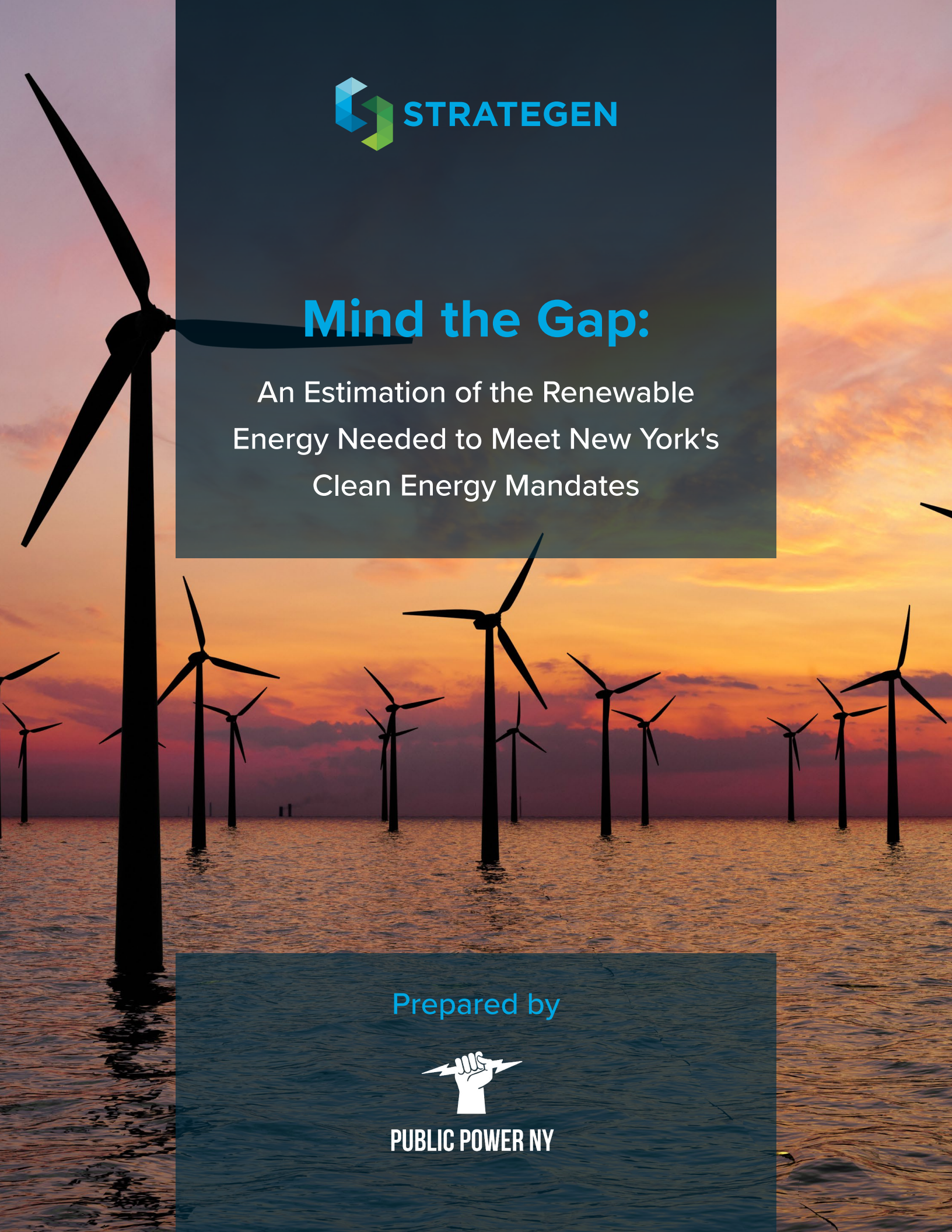


STRATEGEN

Mind the Gap:

An Estimation of the Renewable Energy Needed to Meet New York's Clean Energy Mandates

Prepared by

PUBLIC POWER NY

Disclaimer

This document was prepared as an account of work funded by the Public Power New York Coalition (PPNY). While this document is believed to contain accurate and correct information, neither PPNY, nor Strategen consulting, Inc. (Strategen), nor any of their employees, makes any warranty, express or implied, or assumes any legal responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represent that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by its trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply endorsement, recommendation, or favoring by PPNY, its members and supporting parties, or Strategen. The views and opinions of the authors expressed herein do not necessarily state or reflect those of PPNY or any of its members or supporting parties, or Strategen. Strategen is an equal opportunity employer.

www.strategen.com

This document is prepared by Strategen Consulting, Inc. for the Public Power New York Coalition.

Authors

Sergio Dueñas
Erin Childs
Eliasid Animas
Alondra Regalado
Thanh Nguyen
Jaide Lin

Acknowledgments

The authors would like to thank the members and supporters of the Public Power New York Coalition for funding this work.

Table of Contents

Executive Summary

New York's (NY) clean energy and emissions reduction goals are among the most aggressive in the country, with the 2019 Climate Leadership and Community Protection Act (CLCPA) requiring 70% renewable energy (RE) in 2030 and zero-emission electricity by 2040. However, four years after the passage of the CLCPA, the state is far away from achieving its 2030 goal: as of 2023, less than 30% of electricity generation in New York came from renewable energy assets.[1] To date, the majority of the state's current RE capacity is from legacy hydropower projects, while wind and solar make up an increasing but minor portion of electricity generation compared to the fossil fuel generation fleet. Given rising electricity demand in the coming years to support the electrification of the transportation and building sectors, New York's RE deployment will need to ramp up dramatically in order to ensure the state meets its 70% RE by 2030 goal.

This report compares the difference between the RE generation that can be expected under the current pace of deployment and the RE generation that will be necessary for New York to meet the 70% RE by 2030 goal in order to determine the gap that will need to be filled with new strategies for RE deployment. The analysis examines four scenarios across two variables – energy demand and interconnection success rates – to project the expected RE deployment from independent power producers (IPPs) by 2030 and compare it to the RE target so as to estimate the potential gap in RE development. The results of the analysis suggest that New York will fall short of its 70% RE by 2030 goal under current approaches to RE deployment, with a 14,642 GWh gap (reaching 61% RE) in the most optimistic scenario and 41,441 GWh gap (reaching 45% RE) in the most pessimistic scenario:

Expected RE Gap to 70% Renewable Energy by Scenario by 2030

	Low Interconnection Success (20,418 GWh New RE)	**High Interconnection Success (39,782 GWh New RE)**
Base Energy Demand (54,424 GWh RE Need)	Scenario 3 34,006 GWh Gap 48% Renewable Energy	Scenario 1 14,642 GWh Gap 61% Renewable Energy
High Energy Demand (62,859 GWh RE Need)	Scenario 4 41,441 GWh Gap 45% Renewable Energy	Scenario 2 23,077 GWh Gap 57% Renewable Energy

As IPPs face a series of headwinds, including time-consuming and costly interconnection processes as well as rising inflation and interest rates, that diminish the profitability of their projects, further delays and cancellations can be expected. To ensure that the state meets its RE goals, public sector entities must play a more proactive role in RE deployment beyond market development and support for private sector project development. As nonprofit entities accountable to the people of New York and not driven by profit imperatives, public developers

1 New York State Comptroller, "Renewable Electricity in New York State: Review and Prospects," 2023. https://www.osc.state.ny.us/files/reports/pdf/renewable-electricity-in-nys.pdf

of RE can deploy projects at cost to serve the state's needs and prioritize community benefits, helping to advance a just and equitable transition to clean energy. Additionally, public developers' tax-exempt status, low-cost financing through the issuance of bonds, and newfound access to federal tax credits represent opportunities to lower project costs.

The passage of the Build Public Renewables Act (BPRA) in 2023 is a significant step towards this vision by empowering and requiring the New York Power Authority (NYPA) to build, own, and operate RE generation projects to ensure the state deploys enough RE to meet its CLCPA goals. As the largest state power organization in the country and already operating New York's hydropower facilities and over 1,400 circuit miles of transmission lines, NYPA is well positioned to serve as the state's premier public developer of RE. Under its expanded authority and mandate, NYPA will not only build utility-scale solar, wind, and battery storage projects for the first time but also expand its activities in developing transmission facilities and supporting distributed energy resources. Moreover, the BPRA also directs NYPA to implement a program to lower utility bills for customers in disadvantaged communities (DACs).

Nevertheless, NYPA, as well as other potential public developers of RE in New York, will need to overcome certain challenges to their ability to deploy RE projects. These challenges include maintaining strong credit ratings, building up organizational capacity and expertise in RE project development, land scarcity in downstate areas, and the need for utility support for Distributed Energy Resource (DER) deployment. Collaborative efforts between state agencies, communities, and industry partners will be essential to navigate these challenges and ensure the realization of New York's clean energy goals in a just and equitable manner.

Introduction

In 2019, New York enacted one of the most ambitious climate policies in the country with the passage of the historic Climate Leadership and Community Protection Act (CLCPA), which set requirements for renewable energy (RE) generation and greenhouse gas (GHG) emissions reductions, including a target for 70% of energy generation used to meet statewide load to be renewable energy by 2030. Although New York has made strides in the development of RE resources, as of 2023, less than 30% of electricity generated in New York came from renewable assets,[2] the majority of which was from legacy hydropower projects.[3] Meanwhile, residential and commercial electricity demand is expected to rise rapidly in the coming years to support the electrification of the building and transportation sectors. In this context, the installed RE capacity in New York will need to increase dramatically and rapidly if the state is to meet its mandated RE generation target by 2030 and its emission goals for the subsequent decades.

In the past few decades, RE resources in New York, particularly solar and wind, have been deployed mainly by private developers, with state agencies playing a mostly supportive role through market development and incentives. However, time-consuming and costly interconnection processes,[4] as well as rising inflation,[5] supply chain issues, and high interest rates,[6] are impeding project deployment and hampering the state's clean energy goals. These factors are especially detrimental to private developers' projects because they build RE projects to generate profits from their investments. As project development costs rise and expected profits become less certain, projects in the pipeline are abandoned, and additional investments are withheld. In order to ensure the state's decarbonization goals are met, and considering the passage of the Build Public Renewables Act (BPRA), New York's public sector entities must play a much more prominent role in the development of RE resources. Rather than being driven or constrained by the profitability of potential projects, public developers can pursue projects based on their benefits for the people of New York and their necessity for the state's RE goals. The BPRA, passed in the budget in 2023, represents a significant step towards this vision by empowering and requiring the New York Power Authority (NYPA) to build, own, and operate RE generation projects to ensure the state deploys enough RE capacity to meet its CLCPA goals. Moreover, tax-exempt government entities' newfound ability to access federal tax credits for RE projects, thanks to the "direct pay" provision in the Inflation Reduction Act (IRA),[7] also enables public sector entities to take on the role of project developer.

2 New York State Comptroller, "Renewable Electricity in New York State: Review and Prospects," 2023. https://www.osc.state.ny.us/files/reports/pdf/renewable-electricity-in-nys.pdf

3 Ibid.

4 French, M. "Renewable projects are slow to develop amid New York's climate goals," Politico, 2023. https://www.politico.com/news/2023/03/01/new-york-climate-goals-renewable-projects-00083247

5 Arbetter, S. "Renewables advocate discusses inflation adjustment requests from wind porwe developers," Spectrum News, 2023. https://spectrumlocalnews.com/nys/central-ny/politics/2023/10/05/wind-power-developers-want-inflation-adjustments-for-projects

6 Binnie, I. French, D. "Renewable energy investors squeezed by higher interest rates, costs," Reuters, 2023. https://www.reuters.com/business/energy/ceraweek-renewable-energy-investors-squeezed-by-higher-interest-rates-costs-2023-03-10/

7 Lala, C. "Direct pay: an uncapped promise of the Inflation Reduction Act," Center for Public Enterprise, 2023. https://static1.squarespace.com/static/622cca56a2f5926affd807c6/t/64257e7047150f31bf02e7cf/1680178800773/Direct+Pay+101+-+Center+for+Public+Enterprise.pdf

To build sufficient generation to ensure that NY meets the CLCPA mandates, the state must assess the RE deployment required to achieve near- and medium-term targets by measuring the gaps public entities might need to fill to keep the state on track to meet 2030 RE goals and the subsequent decarbonization and emission targets. As such, to better understand New York's current position, this report seeks to:

+ **Evaluate New York's current RE deployment outlook by 2030.**
+ **Assess RE generation gaps that need to be filled to meet the state's 2030 RE mandate under a series of scenarios; and**
+ **Identify opportunities and barriers to the public sector's ability to close the resource development gap.**

New York's Renewables Panorama

New York State Renewable Generation and Greenhouse Gas Emission Goals

Enacted in 2019, the CLCPA will transition New York towards a more sustainable and equitable future. As one of the most ambitious and comprehensive climate policies in the nation, the CLCPA is committed to addressing climate change and benefiting New York's disadvantaged communities (DACs), a critical task given historical and present disparities between communities based on income, race, and other socioeconomic factors.

The CLCPA requires a reduction in statewide GHG emissions from 1990 levels by 40% in 2030 and by 85% in 2050, and net-zero emissions statewide in 2050.[8] This requirement applies to all sectors of the state's economy, from electricity and transportation to agriculture and industry. The CLCPA codified an efficiency target originally set in 2018 by the governor to reduce energy use in buildings by 185 trillion Btu, with a sub-target of 3% annual electric efficiency savings by 2025. The CLCPA also sets targets for the electricity sector, including a provision to ensure that RE systems will generate a minimum of 70% of the statewide energy secured by jurisdictional load-serving entities to meet the electrical energy requirements of all end-use customers in New York state by 2030.[9] It is important to note that this report interprets the 70% RE target included in the CLCPA as being based on the statewide load that must be met by the load-serving entities rather than simply on the generation within the state. This interpretation ties the goal to the load that must be met by load-serving entities, meaning that, as the load increases, the need for incremental RE increases as well. As such, this interpretation is aligned with the spirit of the CLCPA as interpreting the goal as only applicable to in-state generation opens the possibility of diluting the impact of the goal by minimizing the share of load served by in-state generation and instead relying on imports, thus circumventing the intended effect of the CLCPA.

Specific procurement targets for storage, wind, and distributed solar help provide momentum for the RE goal. The CLCPA originally set a target of 6,000 MW of distributed rooftop and community solar energy by 2025, but the New York State Energy Research and Development Authority (NYSERDA) and the Department of Public Service (DPS) have since developed the Distributed Solar Roadmap to achieve an expanded target of a total of 10,000 MW of distributed solar deployment by 2030.[10] As for wind, the policy establishes a goal of 9,000 MW of wind energy by 2035. And for energy storage, the CLCPA requires 1,500 MW storage capacity by 2025 and 3,000 MW by 2030. Governor Hochul updated this goal this past year to double the State's energy storage target to at least 6,000 MW by 2030.

8 New York State Climate Action Council, "Final Scoping Plan," 2022. climate.ny.gov/ScopingPlan
9 Ibid.
10 NYPIRG, "New York State Climate Act 2022 Scorecard," 2022. https://www.nypirg.org/pubs/202207/Climate_Act_2022_Scorecard_final.pdf

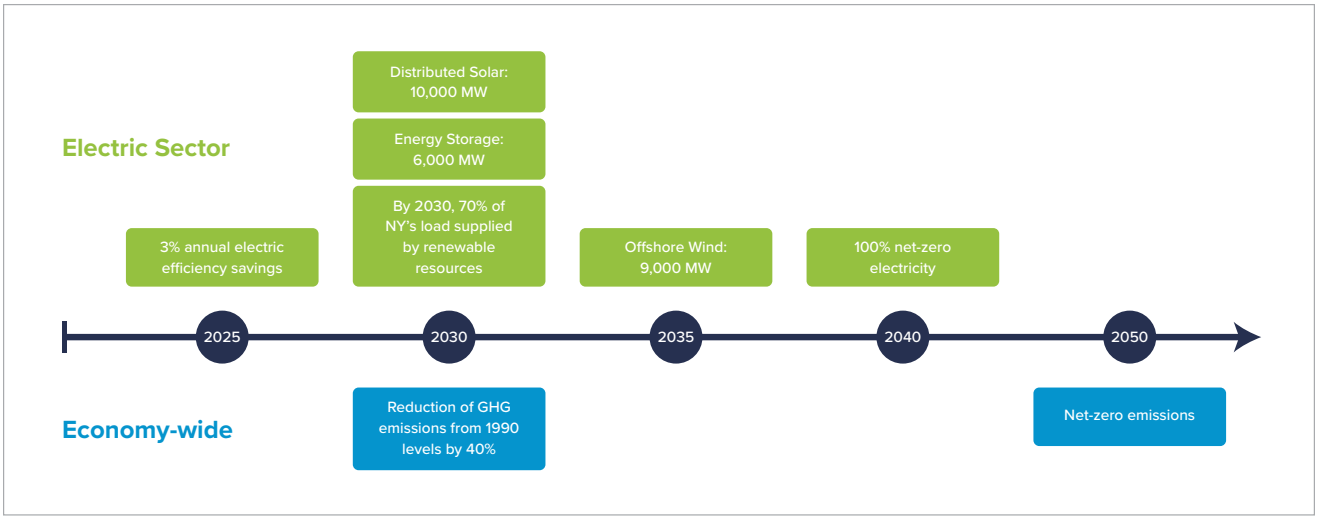


FIGURE 1: CLCPA Targets

The CLCPA requires state agencies to direct their investments in clean energy and energy efficiency programs toward disadvantaged communities to support climate and environmental justice. Specifically, the CLCPA requires that disadvantaged communities receive at least 35%, with a goal of 40%, of the overall benefits of investments in clean energy and energy efficiency, housing, workforce development, pollution reduction, transportation, and economic development.[11] This target aligns with the Biden-Harris Administration's Justice40 Initiative, which established the goal that 40% of overall benefits from federal investments in similar categories flow to disadvantaged communities.[12]

Following directives from the Public Service Commission, New York has developed a comprehensive set of actions that are foundational to the CLCPA's goal. These action items include launching accelerated competitive procurement and leveraging federal support and partnerships. In late October 2023, New York announced offshore wind and onshore renewable awards totaling 6.4 GW to power almost 2.6 million NY homes and delivering 12% of NY needs in 2030.[13]

New York's Electric Grid

New York's electric transmission grid and wholesale power markets are operated by the New York Independent System Operator (NYISO), a non-profit, non-governmental organization. NYISO is tasked with managing fair access to and safe operation of the transmission lines as well as maintaining the reliability of electric service within its footprint, while operating within strict federal and state regulations. To achieve these goals, NYISO works closely with energy producers, public and investor-owned utilities, and other stakeholders to create energy market rules and long-term procurement auctions that ensure the efficient and reliable provision of power into the future.

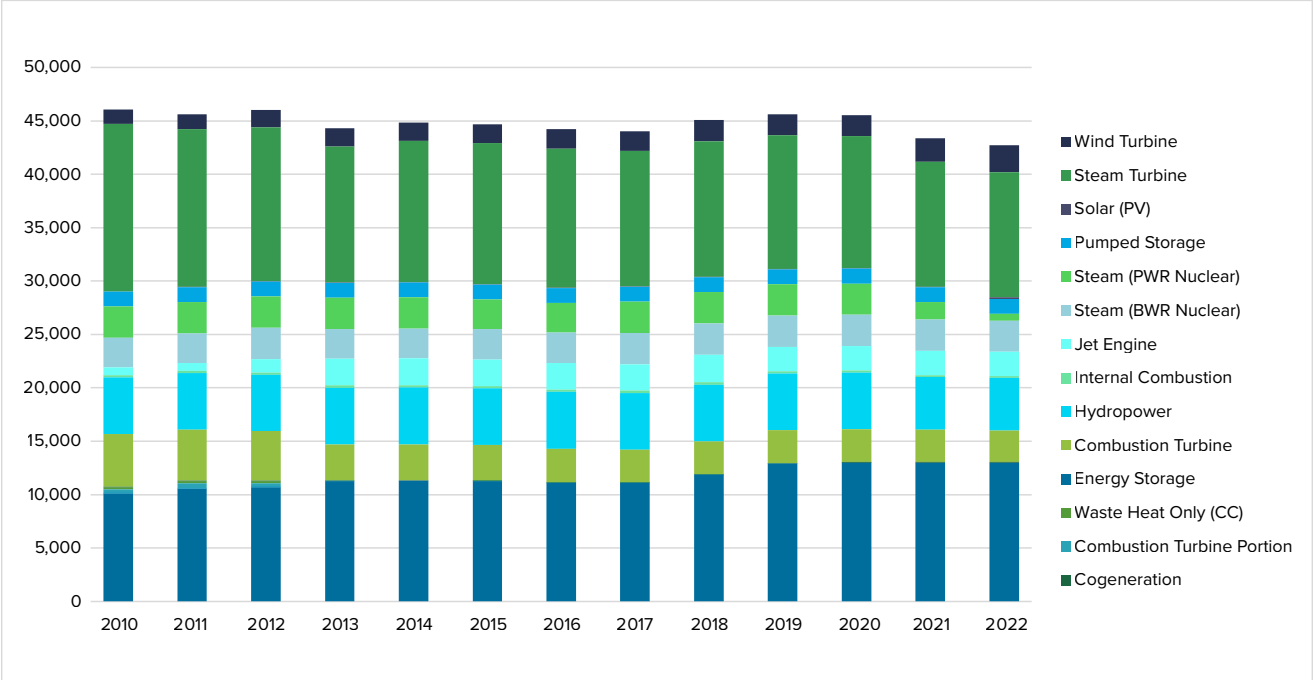
Seven investor-owned distribution utilities operate within NYISO's footprint: Con Edison, National Grid, Central Hudson, National Fuel Gas, New York State Electric & Gas, Rochester Gas & Electric, and Orange & Rockland. These utilities, along with the Long Island Power Authority and other municipal utilities, secure power on behalf of end-users and own and operate distribution lines that deliver said electricity to homes and businesses.

11 NY State Department of Public Service "CLCPA – Disadvantaged Communities Investment and Benefits Reporting Guidance," 2023. https://dps.ny.gov/system/files/documents/2023/10/disadvantaged-communities-guidance.pdf

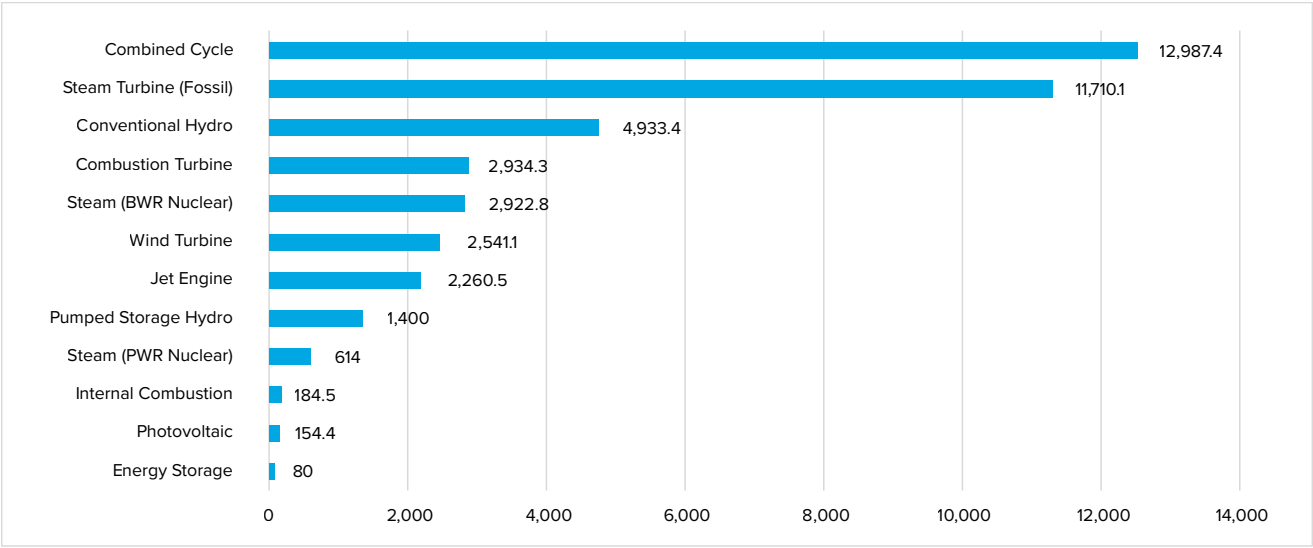
12 The White House, "Justice40: Environmental Justice," Accessed November 2, 2022. https://www.whitehouse.gov/environmentaljustice/justice40/

13 NYSERDA, "America's Largest-Ever Investment in Renewable Energy is Moving Forward in New York," 2023. https://www.nyserda.ny.gov/About/Newsroom/2023-Announcements/2023-10-24-Governor-Hochul-Announces-Nations-Largest-Ever-State-Investment

According to 2022 data, NYISO managed 152,681 gigawatt hours (GWh) of load for the entire year, with a peak demand of 30,505 megawatts (MW).[14] New York City makes up 20% of NYISO's total net generation.[15] The following tables provide a breakdown of the current energy mix in NYISO's footprint, showing the nameplate capacity of resources providing power to New York's residents as of 2022. As noted in Graph 1, below, for the summer of 2023, the total resource capability in the New York Control Area (NYCA)[16] is projected to be 40,262 MW. [17]



GRAPH 1: 2010-2022 NYISO Capacity (MW)



GRAPH 2: 2022 NYISO Capacity (MW)

14 NYISO, "2023 Power Trends: A Balanced Approach to a Clean and Reliable Grid," 2023, https://www.nyiso.com/documents/20142/2223020/2023-Power-Trends.pdf/7f7111e6-8883-7b10-f313-d11418f12fbf?t=1686132123808 (p. 34)

15 NYISO, "2023 Load & Capacity Data Gold Book," 2023. https://www.nyiso.com/documents/20142/2226333/2023-Gold-Book-Public.pdf

16 NYCA is the area under operational control of the NYISO.

17 NYISO, "2023 Load & Capacity Data Gold Book," 2023. https://www.nyiso.com/documents/20142/2226333/2023-Gold-Book-Public.pdf

New York's power grid is divided into eleven different load areas, called Zones A through K. For analytical purposes, the NYISO and the state's agencies have divided the state into two regions: Upstate New York consists of Zones A through E, while Downstate New York consists of Zones F through K. Figure 2, below, provides a geographical breakdown of the load zones.

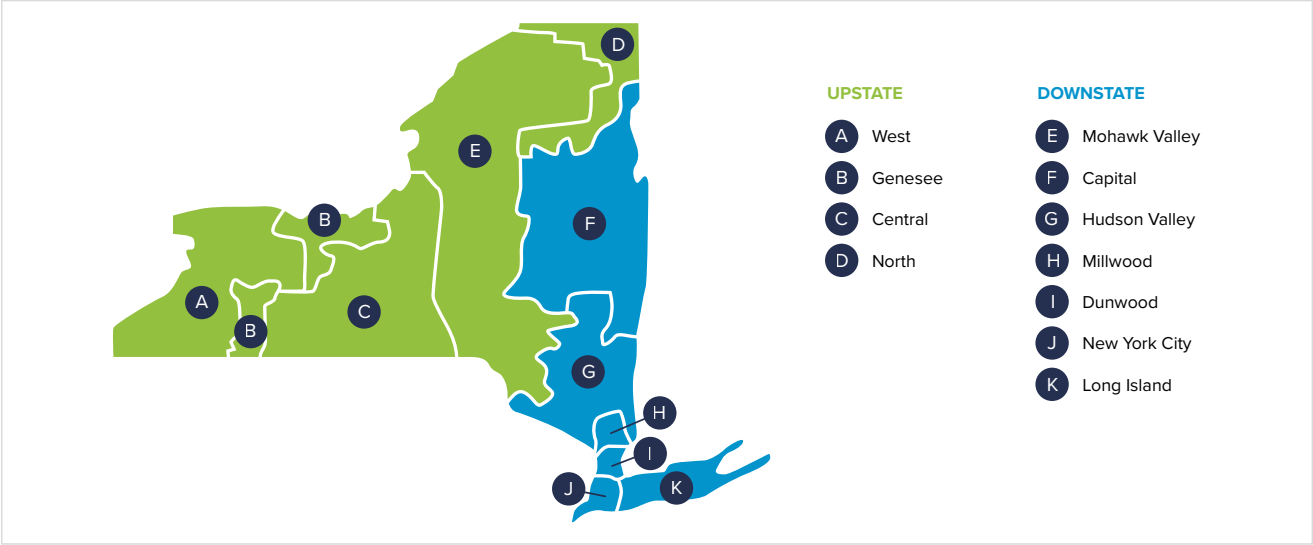
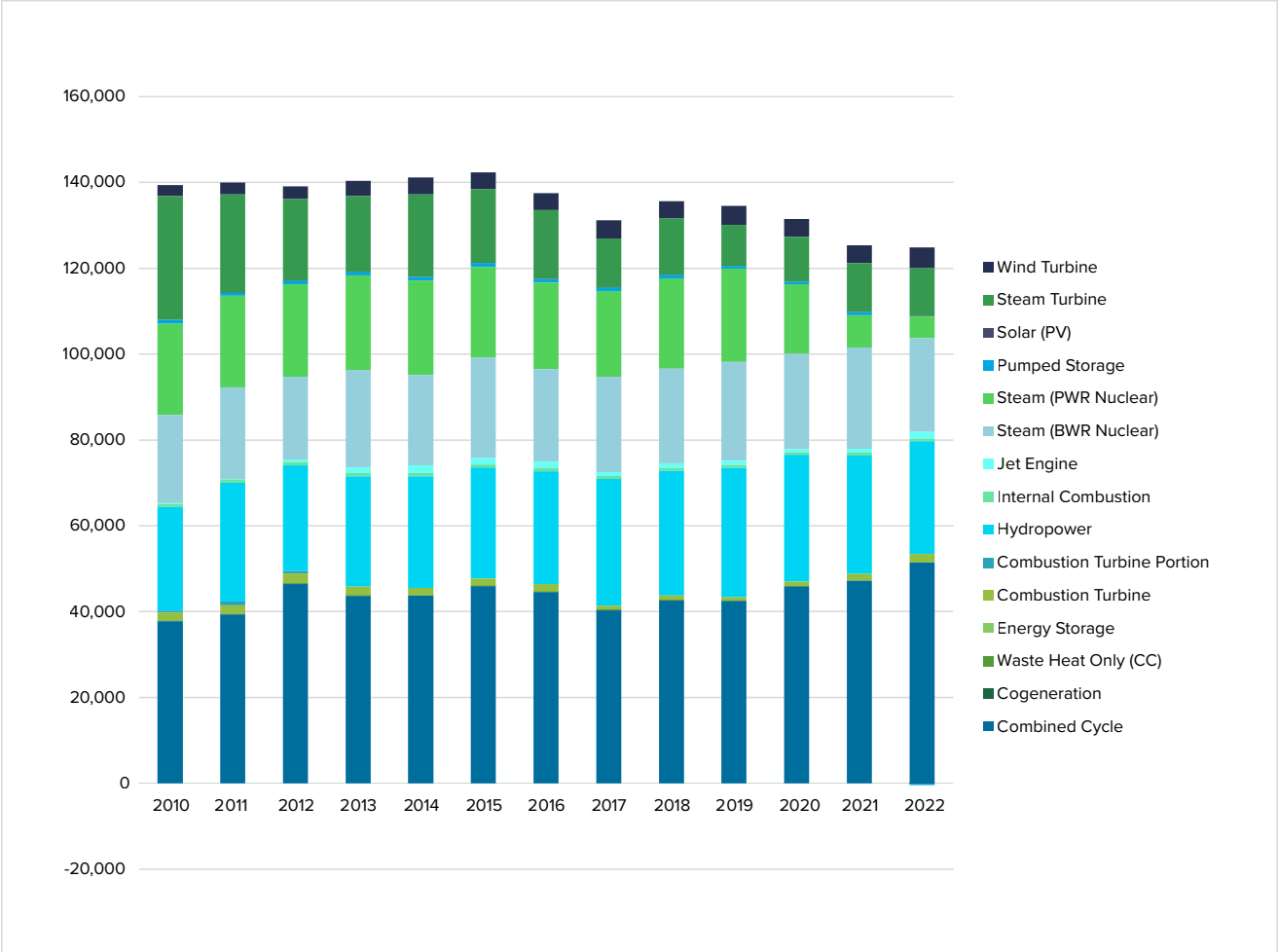


FIGURE 2: NY Load Zones[18]

Upstate and Downstate New York and the zones within them differ in their loads and mix of generation resource types due to various historical, geographical, and economic factors. For example, the Niagara and St. Lawrence rivers in Upstate NY provide this region with significant hydropower capacity,[19] while the Downstate region has limited hydropower potential.[20] This divide between New York's geographies is further exacerbated by limited transmission corridors between the regions, which limits NYISO's ability to harness the RE generated upstate to meet downstate load. As a result, and given that New York City (NYC) accounts for 32% of the NYCA's annual energy usage,[21] Downstate New York has historically relied on coal- and gas-fired power plants to meet the significant energy demand from dense urban centers in NYC and Long Island. These fossil fuel plants are often situated near underserved urban communities and have continued to operate to meet the region's increasing energy needs.

18 NYISO, "2022 Reliability Needs Assessment (RNA)," 2022. https://www.nyiso.com/documents/20142/2248793/2022-RNA-Report.pdf
19 NYPA, "NY Power Authority: Generation Overview," Accessed November 2, 2023. https://www.nypa.gov/power/generation/generation-overview
20 According to the 2023 Gold Book, Downstate New York is equipped with 374 MW of hydropower capacity, including Spier Falls and Stewarts Bridge, Dahowa Hydroelectric, Neversink and Grahamsville stations. This is compared to Upstate New York's hydropower capacity of 4,560 MW.
21 2023 Gold Book, Page 25. Read more at https://www.nyiso.com/documents/20142/2226333/2023-Gold-Book-Public.pdf/c079fc6b-514f-b28d-60e2-256546600214



GRAPH 3: 2010-2022 NYISO Net Energy Generation (GWh)

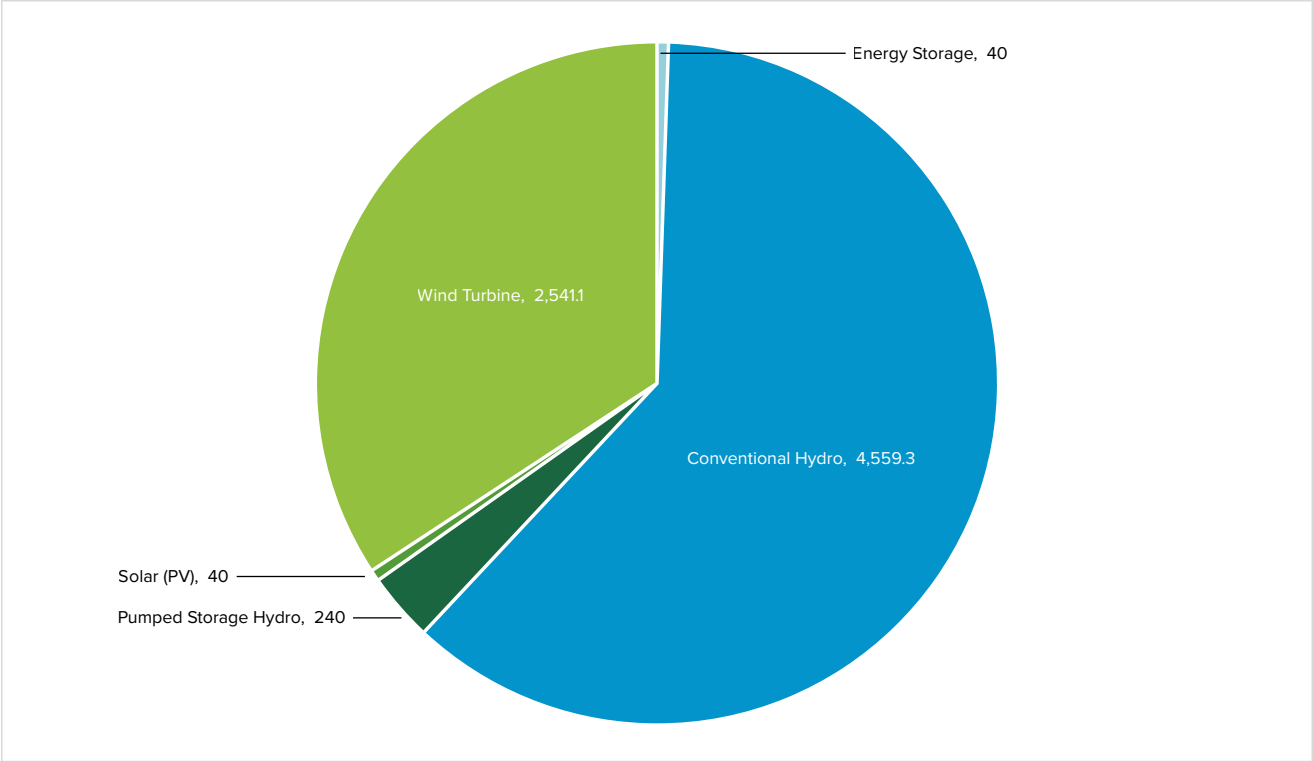
For New York, the clean energy transition coincides with increasing residential and commercial demands due to a growing population and an increasingly electrified world. NYISO projects that New York will consume over 157,000 gigawatt hours of electricity by 2030, inclusive of consumption offset by behind-the-meter solar generation (BTM).[22] This growth in consumption presents a challenge for the state's decarbonization goals, as RE generation has to not only displace the current fleet of fossil fuel power plants but also be sufficient to meet the increasing demand on the grid.

Current Installed Renewable Generation

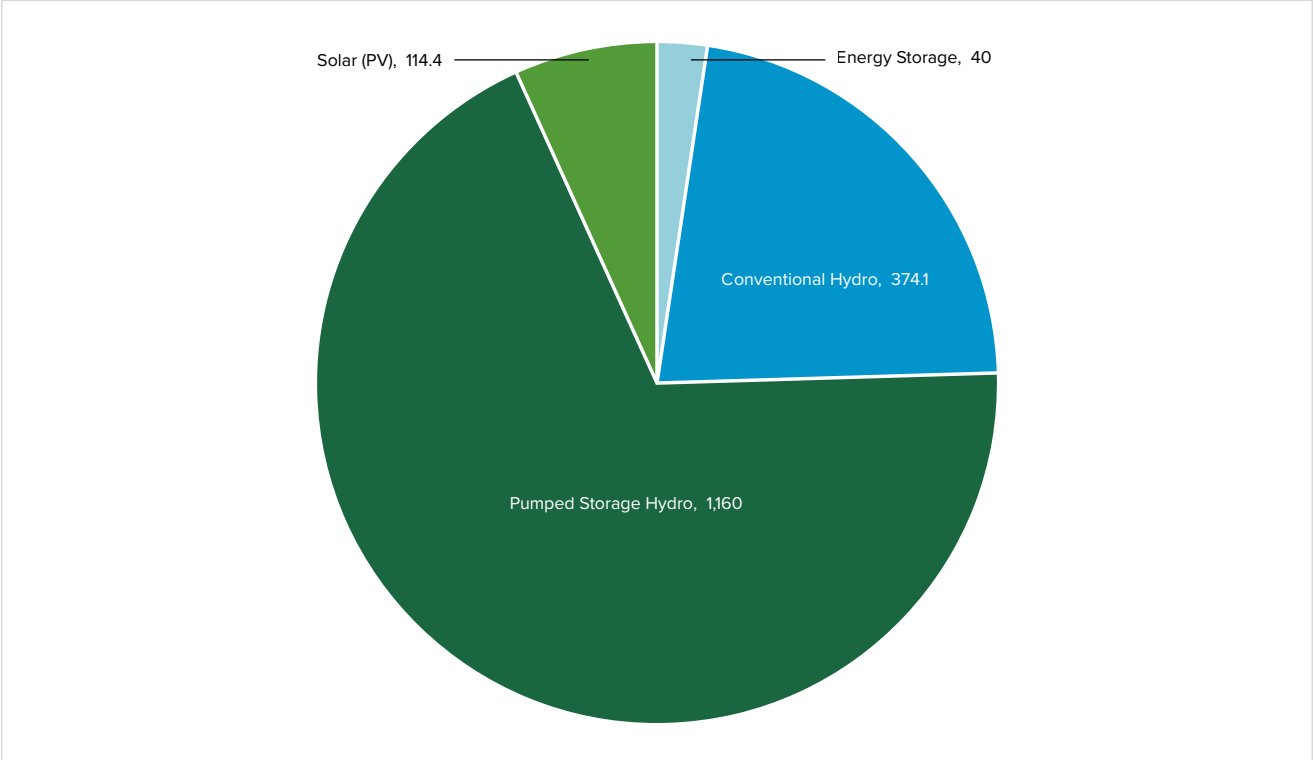
To understand New York's current RE generation, this report consulted Gold Book data provided by NYISO for the years 2011 to 2023.[23] NYISO publishes a Gold Book each year, which includes data for existing generating resources operating in New York as well as a breakdown of generator ownership, resource type, fuels used, nameplate rating, and net energy generated during the preceding calendar year.

The NYISO RE capacity in 2022 was at 9 GW, with the majority being supplied by conventional hydro owned and operated by NYPA in Upstate New York. Wind turbine capacity followed behind, with 2.5 GWs of capacity located in Zones A to E. Graphs 4 through 6 provide a breakdown of New York's and NYISO RE capacity.

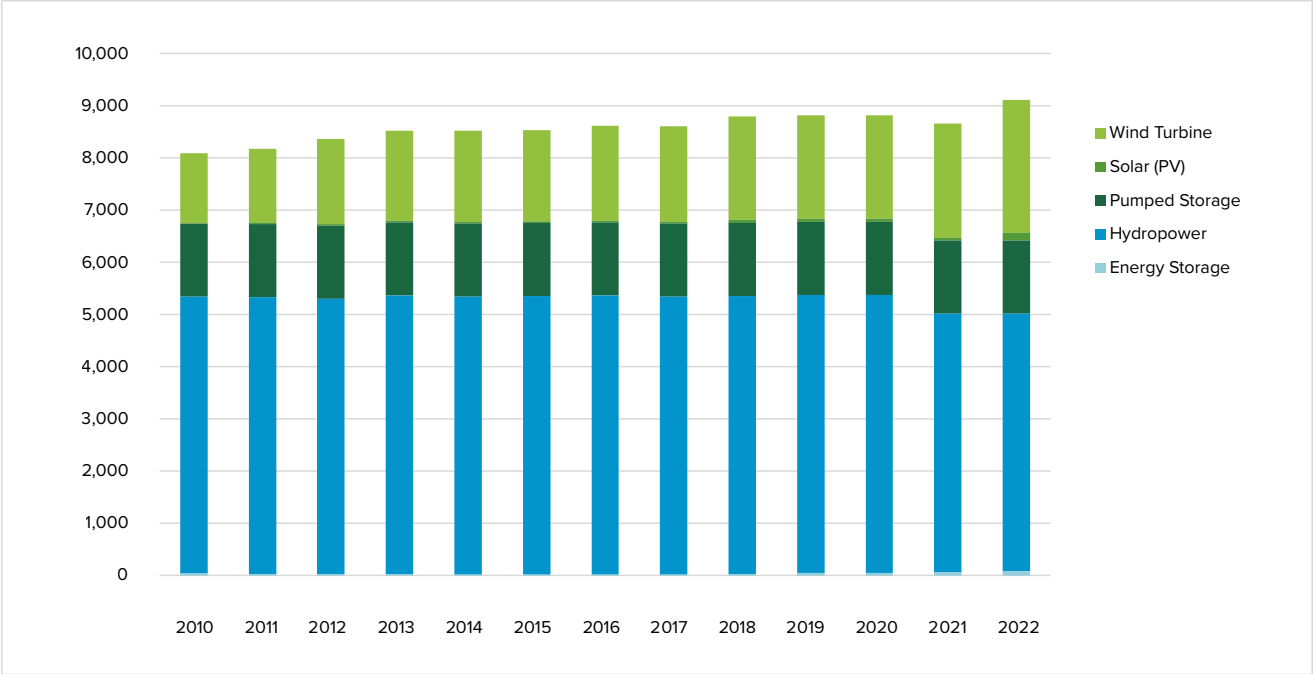
22 NY State Comptroller, "Renewable Electricity in New York," August 2023. https://www.osc.state.ny.us/files/reports/pdf/renewable-electricity-in-nys.pdf
23 NYISO, "Gold Book Resources: Load & Capacity Data Reports," 2023. https://www.nyiso.com/gold-book-resources



GRAPH 4: 2022 Upstate NY Renewable Energy Capacity (MW)

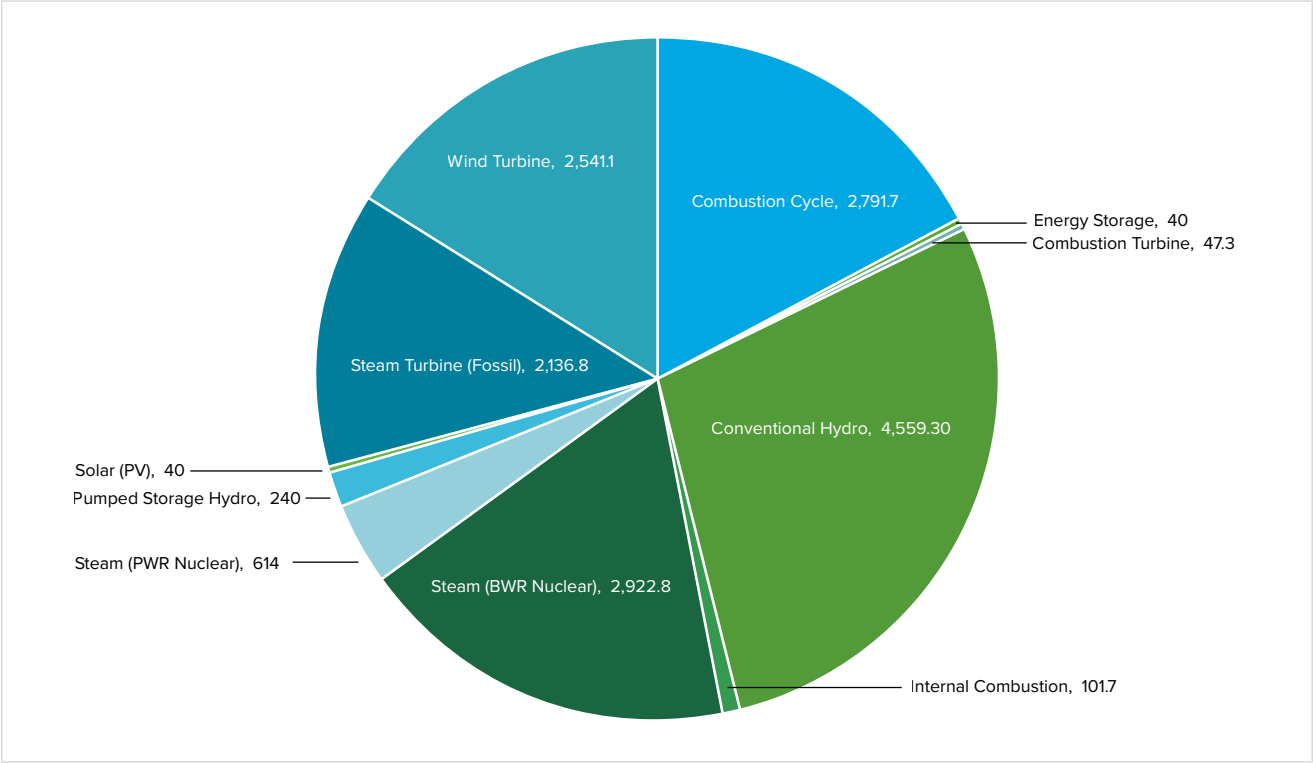


GRAPH 5: 2022 Downstate NY Renewable Energy Capacity (MW)



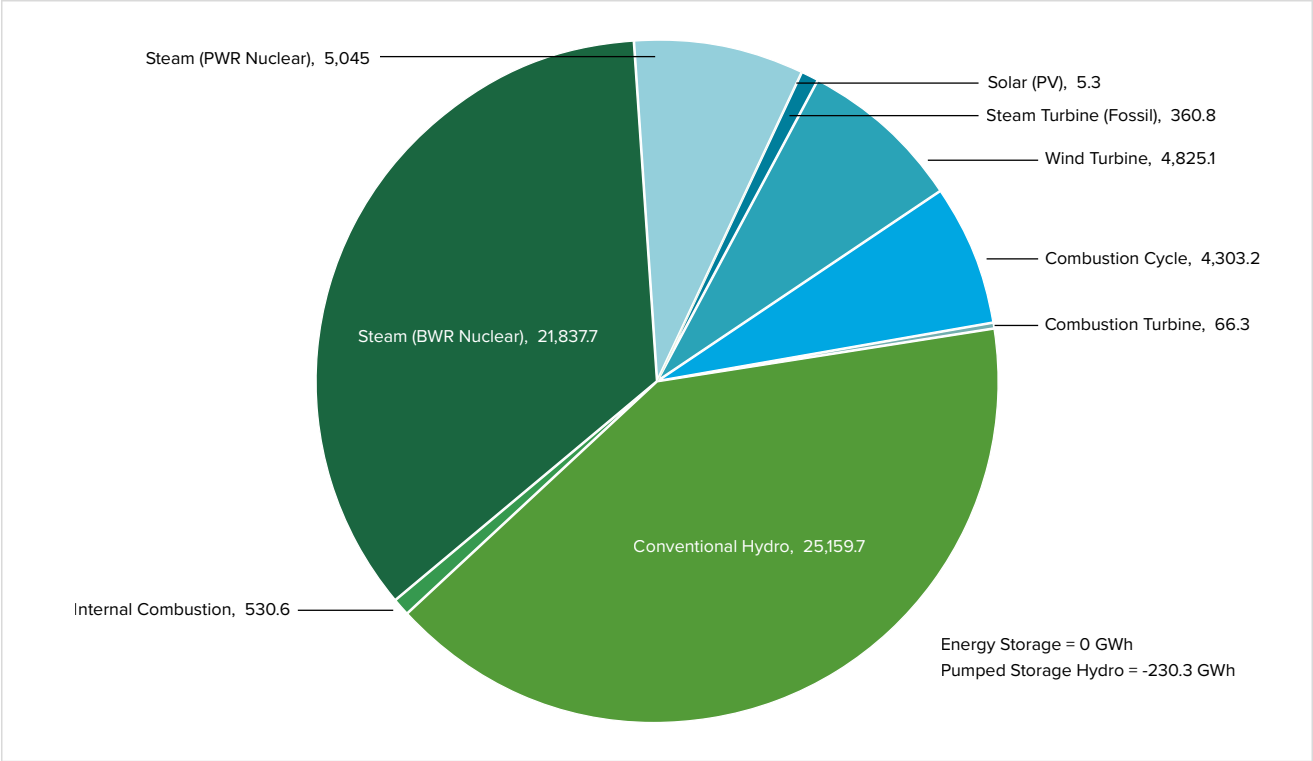
GRAPH 6: 2010-2022 NYISO Renewable Energy Capacity (MW)

As mentioned, much of Downstate New York's energy generation comes from fossil fuels. Downstate NY's renewable resource capacity mainly comes from the Blenheim-Gilboa Pumped Storage Power Project located southwest of Albany, as well as some wind and solar.[24] Graphs 7 through 10 provide a breakdown of New York's generation capacity and net energy for all resource types in 2022.

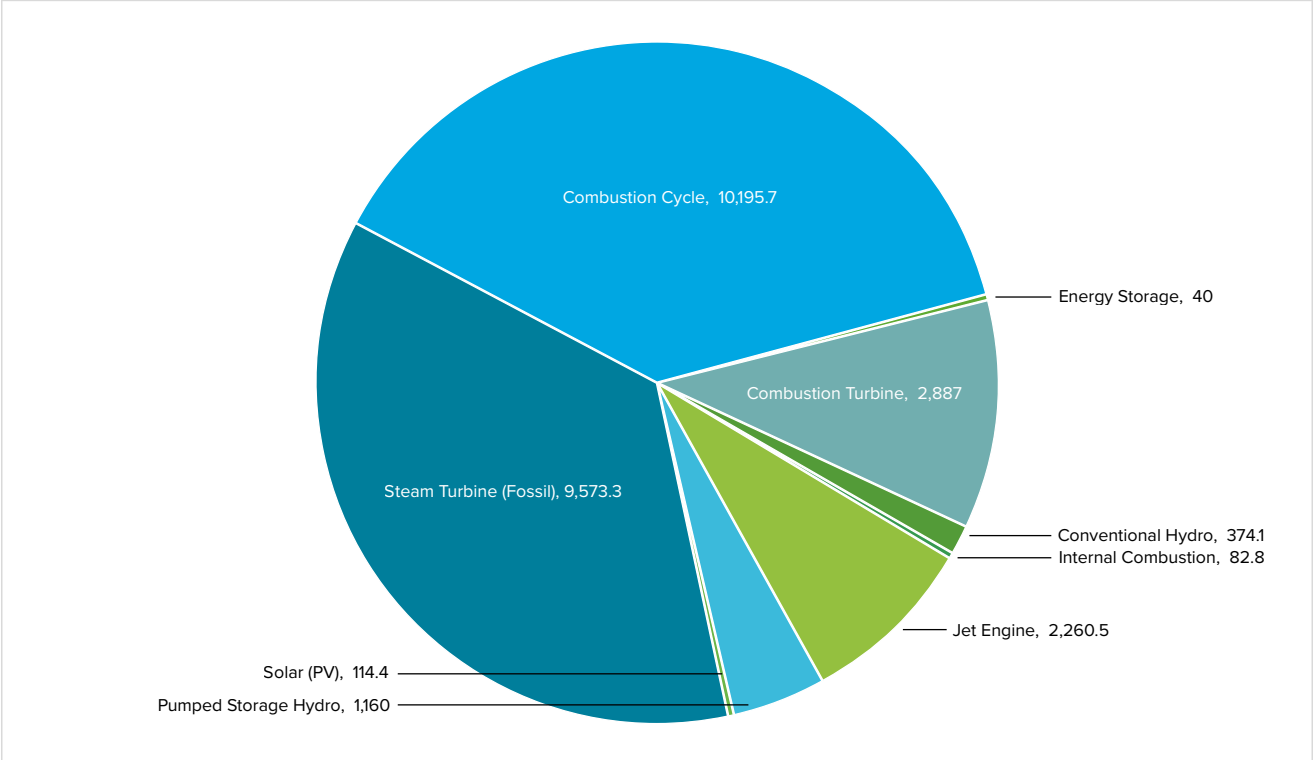


GRAPH 7: 2022 Upstate New York Capacity– All Resource Types (MW)

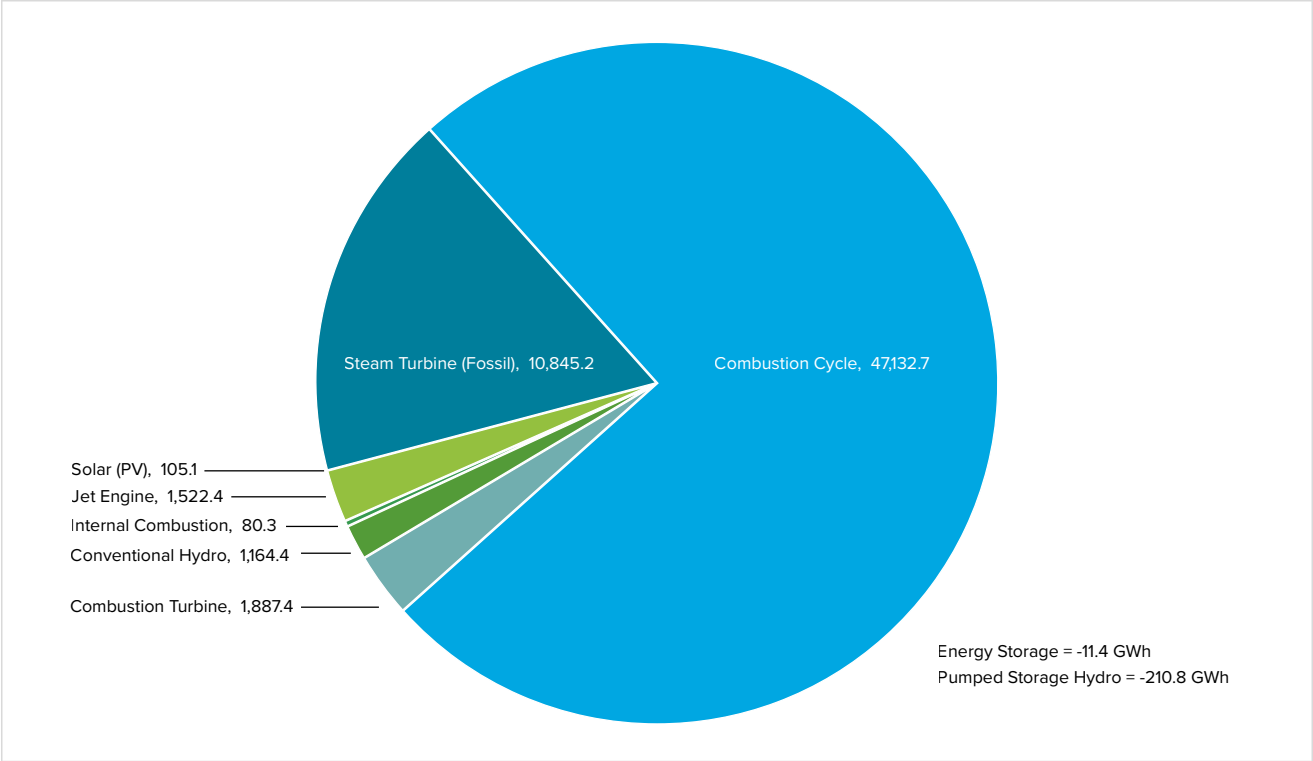
24 NYPA, "Blenheim-Gilboa Pumped Storage Power Project," 2023, https://www.nypa.gov/power/generation/blenheim-gilboa-pumped-storage



GRAPH 8: 2022 Upstate New York Net Energy – All Resource Types (GWh)



GRAPH 9: 2022 Downstate New York Capacity– All Resource Types (MW)



GRAPH 10: 2022 Downstate New York Net Energy– All Resource Types (GWh)

Gap Analysis

Gap Analysis Design

In order to build sufficient generation to ensure that NY meets the CLCPA mandates, it is crucial to determine the levels of renewable energy deployment required to achieve near-term and medium-term targets. This analysis aims to identify the gap in New York State's renewable generation capacity that could be materialized by 2030 given the existing pace of renewable development. The analysis determines the difference between the RE generation that would materialize under the current pace of deployment and the amount of RE generation necessary to meet CLCPA mandates; the gap. The analysis projects the gap in four potential future scenarios deriving from two variables. The first is the energy demand in the state by 2030, taken from NYISO planning projections (high and base demand). The second is the rate of construction and interconnection of new renewable energy projects (low and high rates). These rates are informed by historical interconnection activity in NYISO (low rates) and by the perspective of improvement based on recent changes in interconnection rules (FERC) and announcements of support for a renewable energy portfolio (NYSERDA 10-point Action Plan), as well as previously awarded offshore wind (OSW) projects (2018, 2020 and 2022 solicitation awards).

The analysis uses publicly available data to create projections and highlight the potential of IPPs to deploy renewable energy capacity by 2030. It is important to note that this is not an extensive production cost or capacity expansion analysis and, rather than reflecting the system in detail, is instead intended to identify trends and gaps where more renewable generation capacity is needed and the opportunities to ease its deployment.

In sum, this study:

+ Assesses the potential gap between the RE generation that would materialize given the current pace of deployment, and the RE generation needed to meet CLCPA mandates considering different projections of energy demand and policy and regulatory developments aimed to fast forward the interconnection of clean projects in New York.
+ Identifies the energy needed to meet the state's target but does not recommend a specific mix of generation technologies or siting locations.
+ Focuses on the policy impacts and presents a range of potential futures but does not suggest a preferred outcome.

Sources and Methods

Load Projection Data

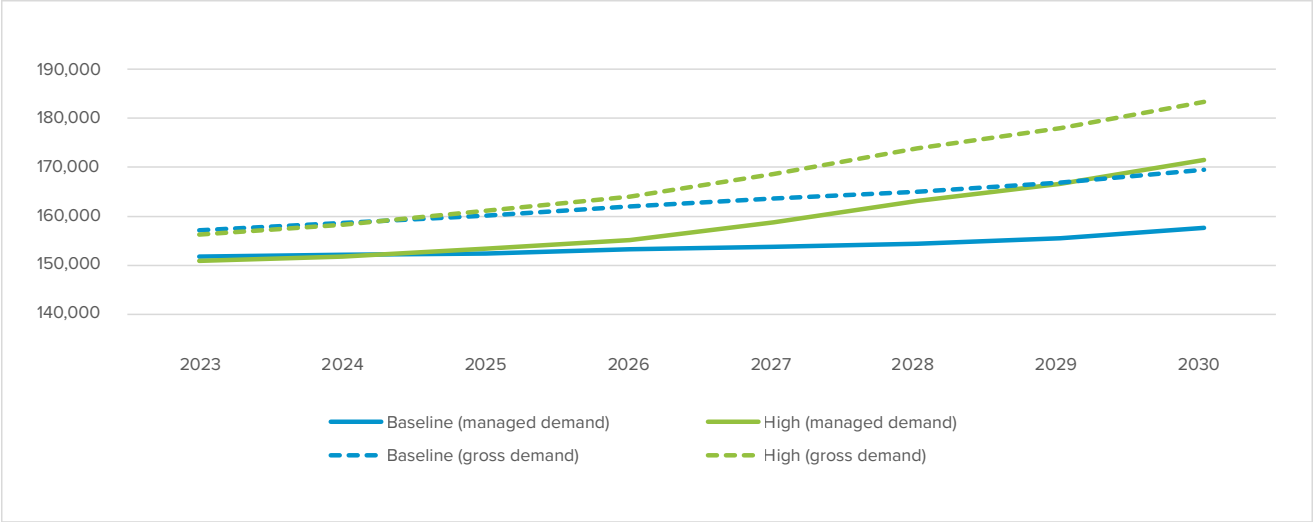
Understanding future load patterns is essential to estimate the potential need for incremental renewable capacity given this report's interpretation of the CLCPA, which focuses on meeting 70% of statewide load with renewable resources. This analysis uses load projection data from the 2023 NYISO Gold Book, which provides load and capacity data for 2023 and future years (2023-2053). Considering uncertainty in future load and capacity, NYISO's energy demand forecasts include assumptions for different scenarios related to population and economic growth, adoption of energy efficiency and distributed energy resources (including BTM solar and storage and other distributed generation), electrification of buildings and vehicles, new demand from big loads, and power demand for the production of green hydrogen. The present study uses the forecasts from NYISO's Baseline and High Demand Policy projections, which result in a net energy demand of 157,660 GWh and 171,480 GWh, respectively.[25]

The Baseline projection assumes significant energy savings and demand reductions will be due to the introduction of energy efficiency programs and incentives for distributed energy resources. Energy efficiency and codes and standards (C&S) contributions to load reduction are expected to reach 18,881 GWh by 2030. There is also expected to be 10,000 MW DC of baseline BTM solar installed by 2030.[26]

In the case of higher demand, there is assumed to be an increase in population and in the number of households beyond the baseline forecast. Energy efficiency and C&S contributions are expected to total around 28,900 GWh. While BTM solar PV, BTM non-solar DG, and BTM energy storage remain the same as the baseline forecast, the managed load is higher as sales of light-duty electric vehicles (EV) are expected to reach 100% of all sales by 2035, with EV energy consumption projections totaling 8,159 GWh in 2030. Buildings are also projected to electrify faster in this projection, growing by 8,531 GWh from 2023 levels (doubling electrification in the base projection). Furthermore, large load projects, such as semiconductor manufacturing plants or server building for telecommunications, are projected to be around 17,680 GWh, significantly larger than the lower demand scenario. Finally, the higher energy demand projection includes the use of clean energy for electrolysis starting in 2025 and reaching 4,975 GWh in 2030.

25 Net energy demand refers to the total state's energy demand after savings from distributed energy resources. In both scenarios NYISO assumes that the goal of 10 GW of BTM solar will be met by 2030, accounting for energy demand savings of 11,879 GWh. Considering this, the gross load in the Baseline and High Demand scenarios is 169,539 GWh and 183,359 GWh respectively.

26 NYISO, "2023 Load & Capacity Data Gold Book," 2023. https://www.nyiso.com/documents/20142/2226333/2023-Gold-Book-Public.pdf



GRAPH 11: NYISO Projected Energy Demand (GWh)

Strategen's interpretation of the CLCPA and its target of 70% renewable energy by 2030 takes the state's gross demand as the base of the calculation. This means that both utility and BTM renewable can count towards the achievement of the goal.

Renewable Energy Supply Projection Data

The second part of the analysis approximates the renewable energy that is expected to be deployed by 2030 under two scenarios that consider the current regulatory, technology, and policy landscape. In order to approximate future RE deployments, this study considers NYISO's interconnection process and its metrics. The queue process enables the coordinated integration of new resources into the existing system by identifying any adverse impacts that could come from proposed generation, transmission, and load facilities in the NYCA. The interconnection process requires extensive coordination between NYISO, developers, transmission owners, and external stakeholders. Once in the queue,[27] proposed projects undergo analysis to determine their safety and the reliability of their connection to the grid and limit customer costs that could come from system upgrades. This interconnection process is vital to the successful deployment of renewable resources, which are often located away from population centers and existing infrastructure.

Across the United States, grid operators are facing lengthening interconnection queues and compounding delays, with wait time expected to grow as the IRA spurs further RE development. Project completion rates are generally low as well, with only around 21% of projects that originally requested interconnection between 2000 and 2017 reaching commercial operations by the end of 2022 when originally requesting connection between 2000-2017.[28] As of October 2023, New York's interconnection queue contains more than 520 project proposals, with over 117,000 MWs coming from RE resources.[29] In this context, the study seeks to capture two different interconnection success rate scenarios to bookend the potential need for incremental RE deployments to attain the 2030 RE goals enshrined in the CLCPA.

27 "Interconnection queues" refer to the lists of projects that have applied to connect to the grid and initiated the interconnection study processes.

28 Rand, J. et al. "Queued Up: Characteristics of Power Plants Seeking Transmission Interconnection As of the End of 2022," Lawrence Berkeley National Lab, 2023. https://emp.lbl.gov/sites/default/files/queued_up_2022_04-06-2023.pdf

29 NYISO, "Clean Energy Policies are Driving Historic Growth and Change in NYISO's Interconnection Queue," 2023. https://www.nyiso.com/-/clean-energy-policies-are-driving-historic-growth-and-change-in-nyiso-interconnection-queue

The low interconnection scenario represents a business-as-usual future, where low historical interconnection rates persist, and state authorities can only partially meet their procurement goals. Historical interconnection rates were assessed by technology and period. This study uses the interconnection success rates from projects subscribed to the queue in the 2014-18 period. The rate is applied to projects subscribed after 2019 and to projects expected to subscribe in the 2024-2026 period (average capacity subscription from the last three years).[30] The low interconnection scenario also assumes that only 25% of projects awarded by state authorities will be interconnected by 2030.

The high interconnection scenario represents an optimistic future, where proposed amendments to interconnection rules will double the queue's success rate and where state authorities can meet most of their procurement goals. This scenario assumes that current regulatory and process improvement efforts, such as FERC's Order 2023[31], New York's Accelerated Renewable Energy Growth and Community Benefit Act[32], and NYISO's ongoing interconnection queue reform, will double the success rate of projects having entered the queue between 2019 and 2026. In addition, the high interconnection scenario assumes that 75% of projects awarded by NYSERDA will be interconnected by 2030. This assumption is applied to existing awards, and while it considers the risk of termination of awarded offshore projects, it does not include a forecast on future awarded capacity.

Under the state's 10-point Action Plan, NYSERDA announced awards for various onshore and offshore renewable energy projects coupled with significant supply chain investments. This includes up to $700 million offered to offshore wind supply chain infrastructure and plans to refine the renewable energy procurement process. Regarding OSW, there are around 8,218 MWs worth of projects currently backed by NYSERDA. In addition, NYSERDA has supported the repowering of onshore wind projects at existing facilities – extending the lifetime of these technologies. Examples include the Valcour Bliss Windpark (100.5 MW), the Valcour Wethersfield Windpark (126 MW), and the Valcour Altona Windpark (98 MW). Given that these projects have a high probability of completion due to reliable financing and state support, this study assumes a higher success rate than that of projects not supported by NYSERDA. For instance, all repowering projects backed by NYSERDA are assumed to have a 100% interconnection success rate in both the high and low interconnection scenarios, while other repowering projects are assumed to have 90% and 75% success in the high and low interconnection scenarios. For new projects, NYSERDA-backed on-shore and off-shore projects have a 75% success rate in the High Interconnection scenario, and a 25% rate in the low interconnection scenario. Whereas there are over 99,749 MW of projects in the queue absent of NYSERDA funding, resulting in a much lower assumed success rate. That is 2% in both the Low- and High Interconnection scenarios for non-NYSERDA-backed projects.

To approximate the amount of interconnected renewable energy by 2030 in the two scenarios, Strategen carried out a three-step assessment of interconnection success for each technology type and level of state support. First, Strategen categorized and analyzed the active, withdrawn and connected projects that went through the interconnection queue to identify historical trends, understand their context, and define their applicability for projects connecting by 2030. In this step, Strategen picked the interconnection success rate of the 2014-2018 application period (projects interconnecting in 2019-2023) as the proxy for the expected success rate of queued projects in the low interconnection scenario. In a second step, Strategen looked at the proposed state plans and the regulatory updates to define success rates for projects supported by NYSERDA, and for the remaining projects in the queue for a high interconnection success scenario as described in the previous paragraph.

30 Importantly, this report implicitly assumes that, for a resource to achieve a 2030 commercial operation date (COD), it must join the queue by 2026 at the latest.

31 FERC E-1 Order 2023 Rm22-12-000. Available at https://www.ferc.gov/media/e-1-order-2023-rm22-14-000

32 NYSERDA, "New York's Accelerated Renewable Energy Growth and Community Benefit Act," Accessed November 2, 2023. https://ores.ny.gov/system/files/documents/2020/07/accelerated-renewables-fact-sheet.pdf

Finally, the projected capacity by technology was converted into energy to be measured against the projected load. The analysis used capacity factors specific for the state that averaged 23% for solar, 30% for wind, and 38% for offshore wind. The capacity factor is the ratio of the electrical energy produced by a generating unit for the period of time considered to the electrical energy that could have been produced at continuous full power operation during the same period.

Considering the aforementioned factors, this study projects a renewable energy supply of 20,418 GWh of incremental energy by 2030 in the low interconnection scenario and 39,782 GWh in the high interconnection scenario.

Resource Type	Low RE Interconnection Scenario	High RE Interconnection Scenario
Solar	2,906 GWh (1,442 MW)	6,565 GWh (3,259 MW)
Wind	4,032 GWh (1,693 MW)	6,059 GWh (2,482 MW)
Offshore Wind	13,480 GWh (4,049 MW)	27,158 GWh (8,158 MW)
Total	**20,418 GWh**	**39,782 GWh**

TABLE 1: Incremental Interconnected Renewable Energy by 2030

Scenario Development

Drawing on the variables of load and expected RE deployments, this report has constructed four separate scenarios that result from the combination of different energy demand and interconnection success projections. These scenarios are designed to bookend the potential incremental RE deployment needed to achieve the CLCPA's RE goal by 2030. In this context, the scenarios range from a best-case scenario in which the potential gap is minimized by baseline load and high interconnection success rates (Scenario 1) and a worst-case scenario in which high load and low interconnection success rates result in a larger, more significant gap (Scenario 4).

	Low Interconnection Success (20,418 GWh New RE)	High Interconnection Success (39,782 GWh New RE)
Base Energy Demand (54,424 GWh RE Need)	Scenario 3	Scenario 1
High Energy Demand (62,859 GWh RE Need)	Scenario 4	Scenario 2

TABLE 2: Four Potential Scenarios of Renewable Energy Gap by 2030

Limitations

This analysis is intended to be indicative rather than exhaustive, evaluating renewable transmission capacity at a high level rather than on a project-by-project basis. As a result, interconnection success rates used are based on bookend values relative to historical NYISO queue data and are applied to the capacity on the queue, not to each individual project.

In addition, Strategen's study shows four possible outcomes in terms of electricity demand and renewable deployment but does not select or assess the likelihood of each. In addition, since the research does not contain any form of capacity expansion modeling, there are no estimates included for what resources ought to be developed to achieve New York's climate goals in the most cost-effective manner.

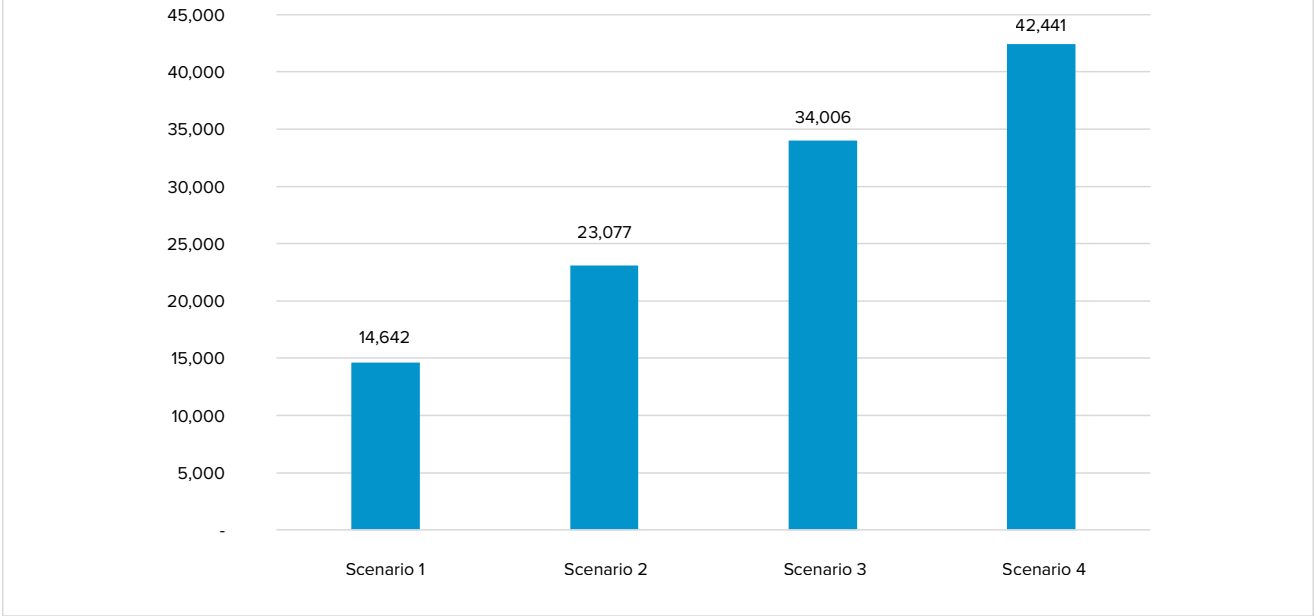
Necessary Incremental Deployment to Meet Climate Leadership and Community Protection Act Mandates

To reach the state's 70% renewable energy target in 2030, there is a need for 112,000 GWh in the low demand case and 122,500 GWh in the high energy demand. According to Strategen's projections given the aforementioned assumptions regarding interconnection success rates by case and resource class, this results in a substantial gap between projected deployment of renewable energy capacity and expected renewable energy demand for all scenarios. Even in the best-case scenario, Scenario 1, the state would be short of its goal by approximately 15,000 GWh, as captured in Table 3 below.

Expected RE Gap to 70% Renewable Energy by Scenario by 2030

	Low Interconnection Success (20,418 GWh New RE)	**High Interconnection Success (39,782 GWh New RE)**
Base Energy Demand (54,424 GWh RE Need)	Scenario 3 34,006 GWh Gap 48% Renewable Energy	Scenario 1 14,642 GWh Gap 61% Renewable Energy
High Energy Demand (62,859 GWh RE Need)	Scenario 4 41,441 GWh Gap 45% Renewable Energy	Scenario 2 23,077 GWh Gap 57% Renewable Energy

TABLE 3: Expected RE Gap to 70% Renewable Energy by Scenario by 2030



GRAPH 12: Expected RE Gap by Scenario by 2030 (GWh)

These results indicate that even with materially optimistic assumptions regarding the pace of private and NYSERDA-backed development, public agencies and other entities able to leverage the BPRA and other novel forms of RE deployment will be essential to the timely achievement of CLCPA goals. In this context, the following sections explore the panorama for public renewable energy deployment within the state, underscoring the key entities and the barriers and opportunities they face to ensure reaching 2030 CLCPA targets.

Public Renewable Energy Deployment in New York

Advantages of Public-Sector Renewable Energy Project Development

Across the world, public sector developers face different incentives and needs compared to private developers. First, public sector entities' decision-making is not driven by the profit imperative that drives investment decisions for private companies, meaning that projects may have lower revenue requirements and could be more likely to be financially viable. This is due to the fact that to attract investment, projects developed by IPPs must generate enough revenues to cover development costs (including materials, labor, financing, taxes, and other costs), plus a certain margin over these costs to be collected as profits for the companies' shareholders. If a potential project is not expected to generate sufficient profits, or if expected profits are too uncertain, the project may not be financed or pursued. For example, private developers in New York recently requested additional ratepayer subsidies for four offshore wind and 86 land-based RE projects to account for high inflation and supply chain issues, and these projects are now at risk of cancellation after the request was rejected.[33] Instead, investors will allocate capital towards other projects or other sectors where they expect higher profit margins. In contrast, publicly owned projects only have to recover enough revenues to cover project development costs and ensure that the public developer fulfills its financial obligations. This means that public RE projects can have lower revenue requirements, allowing public developers to pursue projects needed to achieve RE goals but may not generate sufficient revenues to attract investments from the private sector.

Second, public developers can prioritize and develop projects in a manner that delivers benefits to the people and communities of New York beyond the energy and capacity values of the generation facilities. Because IPPs' primary responsibilities are with their shareholders, IPPs are financially incentivized to develop projects at the lowest cost possible to maximize potential profits. As a result, IPPs may primarily consider financial factors such as labor and land costs when developing a project. Public developers, in contrast, are more accountable to the public interest given their mandate and, therefore can work to ensure that RE projects meaningfully benefit local communities, especially disadvantaged communities. Public developers can work to establish genuine community partnerships to help guide project siting, ownership models, labor standards, workforce development activities, and other community benefits. These efforts are integral to a just and equitable transition and are also important for reducing local opposition to energy projects.[34]

33 POLITICO, "New York rejects offshore wind, onshore renewables request for larger subsidies," 2023. https://www.politico.com/news/2023/10/12/new-york-rejects-offshore-wind-onshore-renewable-request-for-bigger-payments-00121231

34 NRDC, "A Way Forward Toward Reducing Local Opposition to Renewables," 2022. https://www.nrdc.org/bio/cullen-howe/way-forward-toward-reducing-local-opposition-renewables

Public Power Spotlight: New York Power Authority

Introduction to NYPA

As the largest state power organization in the country, NYPA is the prime candidate to serve as New York's public developer of RE. The agency was founded in 1931 when Governor Franklin D. Roosevelt signed the Power Authority Act into law to harness New York's public waters to provide affordable electricity and support economic development in the state. NYPA operates as a fiscally independent public corporation and is not supported by state tax revenues; instead, NYPA finances its projects through internally generated funds and the sale of bonds and notes, which are repaid using revenues from NYPA's operations.[35]

Today, NYPA operates 16 generating facilities and more than 1,400 circuit miles of transmission lines.[36] NYPA supplies electricity to more than 1,000 customers, including local and state government entities; municipal utilities and rural electric co-ops; businesses and industrial customers; and healthcare, education, and cultural institutions.[37] NYPA also sells a portion of its power to the NYISO wholesale market for purchase by utilities. Similarly, transmission service from NYPA-operated transmission facilities can be allocated to specific customers, NYPA's generating facilities, or to NYISO.[38]

In addition to operating generation and transmission facilities on the bulk power system, NYPA also supports the deployment of distributed energy resources (DERs) through its Energy Services Program, which includes offerings related to energy efficiency, electric vehicle charging infrastructure, on-site solar + storage, and community solar.[39]

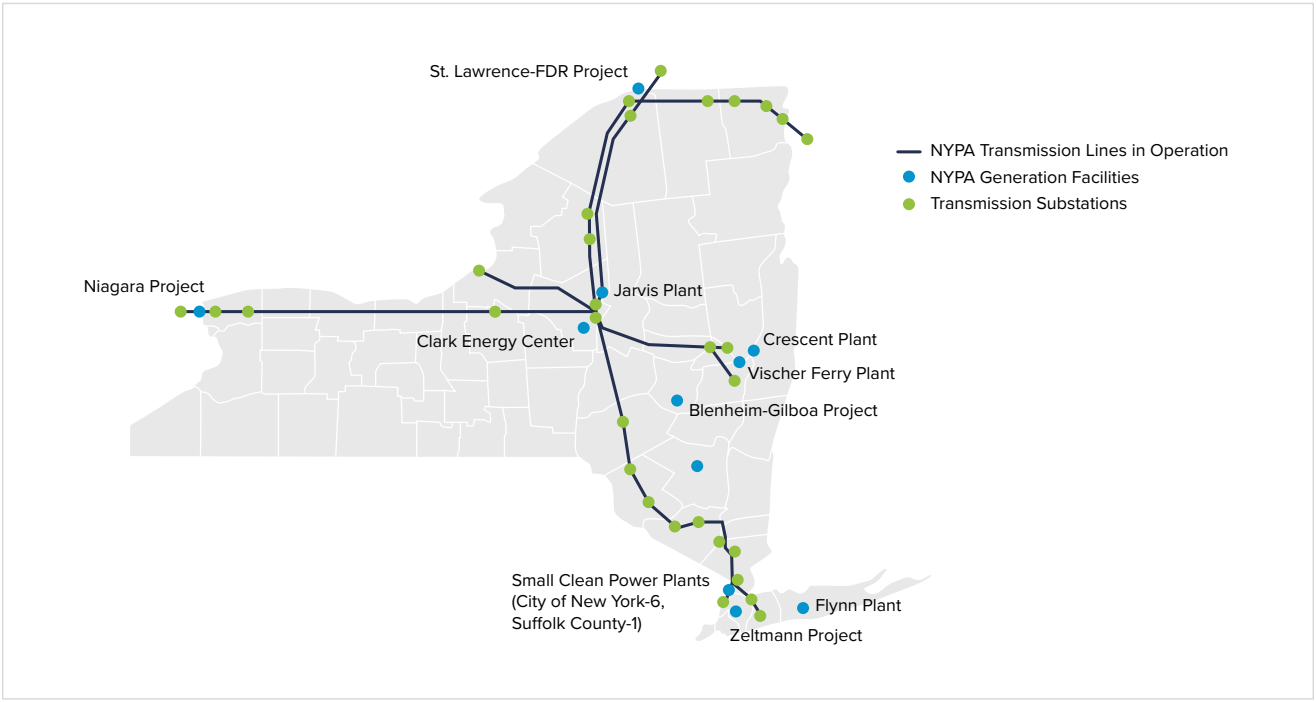


FIGURE 3: NYPA's Generation and Transmission Facilities

35 NYPA, "2023-2026: Approved 2023 Budget and 2023-2026 Financial Plan," 2023. https://www.nypa.gov/-/media/nypa/documents/document-library/financials/Approved2023Budget23-26FP.pdf

36 NYPA, "Meet NYPA," Accessed November 2, 2023. https://www.nypa.gov/about/the-new-york-power-authority

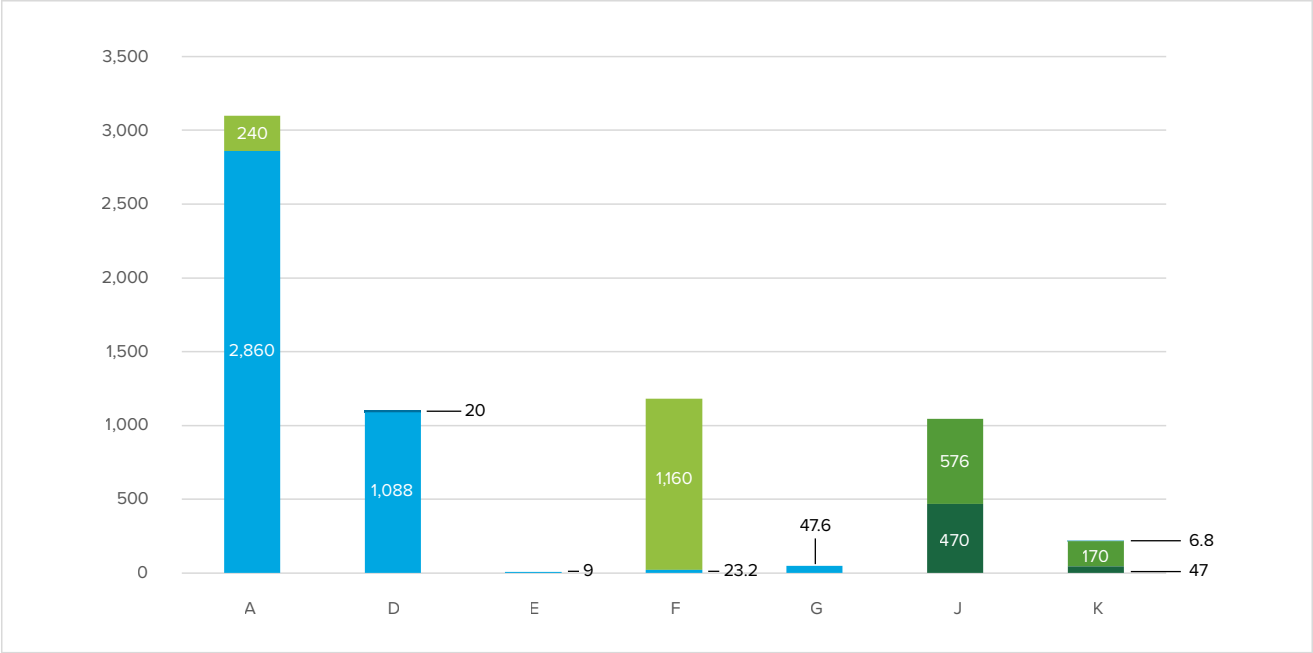
37 NYPA, "Economic Development: Who Are the Customers for NYPA's Generation, Transmission, and Services?" Accessed November 2, 2023. https://www.nypa.gov/power/customers/nypa-customers

38 NYPA, "2023-2026: Approved 2023 Budget and 2023-2026 Financial Plan," 2023. https://www.nypa.gov/-/media/nypa/documents/document-library/financials/Approved2023Budget23-26FP.pdf

39 NYPA, "NYPA Services," Accessed November 2, 2023. https://services.nypa.gov/

NYPA's Current Generation Mix

As of 2022, 80% of the energy generated by NYPA comes from three hydropower facilities, including two conventional hydroelectric facilities (the Niagara Power Project and St. Lawrence Power Project) and one pumped storage facility (the Blenheim-Gilboa Project). The remainder of NYPA's generation facilities are mainly natural gas units, including combustion turbine and combined cycle units. NYPA has one 20-MW energy storage project that began operating in August 2023,[40] but no solar or wind facilities. NYPA's geographical asset distribution is consistent with New York's overall generation mix, with hydropower projects providing capacity to Upstate New York while fossil fuel units supply the Downstate region.



GRAPH 13: 2022 NYPA Capacity - All Resource Types by Zone (MW)

The Build Public Renewables Act

The BPRA, passed in 2023, significantly expands NYPA's authority and mandate to include developing, financing, owning, and operating RE projects to support New York's 2030 RE target under the CLCPA. The BPRA also established the Renewable Energy Access and Community Help (REACH) program to use revenues from NYPA's RE projects to provide bill credits to low- and moderate-income customers in disadvantaged communities. Additionally, the BPRA directs NYPA to phase out its small natural gas power plants by 2030 and replace them with RE projects.

To guide project development, the BPRA requires NYPA to develop a yearly conferral report that assesses the state's progress towards its RE energy goals under the CLCPA. NYPA must then use the results of the conferral report to develop a strategic plan every two years to identify project priorities, taking into account projects in the NYISO interconnection queue; high-need transmission and distribution upgrades; the costs and benefits of potential NYPA projects, including on NYPA's fiscal condition; and other factors. The BPRA requires the strategic plan to prioritize projects that actively benefit disadvantaged communities, serve publicly owned facilities,

40 NYPA, "Governor Hochul Announces New York's First State-Owned Utility-Scale Energy Storage System Now Operating in North Country," 2023. https://www.nypa.gov/news/press-releases/2023/20230825-utility

and/or support the REACH program. Both the conferral report and the strategic plan must be developed in consultation with relevant state agencies and stakeholders, including scientific experts, NYISO, as well as labor, environmental justice, and community organizations.

The implementation of the BPRA requires that NYPA take on a much more proactive role in New York's RE deployment. For the first time, NYPA must develop solar and wind projects, building on its history of serving as the state's developer of hydropower. NYPA's existing roles in developing transmission facilities and supporting distributed energy resources will also likely expand under the agency's new mandate. Finally, by implementing the REACH program, NYPA can help lower utility bills for low- and moderate-income customers in disadvantaged communities, contributing to a just and equitable energy transition in New York.

Opportunities for Public Renewables

+ **Low-Cost Financing:** Public sector entities' ability to raise capital through the issuance of tax-exempt bonds and notes means that they tend to have lower financing costs than what is available to private developers.[41] A low cost of capital means that public developers can build projects at lower overall costs, not only making it easier for projects to pencil out but also allowing public developers to bid into NYISO markets at lower rates and bringing energy prices down for customers in the long term. Long-term bonds are especially beneficial for long-lived, capital-intensive infrastructure assets like energy generation facilities and transmission lines.
+ **Direct Pay for Federal RE Tax Credits:** Historically, lucrative federal tax credits for RE projects have only been fully available to private developers with sufficient tax liability and partially available through the tax credit equity market to developers without sufficient tax liability. The inability of tax-exempt public sector entities to leverage these tax credits to develop RE projects means that they were at a significant cost disadvantage compared to private developers. This cost disadvantage was a major reason why there has been little public RE deployment in the US. However, the Inflation Reduction Act, passed in 2022, includes "direct pay" provisions that allow tax-exempt public sector entities like NYPA to receive the full value of tax credits as direct transfers from the federal government.[42] The Clean Electricity Investment Tax Credit (ITC) provides 30% of the cost of a RE project if prevailing wages and registered apprenticeship requirements are met.[43] Alternatively, the Clean Electricity Production Tax Credit (PTC) provides 1.5 cents per kWh produced by a RE project if prevailing wages and registered apprenticeship requirements are met.[44] Both the ITC and PTC come with bonus credits if the project is sited in an "energy community" and/or meets domestic content requirements. Even though projects financed with tax-exempt debt – which is the case for projects financed through bonds – are only eligible for 85% of the credit value, public developers can still develop RE projects at considerably lower costs than what was possible before the IRA.
+ **Other Federal and State Investments:** Aside from direct pay for ITCs and PTCs, the federal government has also authorized significant investments in clean energy, climate justice, and workforce development in the last few years, including through the Bipartisan Infrastructure Law[45] and Inflation Reduction Act.[46]

41 Public Power New York Coalition, "Public Power & Climate Leadership: Feasibility of 100% Fossil-Free NYPA by 2030," Accessed November 2, 2023. http://publicpowerny.org/nypa-report

42 Center for Public Enterprise, "Direct pay: an uncapped promise of the Inflation Reduction Act," 2023. https://static1.squarespace.com/static/622cca56a2f5926affd807c6/t/64257e7047150f31bf02e7cf/1680178800773/Direct+Pay+101+-+Center+for+Public+Enterprise.pdf

43 Congressional Research Service, "Tax Provisions in the Inflation Reduction Act of 2022 (H.R. 5376)," 2022. https://crsreports.congress.gov/product/pdf/R/R47202

44 Ibid.

45 White House, "A Guidebook to the Bipartisan Infrastructure Law for State, Local, Tribal, and Territorial Governments, and Other Partners," 2022. https://www.whitehouse.gov/wp-content/uploads/2022/05/BUILDING-A-BETTER-AMERICA-V2.pdf

46 White House, "Building a Clean Energy Economy: A Guidebook to the Inflation Reduction Act's Investments in Clean Energy and Climate Action," 2023. https://www.whitehouse.gov/wp-content/uploads/2022/12/Inflation-Reduction-Act-Guidebook.pdf

Similarly, the state of New York has also enacted a suite of policies to support RE development.[47] These federal and state investments, which cover project deployment costs, financing, workforce development, and manufacturing and supply chains, will lower project costs for a wide range of clean technologies for both public and private sector developers. The federal Justice 40 Initiative, as mentioned above, will also complement New York's efforts to ensure that disadvantaged communities share in the benefits of a transition to clean and renewable energy.

+ **NYPA's Ability to Develop Transmission:** Unlike many private developers that solely focus on generation projects and are dependent on the available transmission on the grid, NYPA's track record developing and operating both generation and transmission puts the authority in a unique position to help meet the state's RE goals. NYPA's 2030 Strategic Plan already includes ambitious transmission buildout and positions NYPA as the leading transmission provider in the state.[48] NYPA can build dedicated transmission for its own projects as well as expand transmission across New York to help ease interconnection timelines and costs for private developers' projects in the NYISO queue. The latter can also help mitigate the resource deployment gap that NYPA needs to fill in order to meet the state's 2030 RE goal.

+ **Increased Load Flexibility Resulting from Electrification:** While the electrification of transportation and buildings raises challenges with increasing electricity demand, electrification also brings opportunities for the smart integration of EV charging and building loads to the grid. Electric vehicle chargers, heat pumps, and other electric equipment and appliances can be managed flexibly to help mitigate peak demand and reduce renewable curtailment.[49] These technologies will already be installed at customer sites (e.g., homes and businesses) and should be leveraged to support the grid and the state's RE goals. In 2020, the Federal Energy Regulatory Commission issued Order 2222 to enable DER aggregations to participate in wholesale markets, with NYISO planning to fully implement the necessary rules and system changes by the end of 2026.[50] This enhanced load flexibility can lower the amount of generation capacity needed to meet the 2030 RE goal.

Barriers for Public Renewables

+ **Maintaining Strong Credit Rating:** As the premier public developer in New York, NYPA's strong credit rating is integral for its ability to access low-cost financing and minimize project development costs. Deploying the amount of RE resources required to meet the BPRA mandate will require NYPA to significantly expand its capital investments – and the debt it holds. An aggressive expansion of NYPA's debt obligation, however, may lead to NYPA being downgraded by credit rating agencies. However, some analyses have suggested that NYPA has room to significantly grow resource deployment while still maintaining a strong financial profile.[51] There are also opportunities for NYPA to pursue off-balance sheet financing, such as through revenue bonds or the Department of Energy's Title 17 Clean Energy Financing program, to expand financing capability without impacting its entity-level credit rating.[52]

47 NYSERDA, "New York State's 10-Point Action Plan to Expand a Thriving Large-Scale Renewable Industry," 2023. https://www.nyserda.ny.gov/-/media/Project/Nyserda/Files/Programs/Offshore-Wind/10-point-plan.pdf

48 NYPA, "New York Power Authority's Vision 2030 Ten-Year Strategic Plan," 2020. https://www.nypa.gov/-/media/nypa/documents/document-library/news/NYPAs-Vision-2030-Trustees-Meeting-Presentation-12-9-20.pdf

49 RMI, "Clean Energy 101: Virtual Power Plants," 2023. https://rmi.org/clean-energy-101-virtual-power-plants/

50 FERC, "FERC Order No. 2222 Explainer: Facilitating Participation in Electricity Markets by Distributed Energy Resources," 2023. https://www.ferc.gov/ferc-order-no-2222-explainer-facilitating-participation-electricity-markets-distributed-energy#:~:text=ER21%2D2460.,pursuant%20to%20a%20prior%20initiative

51 Public Power New York Coalition, "Public Power & Climate Leadership: Feasibility of 100% Fossil-Free NYPA by 2030," Accessed November 3, 2023. http://publicpowerny.org/nypa-report ; Climate and Community Project, "A New Era of Public Power: A vision for New York Power Authority in pursuit of climate justice," 2021. https://www.climateandcommunity.org/_files/ugd/d6378b_7b38986941f84b2d8023849b9ae12be0.pdf

52 Public Power New York Coalition, "Public Power & Climate Leadership: Feasibility of 100% Fossil-Free NYPA by 2030," Accessed November 3, 2023. http://publicpowerny.org/nypa-report

+ **Organizational Capacity for Project Development:** The focus on private sector RE deployment in recent decades means that public sector entities may not be structured or staffed to take on a new role in RE project development. For example, the vast majority of NYPA's existing generation capacity consists of three large hydropower facilities, all of which were built between 1958 and 1971.[53] NYPA did not have a mandate to develop solar and wind projects before the BPRA, and public sector entities in general could not access federal RE tax credits and therefore had no reason to develop RE projects themselves rather than contracting with private developers who could access those tax credits. There will need to be investments in the public sector's organizational capacity and in-house RE project development staff in order to achieve the speed and scale of project development necessary to meet the state's RE goals.
+ **Lack of Land in Downstate Areas:** New York's downstate region includes the state's densest population centers with significant load. As such, there is limited availability of land nearby to site utility-scale RE projects to locally support this load. In order to displace the fossil fuel fleet currently serving downstate New York, the state will need to build sufficient transmission capacity to deliver upstate RE to serve downstate load as well as deploy demand-side resources, such as energy efficiency and DERs, to reduce net load. There are also opportunities for NYPA to repurpose the real estate and grid interconnections currently used for fossil fuel facilities to support energy storage and other RE projects.
+ **Utility Opposition to DER Deployment:** The majority of New York's distribution system, with the most notable exception of Long Island, is owned and operated by investor-owned utilities (IOUs), which have significant influence on DER deployment. For example, DERs will have to go through these IOUs' interconnection process, and DERs' distribution value will be compensated based on the IOUs' tariffs. However, the existing regulatory construct for distribution utilities means that IOUs tend to not be incentivized to support DER deployment. To mitigate this challenge, public developers can work with the PSC, including intervening in PSC proceedings, on programs and practices that IOUs can adopt or improve to support DERs, including those related to export tariffs, interconnection processes, and hosting capacity maps.

53 NYPA "NYPA Generating Facilities," 2023. https://www.nypa.gov/power/generation/all-generating-facilities

Conclusions and Key Takeaways

Overall, the data presented in this analysis underscores the significant challenges and opportunities that lie ahead in achieving New York's 2030 CLCPA goals. With an RE gap of between 15,000 and 42,000 GWh by 2030 depending on the scenario, it is evident that public agencies and other entities must play a pivotal role in bridging this disparity and ensuring timely compliance with these critical mandates.

The advantages of public sector renewable energy project development are clear. Public entities, not driven by profit imperatives, have the flexibility to pursue projects with lower revenue requirements, making them more likely to be financially viable even if they don't generate substantial profits. Moreover, public developers can prioritize community benefits, focusing on projects that bring positive impacts to disadvantaged communities and promoting a more equitable transition to clean energy.

The opportunities for public renewables are also promising. With low-cost financing through tax-exempt bonds, public developers can build projects more cost-effectively, ultimately leading to lower energy prices for customers. The recent passage of the IRA has enabled tax-exempt public entities to access federal tax credits, further leveling the playing field with private developers. Additionally, federal and state investments can provide significant support for clean energy, workforce development, and manufacturing, reducing project costs for both public and private sector developers. In this context, NYPA, with its ability to develop transmission infrastructure, holds a unique position to assist in meeting the state's renewable energy goals, reducing interconnection timelines and costs for private developers.

This being said, public renewables do face certain barriers that the state must work to dilute. Maintaining a strong credit rating is crucial for accessing low-cost financing, and the expansion of debt to deploy the necessary resources may pose challenges. Organizational capacity and expertise in renewable energy project development may need substantial growth within public entities. Land scarcity in downstate areas and the need for utility support for DER deployment are additional obstacles that public developers must navigate.

In conclusion, public sector involvement is vital for achieving New York's ambitious renewable energy targets. While challenges exist, the advantages and opportunities, coupled with federal and state support, make public renewables a crucial component of the state's transition to a cleaner and more sustainable energy future. Collaborative efforts between public and private entities, regulatory agencies, and communities will be essential to overcome these challenges and ensure the realization of New York's clean energy vision by 2030.

Appendix

Expected Load and Energy by Area, by 2030 (GWh)				
	Gross load (base demand)	Goss load (high demand)	RE production (high rate)	RE production (low rate)
A	16,079	17,999	18,190	17,299
B	11,986	13,676	499	274
C	20,548	25,448	3,084	2,052
D	6,826	9,456	9,382	9,159
E	8,502	9,512	5,219	3,833
F	13,703	14,413	1,461	1,238
G	10,466	10,916	224	202
H	3,152	3,022	0	0
I	6,056	5,696	0	0
J	49,813	49,733	17,952	9,198
K	22,408	23,488	12,970	6,601
Upstate	**63,941**	**76,091**	**36,374**	**32,616**
Downstate	**105,598**	**107,268**	**32,605**	**17,239**

This table only represents the load and RE production by zone and does not include the renewable energy from distributed energy resources and out-of-state resources. Gross demand is sourced from NYISO Gold Book projections, and it includes the impacts of energy efficiency but not from renewable DER. Please note that the RE production estimates for each zone are approximations based on the state-wide assessment; as such, these estimates may be less accurate at this level of granularity.

Your trusted partner to navigate the energy transformation.

Strategen advises and empowers leading organizations — utilities, government agencies, NGOs, and industry clients — to design innovative, practical solutions that capture the promise of a clean energy future, strengthen resilience and adaptability, and are equitable, collaborative, and impactful.

Headquartered in Northern California, Strategen's mission-driven experts leverage a global perspective and market-leading capabilities to deliver novel, high-impact, stakeholder-aligned approaches across the policy, regulatory, and market design spheres that sustainably accelerate the deployment of low-carbon energy systems.

Strategen's expertise spans corporate strategy, emerging technology acceleration, clean energy system planning, regulatory innovation, and multi-stakeholder engagements and convenings. We take an integrated, multidisciplinary approach, informed by our core values of intellectual honesty, humility, sustainability, diversity, and inclusion.

www.strategen.com