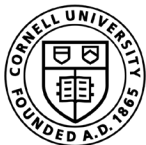


# CLIMATE FOR CHANGE

## A CLIMATE JOBS ROADMAP FOR NEW YORK CITY



**ILR School**



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# FEBRUARY 2022



The Worker Institute at Cornell engages in research and education on contemporary labor issues, to generate innovative thinking and solutions to problems related to work, economy and society. The institute brings together researchers, educators and students with practitioners in labor, business and policy making to confront growing economic and social inequalities, in the interests of working people and their families. A core value of the Worker Institute is that collective representation and workers' rights are vital to a fair economy, robust democracy and just society.

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# ACKNOWLEDGMENTS

In 2015, the Worker Institute's Labor Leading on Climate Initiative partnered with New York labor unions and industry, environmental, environmental justice, and government leaders on a comprehensive and innovative research, educational, and policy process. This collaboration, initiated after Hurricanes Sandy and Irene devastated large parts of downstate and upstate New York – helped spark the creation of Climate Jobs New York (CJNY). This campaign repositions unions as an engine to tackle the climate crisis and works to develop a robust and equitable cleanenergy economy in New York State.

*Reversing Inequality, Combating Climate Change: A Climate Jobs Program for New York State* –the 2017 report released by the Labor Leading on Climate Initiative – emerged from this process. It reframes the public debates around climate change by demonstrating how effective state policy can combat climate change, improve the lives of working people, strengthen New York State's economy, and build more equitable, resilient communities.

This 2022 report, *Climate For Change: A Climate Jobs Roadmap for New York City* is a continuation of this effort for New York City but with new recommendations that acknowledge new realities, challenges and opportunities. This is an abridged report with one highlighted recommendation per sector. A full-length report with additional, extensive recommendations will be released in early 2022.

The Labor Leading on Climate team met with and spoke to 60 leaders from the local labor and environmental movements, policymakers, and experts in the climate, energy, and labor fields to develop the recommendations in this report.

Cornell's Labor Leading on Climate program would like to thank Climate Jobs New York and the many unions, labor federations, and environmental and community groups that participated in this process and continue to show bold leadership and commitment to tackling climate change and inequality.

Special thanks go to New York City Central Labor Council, AFL-CIO (NYCCLC); the American Federation of State County and Municipal Employees (AFSCME), District Council 37; the New York State Building & Construction Trades Council; the Building & Construction Trades Council of Greater New York (BCTC); the Building & Construction Trades Council of Nassau and Suffolk Counties (NSBCTC); the Communications Workers of America (CWA), District 1; the International Brotherhood of Electrical Workers (IBEW), Local 3; the International Brotherhood of Electrical Workers (IBEW), Third District; the International Union of Operating Engineers (IUOE), Local 30; the International Union of Painters and Allied Trades (IUPAT), District Council 9; the Construction and General Building Laborers' Local 79, the Long Island Federation of Labor; the New York City District Council of Carpenters and Joiners of America; the New York State Nurses Association (NYSNA); the 32BJ Service Employees International Union (SEIU); the Transport Workers Union of America, AFL-CIO (TWU), the Transport Workers Union (TWU), Local 100; the United Association of Journeymen and Apprentices of the Plumbing and Pipe Fitting Industry of the United States and Canada (UA); and the Utility Workers Union of America, Local 1-2.

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# INTRODUCTION

In 2017, Cornell University's ILR School released a groundbreaking report, *Reversing Inequality, Combating Climate Change: A Climate Jobs Program for New York State* (Skinner & Cha, 2017). This report was based on interviews, policy research, and educational convenings that brought labor, industry, environmental, environmental justice, and government leaders together to design high-impact job strategies to meet the state's climate, equity, and jobs goals.

The 2017 recommendations showed how New York could simultaneously address the crises of inequality and climate change through bold climate policies that would drive high-quality job creation and economic development. One of the report's featured recommendations – to build 8 gigawatts of offshore wind by 2030 with a Project Labor Agreement requirement that ensured high-quality job creation for all – was adopted in 2019, making New York a leader in the development of offshore wind.

Cornell's multi-dimensional research, policy and educational process also sparked the formation of Climate Jobs New York (CJNY) – a union-led climate organization that repositions unions as engines to fight climate change alongside racial and economic inequality. It also led to the formation of Climate Jobs plans and coalitions in many other U.S. states.

Cornell is thrilled to update the 2017 report and release a new Climate Jobs Program for New York City in 2022. With the new Mayor, Eric Adams, and an almost entirely new City Council, New York City has the opportunity to lead the world in building a diverse, inclusive and equitable clean energy economy that beats back the worst impacts of climate change.

Climate change is an environmental catastrophe *and* it is one of the most important social, racial and economic justice issues of our time. Storms like Hurricane Ida show that every New Yorker will feel the impacts of climate change. However, the most vulnerable in our city – frontline, low-wage workers, communities of color, the elderly and others – will suffer the most, bearing a disproportionate burden of this crisis.

New York State has the highest income inequality in the country, with New York City being the most unequal metro area in the state (EPI, 2022). The disparities in income by race are particularly stark – in 2019, the median household income for a White family was \$103,272, while only \$51,991 for Black families and \$47,963 for Hispanic families (NYU, 2020). Additionally, the City Council reported in 2021 that the median salary for men was \$21,600 higher than women in the City's workforce (NYCC, 2021).

The COVID-19 pandemic highlighted and intensified New York City's crisis of inequality. The hospitalization and age-adjusted fatality rates among Black and Hispanic New Yorkers were more than double the rate for White individuals (UAlbany, 2020). A University at Albany report notes that some of this inequality stems from a larger portion of Black and Hispanic individuals who are essential workers in New York. Additionally, they are more likely to rely on public transportation and commute farther than the White labor force (UAlbany, 2020). According to a report by the City comptroller, 75% of all New York City frontline workers are people of color (NYC Comptroller, 2020). Climate change exacerbates and worsens these existing inequalities, making it imperative that all climate protection policies are also strategies to reduce existing inequalities.

On the climate front, climate scientists have made it clear that this decade, from 2020 to 2030, is crucial to addressing climate change. Without drastic reductions to our emissions by 2030, we lock ourselves into catastrophic levels of planetary warming. New York City is particularly vulnerable to extreme storms, sea level rise and flooding, intense heat and corrosion.

Without bold climate action, rising temperatures will cause New York City to continue to experience dangerous, extreme storms similar to Hurricane Sandy and tropical storms Elsa, Henri, Ida, and Isaias which are costly and cause flooding, forceful wind, and power outages. These storms affect the health and safety of all New Yorkers, hitting socially vulnerable residents the hardest (EPA, 2021).

As a coastal city, New York is particularly vulnerable to sea-level rise and increased flooding from storms. Sea-level rise and storm surges damage city infrastructure including buildings, roads, transportation systems, energy systems, and wastewater management. Small changes in sea levels are able to greatly increase the number of storm surges in the City (SLR, 2022). By 2050, 37% of buildings in Lower Manhattan will be exposed to storm surges. Additionally, groundwater table rise is expected to expose 39% of streets with underground utilities to water infiltration and corrosion (NYC EDC, 2022). Also demonstrating how impactful sea level rise and flooding is to New York City and its residents, 35 of New York City's 51 council seats are waterfront districts.

The number of days over 90 degrees Fahrenheit in New York City is expected to increase by 2050 and extreme heat is more than an inconvenience (NYCPCC, 2013). It is dangerous for vulnerable populations and outdoor workers, creates excess demand on the power grid, and strains the healthcare system. While the City's infrastructure overall makes it vulnerable as one of the most intense urban heat islands, there are micro-urban heat islands in South Bronx, Harlem, central Brooklyn, and parts of eastern Queens, meaning that communities of color and low-income people are at a higher risk of extreme heat and the negative health effects (Maldonado & Choi, 2021).

Another disastrous effect of climate change is corrosion. Over time, the increased presence of carbon dioxide with increased temperature and humidity can cause the premature erosion of concrete. It is estimated that due to the current effects of climate change, one in six structures will experience concrete erosion by 2100 (Stewart et al., 2012). Corrosion can negatively affect New York City's water supply, energy systems, and transit systems (Zimmerman et al., 2019).

As the 10th largest economy in the world and one of the cities with the largest carbon footprints, New York City has a critical role to play in leading the fight *against* climate change and *for* a diverse, inclusive, clean energy economy that lifts up all New Yorkers (NYCEDC, 2022; Wei et al., 2021).

Climate change, racial injustice, and economic inequality and recovery are not separate issues. These are intersecting crises that require bold goals and effective policies that deliver significant reductions in emissions and pollution, high-quality jobs, and investment in frontline communities that have suffered the most from environmental injustices and historic inequities.

Based on a close assessment of New York City's climate and energy profile and the latest climate science, the following Climate Jobs recommendations speak to the current moment. Climate change is a massive challenge, but also an unprecedented opportunity to invest in our communities, our health and our future.

New York City can show the rest of the world how to make our schools, public housing, and health and hospital systems clean, green and healthy. Our students, teachers, staff and residents deserve carbon-free and healthy buildings, and investments in these buildings can create good jobs for local residents, significantly lower the City's energy bill, and tackle climate change.

In response to this pandemic, New York City can rebuild, expand and electrify its transit system. The New York City transit system is climate-friendly, provides an excellent alternative to private vehicles, and expands access to jobs for many New Yorkers who can't afford a car (NYC Comptroller, 2020).

These are just a few examples of the Climate Jobs recommendations in this report. Taken together, these recommendations present a bold vision for strengthening New York's economy, tackling climate change, and addressing racial and economic inequality through the creation of high-quality jobs targeted at those who need them most.





# MAKE NYC SCHOOLS SAFER, HEALTHIER, AND CARBON-FREE

Transition all New York City K-12 public schools to net-zero by conducting deep retrofits and installing 1.1 gigawatts of renewable energy plus battery storage by 2030 under a Project Labor Agreement.

The New York City Department of Education (NYC DOE) has 1,876 schools (DOE, 2022). Many of these buildings are antiquated – with an average age of 69 years – and in need of repair (MOS, 2021). They house inefficient air conditioning and heating systems, deteriorating rooftops, and outdated electrical grids. These buildings rely heavily on carbon-intensive energy sources for heating, cooling, and electricity, and only about .2% of school energy is produced from solar energy (MOS, 2020).

To be a Carbon-Free and Healthy New York City School District, every DOE building must be energy-efficient, electrified, and powered by renewable energy by 2030. The City should conduct deep retrofits to reduce the energy use of existing school buildings by 50% of the 2019 baseline where applicable, and ensure all newly-constructed schools are built energy-efficient (with energy use intensity no greater than 20 kBtu/square feet per year), electrified, and equipped with on-site solar.



The City should install 1.1 gigawatts of renewable energy on school rooftops, parking lots, and other City-owned property to meet remaining school energy needs. It should consider incorporating Building Integrated Photovoltaics (BIPV) such as PV windows, facades, skylights, and vertical solar arrays on school buildings during construction or deep retrofits to add surface area for energy production. It should also produce a detailed plan on how it will meet all on-site heating, cooling and electricity needs with renewable energy by 2030.

New York City must prioritize frontline, environmental justice communities first for retrofits and solar installation. The City should also review factors such as environmental justice and opportunity zones, air pollution-attributable asthma hospitalization rates, age of buildings and roofs, among others. See this Cornell University Carbon-Free and Healthy Schools Dashboard for more information, <https://bit.ly/3wGYBFx>.

The NYC DOE spends approximately \$275 million per year on energy for school buildings – all of which can be redirected if every school becomes net-zero (CJNY, 2021). These funds could be used for school programs and to hire additional staff and teachers. By prioritizing investment in school building retrofits and solar energy installations, the school system can save millions in energy costs while creating thousands of good-paying union jobs for frontline communities. This initiative will provide renewable energy for New York City's public schools while leading the way towards the 80% carbon emissions reduction by 2050 target that the City has adopted.

There is support and momentum to prioritize schools through the work of several active campaigns. Both Climate Works for All's *Creating Green, Healthy Schools* and Climate Jobs New York's *Carbon-Free and Healthy Schools* outline the reasons to prioritize the swift implementation of these recommendations (CJNY, 2021; Nguyen et al, 2021).





Not only is it crucial that school buildings are safe and healthy for the students and staff who occupy them and the communities that surround them, but their transition can lead the way for carbon-free buildings citywide, laying a blueprint that will spur more effective models. For example, these models can help bring expanded carbon reduction goals to the New York City Housing Authority (NYCHA) and the New York City Health + Hospitals (NYC H+H). With 2,410 buildings, the majority of which are 50 years or older, NYCHA is in dire need of investment to foster a healthier living environment (NYCHA, 2020).

Comprehensive retrofits, solar installation, and system upgrades, coupled with the implementation of Section 3 hiring requirements, will achieve this goal while also creating high-quality jobs for NYCHA residents. NYC H+H has over 70 hospitals and care centers that require energy reliability. The knowledge gained from this initiative can help inform upgrades, renewables, and long-term battery storage at other City facilities (NYC H+H, 2022).

### **Carbon-Free, Healthy, and Resilient NYCHA**

The NYCHA is the largest public housing authority in the United States, providing affordable housing to 547,891 authorized residents in over 177,611 apartments within 335 developments through public housing, Section 8, and PACT/RAD programs (NYCHA, 2021). Recent investigations have found that NYCHA residents - the vast majority of whom are people of color – have been put at significant risk from lead and mold issues, lack of heat, climate events and more (News12, 2022), (Morales, 2021), (CBS, 2022). Through deep retrofits, renewable energy and storage installations, expanded green space, and immediate repair of hazardous conditions, NYCHA can be transformed into the carbon-free, healthy housing that its residents deserve. These investments could create thousands of jobs per year and build on successful preapprenticeship and apprenticeship programs for NYCHA residents. In 2016, District Council 9 of the International Union of Painters and Allied Trades (IUPAT) established a new apprenticeship program that creates a pipeline for NYCHA residents to high-quality careers as union painters (Cusano, 2016).



**Estimated Job Creation:** Conducting deep retrofits and installing solar plus battery storage to meet energy needs of all public schools would create nearly 62,804 direct jobs over 8 years, or 7,850 direct jobs per year.

**Ensuring High-Quality Jobs:** Requiring a Project Labor Agreement will guarantee that all work is performed safely and with targeted hiring goals that ensure paid on-the-job training and high-quality career pathways for women, justice-involved individuals, and frontline community members.

**Carbon Emissions Reduction:** Becoming a net-zero New York City School District would reduce emissions by 713,382 metric tons of CO<sub>2</sub>e by 2030 (MOS, 2020).

**Estimated Cost:** \$14.5 billion

# MAKE NYC AN OFFSHORE WIND HUB AND EXPLORE GREEN HYDROGEN DEVELOPMENT

The New York Power Authority can build 3 gigawatts of offshore wind by 2030 under a Project Labor Agreement and conduct a feasibility study on green hydrogen production potential at offshore wind ports and onshore substations.

The New York Power Authority (NYPA) has the procurement capacity to develop, own, and install 3 gigawatts of offshore wind by 2030. Having NYPA develop the power could be the most effective way to produce high-quality, affordable power in the public interest. For manufacturing and assembly, the City should consider appropriate city-and-state-owned substation locations including Oakwood Beach, Prince's Bay, and Floyd Bennett Field (NYSERDA, 2019).

The NYPA should also conduct a feasibility study on establishing green hydrogen hubs at New York City offshore wind ports and onshore substations, where offshore wind power can be used to aid in the production of green hydrogen. Conducting a study on the feasibility of green hydrogen hubs at urban offshore wind ports would be one of the first of its kind in the world. It would be critical to understanding how green hydrogen can be produced and distributed in large-scale urban areas like New York City.

Installation and maintenance of offshore wind components should be completed under a Project Labor Agreement with priority hire agreements for frontline communities. This will ensure the work is performed by highly-skilled workers with a paid-on-the-job training pipeline from New York's most disadvantaged communities. The NYPA can take all the steps that are legally permissible to guarantee that 50% of offshore wind components are manufactured locally and in-state to drive the creation of high-quality manufacturing jobs. The City should also make certain, to the maximum extent possible, this work is performed under a Labor Neutrality Agreement so that workers have the opportunity to raise a democratic, collective voice on the job.



**Estimated Job Creation:** Installing 3 gigawatts of offshore wind by 2030 has the potential to create 42,809 direct jobs over 8 years, or 5,351 direct jobs per year.

**Ensuring High-Quality Jobs:** A Project Labor Agreement would ensure that workers installing, maintaining and operating the 3 gigawatts of offshore wind collect fair compensation and have good worker protections. Setting a target of 50% local, in-state manufacturing would ensure that these jobs contribute directly to New York's economy, it would also strengthen the offshore wind supply chain in the Northeast region.

**Carbon Emissions Reduction:** 5,304,180 metric tons of CO

**Estimated Cost:** \$12.2 billion

# SHIFTING TO CLEAN, ELECTRIC TRANSPORTATION: ENSURING EQUITY FOR WORKERS AND COMMUNITIES

Build on the City's commitments to electrify transportation by 2030 by prioritizing high-quality job creation and equity and keeping important infrastructure assets under public purview.

Electrification is a critical way to reduce emissions in the transportation sector. There has been significant progress on state and City commitments to electrify transportation, with an all-electric bus and municipal fleet expected by 2040 and a new commitment for an all-electric school bus fleet by 2035 (City of New York, 2021; MTA, 2021; NYC DCAS, 2021). New York City must leverage its massive upcoming public investments - most notably the 2021 Infrastructure Investment and Jobs Act - to ensure this transition creates good-paying union jobs and provides defined career pathways for current workers in the transportation industry. The City has also recognized the need to provide a plan to install 46,000 on-street public charging stations by 2030 (NYC DOT & NYC MOCS, 2021). However, the public sector must lead this infrastructure development and ensure that equity is at the forefront.

## **Improving and Expanding Public Transit is Key to Tackling Climate Change**

Mass transit is one of the most efficient, climate-friendly ways to move people, and a larger portion of New York City's population uses public transit than in any other U.S. city. Tackling climate change requires bringing New York City's transit system to a state of good repair and improving and expanding it so City residents have the efficient, extensive transit system they need. The transportation electrification recommendation is highlighted in this sector to acknowledge the intensive amount of effort currently taking place in this area. However, in addition to electrification, continued investment in public transit is paramount to addressing climate change and building an equitable, clean energy workforce with high-quality jobs. Public transit must be viable and safe to support the City's most vulnerable and essential while supporting climate goals. Seamless, frequent, and good public transit service in this region is within reach. Over \$10 billion in new monies must be invested to accelerate critical subway expansion projects, including the Interborough Express to include The Bronx (Triboro Rx), as well as building a "Gold Standard" Bus Rapid Transit Network in New York City, starting with Utica Avenue. While electrification is one opportunity in combating this crisis, getting New Yorkers out of their cars and into public transit is a more powerful way to reduce greenhouse gas emissions.

## **Center environmental justice communities in the EV transition**

New York City should ensure that local environmental justice communities are prioritized and directly consulted about areas where EV (Electric Vehicle) assets will be deployed, including bus

depots and yards that will be retrofitted to accommodate EVs.

### **Meet the EV momentum with installation of city-wide public charging infrastructure**

The New York City Department of Transportation (NYC DOT) should engage in a public build-out of on-street NYC charging infrastructure to ensure the work is completed safely and efficiently. The NYC DOT should install, operate and maintain 50,000 public chargers by 2030 under a Project Labor Agreement and require Electric Vehicle Installation Training Program (EVITP) Certification for the installation of chargers to ensure safety standards and support good jobs.

Installing 50,000 chargers would cost an estimated \$272 million and create 380 jobs over 8 years. Many more jobs could be created through operations and maintenance of chargers and manufacturing of both chargers and electric vehicles in New York State.

### **Leverage public investment in electric bus commitments to support local manufacturing and assembly**

New York City should leverage its public investment in electric vehicle buses to ensure that manufacturing jobs are created locally. The City should set a requirement that at least 50% of public charging infrastructure and new electric vehicle public transportation or municipal fleets be manufactured or assembled in New York State and set a local hiring requirement for all manufacturing.

### **Establish a large-scale electric bus upskilling program for City operations and maintenance bus staff and ensure new jobs are high-quality, union jobs**

To ensure a safe, effective transition to low-carbon electric buses, the City should require the development of a large-scale uptraining program for bus mechanics and associated maintenance staff so they can be ready to support operations for an all- electric fleet.

The City and the Metropolitan Transportation Authority (MTA) must also guarantee that the current 17,862 MTA and NYC Transit operations and maintenance bus staff who work on diesel and hybrid vehicles are retained in the transition to electric buses. This figure does not currently include school bus mechanic staff. This will ensure that current diesel and hybrid bus mechanics can shift to supporting electric bus operations and that the City will continue to build a high-quality, diverse and well- paid workforce.



# IMPLEMENT RENEWABLE RIKERS CENTERING A JUST TRANSITION AND WORKERS' RIGHTS

City agencies should implement *A More Just NYC* Renewable Rikers proposal through direct installation of a 90-megawatt solar farm, 300-megawatts of battery storage and construction of a wastewater resource recovery facility under a Project Labor Agreement on Rikers Island by 2035. To ensure a just transition and workers' rights, the City should:

- Require training and just transitions for existing workers
- Require priority hiring, work hours, and new placement opportunities for justice-involved individuals and members of frontline communities
- Set a 50% in-state manufacturing standard for procurement of materials needed for the installation of the solar farm and battery storage

New York City has a chance to reimagine Rikers Island. The second-largest jail complex in the United States is housed on this 432-acre island on the East River and is set to close by 2027 (Griffin, 2021). This opens up a once-in-a-lifetime opportunity to utilize this space for the benefit of all, especially frontline communities and workers most impacted by climate change, institutional racism, and underinvestment.

Rikers Island can be a force of resilience. New Yorkers recognize this, and organizations including the Urban Justice Center, the New York City Environmental Justice Alliance, the New York Lawyers for the Public Interest, and the National Resources Defense Council have advocated for Rikers Island to reduce waste and create green jobs for communities most harmed by mass incarceration (Renewable Rikers, 2022). With the passage of the 2021 Renewable Rikers Act, Rikers Island will be transferred to the New York City Department of Citywide Administrative Services (DCAS), and the City is required to conduct a feasibility study on renewable energy potential and battery storage (New York City Council, 2021).

Large-scale analyses of Rikers Island have already been conducted, including a 2017 study by an Independent Commission on NYC Criminal Justice and Incarceration Reform through *A More Just NYC*. The study found that the Island can host 90 megawatts of solar energy - enough to power 30,000 households - and 300 megawatts of battery storage (Lippman, et al, 2017). The study also analyzed proposals for a potential wastewater treatment facility, energy-to-waste facility, an academic research center, a memorial, and a public greenway.

The NYPA provides energy at 25% less cost than do local, private utility companies and should build, own, and operate the 115-acre solar farm, as well as promote the creation of affordable energy and high-quality jobs (NYCHA, 2020).

A collaboration with the NYC DCAS and the NYPA can ensure that the solar work is done under a Project Labor Agreement and that jobs produced are high-quality and family-sustaining for

frontline communities.

A new wastewater treatment facility can be a source of permanent high-quality jobs. The City should invest in pre- apprenticeship and workforce transition training programs for existing workers that prioritize the necessary skills for 21st- century innovations in wastewater management, including new implementation and control technologies.



**Estimated Job Creation:** Construction of a 90-megawatt solar farm on Rikers Island could create 559 direct jobs over 8 years, or 70 direct jobs per year. Installing 300-megawatts of utility battery storage could create 466 direct jobs over 8 years, or 58 jobs per year.

Operations and maintenance of these projects could create 1,500 permanent jobs (Lippman, et al, 2017).

**Ensuring High-Quality Jobs:** New York City can transform Rikers Island into a place of economic opportunities for workers most impacted by the prison system and climate change by investing in pre-apprenticeship training and prioritizing targeted hiring for justice-involved individuals and frontline community members.

**Carbon Emissions Reduction:** Implementing this proposal could reduce emissions by 689,719 metric tons of CO<sub>2</sub> (Lippman, et al, 2017) – the equivalent of taking 150,000 vehicles off the road (USEPA, 2021).

**Estimated Cost:**

- \$147 million for 90-megawatt solar installation
- \$360 million for 300-megawatt battery installation
- \$15 billion estimated cost for the entire proposal (Lippman, et al, 2017)

# EXPAND THE MAYOR'S OFFICE OF WORKFORCE DEVELOPMENT TO BUILD AN EQUITABLE, INCLUSIVE CLEAN ENERGY WORKFORCE

Prioritize spending to expand the Mayor's Office of Workforce Development to liaise directly with City agencies and develop a robust system of interagency cooperation to achieve workforce goals.

Investments in green energy must go hand-in-hand with equitable workforce development. It is crucial that these investments produce high-quality union job opportunities for frontline communities and that the skills required for a just transition are readily accessible. The City must foster agency-wide commitments to such standards and facilitate the coordination of anticipated opportunities and skills needs with access to the necessary training and jobs. The Project Labor Agreements entered into between the City and the Building and Construction Trades Council of Greater New York (BCTC) covering certain new construction and renovation projects are an example of such commitments. This commitment to a pipeline of good jobs allows for expanded opportunities for recruitment of new workers, training, and placement. These agreements contain workforce goals laid out in the City's most recent Project Labor Agreements that drive equity and career access for communities most in need by providing priority in both recruitment and referral for jobs to individuals in disadvantaged neighborhoods.

This example of a joint effort between the City's Workforce Development Office and the unions affiliated with the BCTC can be expanded and used as a model for an inclusive clean energy workforce across the board given increased resources for the Office of Workforce Development.

**Expanding the Mayor's Office of Workforce Development can achieve these goals and allow it to:**

- Develop tracking and outcomes measures to ensure successful implementation of the PLA's Community Hiring economic justice plan.
- Work across city agencies to ensure they are offering good job opportunities that can support increased demand for workers from target populations.
- Coordinate directly with contractors/ employers, Direct Entry training providers, unions working on PLA- covered City contracts and their apprenticeship programs, and community-based organizations to ensure equity goals are being met and best practices implemented.

Additionally, the City should increase its staff capacity at each agency (the DDC, the DOT, the DEP, the DCAS, etc.) with a dedicated focus on contractor accountability and coordinating the implementation and tracking of the community hiring workforce goals.



Governor Kathy Hochul in her 2022 New York State of the State address announced a new Office of Workforce Development and emphasized the importance of a comprehensive and creative approach to addressing workforce needs. She also highlighted the importance of expanding apprenticeships and supporting Direct Entry pre-apprenticeship programs (Hochul, 2022). This recommendation will help the City coordinate effectively with state efforts coming through the Regional Economic Development Councils. By expanding workforce development and facilitating coordination among agencies, the City can build on its collaborative efforts with stakeholders and create the conditions to further advance an equitable future for New Yorkers.



# The Infrastructure Investment and Jobs Act (IIJA) Funds for New York City



## MORE FEDERAL FUNDS

- \$50 million increase in NYC's federal funding per year
- \$1 billion in total funds going to NYC DOT over the next five years
- \$150 billion in national grants available to eligible NYC projects



## PUBLIC TRANSPORTATION

- \$10.7 billion for MTA construction projects
- Investments in publicly-accessible direct current (fast) electric vehicle charging stations
- Expansion of greenway bicycle paths with a focus on better borough connections



## BRIDGES AND TUNNELS

- \$2 billion to support restoration of up to 789 bridges across NYC
- \$8 billion to repair the Gateway Tunnel for a proposed rail tunnel under the Hudson River



## AIRPORTS

- \$295 million for John F. Kennedy Airport
- \$150 million for LaGuardia Airport



## FERRY

- Upgrading the Staten Island Ferry, the most utilized ferry service in the country with 70,000 daily passengers



## RESILIENCE

- NYC DOT will use funds to protect streets and bridges from flooding
- \$1 billion in national grants to improve connectivity of neighborhoods divided by highway construction available to eligible NYC projects

**All construction workers on IIJA projects will be paid prevailing wages under the Davis-Bacon Act.**

*(NYC DOT, 2021; Schumer, 2021; Mayer, 2021; US DOL, 2021; Ryan, 2021)*

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# NEW YORK COMMITMENTS

## 2022 STATE OF THE STATE HIGHLIGHTS



Require PLAs and prevailing wage on solar projects 1 MW or greater



Require net-zero NYC construction by 2027



\$500 million investment in offshore wind manufacturing and supply chain



Advance an interborough express transit line connecting Brooklyn and Queens



Upgrade the transmission grid so offshore wind plants can provide 6 GW of power to NYC



Electrify Hunt's Point Food Distribution Center



Establish a state Office of Workforce Development



Build or retrofit 2 million homes to be electrified or electrification-ready by 2030



Make New York a national green hydrogen hub



Retrofit more schools by expanding Green Schools Program



Launch offshore wind solicitation to procure 2 GW in new projects



Electrify state fleet and school buses by 2035

*(Hochul, 2022)*



# NEW YORK COMMITMENTS

## 2022 STATE OF THE STATE HIGHLIGHTS

- Require PLAs and prevailing wage on solar projects 1 MW or greater
- Require net-zero NYC construction by 2027
- \$500 million investment in offshore wind manufacturing and supply chain
- Advance an interborough express transit line connecting Brooklyn and Queens
- Upgrade the transmission grid so offshore wind plants can provide 6 GW of power to NYC
- Electrify Hunt's Point Food Distribution Center
- Establish a state Office of Workforce Development
- Build or retrofit 2 million homes to be electrified or electrification-ready by 2030
- Make New York a national green hydrogen hub
- Retrofit more schools by expanding Green Schools Program
- Launch offshore wind solicitation to procure 2 GW in new projects
- Electrify state fleet and school buses by 2035

(Hochul, 2022)

# CONCLUSION

With New York City on the frontlines of the climate crisis, it will take bold, ambitious action to combat climate change and reduce greenhouse gas emissions and pollution to the levels that science demands. Fortunately, tackling climate change is also an opportunity to address the other crises New York City is facing: race, discrimination and income inequality, and pandemic recovery. As a leading climate-focused city, New York can be innovative and efficient, employing cutting-edge approaches to reverse climate change and inequality while recovering from the pandemic. New York City has the potential to invest in high-impact strategies that deliver deep cuts in emissions and pollution, create high-quality union jobs for those who need them the most, and reduce energy costs. This would make New York's economy stronger, fairer, and more inclusive.

The “Climate Jobs” recommendations in this report show how New York City can move toward a path of building the equitable, climate-friendly economy that New Yorkers deserve.



# METHODOLOGY

Please note all estimates are based on the best currently available data. Job numbers, cost, and demand may shift due to changing economic markets and technological developments. Any policy implementation of these recommendations should require an additional review process.

## BUILDINGS

### *Recommendation*

- Transition all K-12 public schools to net-zero by 2030.

### *Cost Calculation*

- NYC public schools have a 2018-2020 average square footage of 160,958,666 (MOS, 2020) where we estimate deep retrofits and electrification cost a total of \$32/square foot (Carleton et al, 2019; Nagpal, 2019). Energy school usage – excluding existing solar - estimated with MOS 2020 reported energy usage for years 2018-2020. MBTU to KW conversion for NYC using 1KW:1400KWH ratio (ECP, 2016.). Use \$5/watt cost estimate for union rooftop solar installations (IBEW, 2021) and energy needs under a 50% energy reduction, deep-retrofit scenario. Estimated 3.3 gigawatts of battery storage needed for NYC schools and battery storage capacity up to 4 hours is \$300/kWh or \$1200/KW for 4 hours (Wesley et al., 2021).

### *Job Creation*

- For deep retrofits: 4.7 direct jobs per million dollars invested, 4 indirect jobs per million dollars invested, and 4.7 induced jobs per million dollars invested, with a subset of 1 manufacturing job per million dollars invested. For solar installations: 3.8 direct jobs per million dollars invested, 3.1 indirect jobs per million dollars invested, and 4.4 induced jobs per million dollars invested, with a subset of 3.1 manufacturing jobs per million dollars invested (Pollin & Chakraborty, 2020). For battery storage: used SEIA assumptions that storage deployment can be completed on average in 25% of the time to install solar by a similar crew (The Solar Foundation, 2016).

### *Emissions Reduction*

- Under a net-zero scenario, emissions reductions are approximated as DOE building emissions (MOS, 2020) averaged over 2018-2020.

## ENERGY

### *Recommendation*

- The New York Power Authority can build 3 gigawatts of offshore wind by 2030 under a Project Labor Agreement and conduct a feasibility study on green hydrogen production potential at offshore wind ports and onshore substations.

### *Cost Calculation*

- Cost of installation of an offshore wind generator in 2019 in the United States was \$4,077/kW (Stehly et al, 2020), and was used to get the total cost for 3-gigawatt

installation.

#### *Job Creation*

- 3.5 direct jobs per million dollars invested, 3.6 indirect jobs per million dollars invested, 4.7 induced jobs per million dollars invested, and a subset of 2.8 manufacturing jobs per million dollars invested (Pollin & Chakraborty, 2020).

#### *Emissions Reduction*

- CO<sub>2</sub> Emissions reductions were calculated using the EPA Avert Model (EPA, 2022). Using total reductions for New York State and assuming 6- 500MW offshore wind installations.

## Transportation

#### *Recommendation*

- Build on the City's commitments to electrify transportation by 2030 by prioritizing high-quality job creation and equity, and keeping important infrastructure assets under public purview. NYC DOT should install, operate and maintain 50,000 public chargers by 2030 under a Project Labor Agreement and require Electric Vehicle Installation Training Program (EVITP) Certification.

#### *Cost Calculation*

- Charging infrastructure and associated costs for an L2 charger is \$5,440 (Nicholas, 2019).

#### *Job Creation*

- 1.4 direct jobs per million dollars invested, 3.7 indirect jobs per million dollars invested, 3.5 induced jobs per million dollars invested, and a subset of 2.9 manufacturing jobs per million dollars invested (Pollin & Chakraborty, 2020).

## Resilience and Adaptation

#### *Recommendation*

- City agencies should implement A More Just NYC Renewable Rikers proposal through direct installation of a 90-megawatt solar farm, 300-megawatt battery storage and construction of a wastewater resource recovery facility under a Project Labor Agreement on Rikers Island by 2035, ensuring just transition and workers rights.

#### *Cost Calculation*

- The cost of installation of a utility-scale solar generator in the Northeast in 2019 was \$1,635/KW (EIA, 2021), and used to get the total cost for 90 MW Solar installation. The assumed Capital cost for battery storage up to 4 hours is \$300/kWh or \$1200/KW for 4 hours (Wesley et al., 2021). According to an analysis from the NYC Independent Commission on Criminal Justice and Incarceration Reform, this project would cost approximately \$15 Billion (Lippman, et al, 2017).

#### *Job Creation*

- For solar: 3.8 direct jobs per million dollars invested, 4.1 indirect jobs per million dollars invested, 4.4 induced jobs per million dollars invested, and a subset of 3.1 manufacturing jobs per million dollars invested (Pollin & Chakraborty, 2020). For battery storage: used SEIA assumptions that storage deployment can be completed on average in 25% of the time to install solar by a similar crew (The Solar Foundation, 2016).

#### *Emissions Reduction*

- Under estimate that this plan would take 150,000 cars off the road (Lippman, et al, 2017), converted emissions with EPA Carbon Equivalency Calculator (EPA, 2021).

# ENDNOTES

All end notes are listed in the order that they are cited within this report.

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