Clean Energy Standard Annual Progress Report: 2018 Compliance Year

Final Report | December 2019

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Advance innovative energy solutions in ways that improve New York's economy and environment.

Vision Statement:

Serve as a catalyst – advancing energy innovation, technology, and investment; transforming New York's economy; and empowering people to choose clean and efficient energy as part of their everyday lives.

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Final Report

Prepared by:

New York State Energy Research and Development Authority

Albany, NY

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Abstract

This Clean Energy Standard Progress Report is intended to summarize and analyze progress toward New York's Clean Energy Standard (CES) as of December 31, 2018, which mandates that, as part of a strategy to reduce statewide greenhouse gas emissions by 40% by 2030, 50% of the State's electricity must come from renewable energy sources by 2030. The report also informs anticipated future initiatives under the Climate Leadership and Community Protection Act (CLCPA), which was signed by Governor Andrew M. Cuomo in July of 2019. The CLCPA codifies Governor Cuomo's nation-leading goals as called for under his Green New Deal, expanding the CES mandate to require that at least 70% of New York's electricity come from renewable energy sources such as wind and solar by 2030, and that the State's electricity sector be 100% carbon free by 2040.

This report includes reporting on aggregate Load Serving Entity (LSE) compliance with Renewable Energy Standard (RES) and Zero-Emissions Credit (ZEC) obligations over the compliance period and discusses the results of other means to achieve the CES mandate, including accounting for baseline renewable and voluntary market activity.

This report allows policymakers and interested stakeholders to reference this information, along with other supporting facts, to make informed decisions on the program and the policy's status and effectiveness as well as to inform any necessary programmatic adjustments.

Keywords

Renewable electricity, clean energy, large-scale renewables, energy programs

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Background

On August 1, 2016, the Public Service Commission (PSC) issued its Order Adopting a Clean Energy Standard (CES Order).[1] 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—50% of the State's electricity must come from renewable energy sources by 2030—as part of a strategy to reduce statewide greenhouse gas emissions by 40% by 2030.[2]

Upon adoption, the CES included a Renewable Energy Standard (RES) and a Zero-Emissions Credit (ZEC) requirement. In July of 2018, the PSC established an Offshore Wind Standard to further contribute to the 50% renewable energy requirement.[3] All renewable energy consumed by end-use customers in New York State contributes to the CES, including generation supported by past, present, and future State renewable energy policies as well as voluntary renewable energy purchases.

In July of 2019, Governor Andrew M. Cuomo signed the Climate Leadership and Community Protection Act (CLCPA).[4] The CLCPA codifies Governor Cuomo's nation-leading goals as called for under his Green New Deal, mandating that at least 70% of New York's electricity come from renewable energy sources such as wind and solar by 2030, and the State's power system be 100% carbon free by 2040.

Executive Summary

This annual CES Progress Report summarizes compliance with the RES and ZEC requirements for 2018 and reports on the cumulative clean energy activities in New York State that contribute to the CES mandate.[5]

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

Specifically, the purpose of the CES Progress Report is as follows:

- Report on progress toward New York State's CES mandate, as of December 31, 2018
- Summarize aggregate Load Serving Entity (LSE) compliance with RES and ZEC obligations
- Inform consumers, policymakers, and stakeholders regarding the characteristics of New York's electricity fuel mix
- Describe outcomes of State programs, regulatory obligations, and voluntary market activity;
- Support for Maintenance Tier 2 for at-risk eligible facilities
- Document trends in key measures of renewable energy market activity

For the 2018 CES compliance year, New York's total load increased by approximately 4.6 million megawatt hours (MWhs) from 2017 and the contribution from renewable energy resources to meet the State's electric load was 26.8%. Due to the increase in electric load, an increase in imports from Pennsylvania-New Jersey-Maryland (PJM) with a lower percentage of renewables in the associated system mix, and a decrease in hydroelectric resource output attributable to lower rainfall amount, the renewable energy resources contribution decreased by 1.3% from 2017 to 2018. This is expected to be a temporary trend, as the State will see significant contributions over the coming years as the result of several procurement programs, including annual solicitations for new land-based renewables, offshore wind, solar incentive programs, and other State procurements. New York has a contracted pipeline of more than 18,000 gigawatt hours (GWh) of large-scale renewable generation projects, with additional contributions expected from distributed energy resources. Once operational, these projects, coupled with

the already operating renewable generation, are expected to deliver 43% renewable generation towards the achievement of the CES.

In 2019, NYSERDA and the New York State Department of Environmental Conservation published the New York State Greenhouse Gas Inventory, which provided a detailed account of anthropogenic greenhouse gas (GHG) emissions in New York State from 1990–2016. During this period, emissions from electricity generated in-state dropped 56%, acting as a major driver of New York State's decreasing GHG emissions. This drop is due in part to the significant decrease in the burning of coal and petroleum products in the electricity generation sector and increasing generation from renewable energy sources.[6]

The Long Island Power Authority (LIPA) continues its initiatives, with new clean energy programs planned in 2019, and expects New York's first offshore wind project to be in service at the end of 2022. The New York Power Authority (NYPA) is also coordinating with the New York State Energy Research and Development Authority (NYSERDA) to implement procurement programs for land-based renewable energy. NYPA has 290 megawatts of large-scale renewable energy under contract and has announced commitments for demonstration projects for battery storage infrastructure. NYPA also operates the two largest hydroelectric power projects in the State.

Renewable voluntary activity continues to expand. At present, there are 61 municipalities in New York that are receiving electricity supply from Community Choice Aggregation (CCA) and 38 have chosen 100% renewable energy as their default product mix. As CCA continues to grow, it is expected to become a significant source of voluntary renewable energy purchasing in the State.

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 Independent System Operator (NYISO) and other market participants to track the generation and distribution of renewable energy in the State, a function that supports the CES program and the voluntary renewable energy market. In addition, NYGATS supports the administration of the Environmental Disclosure Program (EDP), [7] which reports on the environmental characteristics of the electricity consumed in the State.

Overall, LSEs met 87% of the 2018 RES obligation using a variety of methods, including purchases from NYSERDA, other renewable supply, and/or the provision of alternative compliance payments (ACPs). The jurisdictional LSEs used a combination of current and banked vintage Tier 1 RECs as well as ACPs to reach 99% compliance. Overall, LSEs met 97% of the ZEC obligation, while jurisdictional LSEs met 99.5% of their ZEC obligations.

1 New York’s Clean Energy Standard

The CES requires that 50% of New York State's electricity come from renewable energy sources by 2030, starting with a 2014 baseline of 25.9% as documented in the CES Order. In July of 2019, Governor Cuomo signed the Climate Leadership and Community Protection Act (CLCPA), which builds on the CES objectives. The CLCPA codifies Governor Cuomo's nation-leading goals as called for under his Green New Deal, expanding the CES mandate to require that at least 70% of New York's electricity come from renewable energy sources such as wind and solar by 2030, and the State's power system is 100% carbon free by 2040.

All renewable energy consumed by end-use customers in New York contributes to the CES, including energy supported by past, present, and future State renewable energy policies such as the RES, RPS, NY-Sun, Clean Energy Fund (CEF), Value of Distributed Energy Resources (VDER), Offshore Wind Standard, renewable energy procurements by LIPA and NYPA, and voluntary renewable energy purchases. Increasing amounts of energy efficiency is also an important contributor in achieving the CES. The ZEC requirement ensures continued operation of certain existing at-risk upstate nuclear power plants, which produce emissions-free generation and contribute to meeting the State’s greenhouse gas goals. Each component is described in detail in the following sections.

1.1 The Renewable Energy Standard

The RES is comprised of two sub-components: Tier 1, an obligation on LSEs to support new renewable energy resources; and Tier 2, which provides support to existing, at-risk renewables.

1.1.1 Tier 1

To comply with the Tier 1 obligation, each LSE must demonstrate the delivery of renewable energy, from certified facilities, sufficient to meet a PSC-specified percentage of its annual load. LSEs include the investor owned utilities, energy services companies (ESCOs), jurisdictional municipal utilities, and direct customers of the NYISO.[8] NYPA and LIPA are voluntarily undertaking activities to meet RES goals proportional to their respective loads. Each LSE’s Tier 1 obligation is a function of its actual load in the subject compliance year and the PSC-determined compliance obligation percentage for that same compliance year.[9]

An LSE may satisfy its RES Tier 1 obligation through the acquisition and retirement of Tier 1 renewable energy credits (RECs).

Tier 1 RECs can be purchased from NYSERDA, a third-party supplier, or through self-supply. Tier 1 RECs are retired by transferring them into the EDP subaccount associated with the obligated load in the LSE's NYGATS account. In addition, LSEs may make ACPs to NYSERDA or a combination of both ACPs and Tier 1 REC retirements to achieve compliance. LSEs with RES Tier 1 RECs in excess of the current year obligation may bank such excess compliance for use toward RES Tier 1 obligations in either of the following two years, subject to certain limitations.

RES Tier 1-eligible RECs[10] are those generated by renewable energy projects listed as eligible resources in Appendix A of the CES Order, with a commercial operation date on or after January 1, 2015, that meet the eligibility guidelines described in the RES Tier 1 Certification Application Instructions and Eligibility Guidelines.[11] Only renewable energy projects certified by NYSERDA as Tier 1 eligible can be issued Tier 1 RECs in NYGATS. Tier 1 certified renewable energy projects are publicly reported in the Operational Eligibility[12] report in NYGATS.

The CES Order authorized NYSERDA, as central procurement administrator, to award long-term contracts to Tier 1-eligible generators through annual competitive solicitations for the purchase of Tier 1-eligible RECs, in the form of Tier 1 NYGATS certificates. These RECs can then be sold to obligated LSEs for use toward their Tier 1 compliance obligations. NYSERDA's first RES solicitation was issued June 2017 with awards announced in March 2018.[13] The first RES solicitation resulted in 26 agreements, which once operational, will generate more than 3.2 million MWh of renewable electricity per year. The weighted average award price for the 2017 solicitation was $21.71 per MWh of production over the 20-year term of the awarded contracts. NYSERDA's second RES solicitation was issued in June 2018 with awards announced in January 2019.[14] The 2018 RES solicitation resulted in 20 agreements, which once operational, will generate more than 3.8 million MWh of renewable electricity per year. The weighted average award price for the 2018 solicitation was $18.77 per MWh of production over the 20-year term of the awarded contracts. The third RES solicitation was issued in April 2019; awards from this solicitation are expected to be announced in early 2020.

Information regarding RES agreements is reported in the annual New York State Clean Energy Standard and Renewable Portfolio Standard Solicitations for Long-Term Contracts report[15] as well as Open NY.[16]

1.1.2 Tier 2

Tier 2 provides financial support sufficient to maintain commercial operations at qualifying, renewable energy generation facilities that were operational prior to the Tier 1 eligibility date of January 1, 2015. The CES Order referenced the importance of maintaining the generation associated with existing facilities as a baseline toward the State's progress and established the Tier 2 program to support renewable energy generation facilities operational prior to 2003.

A March 2018 Order[17] refined the Tier 2 requirements for eligible resources to receive financial support over a standard contract term of three years through an order of the PSC, which requires NYSERDA to execute an agreement with the generating facility per the terms of the relevant order. To be eligible for Tier 2, the renewable energy facility must have delivered energy to New York consumers in 2014 as part of the CES renewable energy baseline. Maintenance resources must otherwise meet the same eligibility and delivery requirements as Tier 1 resources, except for hydroelectric facilities, which are eligible only up to 10 megawatts (MW). Facilities eligible for maintenance support include all non-State owned, run-of-river hydroelectric equal to or less than 10 MW, wind, and biomass direct combustion facilities, which are not currently under contract to sell the environmental attributes associated with the generated energy, provided the facility was in operation prior to January 1, 2015.

There is no LSE compliance obligation related to Tier 2 of the RES. In accordance with PSC Orders, NYSERDA funded these agreements through its previously collected but unspent funds.[18] Information regarding Tier 2 agreements is reported in the annual New York State Clean Energy Standard and Renewable Portfolio Standard Solicitations for Long-Term Contracts report[19] as well as Open NY.[20]

1.2 Renewable Portfolio Standard

New York State, through regulations adopted by the PSC, first enacted its RPS in 2004 with the goal of increasing the amount of renewable electricity used by consumers to 25% by 2013. In January 2010, the PSC expanded the RPS target to 30% and extended the terminal year of the program to 2015. The PSC established two tiers of resource types under the RPS. The Main Tier consisted primarily of medium- to large-scale electric generation facilities that delivered their electrical output into the power market administered by the NYISO. The Customer-Sited Tier (CST) consisted of smaller, behind-the meter resources, such as photovoltaic systems, fuels cells, customer-sited wind facilities, anaerobic digester gas, and similar technologies that mostly produce electricity for use on site. The RPS also included a

Maintenance Resource program, which was similar in nature to the current Tier 2 program, but with different eligibility criteria.

Under the Main Tier, NYSERDA also served the role of central procurement administrator, to award long-term contracts to eligible generators through periodic competitive solicitations for the purchase of the associated RECs. A portion of these projects are Tier 1 eligible; therefore, NYSERDA sells the associated RECs in a manner similar to those from other Tier 1 RES projects. Information regarding RPS agreements is reported in the annual New York State Clean Energy Standard and Renewable Portfolio Standard Solicitations for Long-Term Contracts report[21] as well as Open NY.[22]

NYSERDA's continued support for CST renewables is now housed within CEF, which includes the NY-Sun program for solar resources. Separate reporting[23] regarding the installed renewable energy generation capacity supported through the CEF can be found on NYSERDA's website. The annual NY-Sun Performance Report[24] contains a holistic representation of historic and ongoing support for distributed solar.

1.2.1 Baseline Generators

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

The generation associated with renewable energy facilities that delivered energy to New York consumers in 2014 is referred to as the CES Renewable Energy Baseline or baseline.[25] This baseline includes NYPA hydropower assets, Main Tier and CST facilities, RPS Maintenance Resources, imported renewable energy, voluntary renewable energy purchases, and other independently owned renewable energy generation resources. The renewable energy baseline in 2014 was calculated as 41,296 GWh, or 25.9% of the 2014 EDP Statewide Fuel Mix.

Baseline facilities that generate RECs that are retired in New York are counted toward CES achievement. Due to the nature of energy market transactions across borders, the 2018 baseline renewable energy may include or exclude imported renewable generation that was part of the 2014 baseline calculation. Differences between years may also be attributable to the variations in climatic conditions each year as generation from renewable resources is weather-dependent.

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

1.3 Value of Distributed Energy Resources

In 2017, the PSC established a mechanism to transition to a new way to compensate distributed energy resources (DER). This mechanism, called the Value of Distributed Energy Resources (VDER), established tariffs to replace the compensation mechanism of net energy metering (net metering or NEM). The transition is intended to encourage the location, design, and operation of DER in a manner that maximizes benefits to the customer, the electric system, and society while also ensuring the development of the clean generation needed to meet the necessary and aggressive goals embodied in the CES. Under VDER, the compensation paid to eligible generation resources is based on a set of value elements referred to as the Value Stack. One component of the Value Stack is compensation for the environmental value of the generation. This value is based on the higher of the latest Tier 1 REC procurement price published by NYSERDA or the Social Cost of Carbon (SCC) as calculated by DPS.[26] Since the utility companies that must implement VDER tariffs are providing Environmental Value, the PSC ordered that the Tier 1 RECs created by DER would flow to the utility company and be eligible for use toward that utility's Tier 1 compliance obligations.[27]

In April 2019, the DPS released an updated Value Stack Order,[28] which allowed projects under 750 kW AC exclusively serving a host load to have a choice of Value Stack or Phase One Net Metering. Projects that previously opted into the Value Stack by default converted to Phase 1 NEM and are no longer Tier 1 eligible. On December 9, 2019, DPS staff issued a new whitepaper[29] describing potential successor tariffs for mass market projects, but no action was implemented, with DPS staff requesting an extension of Phase One NEM for new projects (both mass market and on-site under 750 kW AC) until January 1, 2021. While many DER installations have been supported by the State through CST incentive programs or NY-Sun, NYSERDA makes no claim to the environmental attributes of that generation. Through PSC action in the VDER proceeding, NYSERDA relinquished all rights to any environmental claims or RECs for NY-Sun and RPS CST projects to which it may have made claims under previous policies.[30]

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, Governor Cuomo announced a commitment to support the installation of up to 2,400 MW of offshore wind capacity by 2030, a goal that was expanded to 9,000 MW by 2035 through the CLCPA.

NYSERDA released the New York Offshore Wind Master Plan and Offshore Wind Policy Options Paper to provide a roadmap to fulfill the Governor's directive through cost-effective and responsible offshore wind development. In July 2018, the PSC issued an order[31] adopting the Offshore Wind Standard through which the statewide offshore wind capacity goal of 2,400 MW is to be achieved, authorizing NYSERDA to conduct a first phase of offshore wind solicitations to procure approximately 800 MW of offshore wind in 2018 and 2019. NYSERDA issued its first Offshore Wind Request for Proposals in November 2018.[32]

In October 2019, NYSERDA finalized contracts for its first two offshore wind projects, Empire Wind (816 MW, Equinor US Holdings, Inc.) and Sunrise Wind (880 MW Sunrise Wind LLC, a joint venture of Ørsted A/S and Eversource Energy) as the largest procurement for offshore wind in the nation. These projects are a first step in advancing the State's offshore wind goals under the CES.[33]

NYSERDA will purchase ORECs from awarded projects once they become operational and resell them to the LSEs for compliance with their OREC obligations. Each year, LSEs will be obligated to purchase the pro-rata percentage of ORECs that represents the portion of the electric energy load served by the LSE in relation to the total electric energy load served by all LSEs.

1.5 NYPA and LIPA

LIPA and NYPA have committed to adopting renewable targets that will achieve the CES mandate. According to the 2018 Public Service Enterprise Group (PSEG) Long Island Utility Annual Update, the utility is positioned to comply with the State's targets through past and future investments in offshore wind, energy efficiency and new renewable energy.[34]

To date, LIPA has undertaken numerous initiatives to secure a cleaner and more affordable energy future for Long Island. LIPA has among the most aggressive energy efficiency programs in the State, having invested more than $1.4 billion in energy efficiency and clean energy resources over the last 10 years, reducing Long Island's peak by more than 585 MW. Next year, LIPA has budgeted more than $94 million for energy efficiency, lighting replacement, and demand management programs.

Among the clean energy investments made by LIPA on Long Island are three of New York's largest utility-scale solar projects, with a total utility commitment of 400 MW. LIPA is ranked #6 nationwide among 211 utilities for storage development with the first major commitment to utility scale storage of 80 MWh deployed. LIPA also has the most vibrant solar market accounting for 40% of all distributed systems in the State with more than 50,000 residential and commercial customers throughout the Island as well as New York's first offshore wind farm—the 130 MW South Fork Wind Farm, which once operational, will power 70,000 homes.

Since 2012, LIPA has issued a series of Feed-In Tariff[35] solicitations for 170 MW of solar and 60 MW of non-solar renewable generation assets interconnected at the distribution level. In 2020, LIPA will introduce a new program to deliver affordable, solar energy to low- to moderate-income customers; Long Island Solar Communities Program. The new 20 MW shared-solar program will continue LIPA's longstanding support for a cleaner Long Island, while providing income-eligible households—a segment that historically has been underserved in the rooftop solar market—with access to affordable clean energy.

NYPA operates the largest hydroelectric power projects in New York—the 2,441 MW Niagara Power Project in Lewiston and the 800 MW St. Lawrence-Franklin D. Roosevelt Power Project in Massena—and owns and operates more than 1,400 circuit miles of transmission lines around the State. NYPA, in close coordination NYSERDA, is focused on implementing a variety of programs and initiatives to help realize the ambitious goals of the CES.

NYPA provides power to State and local governments with comprehensive energy portfolio options to meet individual customer needs while advancing the overall energy goals of the State. NYPA is collaborating closely with its customers to achieve the CES goals in ways that best meet their varying needs. As customer contracts are renewed, NYPA is including provisions to allow for recovery of costs associated with the CES and expects that the vast majority of customer contracts will include CES provisions by 2021. NYPA's approach to supporting its customers reaching the CES goal is reflected in

its execution of a Purchase Power Agreement with a 290 MW wind farm that is due to come on-line at the end of 2020. The wind project is expected to generate the required volumes necessary to meet its 2021 CES targets.

NYPA anticipates undertaking additional large-scale renewable procurements, to support reaching the 2030 goal. In addition, NYPA is leading efforts to advance large-scale renewables, distributed renewables, energy efficiency, energy storage, and electric vehicle infrastructure with its new EVolveNY electric vehicle charging infrastructure initiative.

1.6 Voluntary Renewable Energy Activities

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

In 2016, New York's first CCA program, Sustainable Westchester, signed contracts for electricity supply for communities in Westchester County. CCA gives a municipality the ability to pool their electrical load in order to negotiate supply on behalf of residents, businesses, and municipal accounts. CCA also allows a municipality to design a program that reflects local preferences and needs, including a preference for cleaner power sources. At present, there are 61 municipalities in New York that are receiving electricity supply from CCA and 38 have chosen 100% renewable energy as their default product mix. As CCA continues to grow, it is expected to become a significant source of voluntary renewable energy purchasing in the State.

1.7 Zero Emissions Credit Requirement

The CES also includes an LSE ZEC requirement. The ZEC compliance year occurs from April 1 through March 31 of each year. The associated LSE ZEC obligation ensures continued operation of certain existing at-risk Upstate nuclear power plants, which produce emissions-free generation and contribute to meeting the State's greenhouse gas goals. While the ZEC obligation is part of the CES, the generation represented by ZECs, while carbon free, is not counted toward the renewable mandate.

While the RES mandates compliance through the retirement of Tier 1 RECs or the provision of ACPs, ZEC obligations are satisfied exclusively through the purchase of ZECs from NYSERDA. The ZEC supply is largely fixed according to a maximum quantity included in the CES Order, and each LSE's annual ZEC obligation is defined in proportion to its load served in a given compliance year. The ZEC price is administratively determined for each two-year tranche, by formula, as defined in Appendix E of the PSC's August 1, 2016 CES Order and is fixed for all LSEs. Since the number of ZECs are capped and LSEs are required to purchase ZECs from NYSERDA, there is no need for ongoing adjustments or flexibility mechanisms. As a result, there is no ACP option for fulfilling the ZEC obligation, and ZECs may not be banked or traded.

1.8 Energy Efficiency Targets

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

On December 13, 2018, the PSC issued an Order Adopting Accelerated Energy Efficiency Targets.[36] The Order adopts a goal of 31 trillion British thermal units (TBtu) of additional site energy reduction by the State's utilities above existing efficiency goals and toward the achievement of a 2025 target. The new energy efficiency target for investor-owned utilities will more than double utility energy efficiency progress by 2025, relative to maintaining their prior goals.

While NYGATS contains data on total load and changes can be observed through annual reporting, these changes may not be related to energy efficiency activities alone. Reporting on progress toward the achievement of the energy efficiency goals will be provided by NYSERDA's CEF reports and through reporting by the utility companies.

2 System and Timeline

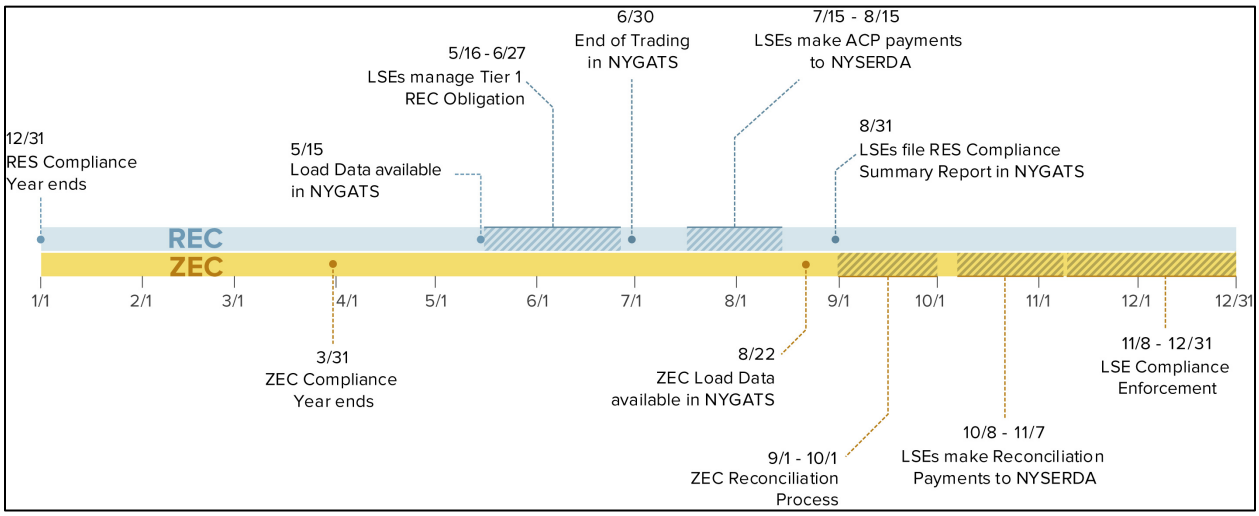
2.1 NYGATS

NYGATS, using data provided by the NYISO and other market participants, supports renewable energy initiatives, including the voluntary renewable energy market. It also supports reporting of the environmental characteristics of electricity consumed in the State through the EDP[37] and the CES.

NYGATS is an online certificate-tracking system that records information about electricity generated, imported, and consumed within the State. Using unique serial numbers, it issues, tracks, and manages energy attribute certificates and RECs. NYGATS raises market confidence by preventing double counting of RECs, provides public reports, and records a full audit trail of all transactions to support the integrity of the RECs issued and held in the system. 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 MWh of energy, but this is not a requirement in NYGATS.

All energy generated in, imported into, or exported out of the State is tracked and verified through NYGATS. NYGATS creates and tracks certificates for all generation, including the renewable energy production counted toward the achievement of the CES. NYGATS also contains data on the load served by State LSEs and is used as the basis for achieving and verifying LSE compliance with CES obligations. NYGATS is the primary data source for this report and much of the source data is publicly available on the NYGATS website.[38] Figure 1 provides key dates for both NYGATS timelines.

Figure 1. CES and NYGATS Timeline



3 2018 Progress Toward New York's Policy Goals

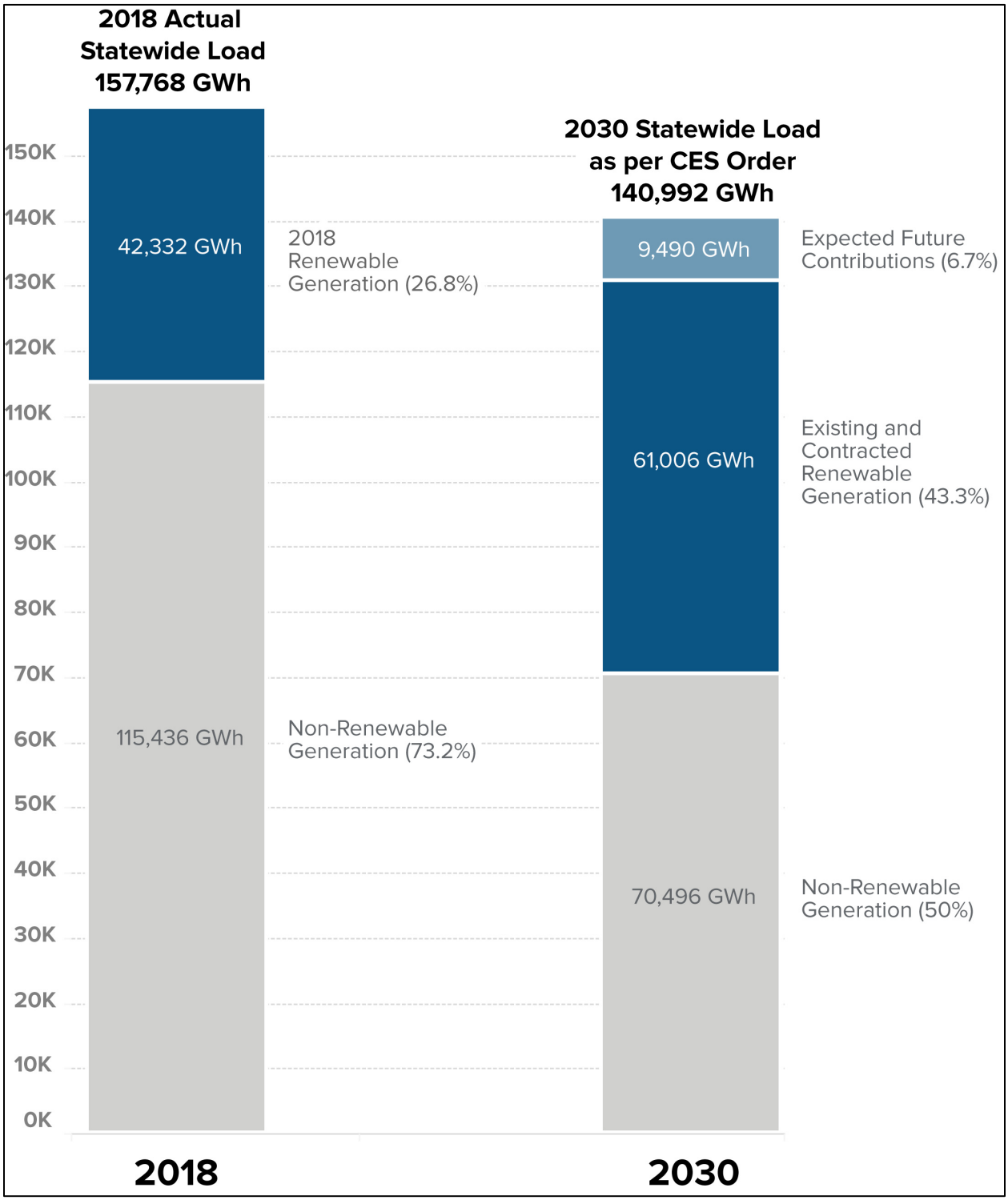
Progress toward the CES mandate is measured by tracking the additional renewable energy contributing to the New York System Mix throughout the years of the CES. In 2018, the contribution from renewable energy resources to meet the State's electric load rose from the 2014 baseline of 25.9% to 26.8%. Due to the increase in electric load, an increase in imports from external control areas with a lower percentage of renewables in the associated system mix, and a decrease in hydroelectric output, renewable energy resources decreased by 1.3% compared to 2017.

In addition, as of the end of 2019, New York awarded a total of approximately 4,700 MW of new large-scale renewable energy contracts since March 2018 through three separate solicitations, a globally significant advancement in renewable energy in just two years. Collectively, once these projects are operational, they will provide enough renewable energy to power up to two million households and meet nearly 10% of the State's electricity needs by 2025.

Figure 2 depicts the generation sources (including non-renewable and renewable) serving the State's electric load in 2018, plus the expected progress toward the 2030 goal. Long-term progress includes more than 18,000 GWh of generation associated with contracted renewable pipeline resulting from several procurement programs, including annual solicitations for new renewables, offshore wind, solar incentive programs, and other State procurements projects, with additional contributions expected from distributed energy resources. Once operational, these projects coupled with the already operating renewable generation are expected are expected to deliver 43% renewable generation towards the achievement of the CES.

The remaining expected future contributions toward CES achievement will be met with renewable contributions from land-based large-scale renewables, offshore wind, and distributed energy resources.

Figure 2. Actual and Future Projections Toward CES Mandate

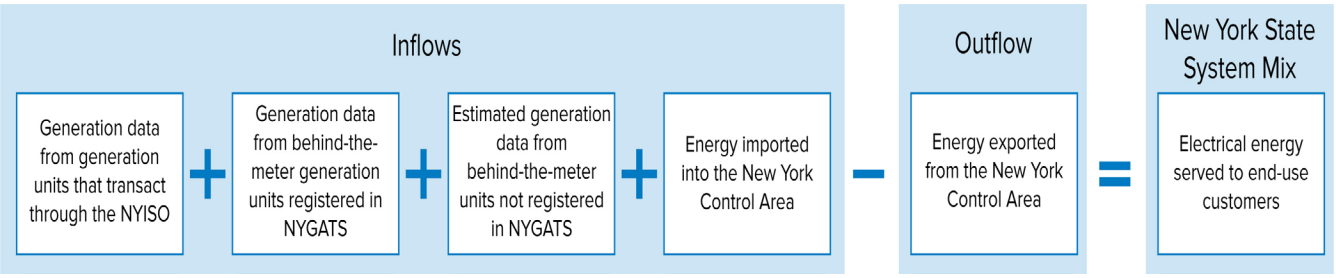


The following sections present more detailed information regarding the energy that served electricity consumers in 2018.

3.1 Statewide Fuel Mix for Electricity Generation

Annually, NYGATS is used to compute the average characteristics of the energy consumed (New York System Mix). The New York System Mix represents the electric energy served to end-use customers and is based upon the inputs shown in Figure 3, which include both inflows and outflows of energy.

Figure 3. New York System Mix Calculation

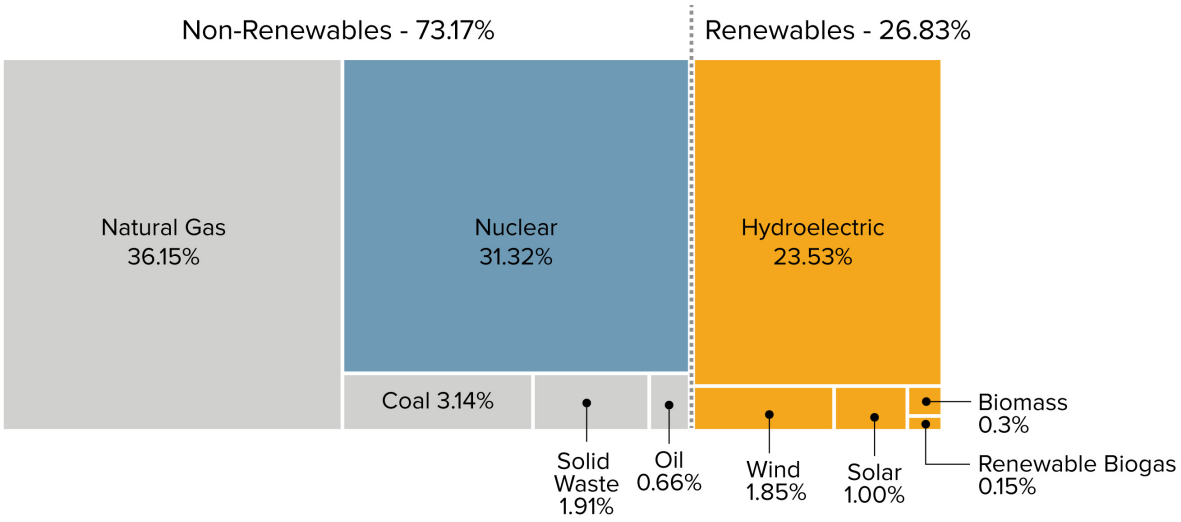


Using these inputs, NYGATS calculates the average amount of each fuel type used to generate electricity and the associated average emissions. Fuel type and emissions information is then matched to the generation used by electricity customers. The output of the New York System Mix represents the average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

Figure 4 summarizes the 2018 New York System Mix from NYGATS, displaying data on the types and quantities of fuels used to supply New York State's electric load in 2018. The New York System Mix uses NYGATS certificate data for energy that served New York's load in 2018, including certificates that were retired for voluntary or compliance purposes or banked for future use. Renewable energy resources contributed 26.8% of the electrical energy consumed in 2018.

Figure 4. New York System Mix, 2018

Source: NYGATS



3.2 Progress toward CES Mandate

Progress toward the CES mandate is summarized in Table 1, including sources of renewable energy supply (by eligibility) and total electric load. The quantities represent all compliance year renewable energy supply settled in the State, through NYGATS, and considers all renewable energy imports and exports.

Table 1. Summary of New York System Mix

Source: NYGATS

	2014	2017	2018
Generation from Baseline Renewable Energy (MWh)	41,295,663	42,964,344	42,161,126
Generation from Tier 1-Eligible Energy (MWh)[a]	N/A	124,373	178,094
Total Renewable Energy (MWh)	41,295,663	43,082,717	42,331,563
Total Load (MWh)[b]	159,146,663	153,162,582	157,768,468
% Renewable Energy serving Load (%)	25.9%	28.1%	26.8%

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

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

Figure 5 represents the total load compared to the percentage associated with renewable energy and the portion of the renewable generation from Tier 1 resources for 2017 and 2018.

Figure 5. New York System Mix – Total Load and Renewable Energy

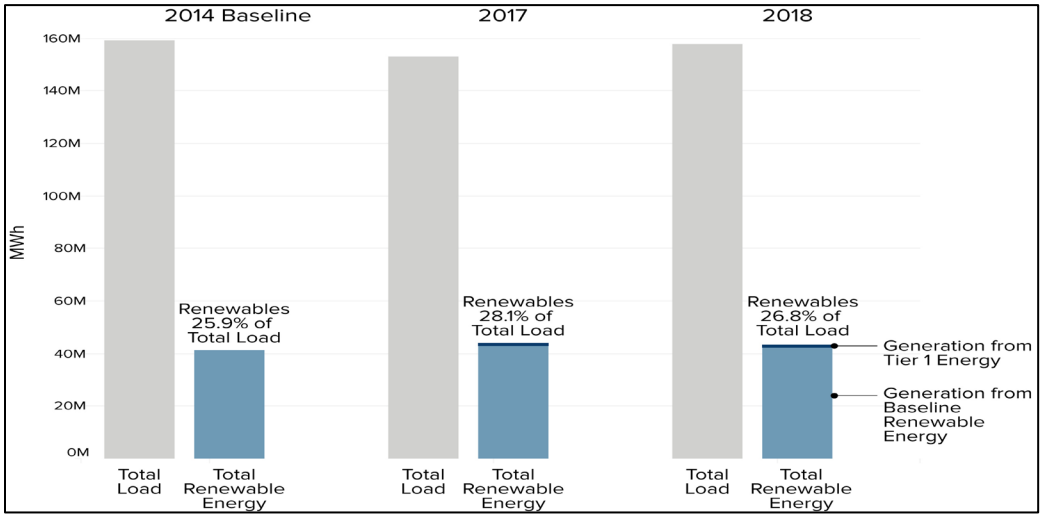


Figure 6 breaks down the renewables portion of the 2018 New York System Mix by the type of activity. This figure illustrates that baseline renewables, which includes generation from NYPA hydroelectric[39] facilities, and imported renewables compromise the largest amount of renewable energy in the 2018 New York System Mix.

Figure 6. Renewables within 2018 New York System Mix

Source: NYGATS

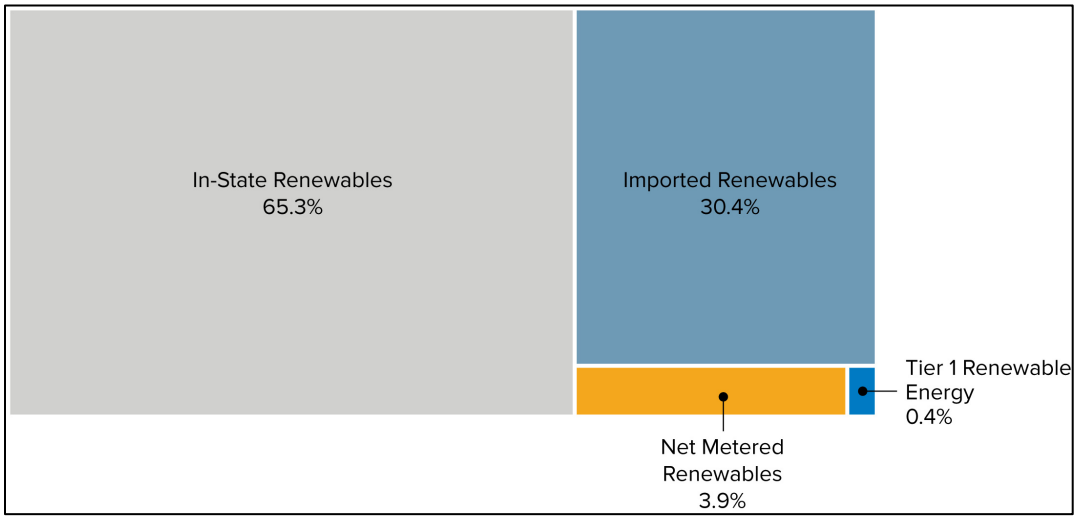


Table 2 shows renewable energy in the New York System Mix by technology as well as the differential contribution between 2014 and 2018. Contributions from hydroelectric and solar technologies increased while biomass, renewable biogas, and wind decreased.

Table 2. New York System Mix Renewable Energy by Technology

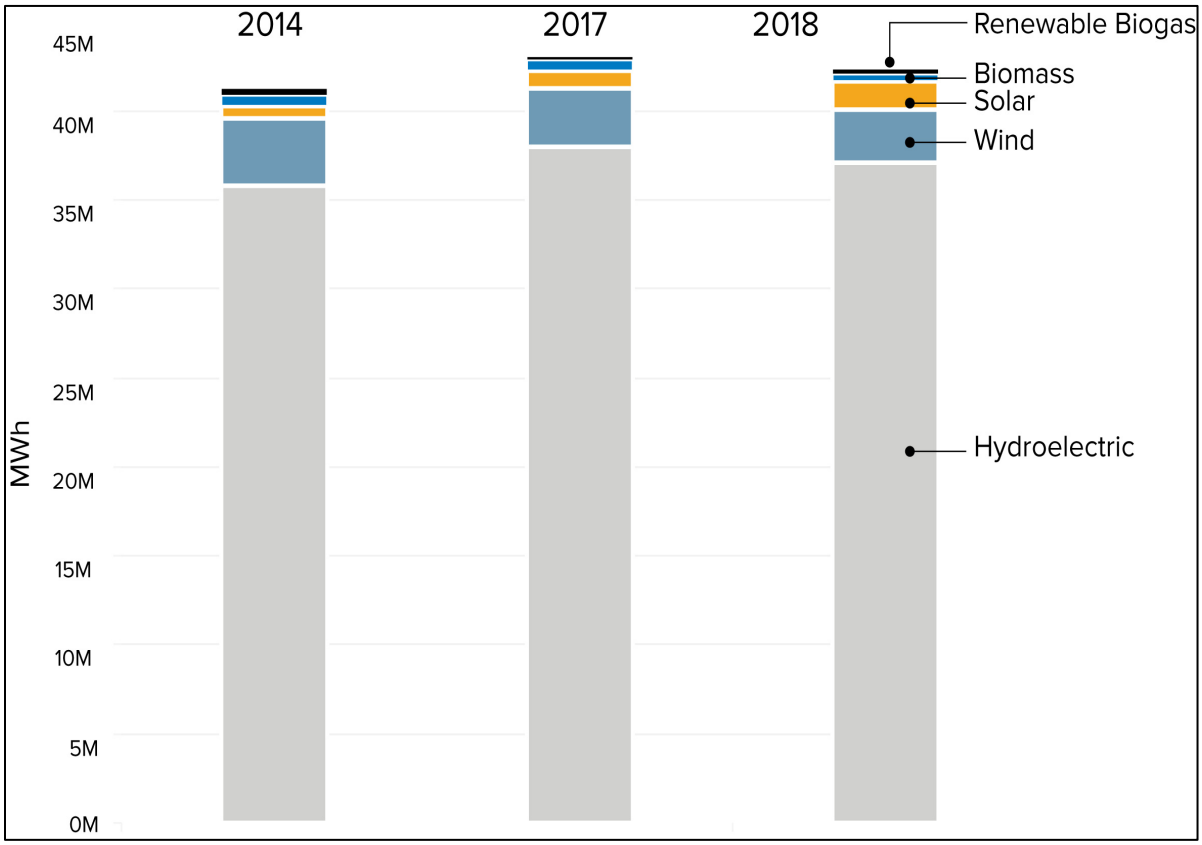
See endnotes section for more information.[40]

Source: NYGATS

Fuel Type	2014 MWhs	2018 MWhs	MWh change
Biomass	609,293	474,838	-134,855
Hydroelectric	35,834,762	37,122,974	1,288,212
Renewable Biogas	394,314	238,004	-156,310
Solar	681,610	1,574,915	893,305
Wind	3,775,684	2,921,232	-854,452
Total	**41,295,663**	**42,331,563**	**1,035,900**

Figure 7 depicts renewable energy by technology for the years 2014, 2017, and 2018.

Figure 7. New York System Mix Renewable Energy Comparison



3.3 Composition of Baseline Renewable Energy

Table 3 shows the contribution from baseline renewable energy generators by technology and the changes between 2014 and 2018. For 2017 and 2018, the contribution from the baseline renewable energy generators includes all the non-Tier 1 certified energy in the New York System Mix and demonstrates that the overall contribution from baseline renewable energy resources increased from 2014 to 2018.[41]

Table 3. Baseline Generation Contribution to New York System Mix

(Excludes Tier 1-Eligible Renewable Energy).[42]

Source: NYGATS

	2014 (CES White Paper)		2017 (New York System Mix)		2018 (New York System Mix)	
	CES Baseline MWhs	**Percentage[a]**	**Non-Tier 1 MWhs**	**Percentage[b]**	**Non-Tier 1 MWhs**	**Percentage[c]**
Coal	7,205,000	4.5%	4,219,310	2.8%	4,947,998	3.1%
Natural Gas	58,454,000	36.7%	52,722,227	34.5%	57,022,560	36.2%
Nuclear	49,409,000	31.0%	49,062,427	32.1%	49,407,821	31.4%
Oil	708,000	0.4%	911,126	0.6%	1,044,330	0.7%
Solid Waste	2,075,000	1.3%	3,158,775	2.1%	3,006,538	1.9%
Non-Renewable Energy[43]	**117,851,000**	**74.1%**	**110,073,865**	**71.9%**	**115,429,248**	**73.2%**
Biomass	609,293	0.4%	561,816	0.4%	474,439	0.3%
Hydroelectric	35,834,762	22.5%	37,951,145	24.8%	37,081,652	23.5%
Renewable Biogas	394,314	0.2%	236,628	0.2%	237,441	0.2%
Solar	681,610	0.4%	1,005,028	0.7%	1,486,575	0.9%
Wind	3,775,684	2.4%	3,209,727	2.1%	2,881,020	1.8%
Renewable Energy	**41,295,663**	**25.9%**	**42,964,344**	**28.1%**	**42,161,126**	**26.8%**
Total (Baseline)	**159,146,663**	**100.0%**	**153,038,209**	**100.0%**	**157,590,374**	**100.0%**

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

3.3.1 Baseline Renewable Energy Exports

Table 4 displays in aggregate the number of RECs exported from baseline renewable generation units located in the State during the compliance year. Since there was no tracking system in place at the time the CES baseline was calculated, a comparison cannot be made to the level of renewable energy exports that occurred in the CES baseline year of 2014.

Table 4. Renewable Energy Exports by Baseline New York Generators

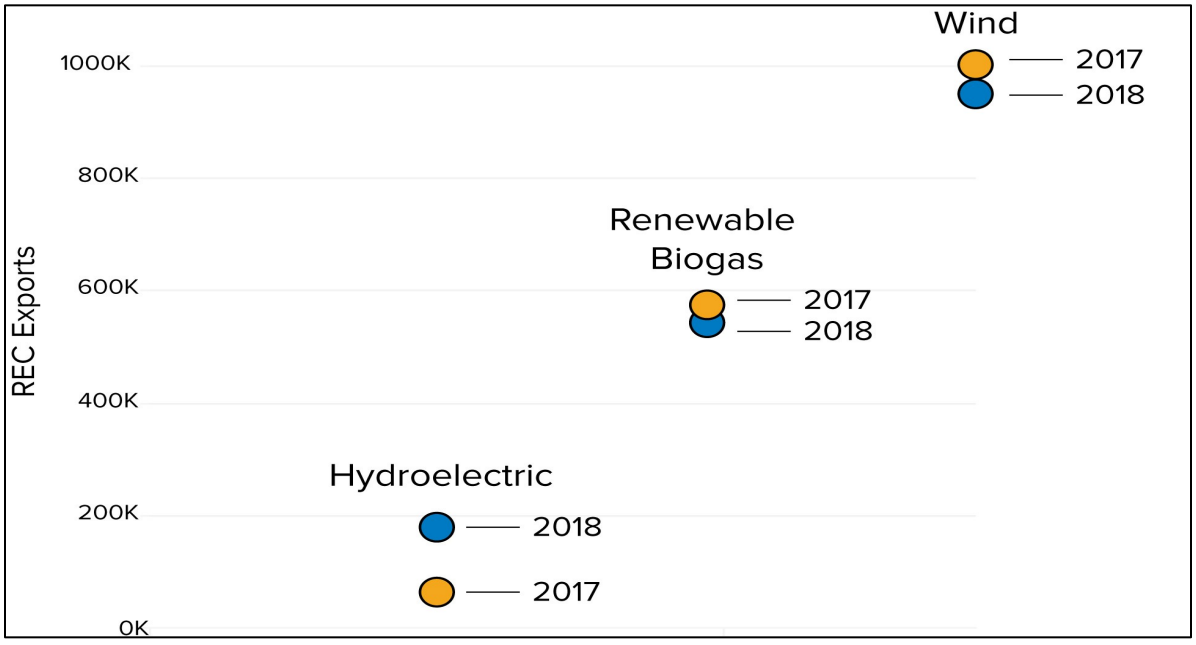
Installed Prior to 1/1/2015.[44]

Source: NYGATS

Technology	2017 REC Exports	2018 REC Exports	MWh Change
Hydroelectric[a]	63,405	178,056	114,651
Renewable Biogas	572,505	542,573	- 29,932
Wind	1,001,874	949,885	-51,989
Total Baseline Renewable Energy Exports	1,637,784	1,670,514	32,730

[a] Number excludes exports from NYPA hydroelectric facilities

Figure 8. Baseline Generator Renewable Energy Exports by Technology and Year Comparison



4 Tier 1

4.1 Tier 1 Annual Compliance Summary

Table 5 summarizes the results of the NYSERDA and DPS review of Tier 1 compliance for 2018. Tier 1 compliance mechanisms are summarized, in aggregate, for all jurisdictional LSEs as well as for LIPA and NYPA. A full list of LSEs active during the year can be obtained through NYGATS, via the EDP Label Reports.[45]

The data is inclusive of NYSERDA Tier 1 REC activities. In 2018, NYSERDA purchased 46,159 Tier 1 RECs through its long-term contracts. These 2018 Tier 1 RECs were offered for sale to jurisdictional LSEs toward their Tier 1 compliance; these LSEs have purchased 44,369 vintage 2018 Tier 1 RECs to date. The 2018 Tier 1 REC obligation percentage for all LSEs participating in the CES was 0.15%.

As of the date of this report's issuance, the jurisdictional LSEs used a combination of current and banked vintage Tier 1 RECs as well as ACPs to reach 99% compliance. A small number of LSEs did not meet their compliance obligations due to bankruptcy, ceasing operation during the compliance year, or no longer providing retail energy in New York. LIPA used Tier 1 RECs to reach 100% RES Tier 1 compliance for 2018. While NYPA did not procure Tier 1 RECs in 2018, NYPA anticipates meeting its anticipated proportion of the RES goals in the coming years through long term contracts with Tier 1-eligible large-scale renewable energy projects as discussed in Section 1.5.

Table 5. Summary of 2018 Tier 1 RES Compliance Status

	Jurisdictional	LIPA	NYPA[46]	Total
Tier 1 Obligated Load (MWhs)	119,636,259	18,459,660	19,672,549	157,768,468
Tier 1 Compliance Obligation (MWhs) (0.15% of Obligated Load)	179,377	27,689	29,508	236,574
2018 Tier 1 RECs Used for Compliance	80,048	0	0	80,048
2018 VDER Tier 1 RECs Used for Compliance	2,427	0	0	2,427
Imported Tier 1 RECs Used for Compliance	0	0	0	0
Banked Tier 1 RECs Used for 2018 Compliance	3,282	27,689	0	30,971
Banked VDER Tier 1 RECs Used for 2018 Compliance	0	0	0	0
Total Tier 1 RECs for 2018 Compliance	85,757	27,689	0	113,446
Number of ACPs for 2018 Compliance	92,169	0	0	92,169
Total 2018 Compliance	177,926[a]	27,689	0	205,615
Total Compliance	**99%**	**100%**	**0%**	**87%**

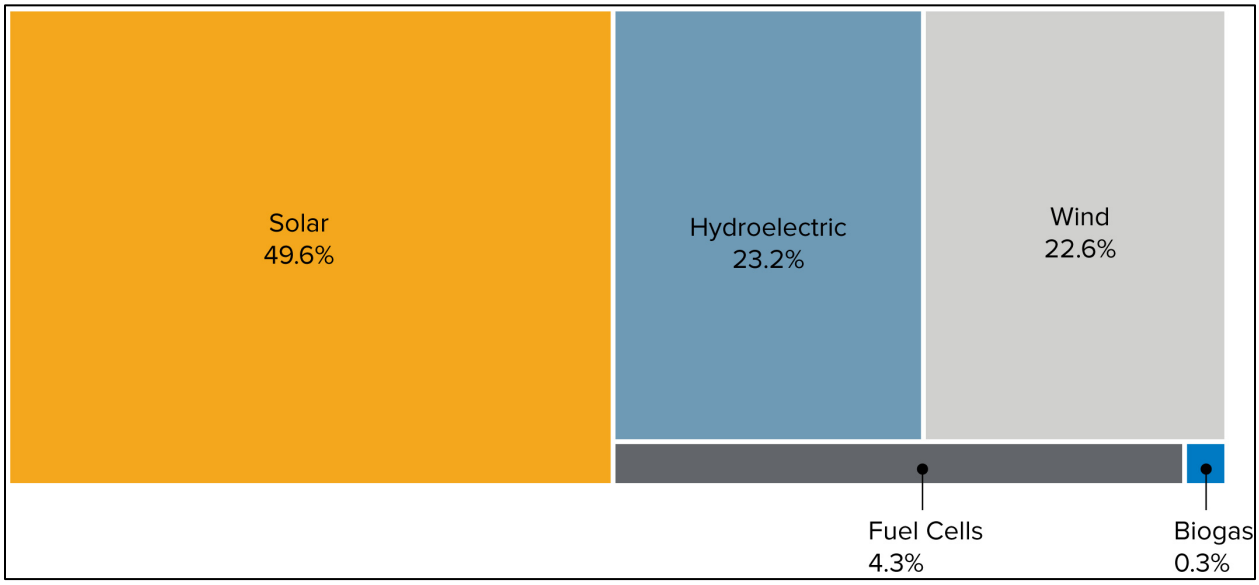
[a] Tier 1 RECs were purchased by LSEs and retired for RES compliance in excess of their obligation.

4.2 Tier 1 RECs by Technology

Figure 9 summarizes Tier 1 RECs created in 2018 by technology. This figure includes Tier 1 RECs that were created in New York but exported. There were no imported Tier 1 RECs in 2018.

Figure 9. 2018 Tier 1 RECs by Technology

Source: NYGATS



4.3 Tier 1 REC Banking Activity

PSC orders afford LSEs and NYSERDA the option to bank excess Tier 1 RECs from the current compliance year for use in two subsequent compliance years. Banking is a flexibility mechanism intended to increase market liquidity and reduce REC price volatility—by allowing renewable energy surpluses (if applicable) to be used for compliance in a future year. Banking is limited to Tier 1 RECs for compliance purposes, and only by NYSERDA or obligated LSEs who are compliant with the RES for all previous compliance periods. To be eligible for banking, excess NYGATS certificates must not have been previously used for compliance with the RES or transferred to other parties. The number of RECs an LSE may bank is capped at 60% of the current compliance year's REC obligation. However, the PSC (in response to a Joint Utilities Petition) suspended the 60% banking cap for VDER resources through 2022.[47]

Table 6 summarizes Tier 1 RECs, which are banked by category, including LSE banked RECs, VDER Tier 1 banked RECs, and NYSERDA's Tier 1 banked balance. Tier 1 RECs, which remain unsold from

NYSERDA quarterly sales, are banked and then made available in subsequent NYSERDA sale events. LSEs with excess Tier 1 RECs must bank them prior to the end of certificate trading in NYGATS; for 2018 vintage RECs, trading closed on June 30, 2019.

Table 6. Tier 1 REC Banking Summary

Source: NYGATS

2018	
LSE Tier 1 REC Banking (Non-VDER Tier 1 RECs)	
Aggregate LSE Tier 1 Bank Balance, 6/30/2018	36,010
Aggregate LSE Bank Balance, 6/30/2019	**110,348**
2017 Tier 1 RECs	17,585
2018 Tier 1 RECs	92,763
VDER Tier 1 REC Banking	
Aggregate VDER Tier 1 Bank Balance, 6/30/2018	0
Aggregate VDER Tier 1 Bank Balance, 6/30/2019	**0**
NYSERDA Tier 1 REC Banking	
NYSERDA Bank Balance, 6/30/2018	14,088
NYSERDA Bank Balance, 6/30/2019	**2,382**
Total Balance of Banked Tier 1 RECs	**112,730**

5 Compliance with Zero-Emissions Credit Obligations

At the time of this report's issuance, 97% of the ZECs have been purchased by LSEs from NYSERDA to meet their ZEC obligation. Table 7 summarizes the progress that has been made in meeting the ZEC obligations under the CES for the 2018 compliance year.[48]

Table 7. Summary of 2018 ZEC Compliance

ZEC Compliance Year	Jurisdictional	LIPA	NYPA[49]	Total
Total Obligated Load (MWh) [50]	119,789,805	18,429,087	19,546,474	157,765,366
ZEC Obligation	20,074,116	3,088,307	3,275,556	26,437,979
Total ZECs Purchased for 2018 Compliance	19,977,584	3,088,307	2,668,562	25,734,453
Compliance with ZEC Obligation	**99.5%**	**100%**	**81.5%**	**97%**

6 Contribution of Voluntary Renewable Energy Activities to CES Progress

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

Table 8 reports on the retirement of 2018 RECs for voluntary purposes. These voluntary actions include, but are not limited to, Green Power Products sold by LSEs, Customer-sited DER Generation Retirements, and Corporate or Individual Retirements. NYGATS account holders may retire RECs without the associated energy for corporate or individual renewable energy claims. The reported Corporate and Individual Retirements only include RECs retired with the associated energy; REC-only retirements have been excluded as these to do not contribute to CES Progress, which is measured by energy consumed in New York.

The reported LSE voluntary activity reflects REC retirements by LSEs for EDP label purposes. The total does not include the retirement of RECs from NYPA hydroelectric facilities made by NYPA and municipal utilities that have long-term hydropower contracts with NYPA or Tier 1 RECs retired for compliance toward RES obligations. The resulting number represents RECs retired by LSEs for retail renewable energy products delivered to customers in 2018.

The customer sited DER retirements represents RECs from NEM projects that were retired in NYGATS. Generation from customer sited DER projects that are not registered in NYGATS is estimated annually using information from the New York State Standardized Interconnection Requirements (SIR) Inventory reporting.[51] NYSERDA enters this information into NYGATS and retires the resulting RECs on behalf of the project owner.

Table 8. Voluntary Activity in NYGATS[52]

Source: NYGATS; Data is not static. Table 8 reflects activity as of 12.11.2019. Refer to Public reports for current figures.

	2018 RECs
Total Voluntary Activity in LSE EDP Subaccounts	2,814,781
Corporate or Individual Retirements	111,010
Customer-sited DER Retirements	1,594,654
Non-Tier 1 RECs Banked	916,000

7 Key References and Links

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

- nyserda.ny.gov/All-Programs/Programs/Clean-Energy-Standard/Important-Orders-Reports-and-Filings/Filings-Orders-and-Reports

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

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

Information on the Renewable Portfolio Standard, the precursor to the CES and past Main Tier solicitations can be found on the following NYSERDA websites:

- nyserda.ny.gov/All-Programs/Programs/Clean-Energy-Standard/Renewable-Portfolio-Standard/RPS-Documents
- nyserda.ny.gov/All-Programs/Programs/Clean-Energy-Standard/Renewable-Portfolio-Standard/Past-Main-Tier-Solicitations

Endnotes

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

[2] In Governor Cuomo's 2019 State of the State, he 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 megawatts to 6,000 megawatts by 2025, obtaining 70 percent of its electricity from renewables by 2030, increasing New York's offshore wind target to 9,000 megawatts by 2035, and achieving 100 percent 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."

[3] 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).

[4] https://legislation.nysenate.gov/pdf/bills/2019/S6599

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

[6] https://www.nyserda.ny.gov/-/media/Files/EDPPP/Energy-Prices/Energy-Statistics/greenhouse-gas-inventory.pdf

[7] http://www3.dps.ny.gov/W/PSCWeb.nsf/0/502EF210A0D15B2885257687006F39D8

[8] CES Order, p. 14

[9] The CES Order set the LSE obligation to purchase Tier 1 RECs through 2021. These obligations were updated in the approved Phase 2 Implementation Plan. Case 15-E-0302, Proceeding to Implement a Large-Scale Renewable Program and a Clean Energy Standard, Order Approving Phase 2 Implementation Plan (issued November 17, 2017).

[10] 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.

[11] nyserda.ny.gov/All-Programs/Programs/Clean-Energy-Standard/Renewable-Generators-and-Developers/RES-Tier-One-Eligibility/Eligibility

[12] https://nygats.ny.gov/ng/Report/getdto_view_Report_PublicOperationalEA

[13] nyserda.ny.gov/About/Newsroom/2018-Announcements/2018-03-09-Governor-Cuomo-Announces-Formal-Request-for-New-York-Exclusion-From-Offshore-Drilling

[14] nyserda.ny.gov/About/Newsroom/2019-Announcements/2019-01-18-NYSERDA-Announces-Details-for-20-Large-Scale-Renewable-Energy-Projects

[15] nyserda.ny.gov/-/media/Files/Programs/Clean-Energy-Standard/2019-CES-2018-annual-procurement.pdf

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

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

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

[19] nyserda.ny.gov/-/media/Files/Programs/Clean-Energy-Standard/2019-CES-2018-annual-procurement.pdf

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

[21] nyserda.ny.gov/-/media/Files/Programs/Clean-Energy-Standard/2019-CES-2018-annual-procurement.pdf

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

[23] nyserda.ny.gov/About/Publications/Program-Planning-Status-and-Evaluation-Reports/Clean-Energy-Fund-Reports

[24] nyserda.ny.gov/About/Publications/Program-Planning-Status-and-Evaluation-Reports/NY-Sun-Performance-Reports

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

[26] 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.

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

[28] nyserda.ny.gov/-/media/NYSun/files/Updated-Value-Stack-Order-2019-04-18.pdf

[29] http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={1B26B55B-54F2-4D95-A7FE-6245EBD37338}

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

[31] 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).

[32] https://portal.nyserda.ny.gov/CORE_Solicitation_Detail_Page?SolicitationId=a0rt000000UTbqSAAT

[33] nyserda.ny.gov/-/media/Files/Programs/offshore-wind/osw-phase-1-fact-sheet.pdf

[34] https://www.lipower.org/wp-content/uploads/2019/07/2019-06-28-PSEG-Long-Island-Utility-2.0-2019-Annual-Update.pdf

[35] https://www.pseg.com/?item=%2faboutpseglongisland%2fratesandtariffs%2ftariffs%2ffeed-in+tariff+v&user=extranet%5cAnonymous&site=LIPublic

[36] nyserda.ny.gov/About/Newsroom/2018-Announcements/2018-12-13-Governor-Cuomo-Announces-Dramatic-Increase-in-Energy-Efficiency-and-Energy-Storage

[37] https://www3.dps.ny.gov/W/PSCWeb.nsf/0/502EF210A0D15B2885257687006F39D8

[38] https://nygats.ny.gov/ng/Report/getdto_view_Report_PublicProjectsAll

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

[40] Due to the nature of energy market transactions across borders, the 2018 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

[41] Due to the nature of energy market transactions across borders, the 2018 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.

[42] The Tier 1 contribution of 178,094 MWh does not change the overall renewable %. Tier 1 energy from Fuel Cells are included in Natural Gas.

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

[44] The 2017 figure included unbundled exports.

[45] https://nygats.ny.gov/ng/Report/getdto_view_Report_PublicEDPLabel

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

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

[48] NYSERDA completed the ZEC reconciliation process and issued statements to LSEs in October 2019 with payment due to NYSERDA by November 2019. 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.

[49] See endnote 46.

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

[51] http://www3.dps.ny.gov/W/PSCWeb.nsf/All/286D2C179E9A5A8385257FBF003F1F7E?OpenDocument

[52] https://nygats.ny.gov/ng/Report/getdto_view_Report_PublicVoluntaryRetirements.

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New York State Energy Research and Development Authority

17 Columbia Circle
Albany, NY 12203-6399

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

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

State of New York
Andrew M. Cuomo, Governor

New York State Energy Research and Development Authority
Richard L. Kauffman, Chair | Alicia Barton, President and CEO