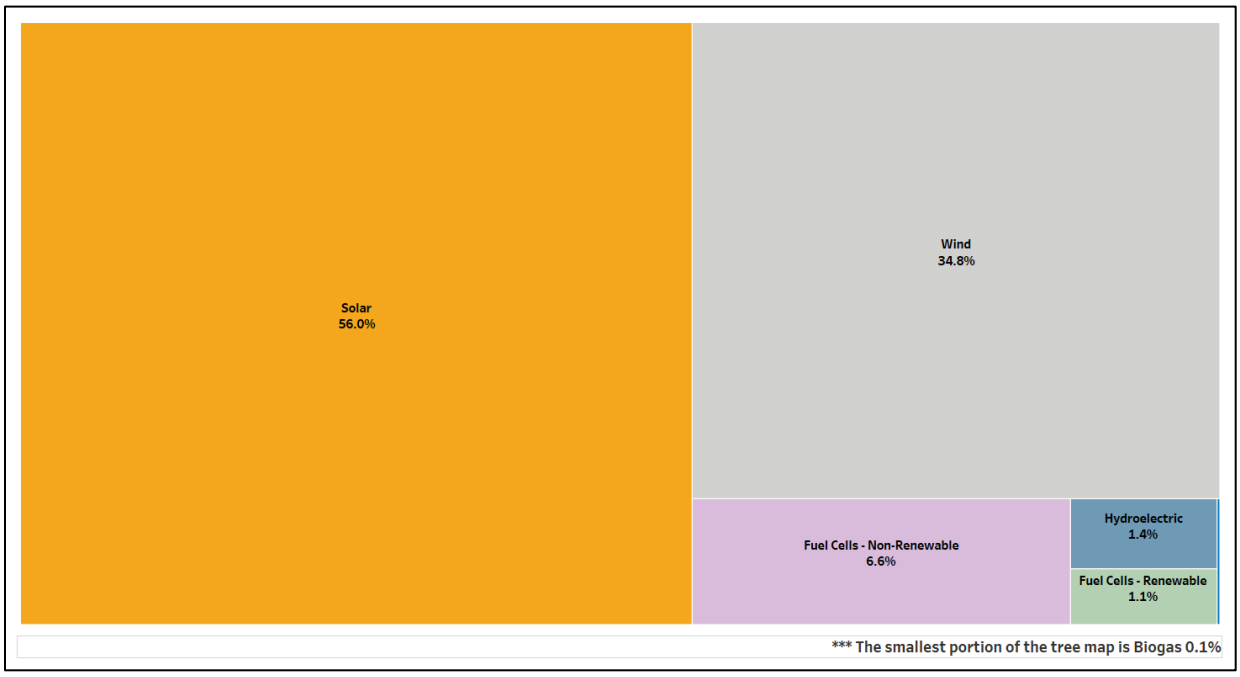
[a] As outlined in section 1.5, NYPA remains fully committed to meeting the goals and requirements of the PSC's CES Order. Under the New York Public Authorities Law, NYPA's rates, services, and practices related to power generation and sales are not subject to New York Public Service Law or its regulations. NYPA continues collaborating with its customers to ensure its power supply contracts align with the CES Order's requirements for REC and ZEC procurement. NYPA is amending its power contracts to authorize the purchase of RECs and ZECs in proportions corresponding to the load served under these contracts and recover the costs through supplemental charges to customers.

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

Figure 7 summarizes Tier 1 RECs created in 2023 by technology. This figure includes Tier 1 RECs minted in the State but exported.

Figure 7. Tier 1 Renewable Energy Certificate by Technology, 2023

Source: NYGATS.



4.2 Tier 1 Renewable Energy Certificate Banking Activity

The PSC orders allow LSEs and NYSERDA to bank excess Tier 1 RECs from the current compliance year for use in the next two compliance years. This flexibility mechanism enhances market liquidity and reduces REC price volatility by enabling the use of renewable energy surpluses (if applicable) for compliance. Banking applies only to Tier 1 RECs and is limited to NYSERDA or obligated LSEs that have met RES compliance for all previous periods.

Excess NYGATS certificates must not have been previously used for RES compliance or transferred to other parties to be eligible for banking. An LSE may bank up to 60% of its REC obligation for the current compliance year. However, the PSC suspended this 60% banking cap for VDER resources through 2022 in response to a JU Petition.[79]

Table 8 categorizes banked Tier 1 RECs, including LSE banked RECs, VDER Tier 1 banked RECs, and NYSERDA's Tier 1 banked balance. NYSERDA banks unsold Tier 1 RECs from its quarterly sales, making them available in subsequent sale events. LSEs with excess Tier 1 RECs must bank them before certificate trading ends in NYGATS. For 2023 vintage RECs, trading closed on June 30, 2023.

Table 8. Tier 1 Renewable Energy Certificate Banking Summary, 2023

Source: NYGATS.

LSE Tier 1 REC Banking (Non-VDER Tier 1 RECs)	
Aggregate LSE Tier 1 Bank Balance 6/30/2022	164,157
Aggregate LSE Tier 1 Bank Balance 6/30/2023	116,155
Aggregate LSE Tier 1 Bank Balance 6/30/2024	95,883
2021 Tier 1 RECs	164,157
2022 Tier 1 RECs	116,155
2023 Tier 1 RECs	95,883
VDER Tier 1 REC Banking	
Aggregate VDER Tier 1 Bank Balance 6/30/2022	189,122
Aggregate VDER Tier 1 Bank Balance 6/30/2023	551,013
Aggregate VDER Tier 1 Bank Balance 6/30/2024	487,143
NYSERDA Tier 1 REC Banking	
NYSERDA Bank Balance 6/30/2022	39,272
NYSERDA Bank Balance 6/30/2023	11,893
NYSERDA Bank Balance 6/30/2024	145,941
Total Balance of Banked Tier 1 RECs	**728,967**

5 Compliance with Zero-Emission Credit Obligations

At the time of this report's issuance, LSEs have purchased 99% of the ZECs from NYSERDA to meet their ZEC obligation. Table 9 summarizes the progress in meeting CES obligations for the 2023 compliance year.[80]

Table 9. Summary of Zero-Emission Credit Compliance, 2023

ZEC Compliance Year	Jurisdictional	LIPA	NYPA	Total
Total Obligated Load (MWh)[a]	110,831,714	18,445,060	19,473,244	148,750,018
ZEC Obligation	20,253,784	3,370,716	3,558,610	27,183,111
Total ZECs Purchased for 2023 Compliance	20,032,567	3,370,716	3,498,832	26,902,115
Compliance with ZEC Obligation	**98.9%**	**100.0%**	**98.3%**	**99.0%**

[a] The ZEC compliance year is from April 1 to March 31, which causes differences in the number of obligated LSEs and the obligated load compared to RES compliance year reporting.

6 Compliance with Tier 2 Obligations

At the time of this report's issuance, LSEs have purchased 100% of the Tier 2 RECs from NYSERDA to meet their Tier 2 obligation. NYPA elected not to participate in Tier 2 obligation and is omitted. Table 10 summarizes the progress in meeting CES obligations for the 2023 compliance year.

Table 10. Summary of Tier 2 Compliance, 2023

Tier 2 Compliance Year	Jurisdictional	LIPA	Total
Total Obligated Load (MWh)[a]	110,118,657	18,244,929	128,363,586
Tier 2 Obligation	10,838	1,796	12,634
Total Tier 2 Purchased for 2023 Compliance	10,838	1,796	12,634
Compliance with Tier 2 Obligation	**100.0%**	**100.0%**	**100.0%**

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

7 Contribution of Voluntary Renewable Energy Activities to Clean Energy Standard Progress

The CES Order acknowledges that many market participants choose to purchase renewable energy beyond regulatory compliance requirements. This voluntary market activity is encouraged and tracked and does not alter existing LSE obligations.

Table 11 provides information on 2023 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. However, the reported retirements only include RECs retired with the related energy because REC-only do not contribute to CES progress, measured by the energy consumed in the State.

The reported LSE voluntary activity reflects REC retirements by LSEs for EDP label purposes. The total excludes RECs retired from NYPA hydroelectric facilities made by NYPA and municipal utilities with long-term hydropower contracts and Tier 1 RECs retired for RES compliance. The resulting number represents RECs retired by LSEs for retail renewable energy products delivered to customers in 2023.

The customer-sited DER retirements reflect RECs from NEM projects retired in NYGATS. Generation from customer-sited DER projects not registered in NYGATS is estimated annually using information from the New York State Standardized Interconnection Requirements (SIR) inventory reporting.[81] NYSERDA enters this information into NYGATS and retires the resulting RECs on behalf of the project owner.

Table 11. Voluntary Activity in New York Generation Attribute Tracking System

Source: NYGATS.

REC Activity	2023 RECs[a]
Total Voluntary Activity in LSE EDP Subaccounts	5,132,236
Corporate or Individual Retirements	266,926
Customer-sited DER Retirements	2,938,727
Non-Tier 1 RECs Banked	295,062

[a] Data is not static. Refer to public reports for current figures. See NYGATS: https://nygats.ny.gov/ng/Report/getdto_view_Report_PublicVoluntaryRetirements.

8 Key References and Links

The CES 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

An overview of the State's progress toward meeting the Climate Act goals can be found on the Climate Act Dashboard:

- https://climate.ny.gov/dashboard

Appendix A. Clean Energy Standard Solicitations

A.1 Tier 1 Solicitations

The New York State Energy Research and Development Authority (NYSERDA) issued its first Renewable Energy Standard (RES) solicitation in June 2017 and announced awards in March 2018.[82] This solicitation resulted in agreements with 26 facilities that, once operational, are expected to generate more than 3.2 million MWh of renewable electricity annually. The weighted average award price for the 2017 solicitation was $21.71 per megawatt-hour (MWh) production over 20 years.

In June 2018, NYSERDA issued its second RES solicitation and announced awards announced in January 2019.[83] This round secured agreements with 20 facilities that, once operational, are expected to generate more than 3.8 million MWh of renewable electricity annually. The weighted average award price for this 2018 solicitation was $18.77 per MWh over 20 years.

The third RES solicitation, issued in April 2019, led to agreements with 21 facilities that, once operational, are expected to generate more than 2.6 million MWh of renewable electricity annually. The weighted average price for these agreements was $18.59 per MWh over 20 years.

In July 2020, NYSERDA launched the fourth RES solicitation—the first to use the innovative Index REC pricing structure. This round resulted in 22 agreements that, once operational, will contribute 4.1 million MWh of renewable electricity annually. Under this structure, projects receive variable REC payments that adjust inversely to an index of zonal market energy and capacity prices. When market prices rise, the REC payments decrease, and vice versa. In August 2020, NYSERDA petitioned for authorization to offer developers with existing Fixed REC Tier 1 Renewable Energy agreements (not yet operational) a one-time option to switch to Index REC pricing. A November 2020 Commission Order granted this petition, and 60 of 62 eligible projects accepted the offer in 2021.[84]

The fifth RES solicitation, issued in April 2021, is the first to target 4.5 million RECs annually, aligning with the CES white paper's procurement trajectory to support the Climate Act's goal of 70% renewable energy by 2030. This solicitation awarded contracts to 22 facilities that, once operational, are expected to generate 4.5 million MWh annually. The weighted average strike price for these awards was $63.08 per MWh over 20 years.

On September 21, 2022, NYSERDA issued the sixth RES solicitation, awarding contracts to 22 solar, wind, and hydroelectric projects to develop 2,410 megawatts (MW) of new and repowered renewable energy capacity throughout New York State. The agreements also support the development of 20 MW of utility-scale energy storage. These projects will generate enough renewable capacity to power over 560,000 households. The weighted average strike price for awarded projects is $60.93 per MWh in 2023 dollars, equivalent to a nominal weighted average strike price of $80.96 per MWh. These strike prices remain subject to specific contract terms and price indices adjustments.

In late 2023, NYSERDA issued the seventh annual RES request for proposals (RESRFP23-1),[85] with bids due January 31, 2024. In November 2024, NYSERDA announced contracts for 23 projects to support the continued development of large-scale onshore wind and solar resources in New York. These contracts total more than 2.3 gigawatts (GW) of new renewable energy capacity.

At the time of publishing, NYSERDA's eighth Tier 1 solicitation (RESRFP24-1) under the CES, launched in June 2024, had garnered a significant level of competitive interest from the private market. NYSERDA received bids from 38 projects, comprising 3.5 GW of capacity. The evaluation of bids submitted to RESRFP24-1 concluded in October 2024, and NYSERDA will publicly disclose the list of awarded projects in the RESRFP24-1 solicitation upon the completion of contracting.

Offshore Wind Solicitations

NYSERDA issued its first Offshore Wind Request for Proposals (ORECRFP18-1) in November 2018.[86] 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 at the time of Ørsted A/S and Eversource Energy), making the largest competitive procurement for offshore wind in the nation at that time.[87]

In pursuit of its nation-leading goal of at least 9,000 MW of offshore wind energy, NYSERDA petitioned the PSC in January 2020, requesting authority to conduct a 2020 solicitation for at least 1,000 MW of Offshore Renewable Energy Credits (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 (ORECRFP20-1) [88] to procure ORECs associated with 1,000 MW or more of offshore wind energy, coordinated with a potential $200 million investment in public and private port infrastructure.

In January 2021,[89] NYSERDA selected two offshore wind projects for contract negotiation under its second solicitation: Empire Wind 2 and Beacon Wind from Equinor Wind US LLC (a joint venture with bp). The projects total nearly 2,500 MW and leverage almost $3 of private funding for every $1 of public financing, with a combined $644 million investment in resilient port facilities.

In July 2022, NYSERDA issued its third solicitation (ORECRFP22-1), seeking a minimum of 2,000 MW of offshore wind energy. The third solicitation included the first phase of a nation-leading $500 million investment in offshore wind ports, manufacturing, and supply chain infrastructure. Proposals were received on January 26, 2023, with updated offer prices due on August 24, 2023.[90] 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). However, technical and commercial complexities arose between the provisional awardees and their partners after the provisional award announcement, and the projects could not finalize agreements. A change in GE Vernova's offshore wind turbine product, from the initially proposed 18 MW Haliade-X turbine platform to a 15.5/16.5 MW platform, caused material changes to the proposed projects. Given these developments, NYSERDA announced in April 2024 that the solicitation was concluded, with no final awards made.

On November 30, 2023, as part of New York State's 10-Point Renewable Energy Action Plan, NYSERDA issued its fourth offshore wind solicitation (ORECRFP23-1) on an accelerated timeline. After the solicitation, mutual termination agreements were reached between NYSERDA and the Empire Wind 2 and Beacon Wind 1 projects, selected under the second offshore wind solicitation (ORECRFP20-1). The projects that were selected in the first solicitation (ORECRFP18-1), Empire Wind 1 and Sunrise Wind, both rebid their projects into the fourth solicitation (ORECRFP23-1), along with a new project, Community Offshore Wind 2, a joint venture of RWE and National Grid.

On February 29, 2024, Governor Hochul announced the conditional award of two offshore wind projects from the fourth offshore wind solicitation—a planned 810-MW project, Empire Wind 1 (developed by Equinor ASA), and Sunrise Wind, a planned 924-MW project (developed by Ørsted and Eversource). Both contracts were executed by June 2024. Once operational, these projects, totaling over 1,700 MW of clean energy, will be the largest power generation projects in New York State in more than 35 years, advancing the goal to develop 9 GW of offshore wind energy by 2035.[91]

On April 23, 2024, NYSERDA issued a Request for Information (OSWRFI24-1) to gather industry feedback to inform the development of the State's fifth offshore wind solicitation (ORECRFP24-1). NYSERDA also sought input on issuing a parallel request for proposals (RFP) to make available at least $300 million for offshore wind supply chain investments, repurposing the funds that were previously provisionally awarded to GE Vernova and LM Wind Power as part of the State's third offshore wind solicitation.

NYSERDA's launched its fifth offshore wind solicitation on July 17, 2024. On September 9, 2024, NYSERDA received 25 proposals from four developers, totaling 6,870 MW in capacity. On October 18, 2024, NYSERDA received offer pricing for 21 proposals, with Attentive Energy withdrawing its four proposals.

On December 18, 2024, NYSERDA issued a request for information (OSWRFI24-2) to solicit industry feedback to inform the development of the State's sixth OREC solicitation (NY6), seeking to optimize coordination between offshore wind generation projects and transmission projects selected through an open NYISO solicitation. Additionally, NYSERDA released a request for information (RFI 5929: Inform Transmission Pre-Development Research) to invite stakeholders involved in or impacted by offshore wind transmission development to identify ways to develop New York City offshore wind transmission projects more efficiently. Specifically, NYSERDA sought information on activities that could reduce transmission project permitting costs and timelines.

Endnotes

[1] New York State Senate (2019). "NY State Senate Bill 2019-S6599." Accessed January 31, 2025. https://legislation.nysenate.gov/pdf/bills/2019/S6599.

[2] New York State Senate (2023). Public Service Law (PSL) § 66-p(b)(2).

[3] 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.

[4] The requirement for this CES Annual 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).

[5] Total load represents MWh in 2023 as reported in NYGATS.

[6] New York Independent System Operator (NYISO). 2024. "NYISO Announces New Renewable Energy Generation Records." Accessed January 31, 2025. https://www.nyiso.com/-/press-release-nyiso-announces-new-renewable-energy-generation-records

[7] NYISO. 2024. "NYISO Announces New Wind Generation Record." Accessed January 31, 2025. https://www.nyiso.com/-/press-release-nyiso-announces-new-wind-generation-record-1

[8] New York State Energy Research and Development Authority (NYSERDA). 2024. "New York State Has Achieved Major Solar Milestone A Year Early." Accessed January 31, 2025. https://www.nyserda.ny.gov/About/Newsroom/2024-Announcements/2024-10-17-Governor-Hochul-Announces-New-York-State-Has-Achieved-Major-Solar-Milestone

[9] Office of the Governor of New York State. 2024. *Governor Hochul Announces Completion of South Fork Wind, First Utility-Scale Offshore Wind Farm in the* United States. Accessed January 31, 2025. https://www.governor.ny.gov/news/governor-hochul-announces-completion-south-fork-wind-first-utility-scale-offshore-wind-farm

[10] New York State Department of Environmental Conservation. 2024. "New York State Statewide Greenhouse Gas Emissions Report." Accessed January 31, 2025. https://www.dec.ny.gov/energy/99223.html

[11] New York Department of Public Service (DPS). 2020. "New York's 10 GW Distributed Solar Roadmap: Policy Options for Continued Growth in Distributed Solar (10 GW Distributed Solar Roadmap)." Accessed January 31, 2025. https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7b4C42AAFF-0EB9-4890-AA0D-21C70B088F4B%7d

[12] Case 21-E-0629. *In the Matter of the Advancement of Distributed Solar*; Case 19-E-0735. *Petition of New York State Energy Research and Development Authority Requesting Additional NY-Sun Program Funding and Extension of Program Through 2025*; Case 15-E-0751. *In the Matter of the Value of Distributed Energy Resources*; Case 14-M-0094. *Proceeding on Motion of the Commission to Consider a Clean Energy Fund*. *Order Expanding NY-Sun Program*, issued and effective April 14, 2022.

[13] DPS. "Environmental Disclosure Labels by Load Serving Entity." Accessed January 31, 2025. https://dps.ny.gov/environmental-disclosure-labels-load-serving-entity

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

[15] 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 MW to 6,000 MW by 2025, obtaining 70% of its electricity from renewables by 2030, increasing New York's offshore wind target to 9,000 MW 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."

[16] 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.

[17] New York State Senate (2019). "NY State Senate Bill 2019-S6599." Accessed January 31, 2025. https://legislation.nysenate.gov/pdf/bills/2019/S6599

[18] DPS. "10 GW Distributed Solar Roadmap."

[19] DPS. "10 GW Distributed Solar Roadmap."

[20] NYSERDA. 2020. "Accelerated Renewable Energy Growth and Community Benefit Act." Accessed January 31, 2025. https://www.nyserda.ny.gov/-/media/Project/Nyserda/Files/Publications/Fact-Sheets/Accelerated-Renewables-Fact-Sheet.pdf

[21] DPS. 2020. "White Paper on Clean Energy Standards Procurements to Implement New York's Climate Leadership and Community Protections Act." Accessed January 31, 2025. https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={E6A3B524-6617-4506-A076-62526F8EC4CB}

[22] 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.

[23] Case 15-E-0302. *Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Program and Clean Energy Standard. Order Approving Build-Ready Program*, issued and effective October 15, 2020.

[24] Case 15-E-0302. *Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Program and Clean Energy Standard;* Case 15-E-0751. *In the Matter of the Value of Distributed Energy Resources. Order Modifying Clean Energy Standard Tier 1 Obligations*, issued and effective April 20, 2023.

[25] NYSERDA. 2023. "Phase 5 Implementation Plan." Accessed January 31, 2025. https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={C0B3478A-0000-C512-B8A3-08608162BC90}

[26] Case 15-E-0302. *Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Program and Clean Energy Standard;* Case 18-E-0071. *In the Matter of Offshore Wind Energy. Order Addressing Capacity Accreditation Rules*, issued and effective November 20, 2023.

[27] Case 15-E-0302. *Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Program and Clean Energy Standard;* Case 18-E-0071. *In the Matter of Offshore Wind Energy. Order Denying Petitions Seeking to Amend Contracts With Renewable Energy Projects*, issued and effective October 2023.

[28] NYSERDA. 2023. "New 10-Point Renewable Energy Action Plan Announced to Expand the Renewable Energy Industry and Support High-Quality Jobs Clean Jobs in New York State." Accessed January 31, 2025. https://www.nyserda.ny.gov/About/Newsroom/2023-Announcements/2023-10-12-Governor-Hochul-Announces-New-10-Point-Action-Plan-to-Expand

[29] Case 18-E-0130. *In the Matter of Energy Storage Deployment Program*. *Order Establishing Updated Energy Storage Goal and Deployment Policy*, issued and effective June 20, 2024.

[30] Case 15-E-0751. *In the Matter of the Value of Distributed Energy Resources*; Case 15-E-0082. *Proceeding on Motion of the Commission as to the Policies, Requirements and Conditions For Implementing a Community Net Metering Program*. *Order Approving Compensation For Hydroelectric Baseline Generating Facilities*, issued and effective October 17, 2024.

[31] Open NY. 2024. "Large-scale Renewable Projects Reported by NYSERDA: Beginning 2004." Accessed January 31, 2025. https://data.ny.gov/Energy-Environment/Large-scale-Renewable-Projects-Reported-by-NYSERDA/dprp-55ye

[32] Open NY. "Large-scale Renewable Projects Reported by NYSERDA: Beginning 2004."

[33] 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.

[34] NYSERDA. "RES Tier 1 Eligibility." Accessed January 31, 2025. https://www.nyserda.ny.gov/All-Programs/Large-Scale-Renewables/RES-Tier-One-Eligibility/Eligibility

[35] New York Generation Attribute Tracking System (NYGATS). "Operational Eligibility." Accessed January 31, 2025. https://nygats.ny.gov/ng/Report/getdto_view_Report_PublicOperationalEA

[36] Case 15-E-0302. *Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Program and Clean Energy Standard;* Case 15-E-0751. *In the Matter of the Value of Distributed Energy Resources. Order Modifying Clean Energy Standard Tier 1 Obligations*, issued and effective April 20, 2023.

[37] NYSERDA. 2023. "Phase 5 Implementation Plan."

[38] Case 15-E-0302. *Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Program and Clean Energy Standard*. *Order Adopting Measures for the Retention of Existing Renewable Baseline Resources*, issued March 16, 2018.

[39] The Climate Act, and in turn the New York Public Service Commission (PSC), revised the list of resources that qualify as renewable for purposes of the CES.

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

[41] NYSERDA. "Tier 4 – New York City Renewable Energy." Accessed January 31, 2025. https://www.nyserda.ny.gov/All-Programs/Large-Scale-Renewables/Tier-Four

[42] Eligible Tier 4 resources included 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 have existed or already been under construction as of October 15, 2020. All eligible resources must have either been located in New York City, or their energy must be delivered through a new transmission interconnection to the City.

[43] DPS. 2021. "Petition Regarding Agreements for Procurement of Tier 4 Renewable Energy Certificates ("Tier 4 Petition")."

[44] Case 15-E-0302. *Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Program and Clean Energy Standard*. *Order Approving Contracts For The Purchase Of Tier 4 Renewable Energy Certificates*, issued April 14, 2022.

[45] Open NY. "Large-scale Renewable Projects Reported by NYSERDA: Beginning 2004."

[46] Open NY. "Large-scale Renewable Projects Reported by NYSERDA: Beginning 2004."

[47] NYSERDA. "Clean Energy Fund Reports." Accessed January 31, 2025. https://www.nyserda.ny.gov/About/Publications/Program-Planning-Status-and-Evaluation-Reports/Clean-Energy-Fund-Reports

[48] NYSERDA. "NY-Sun Performance Reports." Accessed January 31, 2025. https://www.nyserda.ny.gov/About/Publications/Program-Planning-Status-and-Evaluation-Reports/NY-Sun-Performance-Reports

[49] DPS. 2016. "Staff White Paper on Clean Energy Standard: Case 15-E-0302." Accessed January 31, 2025. http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7b930CE8E2-F2D8-404C-9E36-71A72123A89D%7d

[50] DPS. 2016. "Staff White Paper on Clean Energy Standard: Case 15-E-0302."

[51] Social Cost of Carbon (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.

[52] CASE 15-E-0751. *In the Matter of the Value of Distributed Energy Resources*; Case 15-E-0082. *Proceeding on Motion of the Commission as to the Policies, Requirements, and Conditions for Implementing a Community Net Metering Program*. *Order on Net Energy Metering Transition, Phase One of Value of Distributed Energy Resources, and Related Matters*, issued and effective March 9, 2017.

[53] 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.

[54] DPS. 2019. "Staff Whitepaper on Rate Design for Mass Market Net Metering Successor Tariff." Accessed January 31, 2025. https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={67DC3354-F3D6-4618-AB75-F098A2906E12}

[55] CASE 15-E-0751. *In the Matter of the Value of Distributed Energy Resources*; Case 15-E-0082. *Proceeding on Motion of the Commission as to the Policies, Requirements, and Conditions for Implementing a Community Net Metering Program*. *Order on Net Energy Metering Transition, Phase One of Value of Distributed Energy Resources, and Related Matters*, issued and effective March 9, 2017.

[56] Case 03-E-0188. *Proceeding on Motion of the Commission Regarding a Retail Renewable Portfolio Standard*; Case 14-M-0094. *Proceeding on Motion of the Commission to Consider a Clean Energy Fund*. "Petition Requesting Additional NY-Sun Program Funding and Extension of Program Through 2025, submitted November 25, 2019.

[57] Case 19-E-0735. *Proceeding on Motion of New York State Energy Research and Development Authority Requesting Additional NY-Sun Program Funding and Extension of Program Through 2025*. *Order Extending and Expanding Distributed Solar Incentives* ("NY-Sun Extension Order"), issued and effective May 14, 2020.

[58] Office of the Governor of New York State. 2021. *Governor Hochul Announces Expanded NY-Sun Program to* Achieve at Least 10 Gigawatts of Solar Energy by 2030. Accessed January 31, 2025. https://www.governor.ny.gov/news/governor-hochul-announces-expanded-ny-sun-program-achieve-least-10-gigawatts-solar-energy-2030

[59] DPS. "10 GW Distributed Solar Roadmap."

[60] DPS. "10 GW Distributed Solar Roadmap."

[61] Case 21-E-0629. *In the Matter of the Advancement of Distributed Solar. Order Adopting NY-Sun Mid-Program Modifications*, issued and effective June 23, 2023.

[62] NYSERDA. 2024. "Clean Energy Resource Development and Incentives: The Build-Ready Program Annual Progress Report 2023." Accessed January 31, 2025. https://www.nyserda.ny.gov/-/media/Project/Nyserda/Files/Programs/Clean-Energy-Standard/LSR-BRP-2023-annual-r-1-v1.pdf

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

[64] DPS. 2019. *Clean Energy Standard Final Zero Emissions Credit (ZEC) Implementation Plan.* Accessed January 31, 2025. https://www.nyserda.ny.gov/-/media/Project/Nyserda/Files/Programs/Clean-Energy-Standard/2019/Case-15-E-0302-Final-ZEC-Implementation-Plan.pdf

[65] Case 18-M-0084. *In the Matter of a Comprehensive Energy Efficiency Initiative*. *Order Adopting Accelerated Energy Efficiency Targets*, issued and effective December 13, 2018.

[66] DPS. "Environmental Disclosure Labels by Load Serving Entity."

[67] NYGATS. "Active Projects." Accessed January 31, 2025. https://nygats.ny.gov/ng/Report/getdto_view_Report_PublicProjectsAll

[68] Total load represents MWh in 2023 as reported in NYGATS.

[69] NYISO. "NYISO Announces New Renewable Energy Generation Records."

[70] NYISO. "NYISO Announces New Wind Generation Record."

[71] NYSERDA. "New York State Has Achieved Major Solar Milestone A Year Early."

[72] Office of the Governor of New York State. 2024. *Governor Hochul Announces Completion of South Fork Wind, First Utility-Scale Offshore Wind Farm in the United States*.

[73] 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.

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

[75] 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.

[76] 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.

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

[78] NYGATS. "EDP Label." Accessed Januar 31, 2025. https://nygats.ny.gov/ng/Report/getdto_view_Report_PublicEDPLabel

[79] Case 15-E-0302. *Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Program and Clean Energy Standard;* Case 15-E-0751. *In the Matter of the Value of Distributed Energy Resources*. *Order Providing Limited Modification to Certificate Banking Restrictions,* issued and effective July 16, 2018.

[80] NYSERDA completed the ZEC reconciliation process and issued statements to LSEs in October 2020 with payment due to NYSERDA by November 2020. Load Serving Entities (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.

[81] DPS. “NYS Standardized Interconnection Requirements (SIR).” Accessed January 31, 2025. https://dps.ny.gov/distributed-generation-information

[82] NYSERDA. “2017 Solicitation.” Accessed January 31, 2025. https://www.nyserda.ny.gov/All-Programs/Large-Scale-Renewables/RES-Tier-One-Eligibility/Solicitations-for-Long-term-Contracts/2017-Solicitation

[83] NYSERDA. “2018 Solicitation.” Accessed January 31, 2025. https://www.nyserda.ny.gov/All-Programs/Large-Scale-Renewables/RES-Tier-One-Eligibility/Solicitations-for-Long-term-Contracts/RFP-Resources

[84] Case 15-E-0302. *Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Program and Clean Energy Standard*. *Order Authorizing Voluntary Modification of Certain Tier 1 Agreements*, issued and effective November 20, 2020.

[85] NYSERDA. “Solicitations for Large-Scale Renewables.” Accessed January 31, 2025. https://www.nyserda.ny.gov/All-Programs/Large-Scale-Renewables/RES-Tier-One-Eligibility/Solicitations-for-Long-term-Contracts.

[86] NYSERDA. “2018 Solicitation (Closed).” Accessed January 31, 2025. https://www.nyserda.ny.gov/offshore-wind-2018-solicitation.

[87] NYSERDA. “2018 Solicitation (Closed).”

[88] NYSERDA. “ 2020 Offshore Wind Solicitation (Closed).” Accessed January 31, 2025. https://www.nyserda.ny.gov/offshore-wind-2020-solicitation

[89] NYSERDA. 2021. “Governor Cuomo Outlines 2021 Agenda: Reimagine | Rebuild | Renew.” Accessed January 31, 2025. https://www.nyserda.ny.gov/About/Newsroom/2021-Announcements/2021-01-13-Governor-Cuomo-Outlines-2021-Agenda-Reimagine-Rebuild-Renew

[90] NYSERDA. “2022 Offshore Wind Solicitation (Closed).” Accessed January 31, 2025.https://www.nyserda.ny.gov/All-Programs/Offshore-Wind/Focus-Areas/Offshore-Wind-Solicitations/2022-Solicitation

[91] Office of the Governor of New York State. 2024. *Governor Hochul Announces the Finalization of New Contracts for Empire Wind* 1 and Sunrise Wind. Accessed January 31, 2025. https://www.governor.ny.gov/news/governor-hochul-announces-finalization-new-contracts-empire-wind-1-and-sunrise-wind

NYSERDA, a public benefit corporation, offers objective information and analysis, innovative programs, technical expertise, and support to help New Yorkers increase energy efficiency, save money, use renewable energy, and reduce reliance on fossil fuels. NYSERDA professionals work to protect the environment and create clean-energy jobs. NYSERDA has been developing partnerships to advance innovative energy solutions in New York State since 1975.

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