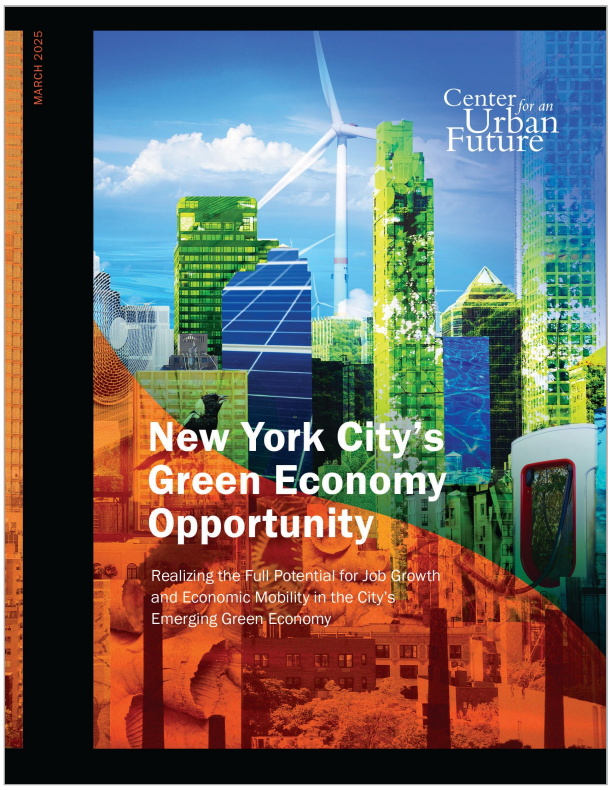


Report - March 2025

New York City's Green Economy Opportunity

A flourishing green economy may be the best chance in a generation to expand access to well-paying career opportunities, especially for New Yorkers of color and individuals from low-income communities. While there has been job growth in several parts of the green economy in recent years, our research suggests that New York City's green economy is not yet close to fully charged.

by Eric Raimondi, Sarah Amandolare, Jonathan Bowles, and Eli Dvorkin

- Read the full report (PDF)
- View the recommendations for realizing the full potential for job growth and economic mobility in NYC's emerging green economy
- View the recommendations for expanding access to job opportunities in NYC's emerging green economy
- **NEW MAP**: Explore the first-ever comprehensive interactive map of New York City's green jobs training programs
- Read the 32 profiles of New York City's green jobs workforce Development Programs

Introduction

No part of New York City's economy has greater potential for long-term growth than the cluster of jobs, companies, and industries known as the green economy. The massive public and private sector investment expected for years to come to reduce greenhouse gas emissions in thousands of buildings, expand infrastructure to enable the switch to electric vehicles (EVs), develop renewable sources of energy, and prepare the city for climate change is expected to sustain 400,000 jobs in the five boroughs by 2040, according to a recent report by the New York City Economic Development Corporation (NYCEDC) and the Mayor's Office of Talent and Workforce Development.

The expected job growth will not only provide a much-needed boost in employment, but also a major new source of middle-class jobs. A flourishing green economy may be the best chance in a generation to expand access to well-paying career

opportunities for New Yorkers of color and individuals from low-income communities—many of whom have borne the brunt of environmental injustices for decades.

But while there has been job growth in several parts of the green economy in recent years, our research suggests that New York City's green economy is not yet anywhere close to fully charged. In 2023, for example, there were just 2,184 unique jobs postings in the core green economy in New York City, according to the Center for an Urban Future's analysis of data from labor-market analytics firm Lightcast. While only one other U.S. city had more (Houston, with 3,127), these core green jobs—the jobs that play a direct role in reducing emissions and transitioning away from fossil fuels—accounted for only a small fraction of New York City's job growth. During the same period, there were 70,002 postings in health care, 56,314 in finance and insurance, 46,912 in tech, and 18,318 in the management, scientific, and technical consulting services sector.

Even as the core green economy remains relatively small, a growing number of employers are seeking candidates with a variety of green-related skills—from architects with expertise in designing energy efficient structures to HVAC technicians knowledgeable about heat pumps. In total, employers posted 22,070 jobs in 2023 seeking candidates with specific green skills, up from 19,566 in 2019—a 12.8 percent increase. Notably, most of this growth is located in industries outside the core green economy, including architecture and engineering (+314 annual job postings compared to 2013, finance (+354 postings), and colleges and universities (+491 postings). The exception is electric power, which includes the core green economy industries of solar and wind (+848 job postings).

A majority of the industry leaders and experts we spoke with in New York City's building sector—which, according to NYCEDC, accounts for well over half of all jobs in the city's green economy—say that job creation connected to green economy investments has so far been modest. Indeed, there are clear signs that the pace to electrify buildings has been slow. One of the key components of a building retrofit designed to reduce emissions is the installation of new heating and cooling systems—an undertaking that requires a permit from the New York City Department of Buildings. But Just 2,021 permits to install new heating and cooling systems have been filed since 2017, including only 415 for commercial buildings and 405 for multifamily residential buildings. Similarly, while there has been a notable increase in the installation of heat pumps, less than 1 percent of all housing units statewide have one.

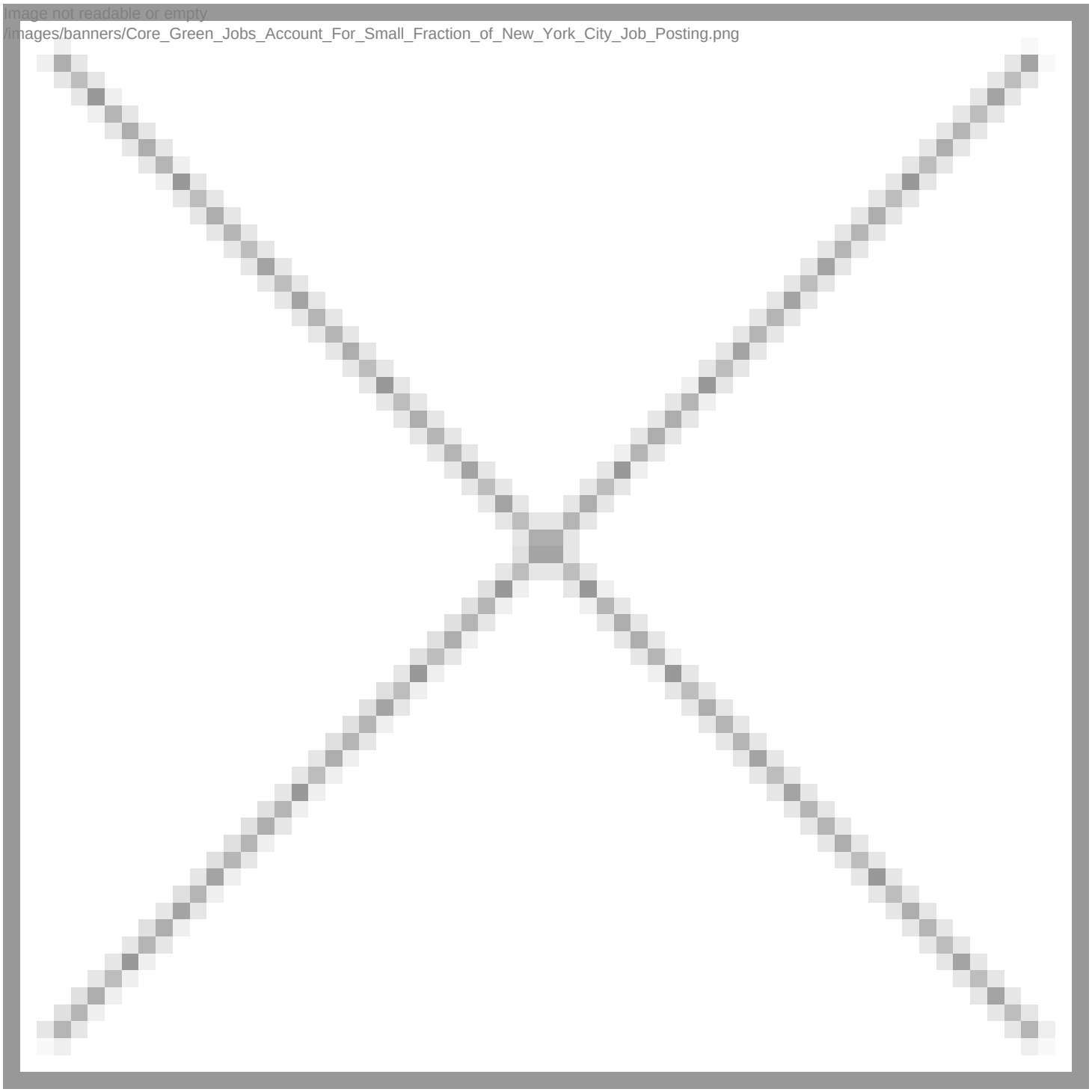
The solar industry has arguably been the fastest growing part of the green economy in the past few years, but our research suggests its rapid growth has accounted for only about 750 new jobs over the past decade. And while the offshore wind industry has the potential to create thousands of jobs in the years ahead, offshore wind firms with a presence in New York City generally have just a handful of employees here today.

To be sure, these are early days in the sector's evolution, and there is enormous opportunity going forward. Indeed, numerous green economy companies we interviewed say they expected to double their employment in the coming years. At the same time, Mayor Adams and Governor Hochul have launched an impressive set of programs and initiatives designed to bolster job creation in the green economy—including the Adams administration's recently launched Green Economy Action Plan.

But it is by no means a given that New York City will fully unlock the sector's massive potential and create the tens of thousands of inclusive green jobs that are eminently possible. Indeed, this report details 17 specific challenges that are currently holding back job growth in the city's green economy. At the same time, the potential for a major federal pullback from green economy investment poses an additional obstacle to New York's continued growth.

Going forward, city and state policymakers will need to address these barriers. And while government leaders in New York should continue to innovative with new policies and programs, what's needed most is a full court press to make sure New York fully implements key initiatives already underway, starting with the landmark Local Law 97. Meanwhile, to ensure that a significant share of the city's future green economy jobs are accessible to New Yorkers of color, New York policymakers will need to support the city's small but growing ecosystem of green economy workforce training organizations and the City

University of New York (CUNY), and set them up with the resources, data, and employer insights needed to succeed.



Supported by a grant from JPMorgan Chase, this report provides a new level of detail about the emerging green economy in New York City and the workforce development system now in place to prepare New Yorkers for these jobs. The report, which was informed by more than 150 interviews conducted through August 2024 with company leaders, human resource directors, climate policy advocates, industry and trade association leaders, sustainability finance experts, leaders of workforce development programs and other education and training providers, and New York City and State government officials, is organized into two main parts:

- **Green Economy Job Growth Shows Major Promise but Is Still in the Early Stages of Development.** Based on dozens of interviews with small and large employers across the city's green economy, it unpacks where job growth is

already occurring in green economy fields, details the types of jobs that are being added, and fleshes out which areas employers anticipate growing over the next few years. Importantly, it shines a light on 17 of the most important challenges to job creation in New York City's emerging green economy.

- **Realizing the Potential of New York City's Green Jobs Training Ecosystem.** The report features the first interactive map of workforce development programs that are preparing candidates for green economy jobs in New York City, with data-backed profiles of 32 training and education programs (see page 35). Although the landscape of providers and programs is complex and evolving quickly, this report offers the most detailed snapshot to date of New York's existing green economy workforce programs. This part of the report also includes new analysis about strengths, weaknesses, gaps, and opportunities in the city's green jobs training ecosystem.

Much of this report focuses on the opportunity to New Yorkers from underserved communities to well-paying jobs in the emerging green economy. But there will be limited opportunities for New Yorkers in the green economy if the city doesn't maximize the potential for job creation. Our research identifies 17 specific challenges that are either already holding back job growth in the city's green economy or which will likely limit future growth if not addressed.

THE 17 CHALLENGE AREAS, WHICH ARE OUTLINED IN MORE DETAIL LATER IN THE REPORT, INCLUDE:

- Electrifying buildings is one of the best opportunities to create new green economy jobs, but only a tiny fraction of commercial and multi-family buildings in NYC have taken this step.
- The economics of undertaking Local Law 97-mandated building retrofits have gotten more challenging for many property owners due to rising interest rates and hybrid work.
- The current penalty structure for buildings not meeting Local Law 97 requirements is unlikely to incentivize widespread compliance.
- A shortage of electricians and HVAC technicians threatens to limit the number of buildings retrofits, and slow solar installation projects.
- Not enough property owners are accessing the technical assistance that exists to support building retrofits.
- The state's limited transmission capacity will make it difficult to electrify thousands of buildings and support a broad-based shift to electric vehicles.
- Renewable energy needs to be connected more swiftly to the city's electric grid to meet growing demand.
- The city lacks affordable and accessible space for electric vehicle charging development.
- Current infrastructure for electric micromobility is inadequate.
- The cost of electric vehicles is still too high to incentivize broader adoption.
- The city and state can do more to enable the uptake of solar across its one million buildings.
- New infrastructure is needed to enable the city to grow as an offshore wind servicing hub.
- "Onshore" trades will need to be re-skilled to do "offshore" work.
- Financing offshore wind and other clean energy projects has become more challenging.
- The city lacks the space for a localized sustainable waste management sector.
- The city lacks the mandates and incentives that would create a more robust market shift to sustainable waste management.
- Budget cuts to community composting will slow progress toward organics diversion.

7 KEY TAKEAWAYS ABOUT THE PROGRAMS PREPARING NEW YORKERS FOR JOBS IN NYC'S GREEN ECONOMY:

Addressing these challenges will be key to boosting future job growth in the city's green economy. But simply creating jobs is not sufficient. Additional actions will also be needed to ensure that New Yorkers of color and those from low-income backgrounds are able to access the well-paying jobs being created. Fortunately, New York City is home to dozens of workforce training programs that prepare unemployed and underemployed New Yorkers for a range of green-economy jobs, including programs at CUNY. But our report also identifies some challenges gaps in this training ecosystem, including:

- Given the relatively modest size of the green economy today, there is a risk that without significant and sustained growth, providers could end up training candidates for jobs that don't exist.
- If providers have the data and insights needed to align programs with demand, there is untapped potential to prepare more New Yorkers for many of the jobs outside the core green economy that are increasingly in search of candidates with green-related skills. But many of these roles typically go to candidates with college degrees, making CUNY's role particularly critical.
- Most of New York City's green workforce training programs are small in scale. We identify 32 organizations offering at least 45 unique green economy training programs today, serving a total of about 7,900 New Yorkers each year—or about half of the total number of jobs seeking candidates with green skills annually. But four programs alone account for more than half of the total slots (4,477), and 17 programs serve under 100 New Yorkers annually.
- New York's green workforce training programs are more heavily concentrated in Manhattan and Brooklyn.
- More than half of New York City's green job workforce training programs have a focus on construction and building operations, and those programs cannot keep up with demand.
- Over the next five years, training organizations anticipate escalating need for new workers who can electrify buildings, manage building automation controls, conduct energy audits, and work in offshore wind.
- Funding is needed to upskill experienced, existing workers whose jobs are changing.
- Several training programs are struggling to cover the cost of stipends, as well as provide wraparound services for participants.

The good news is that the administrations of Mayor Adams and Governor Hochul, as well as the City Council and State Legislature, have all taken major steps to foster a stronger and more equitable green economy. The Adams administration's Green Economy Action Plan, released in February 2024, details 63 city commitments to help make New York a global leader in the green economy while integrating talent development—a major step forward in the city's approach to cultivating equitable economic growth. This includes promising new efforts to help prepare New Yorkers for green careers, including the establishment of green training facilities in every borough. Governor Hochul has greenlit several efforts to meet the state's ambitious climate goals, including an action plan to expand the renewable energy sector and obtain 70 percent of the state's electricity from renewable sources by 2030.

However, even more is needed at the state and local level, especially given the likelihood that the federal government may significantly curtail investment in the sector in the years ahead. This report's top policy recommendation is not to launch a shiny new initiative, but rather to pull out all the stops to ensure full implementation of Local Law 97, ensuring that thecity is actually producing the jobs needed to realize the opportunity for new green economy careers and upward economic mobility. On the workforce side, the mayor and City Council will have to allocate ample funding in upcoming budget cycles to implement the key commitments in the Green Economy Action Plan, starting with fully funding the borough-based training centers.

A second key recommendation is to better leverage the City University of New York (CUNY) by launching a major new capital investment to build a greener university, combined with a first-of-its-kind initiative to tap CUNY's students to achieve this—preparing them for green economy careers in everything from architecture, engineering, and materials science, to finance and capital planning, to the building trades.

Crucially, these investments will have to work in tandem with policies designed to overcome the many barriers that exist to further job growth, or else run the risk of training New Yorkers for jobs that fail to materialize. Among other things, New York should launch a green economy data dashboard to help workforce development organizations better understand the growth potential of the green economy at the level of specific sub-industries and occupations, and to ensure that economic and workforce development investments are closely aligned.

This report details the opportunity blooming in the city's nascent green economy, provides analysis of the most pressing challenges that stand in the way of realizing job growth, examines the current size and scope of green economy-aligned workforce training programs, and concludes with achievable recommendations for realizing the full potential for job growth and economic mobility in New York City's emerging green economy.

RECOMMENDATIONS: REALIZING THE FULL POTENTIAL FOR JOB GROWTH AND ECONOMIC MOBILITY IN NEW YORK CITY'S EMERGING GREEN ECONOMY

1. STRENGTHEN AND EXPAND EFFORTS TO ENSURE THAT LOCAL LAW 97 SUCCEEDS. New York City's emerging green economy has enormous potential to spark sustained economic growth and create pathways into well-paying jobs for thousands of lower-income New Yorkers. But realizing this opportunity will only be possible with a major, sustained focus on ensuring that Local Law 97 succeeds in catalyzing emissions-reduction investments across the city's buildings sector. Today, that progress is far from assured, as building owners grapple with high borrowing costs, long payback periods, technical and logistical challenges, and a regulatory scheme in which the cost of compliance significantly outweighs the penalties. To ensure that LL97's emissions-reduction targets are achieved via meaningful private sector investment in building decarbonization and electrification, policymakers should take several steps now to ensure future progress:

- **Establish a new NYC Green Building Fund.** Accelerating the pace of building decarbonization will require expanded access to affordable capital that can be deployed to finance building retrofit projects. Many of the buildings that would benefit the most from major retrofits are also in difficult financial shape, with high vacancy rates and operating costs, and lenders have become increasingly risk averse. To help finance a much faster transition to lower-emissions buildings, New York City should work with the private sector to establish a new Green Building Fund—a revolving loan fund that will provide flexible, low-interest loans to buildings to finance decarbonization projects. Creative financing options could include loan repayment tied to new tax credits in the federal Inflation Reduction Act, helping buildings with their cash flow, as well as repayment plans pegged to the difference in energy usage before and after retrofits, with buildings repaying at least part of their loans with the savings.
- **Expand the PACE Financing program.** The city should also expand the innovative but small-scale PACE Financing program, which helps connect eligible buildings to lenders who can help finance retrofit projects. The program works by offering long repayment periods—up to 25 years—which significantly lowers monthly costs. But to date, the program only includes 15 authorized lenders, just a handful of which are based in New York City, and generally does not cover projects under $500,000. The city should work with the state to expand this program, adding additional lenders including community development financial institutions with expertise partnering with smaller and lower-income building owners, and include more options for loans under $500,000 and over $5 million.
- **Harness existing incentives to help offset the cost of expensive upgrades.** Alongside the creation of a new fund for building retrofits, city leaders should ensure that existing local tax incentives, including the city's Industrial & Commercial Abatement Program (ICAP), the New York City Industrial Development Agency (NYCIDA) programs,

Manhattan Commercial Revitalization's (M-CORE) program, and the BUILD NYC program for tax-exempt organizations can all be tapped to help achieve LL97 compliance—uses that are not explicitly eligible today. At the state level, policymakers in Albany should amend and expand the J-51 tax abatement for renovating residential buildings, ensuring that the abatement can be applied to LL97 compliance projects.

- **Launch a Green Building Assistance Corps to bolster the effectiveness of NYC Accelerator.** Shortly after the city passed LL97, it created the NYC Accelerator to provide personalized guidance to help building owners navigate the law's impact. Although this program has succeeded in connecting with thousands of buildings as an initial touch-point toward LL97 compliance, our research indicates that a much deeper level of hands-on guidance will be needed to help many more buildings make the investments needed to decarbonize—especially from 2030 onward. To prepare for future needs and get ahead of current capacity challenges, the city should enhance NYC Accelerator to keep pace with growing demand. At the same time, much more technical assistance will be needed in the years ahead—including industry-specific expertise that the city's Accelerator program is not well equipped to provide. To meet this challenge, the city should launch a Green Building Assistance Corps, drawing from the city's deep well of private sector expertise, as well as the industry associations, trade groups, financial services firms, architecture and engineering companies, nonprofit green building organizations, community development organizations, and other potential partners who are best positioned to help deliver this assistance. Services could be offered at a sliding scale, with free, in-depth consultations provided to eligible buildings, as well as referrals to relevant state programs, such as NYSERDA's Multifamily Buildings Low-Carbon Pathways Program.
- **Revise LL97's penalty structure to align with compliance costs.** While several actions are needed to help building owners invest in LL97 compliance, policymakers should also consider revisions to LL97's penalty structure, which currently provides little if any financial incentive to decarbonize. Many building owners say that under current conditions, they are likely to opt for paying the penalty instead of investing in costly retrofits. At the same time, the two-year extension of the "good faith" provision makes it even less likely that buildings will invest heavily in decarbonization before 2030. Lastly, buildings may be eligible to purchase renewable energy credits to offset as much as 100 percent of their emissions over the pre-LL97 baseline. To ensure that far more buildings actually make the decarbonization investments needed to reduce emissions and help spur the growth of green jobs, the city should consider adjustments to these mechanisms. The penalty rate—currently $268 per ton of carbon dioxide over their mandated limit—should be increased over time if compliance lags. Likewise, while RECs can provide an important source of funding for renewable energy development, future rules should limit their use to offset no more than 25 percent of a building's emissions over the baseline.

2. PREPARE NEW YORK CITY'S GRID FOR AN ELECTRIFIED FUTURE. New York has a massive opportunity in the decade ahead to reduce carbon emissions while sparking job creation by electrifying tens of thousands of buildings across the five boroughs and replacing hundreds of thousands of gas- and diesel-powered cars and trucks with electric vehicles. But this will only be possible if the city and state work together to bolster the city's electricity grid to meet growing demand and greatly increase the share of the city's electricity generated from renewable sources.

- **Accelerate the completion of key transmission and renewable power generation projects.** Major gaps in energy production and transmission capacity are set to emerge as electricity demand in the city increases. The state's ability to meet New York City's future electricity demands hinges on the successful and timely completion of several ongoing transmission projects, including the Champlain Hudson Power Express, Clean Path NY, and Propel NY Energy, as well as major new offshore and onshore wind, hydro, geothermal, and solar power generation projects. To prepare the city for an increasingly electrified future, city and state policymakers should take action to enhance transmission capacity and reduce the time it takes to connect local renewable energy sources to the city's grid. State policymakers should enact the Renewable Action Through Project Interconnection and Deployment (RAPID) Act, which would create a one-stop-shop for the environmental review and permitting of major renewable energy and transmission facilities, and overhaul existing regulations that can add years to project timelines.
- **Work with Con Edison to strengthen NYC's energy grid and reduce interconnection delays.** Within the five

boroughs, significant new investments will be needed to bolster the capacity of the city's energy grid to accommodate future demand. Several areas of the city, including the northeast Bronx, southern Brooklyn, and southeastern Queens, are likely to reach or exceed grid capacity if major new electrification efforts succeed, shifting peak demand times from summer to both summer and winter. And although Con Edison boasts one of the most reliable grids in the nation, notching an impressive 99.99 percent uptime in 2022, the future work ahead is significant. The city and state should work closely with Con Edison to ensure that massive necessary grid upgrades and new substations are planned and completed in advance of 2030.[22] In addition, city leaders should work with the utility to accelerate the process for buildings that need to acquire service upgrades, a requirement that currently serves as a barrier for building owners that want to electrify their properties.

- **Introduce incentives to usher in more grid-interactive buildings.** Emerging technologies can provide building owners with important new mechanisms for achieving decarbonization goals in the form of grid-interactive buildings—buildings that use advanced building control systems to optimize performance, reduce emissions, generate or release energy as needed from rooftop solar and in-building batteries, and lower operating costs. The city and state should introduce new incentives to promote these investments, helping to make the grid more efficient and resilient, while improving the performance of individual buildings.

3. UNLEASH GREEN TECH INNOVATION THROUGH CHALLENGE-BASED PROCUREMENT. New York City is home to a small but growing number of climate-tech, clean-tech, and other sustainability-focused start-ups, and this ecosystem is poised to grow significantly in the years ahead. One key opportunity to help unlock more growth potential among the city's green tech start-ups is by dramatically expanding the use of challenge-based procurement. Today, start-ups often struggle intensely to compete for city and state contracts. Big companies have several major advantages, including the ability to compete for contracts that may not lead to payment for a year or longer. In recent years, entities such as the Brooklyn Navy Yard, Downtown Brooklyn Partnership, and Governors Island have taken steps to encourage more start-ups to pilot their technologies in New York City. But much untapped opportunity remains for effective demonstrations of new green tech to grow into citywide deployments. To achieve this, the city should dramatically expand challenge-based procurement for climate solutions—for everything from AI-powered building control systems to battery storage infrastructure that can replace street vendors' reliance on gas-powered generators. Despite the city's growing climate tech ecosystem, the city's current procurement process is nearly impossible for start-ups to access. A major expansion of challenge-based procurement—a competitive process in which successful pilot projects can grow into larger procurement contracts—can help start-ups bring their innovative products and services to scale. NYCEDC should work with other agencies including the Department of Citywide Administrative Services to launch new challenge-based procurement processes for a range of products and services that will help accelerate decarbonization efforts and ensure that more of the city's pioneering start-ups are able to test and grow their technologies in the public sector.

4. **ACCELERATE THE PACE OF EV ADOPTION BY RAMPING UP EV INFRASTRUCTURE.**

- **Rapidly deploy EV charging infrastructure and consider new incentives.** Achieving the city's emissions-reduction and job-creation goals in the green economy will only be possible with a massive transition away from gas- and diesel-powered cars and trucks to electric vehicles and zero-emissions vehicles of all types. But progress has been slow, in part because of the high cost for consumers and in part because existing EV and zero-emissions transportation infrastructure—from charging stations to micromobility lanes to secure bike parking—remains far too limited or even nonexistent. NYCEDC's recent push to develop industrial-scale EV-charging hubs on city-owned property is a strong start, as is NYCDOT's proposed rule to expedite approvals of private property owners installing chargers on public sidewalks. But to induce far more uptake for electric vehicles, including major commercial fleets like school buses and delivery trucks, the city will need to do more. Key steps should include designating thousands of city-owned sites for EV charging infrastructure—from lampposts to parking lots to curbside sites; launching challenge-based procurement with clear scale-up opportunities for successful pilots; identifying existing city tax incentives where rules changes or clarifications can make EV charging and micromobility infrastructure investments eligible; expanding rapid charging

infrastructure that can support the energy needs of electric trucks; enforcing the implementation of Local Law 55, which requires new parking facilities to include charging stations; and developing new incentives to spur the introduction of charging stations in existing parking facilities. The state should also consider implementing new EV tax credits, in the event that the federal government reduces or eliminates the $7,500 credit on new purchases.

- **Invest in micromobility infrastructure to spur more widespread adoption and increase safety.** The growing appeal of electric micromobility options like e-bikes and e-scooters also presents New York with a major opportunity to decarbonize transportation while boosting green jobs. But further adoption by both consumers and commercial fleets will be constrained without additional infrastructure investments. The Department of Transportation's recent authorization of e-cargo bikes and plan to install 500 secure bike storage with possible e-bike charging capabilities are important steps. Additional actions should include a state-level legalization of additional cargo e-vehicles (currently, state law restricts e-cargo bike widths to 36 inches or fewer, and motorized trailers are illegal). Policymakers should work with the Department of Transportation to create dedicated electric micromobility lanes and ramp up the expansion of bike lanes, which has slowed alarmingly in recent years. The city should also launch a network of secure bike parking stations that can double as e-bike charging hubs. Finally, the city will have to build on recent progress to help make e-bikes safer, including the launch and expansion of e-bike battery charging and exchange hubs and an expansion of voluntary battery trade-in programs.

5. EXPAND SOLAR POWER GENERATION BY TARGETING NEIGHBORHOODS AND SECTORS WITH THE MOST UNTAPPED OPPORTUNITY. New York has made significant progress incentivizing the deployment of solar power on city rooftops over the past few years, reaching a record 621 megawatts of power generation capabilities in 2024. At the same time, several parts of the city are lagging behind, including many lower-income communities, as well as most of the city's large commercial and industrial buildings. For instance, just 7 percent of the city's installed solar capacity is on large commercial or industrial buildings, and only 14 percent is located in the Bronx. Fortunately, the City of Yes for Carbon Neutrality plan addresses some of the key barriers to solar installation, such as overly restrictive rules around siting panels on rooftops and installing battery storage systems—rules that have largely inhibited the installation of solar on large multifamily and commercial buildings. However, to sustain this key sub-sector's impressive growth, city and state policymakers should do more to expand solar adoption by making solar power installation more affordable for lower-income buildings, targeting some incentives to large commercial and industrial buildings, and installing far more solar systems on city- and state-owned buildings.

- **Replicate the city's NYCHA community solar program across other city-owned buildings.** The New York City Housing Authority (NYCHA) has made a significant commitment to incorporate 30 megawatts of solar energy on its properties by 2026 through the implementation of its community solar program, with as many as 30 major projects underway as of 2024. The mayor should allocate funding for other agencies and public entities—including the City University of New York and the city's three public library systems—to adopt similar solar programs and set a target of deploying 150 megawatts of solar power generation capacity on city-owned buildings by 2030. These investments can also help reduce energy costs and ultimately save the city some operating dollars.
- **Target state incentives to expand solar adoption in lower-income communities.** The city and state have an important role to play in making solar more affordable—boosting uptake in areas where the pace of installation has lagged far behind, including across much of the Bronx. First, state policymakers should expand the residential solar tax credit by making it refundable for low-to-moderate income households and increase the maximum tax credit amount to $10,000 to adjust for inflation, and include energy storage. The state should work quickly to deploy funds from the federal Solar for All grant competition, which can help address the significant gap in uptake for rooftop solar among New York City's lower-income buildings, and allocate at least $125 million to overcoming the barriers to solar installation on multifamily and affordable housing, expanding community solar programs, and supporting workforce training in the solar industry.
- **Strengthen requirements around rooftop solar and green roofs.** City government can also do more to strengthen

existing mandates around solar. As currently designed, Local Laws 92 and 94—which require solar panels or green roofs on all new construction and buildings undertaking major roof renovations—include a broad range of exemptions, which have constrained the impact of these regulations. For instance, the law does not apply to rooftop structures and mechanical equipment, setbacks, terraces, and recreational spaces, among other uses. Policymakers should consider options for revising these exemptions or creating new protocols so that rooftops with these and other exempted uses still devote at least a portion of available space to solar and green roofs—such as a solar canopy above a terrace, or a green roof surrounding mechanical equipment.

6. LEVERAGE THE CITY'S ZERO WASTE GOALS TO SPARK ECONOMIC GROWTH. New York City has a long way to go to reduce the approximately 12,000 tons of waste generated daily, the majority of which ends up in landfills. Fortunately, taking steps to get New York City back on the path to achieving zero waste can help accelerate job creation in the green economy. The city should launch Reuse NYC, a major new five-borough effort to divert reusable materials from the waste stream and incentivize companies to switch from single-use products, building on the encouraging release of NYCEDC's Circular Construction Guidelines for capital projects. Key steps could include identifying a publicly owned site across the five boroughs where companies, start-ups, and nonprofits can develop sustainable waste management businesses with below-market-rate land leases; targeting existing tax incentives to include the infrastructure needed to facilitate reuse and recycling; implementing a disposal surcharge on waste, with the funds allocated to support waste reduction, reuse, and recycling projects; and
passing legislation requiring producers and distributors of packaging materials to create and implement packaging reduction and recycling plans.

7. RAPIDLY BUILD THE INFRASTRUCTURE NEEDED TO SUPPORT THE OFFSHORE WIND INDUSTRY. New York stands poised to emerge as a national leader in offshore wind, with major production capacity coming to Long Island in the next two years. But even though the potential for significant job creation is evident, there's no guarantee that these jobs will be located within the five boroughs. That's because neighboring states have already developed the capacity to manufacture, assemble, install, maintain, and service offshore equipment—
including for New York's inaugural offshore wind farm, South Fork, which was assembled and installed from ports in Rhode Island and Connecticut. Encouragingly, city and state policymakers are proactively addressing this challenge. NYCEDC has invested $191 million in converting existing marine facilities, such as the South Brooklyn Marine Terminal, into an offshore wind port. Likewise, Empire State Development recently granted $48 million to convert the Arthur Kill Terminal on Staten Island. But city policymakers can't afford to take their eyes off the prize: the swift implementation of these initiatives will be essential for positioning New York City as a frontrunner in the rapidly expanding offshore wind industry and encouraging the development of an onshore ecosystem of businesses that can grow alongside the sector even as timelines are suddenly unclear, following the Trump administration's order to halt wind farm permitting. At the same time, the city should identify opportunities where turbine manufacturing, the most labor-intensive part of the industry, could be done within the five boroughs, and take steps to encourage the growth of offshore wind-related manufacturing jobs.

RECOMMENDATIONS: EXPANDING ACCESS TO JOB OPPORTUNITIES IN NYC'S EMERGING GREEN ECONOMY

New York City's emerging green economy is poised to become one of the key drivers of job growth over the next decade and beyond, and presents arguably the greatest opportunity in years to expand access to well-paying career opportunities for New Yorkers from low-income backgrounds. But while New York City is home to dozens of innovative workforce training programs—often the first of their kind—that prepare unemployed and underemployed New Yorkers for a range of green-economy jobs, much more work will be needed to align these programs with the evolving needs of an emerging sector.

To its credit, the Adams administration has made some important initial steps toward realizing this opportunity, including

several key commitments in the 2024 Green Economy Action Plan. Implementing those proposals—including the creation of green economy training facilities in each borough by 2030 and the expansion of green economy industry partnerships—will be vital to achieving the goal of ensuring equitable access to green economy careers. At the same time, more will have to be done. This report includes nine additional recommendations for growing and strengthening the workforce development and training ecosystem aligned with emerging green careers.

1. LAUNCH A GREEN ECONOMY DATA DASHBOARD AT NYCEDC TO INFORM WORKFORCE PROGRAM DESIGN AND INVESTMENT. To maximize the effectiveness of public and private sector investments in workforce development programs aligned with the emerging green economy, funders and providers alike will need access to accurate data on employment trends in green-related industries and occupations. But this poses a major challenge today. Neither the federal Bureau of Labor Statistics nor the state Department of Labor publishes data on green economy jobs, which makes it difficult for funders or providers to calibrate their programs to meet real-world labor market needs. Fortunately, the city's Economic Development Corporation has undertaken and published an extensive analysis of projected job growth in the city's green economy, which offers a broad view of anticipated trends. But to inform effective new workforce investments going forward, NYCEDC should develop and maintain a comprehensive green economy data dashboard—leveraging the Green Economy Action Plan's methodology to provide a quarterly window into job growth and skills demand trends across the city's emerging green sectors, or launching a challenge-based procurement for a new cutting-edge green economy labor market analytics tool. This data dashboard should be developed in partnership with the city's Workforce Development Council and eventually enhanced with data on education and training capacity aligned with key green economy industries and occupations, enabling city policymakers, training providers, and philanthropic foundations to gain a much clearer picture of the access challenges and opportunities in the emerging green economy.

2. LAUNCH A FIRST-OF-ITS-KIND INITIATIVE TO TAP CUNY'S STUDENTS TO BUILD A GREENER UNIVERSITY—PREPARING THEM FOR GREEN ECONOMY CAREERS. To prepare thousands of mostly low-income, first-generation college students for the green economy jobs that are coming online now and in the years ahead—and help spark the economic growth needed to bring these jobs to fruition—the city should make a major new capital investment in greening CUNY nearly 300 aging buildings, and launch a first-of-its-kind effort to tap CUNY's students to achieve this. This effort could provide immensely valuable hands-on experience for thousands of CUNY students in areas from architecture, engineering, and materials science, to finance and capital planning, to the building trades, while helping to reduce emissions from a key part of the city's portfolio. This effort could take advantage of an unprecedented opportunity to harness federal and state funding for building decarbonization efforts, while leveraging the many assets already in place at CUNY and coordinating several existing city, state, and philanthropic investments—from CUNY's Inclusive Economy Initiative to the state's approval of tuition assistance for workforce training. In a promising start, SUNY and CUNY will receive $150 million from the state's Clean Water, Clean Air, and Green Jobs Bond Act to support decarbonization efforts across campuses, but more is needed. Today, CUNY educates a growing number of students earning degrees and certifications in everything from clean energy HVAC and solar power to architecture and engineering to sustainability in the urban environment and offshore wind. At the same time, CUNY is home to the innovative Building Performance Lab, which has hands-on experience in building decarbonization strategies and materials. City College's Grove School of Engineering already operates cutting-edge renewable energy and building electrification research centers, and the Sustainable CUNY initiative has seeded hundreds of smart campus sustainability actions. This new initiative can succeed in putting CUNY students on the path to green economy careers, while transforming the nation's
most powerful economic mobility institution into its greenest one, too.

3. DEPLOY AN ELECTRIFICATION CAREERS CHALLENGE GRANT TO SCALE UP TRAINING PROGRAMS FOR HVAC TECHNICIANS AND ELECTRICIANS—TWO KEY OCCUPATIONS IN THE GREEN ECONOMY WHERE DEMAND IS ALREADY EXCEEDING SUPPLY.

Although much anticipated hiring demand is yet to materialize as the city's green economy gets on its feet, two key green-enabling occupations are already experiencing a surge of demand: HVAC technicians and electricians. As of 2023, New York City was home to 25,121 HVAC installers and electricians—and 28,348 jobs in these occupations. With 23 percent of this workforce currently ages 55-plus, this undersupply of talent is poised to grow. To address this gap and help expand access to these careers for New Yorkers from disadvantaged communities, the Adams administration should launch an Electrification Careers Challenge Grant—leveraging federal, state, and private sector funding—to help scale up existing workforce training programs aligned with these two key occupations, including union-linked pre-apprenticeships, apprenticeships, and direct-entry programs.

4. CREATE A PAY IT FORWARD PROGRAM FOR GREEN ECONOMY TRAINING PROGRAMS THAT DELIVER ON EMPLOYMENT OUTCOMES. Today, most of New York City's green workforce training programs are small in scale and heavily reliant on short-term public and philanthropic funding. Among the 42 unique green economy training programs profiled in this report, their total training capacity is only around 7,900 New Yorkers per year, and 17 programs serve fewer than 100 people annually. To help build the capacity of these programs and develop new ones aligned with emerging career opportunities, city leaders will need to identify sustainable funding streams that can support effective career training programs. To do so, the Adams administration should create a Pay It Forward program for green economy training programs that work, seeded with dollars from both the public and private sectors. Following the lead of the State of New Jersey, this program would offset the cost of tuition for effective training programs that consistently deliver strong employment outcomes, with graduates repaying the cost of tuition back into the fund—but only if they land a well-paying job after completing the program. This mechanism could provide a reliable source of ongoing funding for programs that prove to be effective, while incentivizing both government and providers to focus on programs that deliver results for their participants.

5. BUILD GREEN JOBS CAREER PATHWAYS INTO THE CITY'S MAJOR APPRENTICESHIP DEVELOPMENT EFFORT. New York City is taking decisive steps to expand apprenticeship pathways into well-paying careers, working toward a major goal of connecting 30,000 New Yorkers to apprenticeships by 2030. To that end, the city has launched the NYC Apprenticeship Accelerator—an idea initially proposed by the Center for an Urban Future in a 2021 report—and, most recently, issued a new request for proposals for organizations interested in developing new apprenticeship programs. Importantly, the city's Green Economy Action Plan includes a commitment to deliver 12,000 green economy apprenticeships by 2040. To get there, city and state leaders, unions, and the private sector will have to make new investments in launching and expanding apprenticeship programs aligned with green careers. Governor Hochul and the State Legislature should boost support for the city's vital effort, with new funding for apprenticeship intermediaries, unions, CUNY, and industry partners to cover program design and start-up costs and create playbooks for supervisors and trainers, and an effort to streamline the process for registering new apprenticeship programs with the state Department of Labor, so that employer partners are able to access existing tax credits. The city should invest in boosting the capacity of the NYC Apprenticeship Accelerator, with a decided staff member overseeing green economy apprenticeship development and launch new RFPs for pre-apprenticeship programs and onramps in the building trades, renewable energy, electric vehicle infrastructure, and sustainable waste management, so that community-based organizations can receive funding to help residents with barriers to training and employment connect with existing and new apprenticeship programs that might otherwise be out of reach. At the same time, the city's building trades unions should commit to expanding the number of new hires made through pre-apprenticeship pathways, and partner with the NYC Apprenticeship Accelerator to build pathways into the occupations with the greatest number of projected openings in the years ahead, like electricians and HVAC technicians, as a growing number of members reach retirement age.

6. BUILD A CLIMATE TECH FELLOWSHIP PROGRAM TO HELP DIVERSIFY TALENT PATHWAYS INTO EARLY-STAGE GREEN TECH START-UPS.

One small but highly promising area within the city's emerging green economy is the cluster of start-ups focused on climate change, green tech, clean tech, climate finance, and other technology-powered products and services aimed at accelerating the transition toward carbon neutrality. Jobs in these start-ups are poised to grow significantly, as venture capital and institutional investment flows into this sector. Importantly, these early-stage jobs also function as key drivers of wealth creation, as employees gain equity in their companies. Many of these early employees will go on to be the funders and founders of the future. To help expand access to employment opportunities in the city's green tech ecosystem, new investments will be needed in developing career pathways into green economy start-ups. The city should create a new Climate Tech Fellowship Program—potentially in partnership with Tech:NYC, the city's Tech Talent Pipeline, and CUNY—aimed at cultivating the next generation of underrepresented tech talent interested in solving climate-related challenges. The Fellowship would provide participants with access to mentors in the industry, networking opportunities, professional development, and paid internship experiences with start-ups and other firms working on climate tech innovation, with the goal of ensuring that more New Yorkers of color are able to get in on the ground floor of the city's growth-stage green economy start-ups.

7. LAUNCH NYC'S FIRST GREEN ECONOMY OPPORTUNITY FAIR FOR MIDDLE- AND HIGH SCHOOL STUDENTS. Many of the students in New York City's middle- and high schools today are eager to seek out opportunities in the green economy after graduating, but many more simply do not know where to start. In order to expand access to green economy careers, more should be done to boost green career exploration opportunities in the city's public schools and raise awareness of the postsecondary pathways that exist for a range of green careers. To help address this challenge, the Adams administration should work with New York City Public Schools to launch the city's first annual NYC Green Economy Opportunity Fair, modeled on the highly successful NYC Computer Science Opportunity Fair (CS Fair), which has grown to become the city's largest annual college and career inspiration event for public high school students. Like the CS Fair, the Green Economy Opportunity Fair would bring together CUNY and other colleges, postsecondary training providers, and employers for a major showcase of the career opportunities and education and training programs that exist in the city's green economy, with the goal of inspiring more young people from low-income communities to pursue pathways into green careers.

8. CREATE A GREEN ECONOMY RESKILLING COUNCIL TO HELP DEVELOP AND EXPAND TRAINING IN GREEN SKILLS FOR INCUMBENT WORKERS. Although the growth of the green economy is poised to create thousands of new jobs, a large portion of the city's current and future green careers will be an adaptation of existing jobs. The Adams administration's Green Economy Action Plan projects that of the estimated 250,000 jobs added to the city's green economy by 2040, 175,000 will be current jobs that will become sustainability-focused, whereas only 75,000 will be entirely new jobs. Ensuring equitable access to these transitioning jobs will require a major expansion of reskilling programs for current workers—an area in which New York City has made relatively little investment in recent years. To change this, the city should launch a Green Economy Reskilling Council—a public-private partnership comprising members of the city's Workforce Development Council and Board, Green Advisory Council, LL97 Mobilization Council, and NYC Talent's Industry Partnerships—as well as leading training providers, unions, other trade associations, and CUNY. The Council would advise the city and partner organizations on reskilling needs across occupations and industries within the broader green economy and lay the groundwork for a major new investment in reskilling programs between now and 2030.

9. INTEGRATE WRAPAROUND SERVICES INTO WORKFORCE DEVELOPMENT CONTRACTS In addition to growing the city's workforce training ecosystem for green careers, city leaders should prioritize new investments in wraparound services and other key supports like wage subsidies that can make programs more inclusive and effective. Several organizations interviewed for this report cited a lack of funding for these supports—including stipends and wage subsidies, OMNY cards, and childcare—as a major barrier to participation for the New Yorkers
who would otherwise benefit the most. In addition, programs that are able to offer these supports generally demonstrate better persistence, completion, and post-completion outcomes, suggesting that relatively modest investments in wraparound

services can generate a stronger return on investment for public training dollars. The problem is that while some philanthropic foundations provide grants that can be used for these purposes, city workforce contracts generally do not—and federal funding comes with tight restrictions on these uses. To overcome
these obstacles, the city should incorporate flexible city tax levy funding specifically for wraparound services in future RFPs, help workforce providers build capacity to screen participants for benefits eligibility, and pilot new workforce funding designed to test and assess the effectiveness of specific supports on program outcomes.

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CENTER FOR AN URBAN FUTURE
120 Wall Street, 20th Floor, New York, NY 10005

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