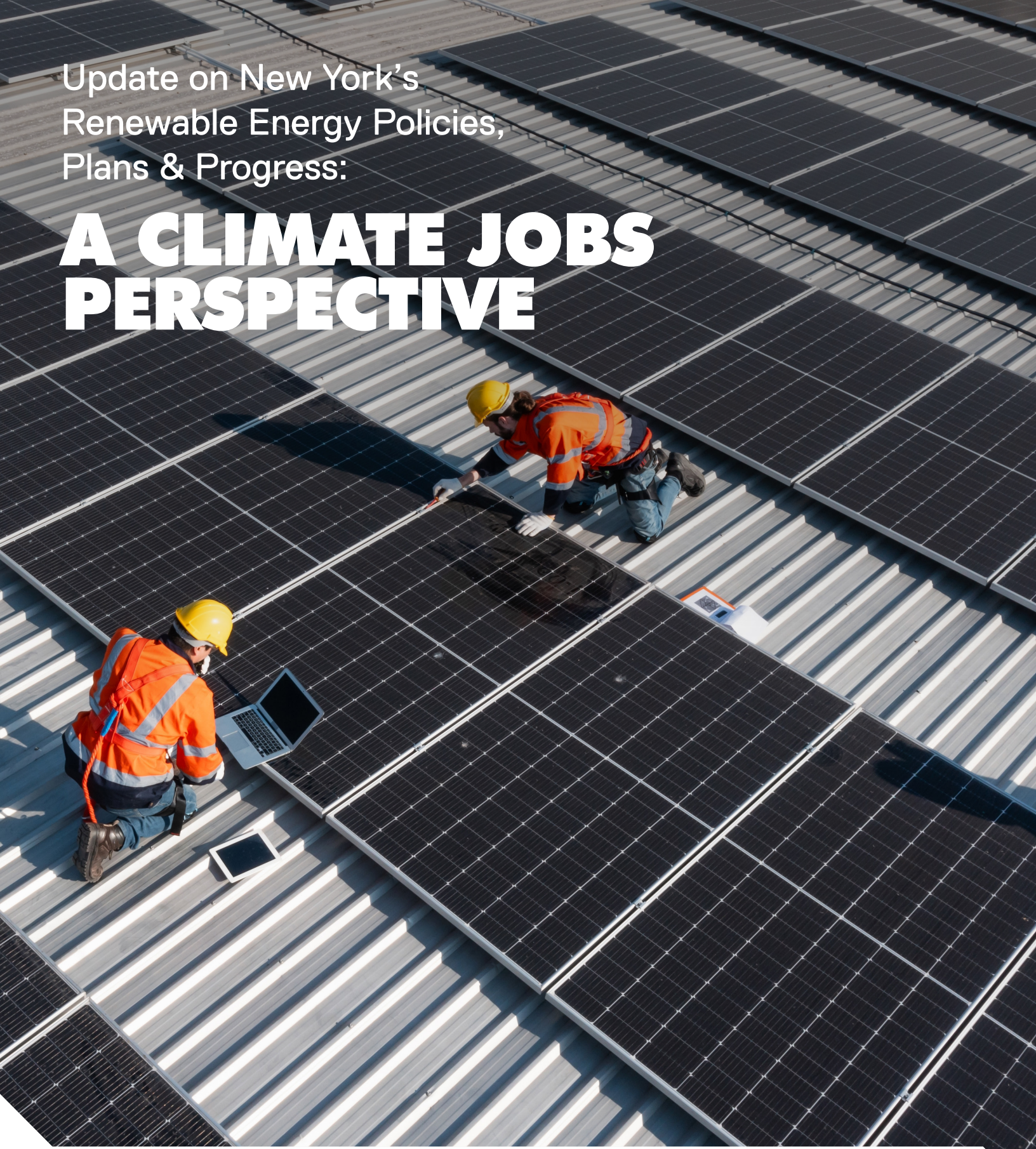
Update on New York's Renewable Energy Policies, Plans & Progress:

A CLIMATE JOBS PERSPECTIVE



ILR Climate Jobs Institute

Cornell University Founded A.D. 1865

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ILR Climate Jobs Institute

The Climate Jobs Institute (CJI) at Cornell University's ILR School is guiding the nation's transition to a strong, equitable, and resilient clean energy economy by pursuing three aims: to tackle the climate crisis; to create high-quality jobs; and to build a diverse, inclusive workforce.

Through cutting-edge policy studies, deep relationships with on-the-ground partners, and innovative training and education programs, CJI provides information that policymakers, the labor and environmental movements, industry leaders, and others need to navigate this historic transition to a zero-carbon economy.

Core Activities and Objectives

CJI delivers high-quality research, innovative policy solutions, and top-notch educational programming that connects key stakeholders to design and implement climate plans.

The CJI's main areas of work include:

Applied Research and Policy Development for Legislators and Labor, Environmental, and Industry Leaders. CJI crafts equity- and worker-oriented climate policies and analyses indicating how states can address climate change while maximizing high-quality job creation and economic development. The Institute's research and policy efforts result in reports, case studies, policy briefs, and visual tools and maps meant to guide the nation's transition to a clean, equitable economy.

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Technical Assistance. CJI provides rapid response data and policy analysis on the labor, employment, and economic impacts of climate and clean energy issues. The Institute's technical assistance work offers legislators, policymakers, and others real-time support. This work also generates legislative briefings, policy briefs, blog posts, op-eds, and other written materials targeting legislators, local government officials, and leaders in labor, environmental movements, and industry.

Training and Education. CJI organizes a variety of educational convenings that strengthen stakeholders' knowledge, confidence, and motivation to tackle climate change and to build a large, equitable clean energy economy with high-quality jobs. Programs include the Institute's annual Climate Jobs Summit; the design and delivery of member trainings; legislative briefings; educational delegations for legislators, labor leaders, and others; and an online Climate Jobs certificate.

Workforce Development. CJI provides a critical link between the future clean energy workforce we need and workforce development programs that meet these needs. The Institute also provides a pipeline from frontline Black, indigenous, and people of color communities to paid on-the-job training and high-quality careers.

Student Engagement. CJI enriches the ILR and Cornell student experience by engaging undergraduate and graduate students in important aspects of the Institute's core work through fellowships, research assistantships, hands-on clinical experiences, internships, labor-climate undergraduate and graduate courses, and more.

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KEY TAKEAWAYS

Climate Impacts in New York

- Temperatures in New York have warmed faster than the national average
- In 2024, New York experienced more climate-related billion dollar disasters than in any year since 1980
- In the past decade, the state experienced nearly as many billion dollar climate disasters (45 events from 2015-2024), than in the prior three decades combined (47 events from 1985-2014), primarily due to flooding, severe storms, winter storms, and drought

Progress Toward New York's Goals and Mandates

- In the next five years, New York must reduce statewide emissions by another 30% from 1990 levels to meet its 2030 mandate
- In just five years, New York will need to more than double its current level of clean energy procurement, and nearly triple the amount sourced two years ago
- In 2024, New York achieved its goal of 6 GW_{DC} distributed solar, and is projected to achieve its 10 GW_{DC} distributed solar goal by 2030
- In the long-term, distributed solar capacity is projected to plateau, causing the state to fall 4 GW_{DC} short of its distributed solar needs by 2050
- New York is not likely to achieve its 70% clean energy by 2030 target until at least 2033, as the state is not procuring enough renewable energy to keep up with rising electricity demand, which has been increasing at a rate faster than anticipated. Federal delays to offshore wind projects could set the state back at least another two years, meeting the energy standard by 2035, at the earliest.

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Clean Energy Buildout

- The current pace of renewable energy buildout and procurement in New York is falling short of its near-term goals amid rising electrification needs
- Market conditions have changed significantly since New York set its first climate targets, making the 2030 and 2040 targets harder to achieve
- The state has reduced the average wait time for siting and permitting by two-thirds under its new Office of Renewable Energy Siting and Electric Transmission
- The majority of solar installations and megawatts of distributed solar capacity in New York are downstate, especially in New York City and Long Island
- Developers are planning another 10 GW_{AC} of solar to come online starting in 2029, contributing at least 12% to the state's renewable electricity needs
- Most of the larger planned solar projects will be in Western and Central New York, while smaller utility-scale projects will be concentrated in the Capital region
- The top three developers associated with planned large-scale solar buildouts include EDF Renewables Inc., Hecate Energy, and Invenergy
- Planned smaller scale distributed solar projects make up nearly 3 GW_{AC} of future renewable power construction by the end of 2029
- New onshore wind projects could produce as much as 5 TWh per year by 2030, meeting at least 3% of the state's electricity needs

Outlook for Clean Energy Jobs

- It is estimated that between 2022 and 2023, clean energy industry jobs grew at 5%, compared to an overall 2% job growth rate in the state
- If New York achieves its 2030 clean energy standard, it could create more than 15,000 solar jobs alone, nearly doubling 2019 levels of solar employment
- There are no prevailing wage requirements for distributed solar projects, and the industry is almost universally nonunion with a minority of solar jobs providing benefits
- Clean energy jobs are underrepresented in disadvantaged communities, indicating a need to target energy development and jobs training for frontline workers
- Women and Black workers are underrepresented in the clean energy workforce, filling only 26% and 9% of clean energy jobs, respectively
- There is a need for more reporting of job and training outcomes to determine success

THE CLIMATE CRISIS IN NEW YORK: POLICY SOLUTIONS IN THEORY AND IN PRACTICE

This briefing examines New York's progress toward meeting its ambitious climate and clean energy goals and mandates, with a specific focus on the buildout of distributed and utility-scale solar projects statewide. After assessing the latest data on clean energy jobs in the state, this progress update reviews available evidence for job quality in these professions. Through a labor lens, it considers indicators of whether the jobs that have been created thus far are good quality jobs for New Yorkers who have historically been underrepresented in clean energy or the transition away from fossil fuels.

Image credit: MTA

Climate Impacts in New York

From hurricanes and superstorms, to record-breaking lake-effect snowfall and deadly heat waves, New Yorkers have experienced the devastating and costly impacts of climate change in every region of the state (Lamie et al., 2024). In 2024, New York experienced more climate-related billion dollar disasters than in any year since 1980, when data was first recorded (Smith, 2025). In fact, the state experienced nearly as many billion dollar climate disasters in the past decade, (45 events), than in the prior three decades combined (47 events from 1985-2014) (Smith, 2025). Temperatures in New York have warmed faster than the national average, and will continue to do so unless and until we drastically reduce greenhouse gas emissions and transition to a net-zero carbon economy (Goff et al., 2024). On our current trajectory, by the middle of the 21st century, New Yorkers will be facing increasing climate risks including: droughts, heavy rainfall, flooding, rising sea levels, deadly heat waves, and vector-borne illnesses (Lamie et al., 2024).

In 2024, New York experienced more climate-related billion dollar disasters than in any year since 1980, when data was first recorded

New York is Falling Short of its Emissions Mandate

New York has taken a two-pronged approach to reducing its reliance on burning fossil fuels, and thus reducing its greenhouse gas emissions to avoid the worst human, economic, and environmental impacts of climate change. Under New York's Climate Leadership and Community Protection Act ("Climate Act"), the state committed to drastically reducing greenhouse gas emissions in

By 2030, New York's emissions must drop 40% below 1990 levels, and by 2050, at least 85% below 1990 levels, with a goal of 100% reduction

New York's Clean Energy Standard requires utilities to source at least 70% of electricity from renewable sources by 2030, and 100% from zero carbon sources by 2040

the coming decades (Climate Act § 14, 2019). By 2030, New York's emissions must drop 40% below 1990 levels, and by 2050, at least 85% below 1990 levels, with a goal of 100% reduction (Climate Act § 14, 2019). This aligns with what science demands to avoid the most severe climate-related impacts (United Nations, n.d.). Further, New York's Clean Energy Standard requires utilities to source at least 70% of electricity from renewable sources by 2030, and 100% from zero carbon sources by 2040 (N.Y. Pub. Serv. Law § 66-P).[1] This is on par with at least 23 other states with zero carbon goals, including nine others with zero carbon targets by 2040 (Clean Energy States Alliance, 2024).

Image credit: Windtech at English Wikipedia. Licensed under CC BY 2.0

In the latest Statewide Greenhouse Gas Emissions report, New York reduced its total gross emissions to 9.4% below 1990 levels in 2022 (NY Department of Environmental Conservation [NY DEC], 2024). However, New York must reduce statewide emissions by another 30% from 1990 levels in the next five years to meet its 2030 mandate (Climate Act § 14, 2019). When looking at the source of the state's emissions, more than three-quarters (76%) came from energy used in the state for power generation, transportation, and heating systems (NY DEC, 2024).[2] Much of this energy was derived from fossil fuels, whether burned in-state or imported from fossil fuel plants outside New York (NY DEC, 2024). Efforts to decarbonize buildings and transportation will help reduce the overall demand for energy. However, increasing electrification of buildings and transportation will increase the state's demand for electricity. Thus, without expanding renewable generation and instead continuing to rely on fossil fuel sources for much of the state's electricity, New York's emissions may *increase* over the coming years. To address this challenge, the state must continue to support and build additional renewable energy sources to aid in reaching its emissions mandate.

New York must reduce statewide emissions by another 30% from 1990 levels in the next five years to meet its 2030 mandate

New York Must Build More Renewable Energy to Meet its Targets

New York is not likely to achieve its overall 2030 clean energy standard on time

To achieve zero emissions, the state set a target of procuring 9 GW of offshore wind, 6 GW of distributed solar (aka "rooftop" or ground-mounted solar

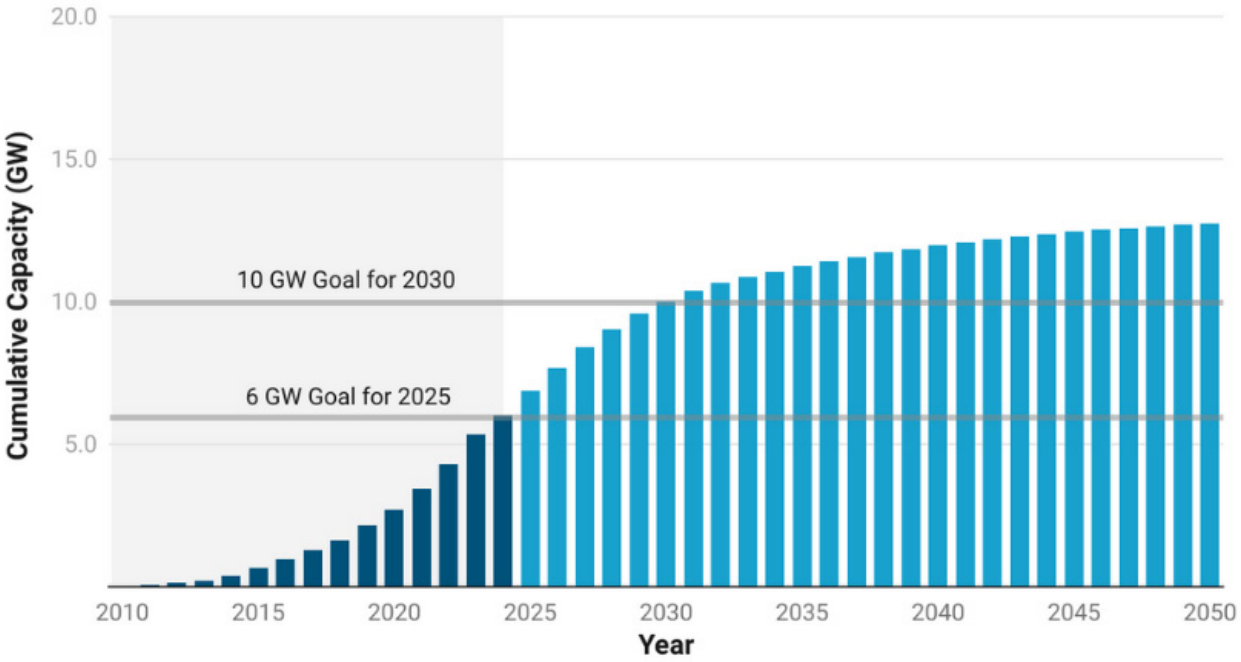
1 Note that "zero carbon" is not the same as "renewable" and includes nuclear power generation, which does not create greenhouse gas emissions, but which is not derived from renewable sources.

2 State law defines "emissions" to include the total emissions produced within the state ***and*** the emissions from out of state that are associated with energy generation and fossil fuels imported into New York. NY Env. Conserv. Law § 75-0101(13).

projects under 1 MW) by 2025, and 10 GW of distributed solar by 2030 (Climate Act, 2019; Case 19-E-0735; Case 21-E-0629 *(Proceeding on Motion of New York State Energy Research and Development Authority Requesting Additional NY-Sun Program Funding and Extension of Program Through 2025), 2022)*. In 2024, New York achieved its goal of 6 GW_{DC} distributed solar, and is projected to achieve its 10 GW_{DC} distributed solar goal by 2030 (Cropley, 2024; New York Independent System Operator [NYISO], 2024; Solar Energy Industries Association [SEIA], 2024).[3] However, it is possible that New York is not on track towards building enough solar capacity in the long term - as the New York Scoping Plan's assessment shows that the state may need more than 60 GW of aggregate solar capacity by 2050, (NY Climate Action Council, 2022). Based on the present mix of planned utility and distributed scale solar capacity, it is projected that the state will need at least 17 GW_{DC} of distributed solar by 2050 (SEIA, 2024; S&P Global Market Intelligence, 2024).[4] Present trends indicate that the state will fall short of this recommendation by 25% , plateauing at about 13 GW_{DC} by 2050 (NYISO, 2024). Additionally, New York is not likely to achieve its overall 2030 clean energy standard on time (New York State Energy Research and Development Authority [NYSERDA], 2024d). Because distributed solar makes up only a small fraction of the state's electricity needs (4.5% in 2024), there is still a substantial gap to fill to achieve 70% renewable electricity (NYISO, 2024, p. 17; NYSERDA, 2024e).[5]

Figure 1: New York State Distributed Solar Capacity

Historical capacity (dark blue) and projected capacity (light blue) in GW_{DC}.[6]



Distributed solar trends based on Load & Capacity Data Reports by the New York Independent System Operator (NYISO, 2020, 2024). Present capacity was updated using the Statewide Distributed Solar Projects data set for November (NYSERDA, 2024).

Chart: Bethany Figueroa, Cornell ILR Climate Jobs Institute • Source: (NYISO, 2020, 2024; NYSERDA, 2024) • Created with Datawrapper

The current pace of renewable energy buildout and procurement in New York is falling short of its near-term goals amid

3 To align with the 2030 standard, distributed solar is listed in GWDC (gigawatts direct-current). This represents solar capacity prior to grid connection and electric current conversion. All utility-scale solar capacity is referred to in GWAC (gigawatts alternating current) to align with labor standards for renewable energy projects. Unless otherwise specified, assume the above units for these two types of solar buildouts.

4 Based on CJI's analysis of planned renewable capacity in this report, about 3 GW_{AC} are expected to be built by the end of 2029, contributing 23% to the total amount of planned solar capacity. Assuming the same percentage is applicable to the total 62 GW_{AC} of solar needed by 2050, then the New York will need 14 GW_{AC} of distributed solar, equivalent to 17 GW_{DC} assuming an inverter loading ratio of 1.22 (NY Climate Action Council, 2022; NREL, 2024a, 2024b).

5 New York's capacity of distributed solar is expected to produce 6.8 TWh annually, which is only 4.5% of the state's energy demand forecasted for 2024.

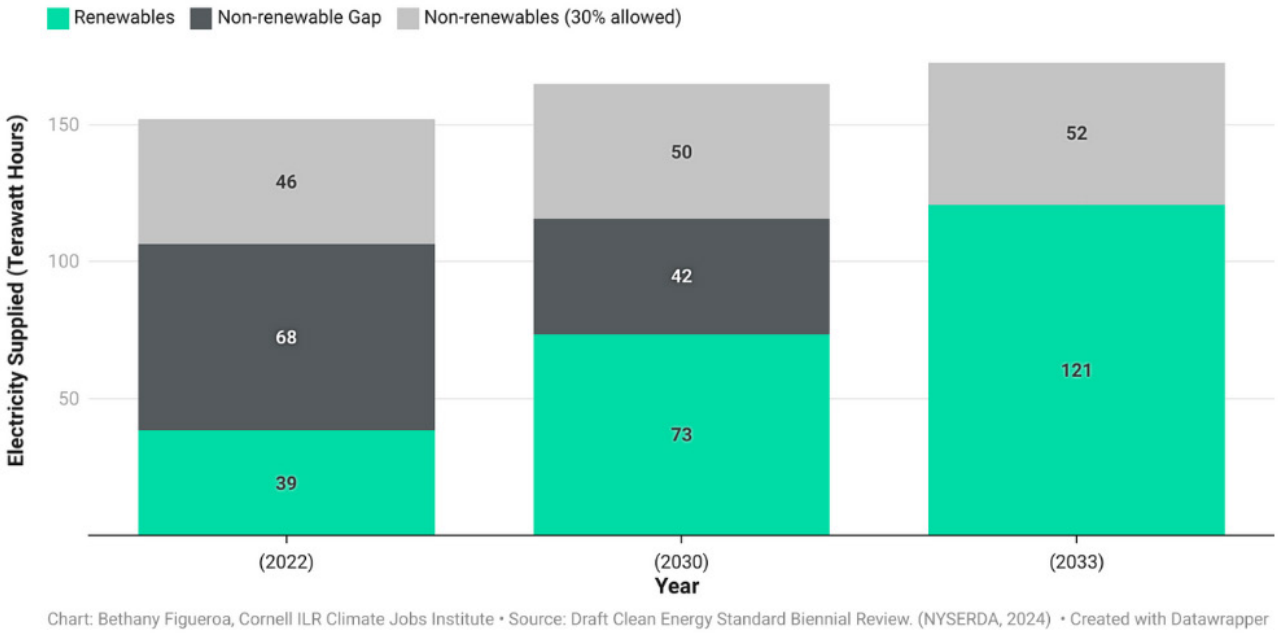
6 Historical data from 2010 to 2014 was sourced from the 2020 Load & Capacity Data Report (NYISO, 2020).

The current pace of renewable energy buildout and procurement in New York is falling short of its near-term goals amid rising electrification needs.

rising electrification needs. In 2022, only 25.1% of New York's electricity came from renewable sources (Case 15-E-0302, 2024). This is just 35% of the state's 2030 goal, which is a mere 5 years away (Climate Act, 2019; Case 15-E-0302, 2020). By 2030, New York is projected to fall 42 TWh short of its clean energy needs, only sourcing 44% of its electricity from renewables (Case 15-E-0302, 2024). Even under a modest scenario without high electrification in other sectors, the state will still not have enough renewable power to meet its goals until 2033.

Figure 2: Timeline Towards Achieving New York's 2030 Clean Energy Standard

New York's electricity by generation source, in terawatt hours (TWh), plotted against the base year (2022), the goal year (2030), and the earliest year that the goal could be achieved (2033).



If New York's electricity demand increases due to rising electrification, the state could achieve its clean energy standard as late as 2035, assuming the state accomplishes its 9 GW offshore goal (NYSERDA, 2024d). This will be difficult to ensure under the current federal administration.

Upon taking office, President Trump announced a pause on offshore wind projects in federal waters, which includes all future leases and permitting for planned projects in New York state (Daily Comp. Pres. Doc. 202500144, 2025). This pause will likely prevent the state from reaching its 9GW goal for offshore wind by 2035 (Rivard & French, 2025). At present, only two New York offshore wind projects are under construction - Empire Wind 1 and Sunrise Wind - which are expected to deliver 1.7 GW of power by 2027 (Case 15-E-0302, 2024). These projects would generate 7.5 TWh of electricity annually. If all offshore wind projects are delayed significantly due to federal regulations, New York could achieve as little as 38% renewables by 2030, as shown in Table 1 below. Depending on the severity of offshore wind construction delays, New York would achieve its 70% renewable electricity standard no earlier than 2035 based on the expected generation from onshore renewable energy projects and the state's electricity demand for that year (NYISO, 2024; NYSERDA, 2024d).[7]

7 Renewable energy projected for 2035 was subtracted by generation attributed to the 9 GW goal (NYSERDA, 2024d). CJI found that the state would only have 71% renewable energy by 2035 if the state can only procure onshore projects based on a moderate energy demand scenario (NYISO, 2024). This represents the earliest achievement date for a 70% renewable grid without offshore wind, as higher energy demands not met by additional renewables could result in a lower renewable energy percentage.

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Table 1: Impact of Offshore Wind Delays on New York's 2030 Clean Energy Standard

New York's renewable energy percent for each energy demand and offshore wind scenario, estimated from NYSERDA electricity projections (Case 15-E-0302, 2024).

2030 Offshore Wind Scenario	Percent of State Energy Demand Sourced from Renewables	
	Moderate Demand	High Demand
1.7 GW Planned Projects Online	44%	42%
Planned Projects Canceled	40%	38%

In 2023, the state authorized the New York Power Authority ("NYPA") to build renewable energy projects and fill in the gap between planned private projects and the state's forecasted need (FY 2024 Enacted State Budget, 2023). NYPA's 2025 Strategic Plan identified 37 projects that could provide 3 GW of clean power and energy storage to New Yorkers (NY Power Authority, 2025). That number would still leave the state falling 38 TWh short of its 2030 standard - the equivalent of 6.5 million homes' electricity needs unfulfilled annually (NREL, 2024d; NYSERDA, 2024d; SEIA, 2024; U.S. EIA, 2024a).[8] This could be an opportunity for the state to make up the difference with an expanded public renewables portfolio.

The state is also falling short of its original 3 GW energy storage goal, presently operating under 1.5 GW (U.S. EIA, 2024b). NYPA is set to deploy less than 0.5 GW of battery capacity by the middle of 2028, contributing only 15% to the target under the Climate Act (Climate Act, 2019; NY Power Authority, 2025). Due to the increase in storage deployments needed by NY to fulfill its clean energy standard, the NY Public Service Commission ("PSC") established an order requiring NYSERDA to open new solicitations for energy storage projects to support an updated goal of 6 GW by 2030 (NYSERDA, 2024a). This order included the authorization of additional funds for NYSERDA to procure 200 MW residential scale, 1.5 GW commercial scale, and 3 GW utility-scale storage projects needed for the updated goal, and required NYSERDA to issue the first bulk storage RFP by June 30, 2025. More must be done to advance energy storage deployment, especially to replace peaker plants in frontline communities.

8 CJI estimated that the NYPA supported projects would contribute about 4 TWh of renewable energy generation, assuming a capacity factor of 16.4% for solar projects (U.S. Energy Information Agency [EIA], 2024a). Based on the number of homes electrically powered from a utility scale solar project, it was estimated that 38 TWh of renewables could support 6.5 million homes (SEIA, 2024; NREL, 2024d).

Why is New York Falling Short of Its Clean Energy Targets?

In just five and a half years, New York will need to more than double its current level of clean energy procurement, and nearly triple the amount sourced two years ago.

To bridge this gap between demand and supply, and to meet the 2030 target, the state will need to rapidly scale renewable energy generation projects and procurement. In just four and a half years, New York will need to more than double its current level of clean energy procurement, and nearly triple the amount sourced two years ago. The PSC found that, even with quadrupling the amount of energy procured in its Tier 1 solicitations, the state will need another three years to meet its "extraordinarily ambitious" 2030 clean energy standard (Case 15-E-0302, 2024). Distributed generation, alone, must continue to grow at a rate of 1 GW per year past 2030 for the state to fulfill the clean energy standard no later than 2033 (Case 15-E-0302, 2024). Moreover, New York will need to seek additional renewable and zero-carbon procurements to bridge the gap from goals to reality, especially as the demand for electricity increases over the coming decades with building electrification, the increased use of electric vehicles, and data center growth.

The average wait time for state permits under the ORES process is now 1.2 years, nearly one-third of what it used to be

Market conditions have changed significantly since New York set its first climate targets, making the 2030 and 2040 targets even harder to attain. First, the post-pandemic inflation and supply chain disruptions and constraints have made projects, especially large offshore wind projects, much more expensive than originally planned (Case 15-E-0302, 2024). The fixed-rate funding model for the initial solicitations left companies facing future losses and contributed to a 12% cancellation rate for renewable energy projects (Office of the New York State Comptroller ["Comptroller"], 2024). Additionally, industry growth and electrification efforts for sectoral decarbonization have been more successful than originally anticipated, causing a higher demand for electricity – from data centers to electric vehicles and heat pumps – in recent years (DPS Case 15-E-0302, July 2024). According to a July 2024 audit of the PSC's and NYSERDA's progress toward meeting its climate goals, the Comptroller found that the PSC failed to account for factors that increased electricity demand when making its initial projections (Comptroller, 2024). Because it did not adequately calculate the impact of the transition to electric vehicles and electric heat pumps, as well as an accurate cancellation rate for planned renewable energy projects in the state, the 2030 goals will be nearly impossible to attain (Comptroller, 2024).

Additionally, siting and permitting have historically caused significant delays in clean energy projects. For example, projects used to wait an average of 3.5 years for state permits (DPS Case 15-E-0302, July 2024). In 2021, New York launched the Office of Renewable Energy Siting and Electric Transmission (ORES) to expedite and simplify the siting and permitting process for large (at least 25 MW) clean energy projects, requiring permitting within one year for most projects, or six months if on underutilized land (S7508B, 2020). Through the ORES process, the Department of Public Service also reviews permits for large transmission facilities to streamline both local and state requirements

(Chapter 58 of the Laws of 2024, part O). The average wait time for state permits under the ORES process is now 1.2 years, nearly one-third of what it used to be (DPS Case 15-E-0302, 2024). This bodes well for expediting future renewable energy projects in the state but has contributed to the slower progress thus far.

Steps to Achieving 70% Renewable Energy by 2030 and 100% by 2040

The PSC made several recommendations in its biennial report to help the state achieve its 70% by 2030 goal. First, it recommended that the state extend NYSERDA's Tier 1 procurement authority from 2026 to at least 2029 to get closer to the 70% goal (Case 15-E-0302, July 2024). It also recommended allowing NYSERDA to procure more than the allotted 9 GW of offshore wind as necessary, especially given the high attrition rate for planned projects (DPS Case 15-E-0302, July 2024). Additionally, NYSERDA may need to authorize more than 10 GW of distributed generation (Case 15-E-0302, July 2024). Numerous organizations and law-makers have recommended that NYPA take a greater leadership role in achieving the state's renewable energy standards, such as committing to build 15 GW by 2030, a fivefold increase in the amount currently promised by the authority (Dunlea, 2024; NY Power Authority, 2025). NYPA also has the responsibility to invest in and maintain more than 1,550 miles of high-voltage transmission lines to support the interconnection and distribution of renewable electricity (NY Power Authority, 2025).

Image credit: Anatoliy_Gleb/Adobe Stock

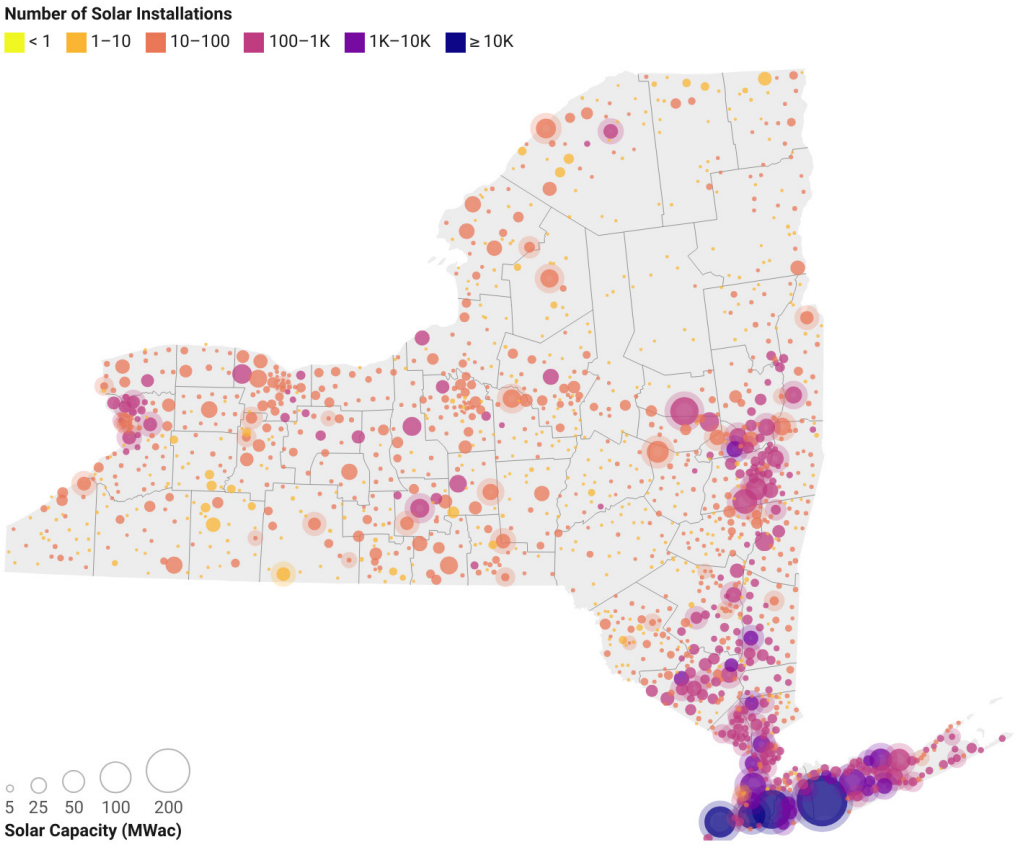
PATHWAYS TO ACHIEVING NEW YORK'S RENEWABLE ENERGY TARGETS

Existing Solar Installations

The majority of solar installations in New York are downstate, especially in New York City and Long Island, but are smaller-scale due to space limitations (NYSERDA, 2024e; S&P Global Market Intelligence, 2024). In these urban areas, such as NYC, distributed solar projects are more prevalent than utility scale, with 465 MW from over 58,000 installations, primarily on rooftops. By contrast, there are fewer installations in Upstate and Western New York, but they are larger with significant aggregate power (e.g. 100 MW of capacity), likely due to greater land availability in these areas.

Figure 3: New York State Solar Installations

Solar installations and capacity aggregated by groups of NY zip codes, from 2000 to the end of June 2024. This map includes 230,000 installations with a total capacity of 5 GW_{AC}.



Data from NYSERDA's Inventory of Statewide Distributed Solar Projects and utility scale projects over 5MW from S&P CIQ Pro.

Map: Bethany Figueroa, Cornell ILR Climate Jobs Institute • Source: (NYSERDA, 2024; S&P Global Market Intelligence, 2024) • Created with Datawrapper

Image credit: 100isNow. Licensed under CC BY 2.0

Planned Renewable Energy Projects and Impact on Clean Energy Goals

An analysis of over two hundred planned large-scale solar projects with capacities of 1 MW and higher revealed that nearly 10 GW_{AC} of solar are slated to come online by 2029 at the earliest (NREL, 2024d; S&P Global Market Intelligence, 2024).[9] These projects could generate 15 TWh annually, contributing at least 12% to the state's renewable electricity needs under the 2030 clean energy standard (NYISO, 2024; NYSERDA, 2024d; U.S. EIA, 2024a).[10]

The majority of large-scale solar projects will be concentrated in western and central regions in New York, such as the counties surrounding Buffalo (e.g. Genesee) and counties east of Syracuse (e.g. Montgomery). Higher concentrations of smaller utility-scale solar projects are also expected in the central area of the capital region. Based on available records, the top three developers associated with these planned large-scale solar buildouts include EDF Renewables Inc., Hecate Energy LLC, and Invenergy LLC (S&P Global Market Intelligence, 2024). These companies alone are expected to contribute to more than 2.3 GW of planned solar. One of the largest solar projects in the NY solar pipeline (500 MW Cider Solar Farm In Genesee County) will be developed by Hecate Energy and receive nearly $1 billion in private financial investment (Greenbacker Renewable Energy Company LLC, 2025).

Smaller scale distributed solar projects make up nearly 3 GW_{AC} of future renewable power construction by the end of 2029 (NREL, 2024b, 2024a; SEIA, 2024).[11] This is based on an analysis of market projections for residential and

Nearly 10 GW_{AC} of solar are slated to come online by 2029 at the earliest

These projects could generate 15 TWh annually, contributing at least 12% to the state's renewable electricity needs under the 2030 clean energy standard

The majority of large-scale solar projects will be concentrated in western and central regions in New York,

Combined, these smaller solar projects will provide more than 11% of the state's electricity generation in 2030

Onshore wind projects could produce as much as 5 TWh per year by 2030, at least 3% of electricity needs in the state

9 CJI aggregated data retrieved from S&P Capital IQ Pro Office Screener on July 15th, which included a total of 228 planned solar units located at 216 unique project sites. About 0.26 GW_{DC} of solar reported from these projects had to be converted to 0.2 GW_{AC} for the aggregation, assuming a DC:AC ratio of 1.3 based on utility-scale solar benchmarks by the National Renewable Energy Laboratory ("NREL").

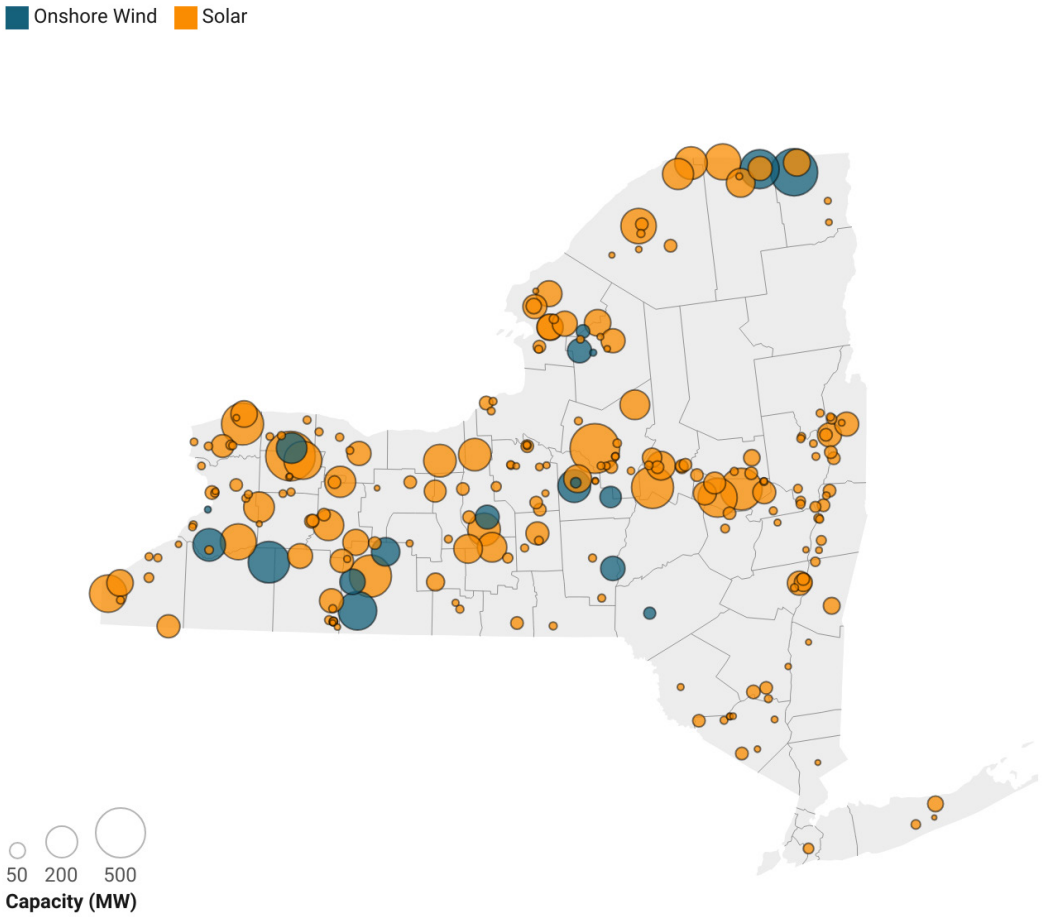
10 Estimated by CJI after reviewing NYISO and NYSERDA high-energy demand scenarios and assuming historical capacity factor data for electricity generated by solar.

11 Estimated by CJI after reviewing distributed solar installed in 2024 and market forecasts for New York, assuming a ratio of 1.22 for converting 4 GW_{DC} to 3.3 GW_{AC} based on benchmarks for commercial & residential scale solar developed by NREL (2024).

commercial installations of solar in NY, which is an aggregate estimate without location-level data (SEIA, 2024). Combined, these smaller solar projects will provide more than 11% of the state's electricity generation in 2030 (NREL, 2024c).[12] In comparison, NY is expected to see around 2.6 GW of new onshore wind capacity in operation based on records from July 2024 (S&P Global Market Intelligence, 2024).[13] These onshore wind projects could produce as much as 5 TWh per year by 2030, at least 3% of electricity needs in the state.[14] This planned capacity is distributed across eighteen project sites, with the largest projects concentrated in western and northern New York state in counties such as Steuben and Clinton.

Figure 4: Large-Scale Solar and Wind Projects Planned for New York State

Planned onshore wind and solar projects, scaled by rated capacity (MW). Nearly 10% of solar capacity and 33% of wind capacity are under construction or in an advanced development stage.



Retrieved on July 15th 2024 from S&P Capital IQ Pro Office Screener: Industry & Asset Data Screener. Any capacity data reported in MWdc was converted into MWac assuming an inverter loading ratio of 1.34 (NREL, 2024).

Map: Bethany Figueroa, Cornell ILR Climate Jobs Institute • Source: (S&P Global Market Intelligence, 2024). • Created with Datawrapper

12 Estimated by CJI after aggregating capacities for planned large-scale and small-scale solar projects and converting to 20 TWh of electricity generation (U.S. EIA, 2024a). This figure was divided by New York's total in-state generation for 2030 under the highest energy demand scenario in the Standard Scenarios model, which assumes high electrification and hydrogen production in the long term (NREL, 2024c).

13 Retrieved on July 15th, 2024. This capacity may not be reflective of the current onshore wind pipeline at the time of reading this statistic due to new project announcements and/or changes in project schedules.

14 Capacity was converted to electricity generation using a capacity factor of 21.5% (U.S. EIA, 2024a). This figure was divided by New York's total in-state generation for 2030 from the highest energy demand scenario in the Standard Scenarios model (NREL, 2024c).

OUTLOOK FOR CLEAN ENERGY JOBS

NYSERDA estimates that there are already 178,000 clean energy workers in the state and that the number has increased by 22% since 2016

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Transitioning to a clean energy economy could create 211,000 new jobs in New York by 2030 (NY Climate Action Council, 2021; NY Climate Action Council, 2022). NYSERDA estimates that there are already 178,000 clean energy workers in the state and that the number has increased by 22% since 2016 (NYSERDA, 2024b, p. 9).[15] However, estimating the actual number of workers in the clean energy and solar industries is incredibly difficult due to significant variation in publicly reported data at both the state and national levels (Hoek-Spaans & Morley, 2024).

If NY achieves 20 GW of solar capacity by 2030 for the clean energy standard, more than 15,000 solar jobs would be created - nearly doubling 2019 levels of employment and adding one job per megawatt built

The amount of time workers spent on clean energy-related tasks also increased by 6% from 2022 to 2023, growing by 47% since 2016 (NYSERDA, 2024b, p. 14). The building decarbonization, clean transportation and energy efficiency, and renewable energy generation sectors saw the largest job growth; installation work, which crosses multiple sectors, accounted for nearly two-thirds of the new clean energy jobs in NY in 2023 and comprised 47% of all clean energy work in the state (NYSERDA, 2024b, p. 17). Between 2022 and 2023, clean energy industry jobs grew at nearly the fastest rate: 5%, compared to the overall 2% jobs growth rate in the state (NYSERDA, 2024c, p. 10). Based on studies conducted by the Just Transition Working Group, if NY achieves 20

15 Note that CJI believes this number does not paint an actual picture of the industry because of how clean energy workers are classified: this figure includes any worker who spends a fraction of time on renewable energy related work, such as installing energy efficient appliances in a home, and not those whose full-time jobs are in the clean energy industry.

Although women make up 48% of NY's workforce, they fill only 26% of clean energy positions; Black workers are similarly underrepresented, filling just 9% of clean energy jobs, but comprising 14% of the state workforce

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In 2023, 99% of employers in clean energy and 93% of renewable electric power generation employers reported that it was "somewhat" to "very difficult" to hire talent – a 20% increase from just three years earlier

By making these positions more attractive to in-state residents, especially workers who have so far been underrepresented in the clean energy field, New York can flip the narrative of a worker shortage on its head and instead begin to address what our research shows is actually a good jobs shortage.

GW of solar capacity by 2030 for the clean energy standard, more than 15,000 solar jobs would be created - nearly doubling 2019 levels of employment and adding one job per megawatt built (NY Climate Action Council, 2021).

The challenge for New York is assuring that these new clean energy jobs will be good, family-sustaining careers and that they will uplift the frontline communities that are most impacted by climate change. Unfortunately, recent data indicates that there is a lower proportion of clean energy workers in disadvantaged communities (DACs) than in other counties in the state, indicating that in many cases, the jobs may not be going to the folks who need them most (NYSERDA, 2023). More than 11,000 clean energy jobs (6.5%) are filled by workers from out of state, while many others are going to residents outside of DACs (NYSERDA, 2023). Further, although women make up 48% of NY's workforce, they fill only 26% of clean energy positions; Black workers are similarly underrepresented, filling just 9% of clean energy jobs, but comprising 14% of the state workforce (NYSERDA, 2024b).

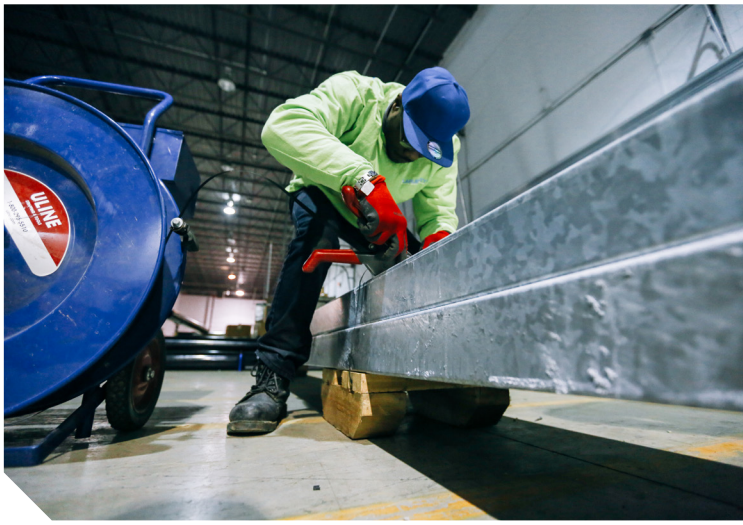
While job growth is essential for a healthy economy, employers reported significant challenges with filling positions in renewable energy work. In 2023, 99% of employers in clean energy and 93% of renewable electric power generation employers reported that it was "somewhat" to "very difficult" to hire talent – a 20% increase from just three years earlier (NYSERDA, 2024b). This is a nationwide problem; for example, the National Renewable Energy Laboratory ("NREL") estimates that there will be only about half (52%) of the number of offshore wind workers to fill the open jobs by 2030 (McDowell et al., 2024). As the PSC explained, to staff up, NY employers will need to make these positions attractive to workers (Case 15-E-0302, 2024). There is clear inequity about which workers can access the new clean energy jobs. By making these positions more attractive to in-state residents, especially workers who have so far been underrepresented in the clean energy field, New York can flip the narrative of a worker shortage on its head and instead begin to address

what our research shows is actually a good jobs shortage. Requiring developers to provide detailed reporting about job creation and training opportunities would facilitate more accurate estimates about the economic impacts of these projects and the communities they engage (Hoek-Spaans & Morley, 2024).

Job Quality Concerns in the Solar and Renewable Energy Economy

CJI's groundbreaking study of NY solar workers found numerous indicators of precarity and poor job quality in the solar industry (Hoek-Spaans & Morley, 2024). First, the solar workforce is largely transient, and a majority (65%) of those surveyed relocated to NY for a job site, while many had since moved on to other states (Hoek-Spaans & Morley, 2024). Thus, solar projects may not be creating long-term career opportunities for the communities in which they are sited. The study also found that a majority (58%) of NY solar workers surveyed did not receive any benefits, nearly one-quarter (24%) experienced wage theft, one-third (34%) were paid piece rate, and more than half (53%) reported that stimulant use is a problem on their worksites (Hoek-Spaans & Morley, 2024). There were notable racial disparities as well: Black and Hispanic workers reported earning just over half the salary that white workers earned, were less likely to receive benefits, and their positions were more likely to be seasonal than annual (Hoek-Spaans & Morley, 2024).

Solar projects may not be creating long-term career opportunities for the communities in which they are sited.



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Unions are the Key to Recruiting and Training a Skilled Clean Energy Workforce

Much of the poor job quality and precarious nature of solar work can be explained by the relatively low union density in the industry (Pontecorvo, 2024; Vasudevan, 2023). Nationally, 12.4% of clean energy workers are unionized (Office of Energy Jobs, 2024), In New York, only one in eight (12%) clean energy workers belongs to a union, as compared to one in five (19%) utility workers (NYSERDA, 2024b). Decades of research have demonstrated that union density leads to significant economic benefits, such as direct wages (Card, Lemieux & Riddell, 2004; Parolin & VanHeuvelen, 2023), spillover wage effects for those in similar occupations and industries (Denice & Rosenfeld, 2018; Western & Rosenfeld, 2011), and reduced poverty rates for both union and non-union households (Brady et al., 2013; VanHeuvelen & Brady, 2022). Unions were also found to have an even larger impact on non-wage benefits, including health insurance, life insurance, paid leave, pension and savings plans, and nonproduction bonuses (Kristal et al., 2020). Conversely, the decline in union density from 1982 to 2015 was also found to be partly responsible for the increase in inequality of non-wage benefits (Kristal et al., 2020). Evidence also indicates that the racial wage gap between white and Black workers would have been 13% to 30% lower if union density had remained at 1973 levels (Rosenfeld & Kleykamp, 2012).

Much of the poor job quality and precarious nature of solar work can be explained by the relatively low union density in the industry

New York requires employers to pay laborers the prevailing wage rate on all renewable energy projects of 1 MW or larger, as well as on networked geothermal projects using public funds

...the prevailing wage requirement does not apply to smaller distributed solar projects, which so far make up 41% of NY's planned and built project capacity. Without a prevailing wage requirement, nonunion companies can underbid the union rate, and not surprisingly, New York's rooftop solar industry is almost universally non-union

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The state has already taken significant steps to support creating good jobs, but as CJI's research has shown, NY must do more to protect workers and vulnerable communities from exploitation (Hoek-Spaans & Morley, 2024). In 2024, NYSERDA reported that entry-level clean energy workers in NY earn on average 12% more than their counterparts in other industries, putting them above the living wage for single adults with no children (NYSERDA, 2024b). However, the wage premium for the industry decreases with higher experience levels (NYSERDA, 2024b). More research is necessary to better understand the wage gaps and any wage premiums within the clean energy industry.

There are no PLA requirements on utility-scale or distributed solar projects, although CJI's research has shown exploitation, racial disparities, and safety hazards in this industry

One of the most important mechanisms for ensuring good jobs on publicly-funded projects is to require contractors and subcontractors to pay the prevailing rate for wages and benefits, which is significantly higher than the minimum wage. New York requires employers to pay laborers the prevailing wage rate on all renewable energy projects of 1 MW or larger, as well as on networked geothermal projects using public funds (N.Y. Lab. Law § 224-d). Climate-risk and energy transition projects receiving at least $100,000 in Cap-and-Invest funds from the Climate Action Fund must also pay the prevailing wage rate for construction workers (N.Y. Lab. Law § 224-f). Unfortunately, New York's cap-and-invest program has yet to be implemented, with final regulations planned by the end of 2025 (Arpey, 2025; NYSDEC, 2025). Additionally, the prevailing wage requirement does not apply to smaller distributed solar projects, which so far make up 41% of NY's planned and built project capacity.[16] Without a prevailing wage requirement, nonunion companies can underbid the union rate, and not surprisingly, New York's rooftop solar industry is almost universally non-union (Rock, 2024).

Project Labor Agreements ("PLAs") are the gold standard for ensuring

16 Estimated by CJI after dividing the cumulative capacity of distributed solar from the total cumulative amount expected based on solar data in the "Existing solar installations" and "Planned Solar Projects" sections and market projection data from SEIA (2024).

high-quality, union jobs on energy and public construction projects, as they require that all construction work done on a project be covered by a collective bargaining agreement with legally binding terms for wages, hours, benefits, training, and other terms and conditions of employment.[17] All of NYSERDA's offshore wind solicitations require a PLA (NYSERDA, 2024f), and all climate-risk and energy transition projects receiving Cap-and-Invest funds must have either a PLA or pay the prevailing wage rate (N.Y. Lab. Law § 224-f). Significantly, there are no PLA requirements on utility-scale or distributed solar projects, although CJI's research has shown exploitation, racial disparities, and safety hazards in this industry (Hoek-Spaans & Morley, 2024).

Labor Peace Agreements ("LPAs"), which are binding contracts between employers and unions that establish a process for workers to join a union without employer opposition, are an important mechanism for protecting non-construction workers' rights on the job.[18] New York requires that all operations and maintenance workers on offshore wind projects are covered by an LPA (N.Y. Pub. Serv. Law § 66-r (3)), as well as those non-construction workers on climate-risk and energy transition projects receiving Cap-and-Invest funds (N.Y. Lab. Law § 224-f).

Another element in securing a just transition for energy communities affected by the transition away from fossil fuels is a robust plan for training and placement. Several NY laws incentivize or require projects to hire from apprenticeship and pre-apprenticeship ("job readiness") programs, including networked geothermal and public renewable energy projects, as well as those receiving Cap-and-Invest funds (N.Y. Lab. Law § 224-f). Additionally, these projects must recruit from local and disadvantaged communities (NYSERDA, 2024f). The Cap-and-Invest program also establishes funds for fossil fuel job transition planning and retraining (N.Y. Envtl. Conserv. Law § 75-0121; N.Y. Pub. Auth. Law § 1854), and supports efforts to hire displaced fossil fuel workers. This year, NYPA was empowered to invest up to $25 million each year in workforce development programs (N.Y. Pub. Auth. Law § 1005(27-d)). All of these efforts are necessary to ensure that workers from the most vulnerable communities are not left behind in the clean energy transition.

The final pillar of strong labor standards is incentivizing the domestic supply chain through domestic content requirements. NY requires that offshore wind and public renewable energy projects – as well as those receiving Cap-and-Invest funds – procure American-made steel and iron (N.Y. Pub. Serv. Law § 66-r (4)(a)). This, along with state and federal investments in the necessary infrastructure to build out a robust American supply chain for renewables, is intended to drive demand for U.S. made goods and, ultimately, create jobs for New Yorkers.

17 The public works statute defines a PLA as a "pre-hire collective bargaining agreement between a contractor and a bona fide building and construction trade labor organization establishing the labor organization as the collective bargaining representative for all persons who will perform work on a public work project, and which provides that only contractors and subcontractors who sign a pre-negotiated agreement with the labor organization can perform project work." N.Y. Lab. Law § 222. PLAs are lawful under § 8(f) of the National Labor Relations Act, 29 U.S.C. § 158(f).

18 For example, NY law defines a "labor peace agreement as "an agreement between an owner and/or developer and labor organization that, at a minimum, protects the state's proprietary interests by prohibiting labor organizations and members from engaging in picketing, work stoppages, boycotts, and any other economic interference." N.Y. Lab. Law § 224-f.

CONCLUSION

The 2030 deadline for New York State to significantly reduce its greenhouse gas emissions to 40% below 1990 levels and increase the amount of renewable energy to meet its 70% target is fast approaching. Although the state has made significant investments in distributed scale solar, it is falling far behind on overall renewable procurements, and must substantially increase the amount of renewable generation, potentially fivefold over planned projects, to comply with the law.

At the same time, while the amount of clean energy jobs, particularly in solar, has grown much faster than in other sectors, these jobs remain overwhelmingly nonunion with few labor standards to ensure that they create high-quality careers, particularly in disadvantaged and historically marginalized communities. New York's strong policy protections for solar workers on utility-scale projects have left distributed and residential solar workers behind. Without prevailing wage standards on distributed solar projects, workers face potential exploitation and unfair wages. Further, without PLA requirements on solar projects, workers lack the protections of health care benefits and fair hiring provisions. The state must bridge these gaps, both to rapidly scale renewable buildout at the speed that science and policy demand, as well as to ensure that the energy transition benefits workers and communities who are most impacted by climate change.

A clean energy future is possible for New York State, but it will require a commitment to implementing its clean energy and emissions mandates in the near-term. The state must prioritize efforts to build public renewables, expedite projects that hire skilled, union labor, incentivize responsible development, and decarbonize buildings, transportation, and industry in the next five years, or risk falling even further behind. These actions will not only support the state's economy and create union jobs, but also serve as a model for other states of a successful clean energy transition.

WORKS CITED

Arpey, Jack. (2025, January 28). Interim New York DEC commissioner says Hochul's punt on 'Cap and Invest' isn't a delay. Spectrum News. https://spectrumlocalnews.com/nys/central-ny/politics/2025/01/29/energy-leaders-talk-cap-invest-

Brady, D., Baker, R. S., & Finnigan, R. (2013). When Unionization Disappears: State-Level Unionization and Working Poverty in the United States. American Sociological Review, 78(5), 872–896. https://doi.org/10.1177/0003122413501859

Card, D., Lemieux, T., & Riddell, W. C. (n.d.). Unions and Wage Inequality. Journal of Labor Research, December 2004. https://doi.org/10.1007/s12122-004-1011-z.

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

Case 15-E-0302. (January 1, 2024). Clean Energy Standard Annual Progress Report – 2022 Compliance Year. NYSERDA. https://www.nyserda.ny.gov/-/media/Project/Nyserda/Files/Programs/Clean-Energy-Standard/CES-2022-annual-r-1-v1-complete-acc.pdf

Case 15-E-0302. (July 1, 2024). Draft Clean Energy Standard Biennial Review. Proceeding on Motion of the Commission to Implement a Large Scale Renewable Program and a Clean Energy Standard. https://www.nyserda.ny.gov/-/media/Project/Nyserda/Files/Programs/Clean-Energy-Standard/A00194900000C313A126877CFFAA2B0C.pdf

Case 19-E-0735. (April 14, 2022). Proceeding on Motion of New York State Energy Research and Development Authority Requesting Additional NY-Sun Program Funding and Extension of Program Through 2025. Order Expanding NY-Sun Program (issued April 14, 2022).

Case 21-E-0629 (April 14, 2022). In the Matter of the Advancement of Distributed Solar. Order Expanding NY-Sun Program. https://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?Mattercaseno=21-E-0629

Case 22-M-0149. (July 20, 2023). Proceeding on Motion of the Commission Assessing Implementation of and Compliance with the Requirements and Targets of the Climate Leadership and Community Protection Act. New York State Department of Public Service First Annual Informational Report on Overall Implementation of the Climate Leadership and Community Protection Act. https://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterCaseNo=22-M-0149.

Clean Energy States Alliance. (2024). Table of 100% Clean Energy States. https://www.cesa.org/projects/100-clean-energy-collaborative/guide/table-of-100-clean-energy-states/

Climate Leadership and Community Protection Act, SB 6599, 2019 NY Senate-Assembly Bill (2019). https://www.nysenate.gov/legislation/bills/2019/S6599

Cropley, J. (2024, October 18). NY Surpasses 6 GW of Distributed Solar Capacity. RTO Insider. https://www.rtoinsider.com/89819-ny-solar-milestone-dist-solar/

Denice, P., & Rosenfeld, J. (2018). Unions and Nonunion Pay in the United States, 1977-2015. Sociological Science, 5, 541–561. https://doi.org/10.15195/v5.a23

Dunlea, M. (2024, November 18). GELF Calls for NYPA to Build 15 GW on Renewable Energy by 2030. Green Education and Legal Fund. https://gelfny.org/uncategorized/gelf-calls-for-nypa-to-build-15-gw-on-renewable-energy-by-2030/

FY 2024 Enacted State Budget, Transportation, Economic Development, and Environmental Conservation, Article VII Legislation, S4008-C. (2023). https://www.budget.ny.gov/pubs/archive/fy24/ex/artvii/ted-bill.pdf

Goff, C., Amarakoon, S., & Curtis, D. (2024). Chapter 1: Assessment introduction. In New York State Climate Impacts Assessment [Interim version for public release]. https://nysclimateimpacts.org/wp-content/uploads/2024/01/Assessment-ch1-intro-01-31-24.pdf

Greenbacker Renewable Energy Company LLC. (2025, January 27). Greenbacker secures nearly $1 billion financing to support acquisition and construction of largest solar project in New York State. GlobeNewswire News Room. https://www.globenewswire.com/news-release/2025/01/27/3015483/0/en/Greenbacker-secures-nearly-1-billion-financing-to-support-acquisition-and-construction-of-largest-solar-project-in-New-York-State.html

Hoek-Spaans, A., & Morley, J. (2024). Exploring the Conditions of the New York Solar Workforce. ILR Climate Jobs Institute. https://www.ilr.cornell.edu/sites/default/files-d8/2024-04/CJI-NYS%20Solar%20Workforce%20Report_April%202024_Final.pdf

Kristal, T., Cohen, Y., & Navot, E. (2020). Workplace Compensation Practices and the Rise in Benefit Inequality. American Sociological Review, 85(2), 271–297. https://doi.org/10.1177/0003122420912505

Lamie, C., Bader, D., Graziano, K., Horton, R., John, K., O'Hern, N., & Spungin, S. (2024). Chapter 2: New York State's changing climate. In New York State Climate Impacts Assessment [Interim version for public release]. https://nysclimateimpacts.org/wp-content/uploads/2024/01/Assessment-ch2-NYS-changing-climate-01-09-24.pdf

McDowell, B., Stefek, J., Elena Smith, Pons, B., & Ahmad, Q. (2024). National Wind Energy Workforce Assessment: Challenges, Opportunities, and Future Needs. National Renewable Energy Laboratory. https://www.nrel.gov/docs/fy24osti/87670.pdf.

Memorandum on Temporary Withdrawal of All Areas on the Outer Continental Shelf From Offshore Wind Leasing and Review of the Federal Government's Leasing and Permitting Practices for Wind Projects, 2025, 30 Weekly.Comp.Pres. Doc.202500144. (2025, January 20). https://www.govinfo.gov/app/details/DCPD-202500144/.

National Labor Relations Act, 29 U.S.C. § 158(f) (2024).

National Renewable Energy Laboratory. (2024a). Commercial PV. Annual Technology Baseline. https://atb.nrel.gov/electricity/2024/commercial_pv

National Renewable Energy Laboratory. (2024b). Residential PV. Annual Technology Baseline. https://atb.nrel.gov/electricity/2024/residential_pv

National Renewable Energy Laboratory. (2024c). Scenario Viewer | Standard Scenarios 2023. https://scenarioviewer.nrel.gov/?project=03ad535d-f0ed-4a6b-8323-c582a606e92c&mode=view&layout=Default

National Renewable Energy Laboratory. (2024d). Utility-Scale PV. Annual Technology Baseline. https://atb.nrel.gov/electricity/2024/utility-scale_pv

New York Department of Environmental Conservation. (2024). 2024 NYS Greenhouse Gas Emissions Report Summary. https://dec.ny.gov/sites/default/files/2024-12/summaryreportnysghgemissionsreport.pdf

New York Department of Environmental Conservation. (2025, March 26). DEC Releases Draft Regulations to Collect Greenhouse Gas Emissions Data. https://dec.ny.gov/news/press-releases/2025/3/dec-releases-draft-regulations-to-collect-greenhouse-gas-emissions-data

New York Power Authority. (2025, January 28). NYPA Renewables 2025 Strategic Plan. https://www.nypa.gov/-/media/nypa/documents/document-library/renewables/nypa-renewables-2025-strategic-plan.pdf

New York Independent System Operator. (2020, April). 2020 Load & Capacity Data Report (New York Independent System Operator Gold Book, p. 34). https://www.nyiso.com/documents/20142/2226333/2020-Gold-Book-Final-Public.pdf/9ff426ab-e325-28bc-97cf-106d792593a1

New York Independent System Operator. (2024, April). 2024 Load & Capacity Data Report (New York Independent System Operator Gold Book). https://www.nyiso.com/documents/20142/2226333/2024-Gold-Book-Public.pdf

New York State Climate Action Council. (2021). Just Transition Working Group 2021 Jobs Study. https://www.nyserda.ny.gov/-/media/Project/Climate/Files/JTWG-Jobs-Report.pdf

New York State Climate Action Council. (2022, December). New York State Climate Action Council Scoping Plan. New York's Scoping Plan. https://climate.ny.gov/resources/scoping-plan/

New York State Energy Research and Development Authority. (2023). 2023 New York Clean Energy Industry Report. https://www.nyserda.ny.gov/-/media/Project/Nyserda/Files/Publications/Clean-energy-industry/2023-clean-energy-industry-report.pdf

New York State Energy Research and Development Authority. (2024a). 2024 Energy Storage Order Overview [White paper]. https://www.nyserda.ny.gov/-/media/Project/Nyserda/Files/Programs/Energy-Storage/2024-Energy-Storage-Order-Overview.pdf

New York State Energy Research and Development Authority. (2024b). 2024 New York Clean Energy Industry Report. https://www.nyserda.ny.gov/-/media/Project/Nyserda/Files/Publications/Clean-energy-industry/CEIR-2024-r-1-v1_acc.pdf

New York State Energy Research and Development Authority. (2024c). 2024 New York Clean Energy Industry Report (New York Clean Energy Industry Report). NYSERDA. https://www.nyserda.ny.gov/About/Publications/New-York-Clean-Energy-Industry-Report

New York State Energy Research and Development Authority. (2024d). Clean Energy Standard Biennial Review. https://www.nyserda.ny.gov/-/media/Project/Nyserda/Files/Programs/Clean-Energy-Standard/A00194900000C313A126877CFFAA2B0C.pdf

New York State Energy Research and Development Authority. (2024e, July 1). Statewide Distributed Solar Projects: Beginning 2000. https://data.ny.gov/Energy-Environment/Statewide-Distributed-Solar-Projects-Beginning-200/wgsj-jt5f/about_data

New York State Energy Research and Development Authority. (2024f). Purchase of Offshore Wind Renewable Energy Certificates. Request for Proposals ORECRFP24-1. (Updated August 13, 2024). https://portal.nyserda.ny.gov/servlet/servlet.FileDownload?file=00P8z000004Qqk9EAC

N.Y. Envtl. Conserv. Law, 75 ENV § 75-0101 et seq.

N.Y. Lab. Law § 222.

N.Y. Lab. Law, 8 LAB § 224-d.

N.Y. Lab. Law, 8 LAB § 224-f.

N.Y. Pub. Auth. Law, 5 PBA § 1005 et seq.

N.Y. Pub. Serv. Law, 7 PBS § 66-p.

N.Y. Pub. Serv. Law, 7 PBS § 66-r.

Office of Energy Jobs. (2024). United States Energy and Employment Report 2024. U.S. Department of Energy. https://www.energy.gov/sites/default/files/2024-10/USEER%202024_COMPLETE_1002.pdf

Office of the New York State Comptroller. (2024, July). Climate Act Goals - Planning, Procurements, and Progress Tracking. Report 2022 S-4. https://www.osc.ny.gov/files/state-agencies/audits/pdf/sga-2024-22s4.pdf

Parolin, Z., & VanHeuvelen, T. (2023). The Cumulative Advantage of a Unionized Career for Lifetime Earnings. ILR Review, 76(2), 434-460. https://doi.org/10.1177/00197939221129261

Pontecorvo, E. (2024, January 9). What Happened When Solar Installers in New York Tried to Unionize—Heatmap News. https://heatmap.news/climate/rooftop-solar-workers-uaw

Proceeding on Motion of New York State Energy Research and Development Authority Requesting Additional NY-Sun Program Funding and Extension of Program Through 2025, No. Case 21-E-0629 (NYSDPS April 14, 2022).

Renewable Action through Project Interconnection and Deployment (RAPID) Act, L 2024, Ch 58, Part O (2024).

Rivard, R. & French, M. (2025, February 4). Trump's plan to kill offshore wind is paying off. Politico. https://www.politico.com/news/2025/02/04/trump-new-jersey-wind-energy-00202248.

Rock, J. (2024, January 10). The United Auto Workers Are Unionizing Rooftop Solar. New York Focus. https://nysfocus.com/2024/01/10/united-auto-workers-uaw-rooftop-solar-union-empower

Rosenfeld, J., & Kleykamp, M. (2012). Organized Labor and Racial Wage Inequality in the United States. American Journal of Sociology, 117(5), 1460–1502. https://doi.org/10.1086/663673

S7508B, NY Senate 2019–2020, Chapter 58 of the Laws of 2020, part JJJ. (2020). https://www.nysenate.gov/legislation/bills/2019/S7508

Solar Energy Industries Association. (2024, September). New York. https://seia.org/state-solar-policy/new-york-solar/

Smith, A. B. (2025). NOAA National Centers for Environmental Information (NCEI) U.S. Billion-Dollar Weather and Climate Disasters [Dataset]. NOAA National Centers for Environmental Information. https://doi.org/10.25921/STKW-7W73

S&P Global Market Intelligence. (2024, July 15). S&P Capital IQ Pro Office Screener: Industry & Asset Data [Data set]. https://www.capitaliq.spglobal.com/web/client?auth=inherit#office/screener?landingPage=true

United Nations. (n.d.). For a livable climate: Net-zero commitments must be backed by credible action. United Nations. Retrieved February 10, 2025, from https://www.un.org/en/climatechange/net-zero-coalition#:~:text=Currently%2C%20the%20Earth%20is%20already,reach%20net%20zero%20by%202050

U.S. Energy Information Administration. (2024a, November 6). New York Electricity Profile 2023 [Data]. https://www.eia.gov/electricity/state/NewYork/index.php

U.S. Energy Information Administration. (2024b, December). Preliminary Monthly Electric Generator Inventory (based on Form EIA-860M as a supplement to Form EIA-860). https://www.eia.gov/electricity/data/eia860m/index.php

VanHeuvelen, T., & Brady, D. (2022). Labor Unions and American Poverty. ILR Review, 75(4), 891–917. https://doi.org/10.1177/00197939211014855

Vasudevan, R. (2023, August 9). They got jobs in the growing solar industry – but the reality was less sunny than they expected. The Guardian. https://www.theguardian.com/us-news/2023/aug/09/green-jobs-workers-incarcerated-prison

Western, B., & Rosenfeld, J. (2011). Unions, Norms, and the Rise in U.S. Wage Inequality. American Sociological Review, 76(4), 513–537. https://doi.org/10.1177/0003122411414817

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