CLIMATE WORKS FOR ALL

# An Equitable Recovery for NYC

## Creating 100,000 climate jobs for frontline communities of color

October 2020

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Formed in 2014, Climate Works for All is comprised of environmental justice advocates, community organizations, labor unions, and faith-based organizations with the goal of addressing climate change and income inequality. Coalition members who contributed to this report include ALIGN NY: Alliance for a Greater New York, DC 37 Climate Justice Committee, Sierra Club, UPROSE, Urban Homesteading Assistance Board, New York City Environmental Justice Alliance, Pratt Center for Community Development, and TREEage.

This report and underlying research were produced by members of the Climate Works for All coalition, with Lynda Nguyen of ALIGN NY as the lead author. It was designed by ALIGN NY's Communications Associate, Patrick Nevada.

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# Executive Summary

The COVID-19 crisis upended New York City. As of September 2020, more than 23,000 New York City residents died from complications associated with the novel coronavirus,[1] and more than 648,000 New Yorkers are currently out of work.[2] New York City is faring much worse economically than the rest of the country. As the City struggles to navigate through an economic recovery, its low-income communities are also battling a climate crisis. Hurricanes have destroyed New York's coastal communities and rising heat indexes are threatening the lives of more vulnerable New Yorkers every year. Scientists tell us we have fewer than ten years to act to prevent the irreversible damage of climate change,[3] and researchers are already projecting a second wave of positive COVID-19 cases.[4] New York's future is on the line.

Communities of color are bearing the brunt of this economic and public health tragedy. Although Black and Latinx New Yorkers make up 51 percent of the City's population,[5] they account for 2/3 of its confirmed COVID-19 cases, and are twice as likely as white New Yorkers to die from the coronavirus.[6] As low-income Black and brown communities recover from COVID-19, joblessness and climate resiliency continue to be widespread issues. An analysis done by the Community Service Society estimated that as of June 2020, the citywide unemployment rate was 21.1 percent among Asian residents; 23.7 percent among Black residents; and 22.7 percent among Latinx residents; compared to just 13.9 percent among white New Yorkers.[7] Concomitantly, Black and brown New Yorkers continue to go to work in essential jobs at higher rates than white New Yorkers,[8] and are thus more likely to be exposed to the virus.

A long history of environmental racism has led to public health disparities within Black and brown communities and placed these communities at an even higher risk during this crisis. These environmental justice communities experience higher levels of air pollution from proximity to particulate matter-producing sources such as power plants, landfills, and highways. A recent preliminary study found that long term exposure to high levels of fine particulate matter puts communities at significantly higher risk of dying from coronavirus.[9] Many of these neighborhoods are also disproportionately impacted by extreme heat and are physically vulnerable to the threats of coastal flooding and sea level rise.

Economic injustice, environmental racism, and public health disparities will worsen as the climate crisis progresses in the midst of the COVID-19 pandemic. New York City must prioritize and invest in climate adaptation, mitigation, and recovery measures in environmental justice communities most impacted by: 1) climate change; 2) the COVID-19 pandemic; 3) racial violence; and 4) existing processes and infrastructure. Now more than ever, the City must support community planning and local solutions.

Our country is looking for a way out of this crisis and New York has the opportunity to lead the way. We cannot return to a pre-COVID-19 New York. We must move towards a Just Recovery.[10] We must implement solutions that address both the climate crisis and the economic crisis, and we must center New York City's Black and brown environmental justice communities in these solutions.

The Climate Works for All coalition developed the Climate And Community Stimulus Platform as a visionary path forward for New York City's recovery. The Platform builds off the momentum of the Climate Mobilization Act and the 2019 Climate Leadership and Climate Protection Act, both of which set the stage for the City to build regenerative economies that address renewable energy generation, food security, water, transportation, and sustainable manufacturing. The Climate And Community Stimulus Platform moves the needle even further by investing in infrastructure projects that reduce carbon emissions, including training our workforce for climate jobs, expanding clean transportation systems, retrofitting homes and buildings, and developing public land resiliency projects.



The Platform is endorsed by more than fifty faith, labor, and community based organizations that represent directly impacted workers and community members on the frontlines of environmental injustice. A total investment of $16.2 billion over three years will put over 100,000 New Yorkers back to work, impacting 15 percent of the City's unemployed workforce.

In this report we will demonstrate the feasibility of the Climate and Community Stimulus Platform, and make the case for implementing these projects in New York. The City must invest in the Climate and Community Stimulus Platform to ensure our communities will have a liveable New York for future generations.

**Figure 1. Climate And Community Stimulus Platform Strategies**

| Issue Areas | Job creation Strategy | Investment Needed | Jobs Created |
|---|---|---|---|
| Renewable Energy and Energy Efficiency Systems | Retrofit and install solar on public buildings. | $1 billion | 5,085 |
| Housing Infrastructure Improvements | Conduct moderate retrofits to the city's affordable and public housing buildings, and small low-income residential buildings. | $7 billion | 42,210 |
| Clean Transportation Expansions | Expand bike lanes throughout the city to reach a "bicycle arterial" network. | $180 million | 1,668 |
| Local Manufacturing Hubs | Maximize usage of our city's industrial zones and waterfronts by electrifying ports. | $3 billion | 17,280 |
| Public Land Development for Climate Adaptation and Mitigation | Invest in climate projects that will address the challenges of coastal flooding, excess stormwater, extreme heat, as well as equitable development of clean energy. | $3 billion | 28,485 |
| Public Waste Management | Implement Commercial Waste Zones and expand the City's organics recycling program. | $1 billion | 6,885 |
| Labor and Workforce Training and Development | Invest in education pipelines that help connect New Yorkers to the climate industry. | $1 billion | |
| | | Total: $16.2 billion over 3 years | Total: 101,613 jobs over 3 years |

# Our Solutions

The global COVID-19 pandemic exacerbated the systemic and historic inequities New Yorkers have faced for years, resulting in a crisis that sits at the intersections of economic, health, climate, and racial injustice. Service, tech, and retail sectors are struggling to stay afloat.[11] Offices and other commercial spaces remain vacant across the city.[12] International supply chains continue to be disrupted, keeping local manufacturers in limbo.[13] It is critical that New York City look to local frontline-led solutions to ensure a Just Recovery.[14]

Communities of color are bearing the brunt of the COVID-19 pandemic. Recovery policies and programs often neglect Black and brown communities, especially during times of unprecedented economic and public health distress. The historic and racist disinvestment in Black and brown communities have resulted in crumbling infrastructure, increased chronic health issues, and outsized job loss. New York City can learn from the COVID-19 crisis and take aggressive, bold action to not only tackle these issues, but also address the root causes that allowed them to take hold.

In 2016, New York City committed to reducing greenhouse gases (GHG) 80 percent by 2050 — a sustainability plan also known as 80X50.[15] The Climate Mobilization Act (CMA), passed in 2019, sets goals of net zero carbon emissions for New York City by 2050. In order to make real strides toward these climate goals, the City must invest in climate adaptation, mitigation, and recovery measures in communities most impacted by: 1) climate change; 2) the COVID-19 pandemic; 3) racial violence; and 4) existing processes and infrastructure.

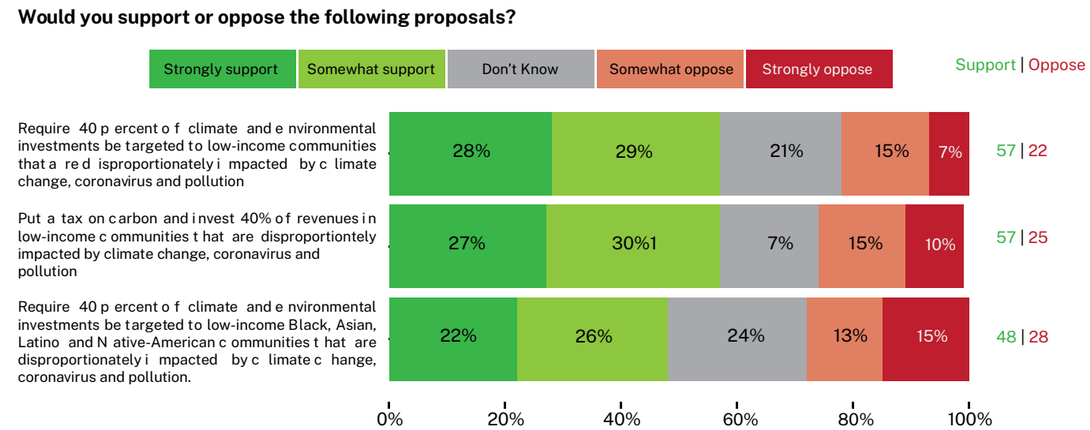
The crises of 2020 have caused many state and local governments across the U.S. to deprioritize environmental programs. Despite some asserting climate concerns as a "luxury good," research shows that the general public has actually maintained high levels of concern about climate change and has identified it as a primary issue.[16]

Nationally, voters support allocating Federal funds for local infrastructure projects to combat the economic and climate crisis (refer to figure 2). 57 percent of voters nationally support targeting climate and environmental investments in low-income communities that are disproportionately impacted by climate change, the coronavirus, and pollution. Additionally, 71 percent of voters support increasing Federal funding to protect vulnerable low-income communities and communities of color from immediate environmental dangers like severe flooding and hurricanes.[17] Across our deeply divided country, support for climate infrastructure projects aimed at environmental justice and Black and brown communities is strong.

Investment in infrastructure directed at low-income communities is not only a popular idea, but it's also a proven economic stimulus that will put our city back on track towards a robust recovery. When considering tax cuts and spending increases, infrastructure investments are one of the most effective and efficient fiscal stimulus measures. Output multipliers from tax cuts result in a range of 0.24-1.29, as compared to a multiplier of 1.57 from infrastructure spending.[18] This means governments get a larger return when money is spent on infrastructure projects as compared to imposing tax cuts. Specifically, every $100 billion invested in infrastructure spending could create 1 million full time jobs. The City can pay for infrastructure projects through a combination of grants, state bond proceeds, local funds, and Federal funds.



**Figure 2. Voters Support Allocating Federal Aid to Disproportionately Impacted Communities[23]**




The Climate Works for All coalition supports community and regional resilience by addressing economic and environmental recovery needs. The coalition's Climate and Community Stimulus Platform offers a visionary path towards a Just Recovery for New York City. The Platform builds off the momentum of both the CMA and the 2019 Climate Leadership and Climate Protection Act (CLCPA). These bills set the stage for the City to build regenerative economies that address renewable energy generation, food security, water, transportation, and sustainable manufacturing. The Platform moves the needle even further. It consists of local proposals that invest in the climate economy to meet the twin goals of reducing local emissions and creating sustainable jobs.

By investing in good climate policy, the City is also investing in good labor policy. If the City invested $16.2 billion into the Platform, it would create over 100,000 jobs[19] in the next three years — impacting 15 percent of the City's current unemployed workforce. This is in addition to the creation of 190,000 well-paid jobs in the next ten years that would be created through the CLCPA and CMA.[20] These jobs will not only put people back to work, but put New York's most-impacted workers in more stable and well-paid positions and help move the city closer toward our climate goals.

This report will outline each proposed strategy, the investments needed to finance them,[21] and the number of jobs they will create (refer to figure 3).[22]

# 100,000 Climate Jobs for New York City

**Figure 3. Climate And Community Stimulus Platform Strategies**

| Issue Areas | Renewable Energy and Energy Efficiency Systems | Housing Infrastructure Improvements | Clean Transportation Expansions | Local Manufacturing Hubs | Public Land Development | Public Waste Management | Workforce Training and Development |
|---|---|---|---|---|---|---|---|
| Job Creation Strategies | Retrofit and install solar on public buildings. | Conduct moderate retrofits to the city's affordable and public housing, and small low-income residential buildings. | Expand bike lanes throughout the city to reach a "bicycle arterial" network. | Maximize usage of our city's industrial zones and waterfronts by electrifying ports. | Invest in climate protective projects that will address the challenges of coastal flooding, excess stormwater, extreme heat, and energy efficiency. | Implement Commercial Waste Zones and expand the City's Organics Reyclying Program. | Invest in education pipelines that help connect New Yorkers with the construction industry. |
| Investment Needed | $1 billion | $7 billion | $180 million | $3 billion | $3 billion | $1 billion | $1 billion |
| Immediate Funding Source | $59.4 million DCAS funding | $700 million from HUD<br>$3 billion capital funding for NYCHA | | | $2 billion from FEMA | | |
| Potential Funding Program | HMGP, Possibly BRIC, CSC, NYGB RFP 1 | HMGP, Possibly FMA, CSC, NYGB RFP 1<br>NYS Weatherization, Assistance Program<br>Possibly HUD CDBG-DR | HMGP, CSC, NYGB RFP 1, Empire State Development Grant Funds | HMGP, Possibly LWRP, CSC, NYGB RFP 1, Empire State Development Grant Funds | HMGP, BRIC, FMA, LWRP, CSC, Restore Mother Nature Bond Act, Possibly HUD CD-BG-DR | HMGP. CSC, Empire State Development Grant Funds | HMGP, WDI<br>Energy Efficiency and Clean Technology Training, On-the-job Training for Energy Efficiency and Clean Technology Building Operations and Maintenance Program, Clean Energy Training Services |
| Jobs Created | 5,085 | 42,210 | 1,668 | 17,280 | 28,485 | 6,885 | |

Job creation: 101,613 jobs over 3 years

Total investment: $16.2 billion over 3 years
- **City Council Fund:** $8.4 billion (9% of City Council Budget)
- **Federal Bailout:** $2 billion
- **Grants:** $2.7 billion (FEMA and HUD)
- **Other Sources:** $3 billion (NYCHA capital funding); $59.4 million (DCAS funding)

## Criteria and Considerations

The strategies highlighted in this report were generated and endorsed by over fifty local organizations working on the frontlines of economic and environmental injustice. The solutions move New York closer to its climate goals and create over 100,000 local jobs by focusing on three key priorities:

- **Centering low income Black and brown environmental justice communities**
- **Creating good union jobs within the climate industry**
- **Meeting New York City's 2050 climate goals**

All of the job creation strategies must prioritize New York City's Black and brown environmental justice communities. These communities face high exposure to air and water pollution, are threatened by extreme heat, experience heightened vulnerability to flooding and storm surges, or are in critical need of energy infrastructure improvements. A climate jobs creation strategy coupled with community hiring can drive economic growth in these communities. New York City has purchasing power it can leverage to prioritize its low-income residents for sustainable job opportunities.



The City must work with communities to provide education and workforce training programs to help unemployed and under-employed people access well-paid climate jobs in renewable energy development, energy efficiency, construction, and sustainable manufacturing. The projects must be implemented with rigorous labor standards that lead to the creation of good quality, career union jobs in these communities. It is crucial that all contractors implementing the infrastructure projects outlined in the Platform prioritize leading community hiring practices; specifically employing local low-income residents, residents of NYCHA, women, and long-term unemployed New Yorkers in new hiring opportunities. This prioritization follows major strides the construction industry has made in recent years, and most recently in New York City, by focusing hiring efforts in areas where 15 percent of the population lives below the federal poverty level, or are residents of public housing. All contractors who receive public funding to implement these projects must:

- Pay a Prevailing Wage for all workers, and utilize a Project Labor Agreement, Labor Peace Agreements, and Community Workforce Agreements;
- Project Labor Agreements must include strong health and safety standards to ensure safety of workers during the pandemic and beyond;
- "Best Value" contracting that prioritizes an array of benefits such as quality not just cost, to grant additional credit to locally-based contractors that commit to paying higher wages and benefits;
- Demonstrate apprenticeship training requirements and labor-management training programs across all sectors, to ensure proper skill levels for all crafts/trades and local access to good jobs and careers;

# Renewable Energy and Energy Efficiency Systems

New York must invest in renewable energy systems to meet its climate goals and ensure well paying jobs are put back into its most impacted communities. In 2014, New York City committed to installing 100 megawatts of solar energy on public buildings by 2025. In order to achieve this goal, solar panels would need to be installed on over 300 public buildings over the following decade, a move that could be replicated on the other 4,000 city-owned and leased properties throughout New York City.[24]

However, as of April 2018, only 76 buildings have been outfitted with solar panels, representing just 10 percent of the City's 80X50 goal. The Department of Citywide Administrative Services' (DCAS) recently announced its plans to install up to 16 additional megawatts of solar energy panels on the rooftops of 46 New York City public schools and several New York City Department of Environmental Protection sites.[25] While this announcement is a good step toward the City's 2025 solar energy goal, the City must provide more time and attention to installing solar panels on public buildings. **If New York invests $1 billion over three years toward building renewable energy infrastructure, it could create approximately 7,627 direct and indirect jobs for New Yorkers.[26]**

Solar projects will not only reduce greenhouse gas emissions, but will also allow New York City to use climate investments to mitigate deep socio-economic inequalities in our city. These investments in environmental justice communities are essential, especially as New York looks towards a Just Recovery. Harsh environmental and economic realities shape the everyday experiences of New York City residents. New Yorkers had first-hand experiences of the catastrophic impacts of climate change through Hurricane Sandy, and face increasingly extreme weather and rising seas. Bold investments in renewable energy are an opportunity for the city to reduce GHG emissions, build more resilient neighborhoods, and create much needed, good local jobs during the COVID-19 pandemic.

Photo: New York City Economic Development Corporation

**If New York invests $1 billion over three years toward building renewable energy infrastructure, it could create approximately 7,627 direct and indirect jobs for New Yorkers.**


Science in HD/Unsplash

## Case Study: Sunset Park Solar

Local renewable energy development is a crucial part of transiting New York's energy system from fossil fuels to clean energy, and an opportunity to create new, well-paid, and accessible jobs. Traditionally, energy systems are controlled and monopolized by private companies with little to no opportunity for customers and communities to participate, engage, and influence. Sunset Park Solar is an example of a community-led project to replicate and make scalable.

Sunset Park Solar is led by UPROSE, Brooklyn's oldest Latinx community-based organization in partnership with Solar One and Co-op Power, and is New York's first cooperatively-owned community solar project. Community solar co-operatives are not simply about installing solar panels on a building; it is a part of the larger Energy Democracy work to make local renewable energy accessible, affordable, and owned by communities most impacted by polluting infrastructure such as power plants, pipelines, and extraction. The project supports 150-200 local households and small businesses with monthly energy bill savings. Sunset Park Solar has a workforce component where 6 local residents participated in a free 2-week solar installation training, and free OSHA 30 certification class.

In order to ensure long-term community benefits, solar projects must follow the Just Transition Model for development by not only creating local clean energy assets to meet climate goals, but also creating well-paid jobs, workforce training, and community education opportunities. Sunset Park Solar is an example of the types of public investment that will: 1) support the state's transition into a renewable energy economy; 2) create well-paid jobs in solar development; 3) create community ownership models and resiliency; and 4) make clean energy accessible and affordable to environmental justice communities who are most impacted by air pollution from fossil fuel based energy.


Vladimir Kudinov/Unsplash

## Housing Infrastructure Improvements

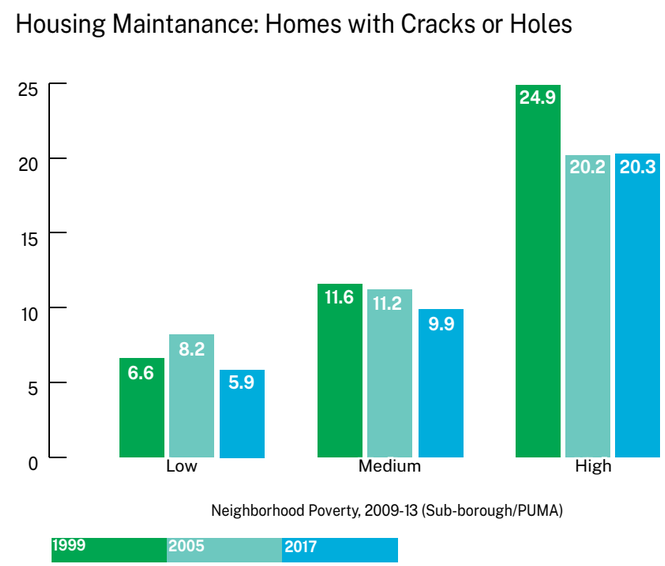
Buildings are responsible for about 70 percent of the City's greenhouse gas emissions. At least 80 percent of buildings that exist today will still exist in 2050.[27] In the Spring of 2019 the City Council passed the CMA, mandating that large buildings be retrofitted to meet emissions reductions standards that become progressively more stringent over time. This local law would result in approximately 60 percent of New York City's buildings lowering their GHG emissions, but additional investments need to be made in the affordable housing sector to achieve the City's carbon reduction goals. **If New York City invested $7 billion over three years into energy efficiency infrastructure projects, it could create 42,210 direct and indirect jobs.**[28]



## Affordable Multifamily Housing

Generally, affordable housing covers private buildings with rent-regulated apartments, small single family structures,[29] and public housing. Studies show that in 2008 approximately 65 percent of the city's rental units were designated as affordable;[30] In 2018 that number dropped by 12 percent.[31] Over 45,000 existing units in affordable multifamily housing will expire from their current affordability restrictions, which will then require new subsidies in early 2021.[32] This decreasing housing stock is also aging without major repairs. About 19.2 percent of multifamily buildings are Pre-War II buildings that have degrading physical structures due to deferred maintenance.[33] Common issues in these buildings include compromised building envelopes (leaky roofs, cracks and holes on the walls) and old oil burning boilers. These building issues cause energy systems in buildings to become more inefficient, costing the building and residents more. Securing the building envelope is a great way to prevent disease and allergen carrying pests, and muffle unwanted noise.

**Figure 4. Housing Maintenance Needs by Poverty Level**[37]




Households that spend over 6 percent of their income on energy costs are considered energy burdened. A 2020 nationwide study at UC Berkeley Energy Institute concluded that Black households face a higher energy burden than white households at almost every position in the income distribution.[34] Reducing energy burden keeps affordable housing affordable, much of which is located in Black and brown neighborhoods. Although deep retrofits can benefit these neighborhoods and housing stock, moderate retrofits will upgrade more buildings and create more jobs. Moderate retrofits can vary in project type but in this case we are defining it in terms of cost savings, at about 30 percent savings.[35] Lowering the cost of energy consumption can reduce the energy burden in a home immediately. For many low-income homeowners, like those in HDFC co-operatives,[36] reducing energy burden can focus funds to other much needed capital improvements in the building, making government incentives go further than just the incentivized project. Renters of affordable housing will also see an increase in quality of life with moderate retrofits. For example, addressing building envelope issues will help renters' air conditioning work more efficiently, reducing heat vulnerability. Across the board, by increasing energy efficiency in a building with 30 percent cost savings, buildings will reduce fossil fuel consumption and air pollution which leads to cleaner and healthier neighborhoods.

The City must commit to improving existing affordable multifamily housing that centers climate resiliency in every retrofit. By investing in multifamily affordable housing, the City could target buildings with some of the largest deficiencies and those with deferred maintenance.

## Public Housing

More than 400,000 New Yorkers depend on the New York City Housing Authority (NYCHA), 98 percent of which are people of color.[38] In most cases, these households have few or no housing alternatives due to the inflation of rental prices throughout New York City.[39] In 2019, Data for Progress released a report that highlighted the grave living conditions NYCHA residents have had to endure.[40] NYCHA residents have over twice the rate of cockroach infestations, heating breakdowns, broken toilets, and water leakages as compared to other city residents (refer to figure 5). NYCHA residents are also twice as likely than the average New Yorker to suffer from poor health. Recent research also reports that bad ventilation systems and crowded conditions in NYCHA buildings created poor indoor airflow that contributed to the spread of COVID-19.[41] Given the racist divestment away from Black and brown environmental justice communities, it's no surprise that NYCHA is in such physical disrepair.

The 2016 "Next Generation NYCHA Sustainability Agenda" report outlines its commitment to creating healthy and comfortable homes that will withstand the challenge of climate change, including several goals that aim to reduce its GHG emissions down 30 percent by 2025 as part of the city's 80X50 mandate.[42] Research indicates 82 percent of NYCHA's buildings will be more than 50 years old by 2025, and will need significant changes to their fundamental building systems in order to achieve this goal. In addition to its crumbling infrastructure, NYCHA has also seen $2.5 billion cut from its federal funding over the last 15 years. With experts estimating renovation costs amounting up to $40 billion to cover 175,000 units, NYCHA faces a tremendous challenge ahead.[43] In order to secure the $18 billion needed to simply stabilize the 62 percent of the units still under direct NYCHA management, NYCHA must pursue retrofit projects that will promise the most energy savings.[44]

The 2019 "Green New Deal for NYCHA Communities" report on the other hand, proposes a well researched, comprehensive approach to totally remaking NYCHA developments.[45] The plan prioritizes aggressive, short-term reductions in carbon emissions; high-quality jobs for those who need them; and sustainable investments to provide economic and environmental benefits to working class communities of color. The plan would reduce carbon emissions by 2.3 million tons a year; create more than 4,300 good jobs per year for NYCHA residents; increase New York City revenues by $1.84 billion per year; and reduce asthma rates among residents by 18-30 percent, while providing healthier, safer and more comfortable living accommodations. This plan provides a new vision for NYCHA communities, and for the needed development of public housing in general, but it does require a new comprehensive political and policy commitment.

Most recently NYCHA issued its "NYCHA Climate Mitigation Roadmap", which proposes several ways of complying with CMA.[46] The white paper proposes the installation of electric air source heat pumps (ASHPs) for individual unit heating and cooling, converting from steam to hot water heating, and ensuring more efficient boilers and heat distribution systems. However, each of these have their technical and budgetary challenges.

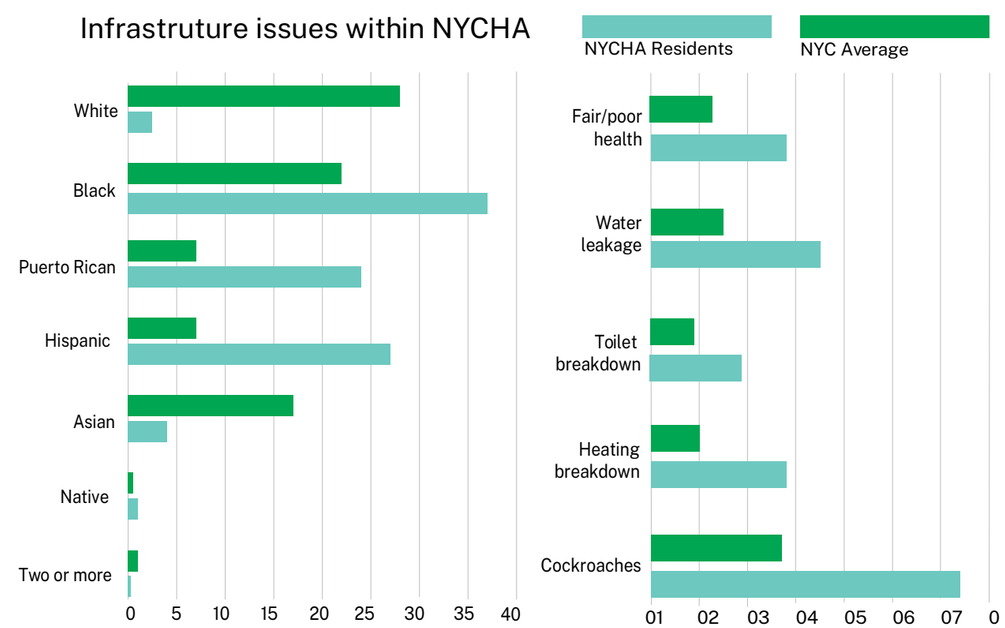
No matter which of these approaches is adopted, the installation of building enclosures and air sealing is projected to reduce building heat loss by 50 to 80 percent and better insulate buildings in hot weather, even if there are electrical outages.[47] Moreover, this would eliminate the expensive need to constantly repoint buildings, while saving on fuel costs and reducing GHG emissions up to 80 percent. Cladding a building also reduces water leaks and damage and the build-up of mold.



The installation of an exterior insulation finishing system on a 60' x 60' 10 story building with 50 apartments would cost about $1.1 million, assuming the exterior walls don't need extensive repair. The installation of new windows and a reflective roof insulation would add approximately an additional $1.2 million, bringing total costs to about $2.3 million, assuming there are no major repair or abatement costs.

NYCHA buildings of course come in all shapes and sizes with different exterior repair needs. However, if New York City were to invest $3 billion for NYCHA building enclosure and air sealing systems, at an average cost of $3 million per building (accounting for possible exterior repairs and window abatements), this would insulate approximately 1,000 buildings and 50,000 apartments. It would save some 15 percent of total heating expenses and 15 percent of GHG emissions for these buildings. It would also reduce the cost of future heating and cooling modifications, such as ASHPs, and most importantly provide a more insulated living space without exterior leaks and mold.

**Figure 5 . Racist Divestment Leads to Unacceptable Housing Conditions[48]**




Racial disparities in resident background (left) and unsafe conditions of NYCHA apartments compared to New York averages (right)

## Low-income 1-4 Family Homes

New York City's 863,000 1-4 family buildings account for 19 percent of the City's building stock emissions.[49] About one-third of these buildings (or 247,000) are located in low-income communities.[50] This building stock presents an important opportunity for facilitating a Just Recovery in the fight against climate change and the economic crisis brought on by the COVID-19 pandemic.

These buildings exist as a variety of typologies such as single family detached homes in the outer boroughs, attached brownstone buildings in Central Brooklyn, wood frame homes in Queens and more. The typical energy conservation measures needed vary from small retrofits that include roof insulation, air sealing, lighting, low-flow water fixtures, and electric appliances; to bigger comprehensive fossil-free improvements such as air source heat pumps and heat pump water heaters.

The number of buildings and the breadth of their energy efficiency needs make the small homes market a huge opportunity for growing green jobs. Technical experts needed for these retrofits include energy auditors, air conditioning and heat pump specialists, Building Performance Institute certified contractors,[51] plumbers, outreach and education experts from local community based organizations, and more.


Rachel Martin/Unsplash



**Figure 6. Average Costs and Savings for Light and Moderate Retrofits[57]**

| | Avg. yearly kWh Saving | *Estimated yearly kWh savings per building in $ | Avg. Therms Saving | *Estimated yearly therm savings per building | Average Project Cost | Total Costs (247,000 buildings) | Total Savings (kWh) | Total Savings (therms) | GHG Reductions - (metric tons) |
|---|---|---|---|---|---|---|---|---|---|
| Light Retrofit (~9.8% savings) | 1,125 | $224 | 40 | $48.4 | $1000 | $247,000,000 | 277,875,000 | 9,888,000 | kWh: 196,469 Therms: 52,317 |
| Moderate Retrofit (~29% savings) | 3,328 | $662 | 117 | $141.5 | $14,082 | $3,478,254,000 | 822,016,000 | 28,899,000 | kWh: 581,198 Therms: 152,905 |

Although variability exists in buildings' needs, for this report we assessed the project costs and the potential for energy savings and carbon reductions for retrofitting the 1/3 of buildings located in low-income census tracts [52] (refer to figure 6). We used the average cost for both a "light" retrofit and "moderate" retrofit according to ACEEE's research[53] on the average US household's potential savings opportunity from efficiency.

However, because each of these buildings on their own are just a small piece of the emissions reductions puzzle and the upfront costs of engagement and retrofitting can be high, policymakers continue to ignore the necessity of coordinating a robust response for moving these households off of fossil fuels with energy efficiency and electrification. A few limited resources are provided by NYSERDA, but the overarching number of retrofits has been dismal.[54]

If New York City truly wants to meet its carbon reduction goals, and is committed to environmental justice, it must begin to see 1-4 family buildings as a key piece of the 80X50 mandate and low-income households as just as important stakeholders as wealthier building owners of larger buildings.

By investing in and implementing better pilot and program models, such as the EnergyFit Pilot (currently on hold by Con Edison), Electrify SI (an air source heat pump pilot targeted at low-income Staten Island homeowners), and holding the utilities to account on the Public Service Commission's Energy Affordability Policy mandate for low-income households; streamlining and implementing these new programs and pilots with and providing more funding for NYSERDA's Empower, the Weatherization Assistance Program, and aligning it with HPD's Homefix, which provides homeowners with help replacing electric and heating systems; and by making the 0 percent interest for GJGNY loans[55] permanent and providing larger, tiered income-based incentives just as was recently committed to by NYSERDA and the utilities in their joint filing Statewide LMI Implementation plan[56] - the opportunity to reduce emissions, increase affordability, and open up the climate fight to a new group of stakeholders has never been greater - all while creating new, green jobs.


Emil Bruckner/Unsplash

## Clean Transportation Expansions

The sole purpose of transportation is to support the social and economic wellness of cities and the people that live in them. The improvements that need to be made to transit and active transportation are simple: prioritize the experiences, use, and needs of low-income, transit-dependent communities, while reducing emissions.

In both New York State and New York City, transportation represents a particularly intransigent source of climate pollution. Transportation emissions in New York City decreased only 6 percent during the 2005-2017 period, while overall emissions fell by 17 percent.[58] The largest driver of transportation-related climate pollution in the City has been and remains passenger vehicles, which produce 4/5 of the greenhouse gas emissions associated with the transportation sector.[59] Emissions from these vehicles decreased just one percent between 2010 and 2017, the last year for which data are available on the City's inventory.



While transit-dependent communities of color contribute the least to passenger vehicle use (lower rates of personal ownership), they are the most impacted by poor transit planning that caters to car ownership and wealthier neighborhoods. As people with more mobility options opt into cars or decide to work from home, there will be a continual decline in transit users who are able to choose between different forms of transportation. Without these choice transit users, the revenue they generate, and no federal funding, transit agencies will make staff and service cuts that will disproportionately harm either their majority Black and brown operations staff or their majority low-income, people of color transit-dependent users. As the City moves to expand its transportation system, it must consider how environmental justice communities are impacted socially and economically throughout the implementation process. Environmental justice communities must not only be included, but also be at the forefront of policy decision-making. Policies and programs need to include community input from the start to ensure equitable processes, frameworks, impacts, and investments. Traditional market-based solutions that have historically harmed Black and brown communities should not be utilized as a means for equitable emission reductions.

A 2019 Synapse analysis of transportation emissions in New York State found that a combination of electric vehicle incentives and mode-shifting (from personal vehicles to bicycles or mass transit) is needed for the state to meet its emissions targets.[60] Similarly, solutions in New York City need to focus on the comprehensive transportation picture, which not only will provide maximal emissions reductions and address profoundly variable needs across the City's communities, but will also create a wider variety of jobs. In the immediate wake of the coronavirus public health and economic crises, investments in sustainable transportation infrastructure can help to prepare New York for the future. **If the City invests $180 million over three years to expand its bike lanes, it could create roughly 1,668 direct and indirect jobs and potentially decrease its urban transportation emissions by 11 percent.**[61]

## MTA

The subway and bus networks of New York City are its economic lifeblood. Without a functional, 24/7 transportation system that is affordable for working people, the city grinds to a halt — and Black and brown workers are more likely to see their service disrupted by budget shortfalls. For New York to recover from this economic crisis, the federal government must act and fund our transit system.

Beyond that urgency, there are encouraging plans to improve and clean up the city's public transportation. The Metropolitan Transportation Authority (MTA) released its newest capital program, "Rebuilding New York's Transportation System."[62] The program is the largest-ever capital program led by the agency, and boasts infrastructure projects that revitalize and expand its bus and rail system, tunnels, and bridges. Among the projects are new fleets of electric buses and a Central Business District tolling system. Two projects that would help New York reach its climate goal of reducing GHG emissions by 80 percent by 2050.

The MTA's commitment to switch to all-electric city buses by 2040 is an admirable one, and will require a massive overhaul of bus depots and charging infrastructure. The battery-electric buses themselves would be built outside of city limits, but the charging infrastructure needed to run the NYCT fleet would create jobs in electrical installation, engineering, and construction sectors. Analysis by the Political Economy Research Institute (UMass-Amherst) has found that every million dollars invested in surface transportation creates 20.6 direct and indirect jobs[63]; with the capital budget allocating $120 million from 2020-2024, we can expect the creation of approximately 1,112 jobs across this time period at the New York City level.[64]

The MTA already directly avoids 17 million metric tons of GHG emissions per year, and continued investments in the plan are critical to further reducing emissions. Despite the significant gains the program presents, loss of revenue could put the capital program in danger. The COVID-19 pandemic led to massive reductions in revenue for New York City's public transportation systems. Between March and August 2020, MTA subway ridership fell by 78 percent and bus ridership dropped by 54 percent. During this time, the MTA lost approximately $5.9 billion in revenue from fares and tolls, and an additional $1.8 billion from dedicated tax revenue. The New York State Comptroller's office estimates the MTA's outstanding debt could reach over $50 billion by 2023.[65] New York must ensure the MTA secures $12 billion in relief funds to fully realize its capital infrastructure program.

Finally, the city Department of Transportation must move forward with planned busways projects, which improve bus ridership experience. While it is outside the scope of jobs creation in this report, encouraging mode-shifting from private vehicles — and improving the experience of bus riders, who tend to be low-to-moderate-income people — is a critical piece of achieving a just transportation system for all.


Ben Stern/Unsplash



Mark de Rooiki/Unsplash

New York must expand its protected bicycle lanes by 60 miles per year for the next five years to achieve a comprehensive "bicycle arterial" network. 21 percent of emissions reductions must come from shifting away from personal vehicles.[66] Bicycle lanes are a critical piece of this puzzle. A July 2020 report from the Regional Plan Association, with input from a broad variety of transportation groups, called for a 425-mile network of protected bicycle arterials that would provide comprehensive, five-borough access to cycling as a true alternative to personal vehicles.[67] This five-borough bikeway incorporates 125 miles of protected cycling lanes that have been built so far, necessitating an investment in 300 miles over the next five years - or 60 miles per year. With a cost of $600,000 per lane mile, that amounts to a total investment of $180 million to meet this target.[68]

Although this cost may seem high initially, much of this funding is reimbursable from Federal transportation funds. Moreover, investments into protected bicycle infrastructure provide major public health, climate, and economic benefits, as cycling lanes encourage more residents to adopt cycling.[69] A study from McGill University found that greenhouse gas emissions decrease by 1.75 percent for every 7 percent expansion of the bicycle network.[70] **We estimate that an expenditure of $180 million per year would be expected to create 1,668 direct and indirect jobs a year.** These jobs do not include ongoing maintenance and repair jobs, or increases in traffic to local businesses; New York City Department of Transportation data, as well as data from other municipalities, have consistently demonstrated a significant increase in retail and food service sales following the installation of bike infrastructure.[71]

# Local Manufacturing Hubs

A renewable energy economy rooted in equity requires us to rethink how we utilize and plan our spaces for the future. Economic recovery in the age of COVID-19 and climate change means that we cannot afford for climate adaptation and economic growth to be addressed in silos. The economic, social, and environmental health of our city heavily depend on the decisions we make today. Decisions on land use, zoning, policies, funding, and partnerships will determine how infrastructure can either support our communities or continue to perpetuate cross sector inequities in environmental justice communities. To identify existing opportunities, we must understand the history of how our current crises were created and exacerbated.

New York City was once a port city that heavily relied on the water for marine transportation of goods. Major industrial areas developed into dozens of industrial waterfronts across the city. Today, the City has only six Significant Maritime Industrial Areas (SMIAs) left, and many of them are faced with the threat of luxury and big box commercial, office, and residential development. Sunset Park is home to the City's largest SMIA and second largest Industrial Business Zone, but between 2003-2015 Sunset Park lost 16 percent of its industrial land to commercial real estate developers.[72] This trend of private developers buying industrial for non-industrial uses have resulted in huge increases of cost per square feet and loss of the City's industrial port character. This has caused significant community displacement and gentrification across the city.



**Decisions on land use, zoning, policies, funding, and partnership s will determine how infrastructure can either support our communities or continue to perpetuate cross sector inequities in environmental justice communities.**

New York City's historic industrial waterfront communities are extremely vulnerable to the impacts of climate change particularly flooding, sea level rise, and extreme heat. Smart procurement policy can encourage some green manufacturing to take place in the City by rewarding contractors that promise to create their products locally, with a commitment to ensuring good jobs and hiring from communities most impacted by polluting infrastructure and climate change. The City also needs to support existing manufacturing and small businesses with their transition into more sustainable practices. These upgrades will preserve and grow New York City's ability to manufacture and produce locally, and increase resilient regional supply chains, while providing industrial spaces to host the 65,000 climate jobs from the CLCPA and additional 40,000 from the CMA. In order to help New York City realize these tens of thousands of jobs, **the City must invest at least $3 billion dollars over three years in necessary industrial port infrastructure upgrades.**[78]

## Offshore Wind

New York City's access to waterways and ports also makes it a prime destination for offshore wind (OSW) development. OSW can provide cleaner and more reliable energy that would be able meet growing regional demands.[73] Shifting New York's energy focus from onshore to offshore wind could position the state to lead the Northeast in stable wind energy production over the coming years.[74]

In 2017, New York City began working on the $39 million New York Works plan. This OSW project aimed to install cranes at a South Brooklyn port and create additional infrastructure capacity.[75] The plan would create approximately 150 jobs per year for the first few years in wind turbine staging and assembly, and add another 70 jobs indirectly from marine and boating contractors. Continued operations and management would create 60-100 local, full-time hires and create other indirect job opportunities through contractors.

The New York State Energy Research and Development Authority (NYSERDA) projects continued investment in OSW will allow New York to meet it's 2.4 gigawatts production goal by 2030.[76] Investing in local OSW supply chains, such as any of the four qualified ports within the five boroughs,[77] would optimize job production and provide for a large return-on-investment.

## Developing New York City's Industrial Waterfronts

Port Electrification is an integral step the City must take to fully develop its industrial waterfronts. Not only will the strategy bring good local jobs and job training opportunities into Black and brown environmental justice communities, it could also help the City increase the resiliency of its local and regional supply chains. There are already major investments being made in this area. NYC EDC has invested more than $115 million over the last nine years to rehabilitate and reactivate the marine terminal in Sunset Park. The effort has created 250 jobs and has taken an estimated 11,000 truck trips off city roadways. In April 2018, the International Maritime Organization agreed to a 50 percent reduction in shipping emissions by 2050 and new ships that will run without fossil fuels by 2030.[79] With approximately 80 percent of global trade volume getting transported through the maritime industry, New York City could win big as it moves to upgrade its infrastructure, towards port electrification. The City must work with industrial waterfront communities to develop and implement community-led plans to transform SMIAs into sustainable manufacturing hubs. These improvements include:

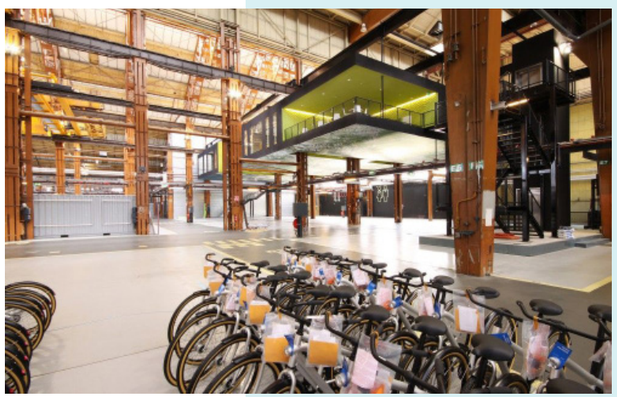
- Preserving and supporting the industrial character of New York City's SMIAs
- Creating accessible and well-paid industrial sector jobs and job training opportunities
- Investing and implementing climate resiliency and green industrial innovation through:
    - Port electrification infrastructure and clean transportation
    - Renewable energy and energy storage development
    - Local manufacturing capacity and supporting small businesses
    - Community-based planning processes and plans like the Green Resilient Industrial District (GRID)
- Changing public review and decision-making systems to support community leadership



### LA Green Port

The LA Green Port is an example that New York City can look to for local implementation. The LA Green Port has made strides towards a cleaner future. They aim to reduce air emissions and improve water quality, while modernizing facilities and encouraging the development of new technologies. The current guidelines and aims adhere to those outlined in The 2017 San Pedro Bay Ports Clean Action Plan. Since 2005, these guidelines have led to the emission reductions of over 85 percent for particulate matter, 50 percent for nitrogen oxides, and 95 percent for sulfur oxides. Different strategies are used respectively for ships, trucks, trains, harbor craft, and energy. All aim for a greener and cleaner environment, and each has seen success. At the same time, the transformation of LA's Port to become more environmentally friendly has not been a deterrent to its economic success. Thus far, these initiatives have led to the creation of thousands of jobs in LA and across the country.


source: newatlas.com



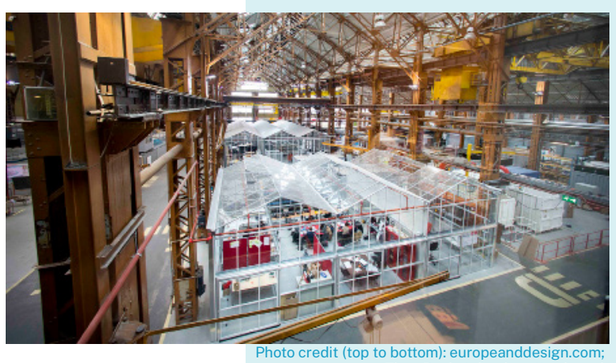


Photo credit (top to bottom): europeanddesign.com; Theo Peekstok; rdmrotterdam.nl

## Case Study: RDM Rotterdam

An example of an innovative industrial waterfront campus is RDM in Rotterdam. One of the main goals of RDM is to provide sustainable mobility along various travel modes. One principal part of the RDM campus's design is what they call the "golden triangle": the connecting of research, multi-level education, and business all in one area that allows for the integration and mixing of these sectors. This type of integration aims for the cross-over and exchange of knowledge between these institutions. Currently, RDM is benefiting from this design as university courses are being held and integrated into the community of businesses present. In addition, the RDM campus offers new opportunities that were previously unavailable. For example, there is an assembly plant (the ESFA) that primarily hires students, mostly youth with social issues, allowing them the opportunity to gain valuable work skills and experiences they otherwise would not have access to. All in all, the RDM campus employs innovative sustainable manufacturing techniques that allows for new technological clusters (such as cleantech) while dealing with negative externalities (such as congestion and pollution). This type of integration can also be used to rectify socio-economic inequities by providing new jobs and opportunities.

The RDM campus used a traditional funding model which allowed for limited financial risk in the process of its manifestation. Their investor, and owner, the Port Authority, first searched for tenants, got long-term contracts signed, and then used the resulting income to cross-fund other areas of the project. There is also a certain degree of flexibility instilled into the project allowing for its adaption to growing sectors such as offshore that provides both additional jobs and contributes to the clean energy aspect of the campus. This adaption to growing sectors will be important to address the changing local and regional needs of the industrial sector.

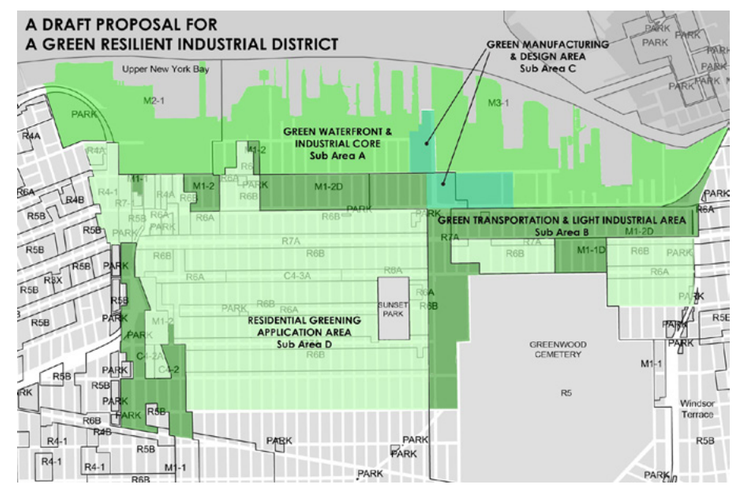


## Green Resilient Industrial District

In the era of COVID-19 and climate change, New York City and State cannot afford to defer to conventional solutions or models of development. Communities most impacted by these multiple crises and systemic inequity must be given technical support, resources, and investments to lead local solutions and planning processes. An example of a comprehensive community-led proposal is the Green Resilient Industrial District (GRID) developed by UPROSE, Brooklyn's oldest Latinx community-based organization, in partnerdhip with POWWA (Protect Our Working Waterfront Alliance) and the Collective for Community, Culture and Environment (CCCE). The GRID is a plan for Sunset Park to help New York City and the region realize thousands of climate jobs, promote local sustainable manufacturing, and address climate mitigation, adaptation, and recovery needs. The GRID is a replicable and scalable framework that outlines how to utilize the industrial sector to address environmental, economic, and community resiliency.

The proposal is a holistic approach to planning that synthesizes how policy, zoning, land use, and funding can be strategically harnessed to address the multiple crises we are faced with while promoting equity. Through years of community engagement, GRID is a community plan for local implementation of New York's CLCPA and New York City's CMA to create tens of thousands of jobs in renewable energy, energy efficiency, sustainable manufacturing, construction, and retrofit industries. The goals of the GRID is to: 1) preserve the industrial character of Sunset Park's waterfront; 2) protect and create well-paid working-class jobs; 3) support green industrial innovation; and 4) promote climate resiliency and circular industrial economy principles to achieve a Just Transition.

**Figure 7. Overview of GRID Proposal in Sunset Park, Brooklyn[80]**



# Public Land Development

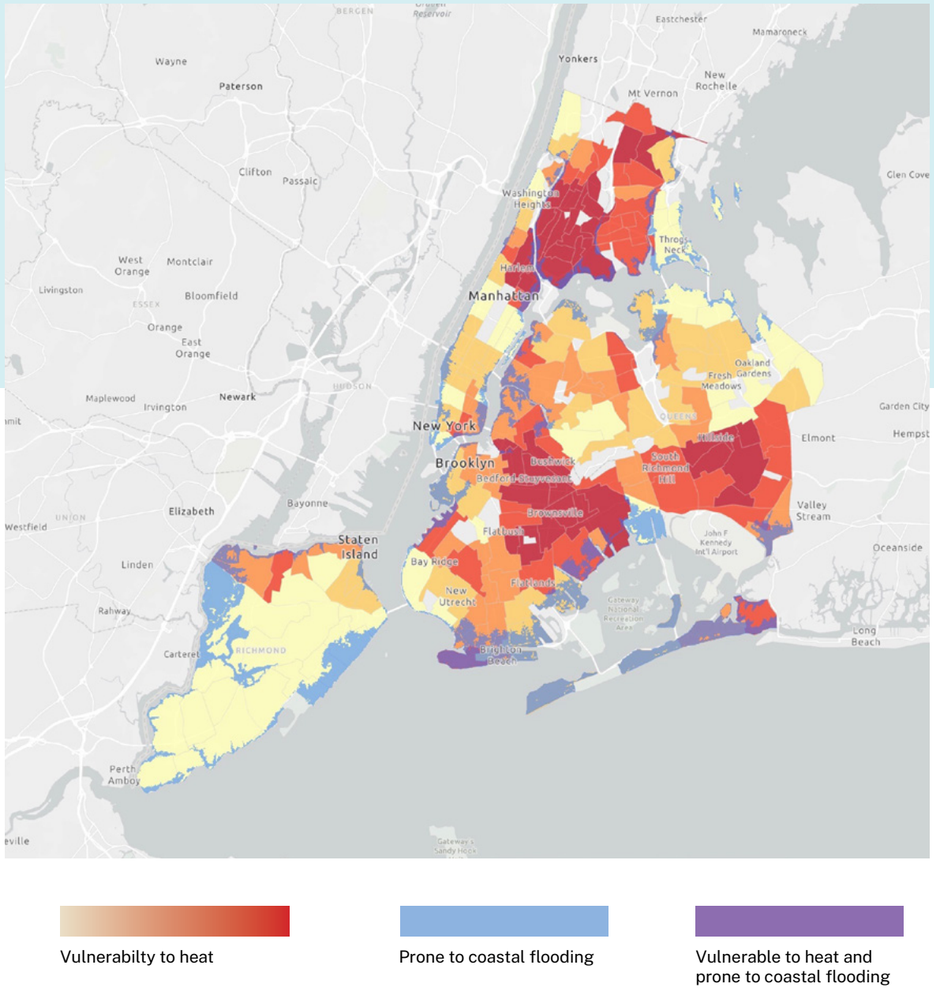
New York has already experienced extreme heat events, intense storm surges, and rising sea levels as a result of climate change. In 2012, Superstorm Sandy caused nearly $19.1 billion dollars in damages, devastated thousands of homes, and most unfortunately, led to the deaths of 43 New Yorkers.[81] Many communities are still recovering from the effects of Sandy today, and storm events such as these are only anticipated to become stronger and more frequent in the future. Extreme heat is already an issue in New York, with summer temperatures in the city reaching up to 20 degrees higher than in our neighboring rural areas, largely due to the urban heat island effect.[82] The annual count of days with dangerous-classified heat levels in New York is anticipated to double by 2050, which will disproportionately impact many of New York's already heat-vulnerable Black and brown communities.[83]

With 28 percent of NYCHA developments being located in the floodplain, many of New York's low-income Black and brown waterfront communities are those most vulnerable to feeling the effects of global warming-induced sea level rise and coastal flooding as well (refer to figure 8).[84] In the face of climate change, it is imperative that New York City invests in resilient infrastructure and developments on public lands that will prioritize the physical and social well-being of New York's most vulnerable communities. **An investment of $3 billion dollars over three years will not only help to alleviate the challenges of coastal flooding, excess stormwater, extreme heat, and equitable development of clean energy, but also create 28,485 direct and indirect jobs.[85]**

A long history of environmental and structural racism has resulted in a lack of public green space in many low-income neighborhoods of color, which is linked to increased local temperatures in these communities.[86] Additionally, power plants, industrial sites, and highways that produce waste heat and harmful particulate matter are more concentrated in these communities,[87] and have resulted in lower neighborhood air quality and higher rates of heart and respiratory issues among residents.[88] [89] Equitable development of green space and tree planting in low-income Black and brown environmental justice communities will not only aid in reducing local air pollution and sequestering carbon, but also help in addressing the urban heat island effect, which will lower local temperatures.[90] [91] However, in order to best address neighborhood-specific environmental challenges, public land projects must be developed and implemented through a collaborative design process that prioritizes the direct input of the communities it serves. Moreover, the city should explore ways to support alternative land management practices and ownership mechanisms such as the creation of Community Land Trusts (CLT's). CLT's can help to maintain long-term affordability of housing, keep wealth in communities, and offer residents greater opportunity to shape their neighborhoods and local climate resilience efforts as they determine to be fit. [92] [93] [94]



**Figure 8. Black and brown communities are the most physically and socially vulnerable to effects of global warming.[95]**




The heat data displayed on the map is sourced from the New York City Department of Health and Mental Hygiene's Heat Vulnerability Index (HVI), which takes into account factors such as quality of housing, access to green space, race, and income to demonstrate how "the risk of heat-related illness and death differs across neighborhoods."[96] The coastal flooding data displayed on the map is the "100-Year Floodplain for the 2020s" as provided by the New York City Mayor's Office of Sustainability.[97] The 100-Year Floodplain is the area that has a 1 in 100 chance of being flooded each year.[98]

Flood mitigation- and adaptation-based strategies are solutions that can address sea-level rise and coastal flooding, which are especially challenging for waterfront environmental communities. Flood mitigation-based approaches may often integrate some of the more traditional "gray" infrastructural components — such as floodgates, levees, and piped water management systems — with nature-based, "green" infrastructural elements such as plants and soils.[99] The incorporation of green infrastructural elements can further aid gray infrastructure in the absorption and filtration of stormwater runoff, and it can also help to provide recreational space. It's also cost-effective.[100] [101] The Northwest Resiliency Park in Hoboken utilizes a combination of green and gray infrastructure to physically reduce flood risks and manage excess stormwater, while providing the community with recreational facilities that foster social cohesion such as an athletic field, a play area, and a multi-use pavilion.[102]

Conversely, communities that are vulnerable to coastal flooding and storm surges may benefit from an adaptation-based flood management strategy. This approach often similarly utilizes nature-based green infrastructure solutions, and may entail the deconstruction of lands to be restored to original shorelines, wetland habitats, floodplains, and natural drainage corridors. Both the Lincoln Park Restoration Project in New Jersey and the Staten Island Bluebelt have utilized this approach to deliver protections from urban flooding and excess stormwater. The projects have improved the local water quality, enhanced ecosystem health, and provided wildlife habitat, while offering passive recreational opportunities.[103] [104]



**The Renewable Rikers project is a public land adaptation project that could reclaim space used to oppress New York's Black and brown communities for climate adaptation and mitigation infrastructure.**

Concept rendering of the proposed Renewable Rikers facilities (fxcollaborative)

## Renewable Rikers

When addressing climate resilience through public land developments, we must not only consider the hazards of heat and coastal flooding, but also take energy into account. The city must implement measures that will guarantee equitable access to reliable, affordable, clean energy throughout the neighborhoods most vulnerable to the threats of climate change while working to ease the burdens that many of these environmental justice communities have historically borne. We need to ensure that climate developments on public lands are as multi-beneficial as possible, and the Renewable Rikers project offers a vision of what a more robust plan for climate resilience and implementation of renewable infrastructure may look like. The Renewable Rikers proposal is a public land adaptation project that could reclaim space used to oppress New York's Black and brown communities for climate adaptation and mitigation infrastructure. In one envisioning of the Renewable Rikers project, the island could be converted to a multi-use renewables space, hosting water treatment and composting facilities, energy from waste facilities, a solar field, power storage, urban agriculture, an academic research center, a public greenway, and a memorial to the acknowledge the suffering and pain inherent to the island's history. This reimagining of the island would generate an estimated $340 million in annual economic activity and an annual cost savings of up to $75 million for the City from improved water treatment. The estimated total cost for this imagining of the project comes to $15 billion, and it would result in the creation of 1,500 jobs.[105]

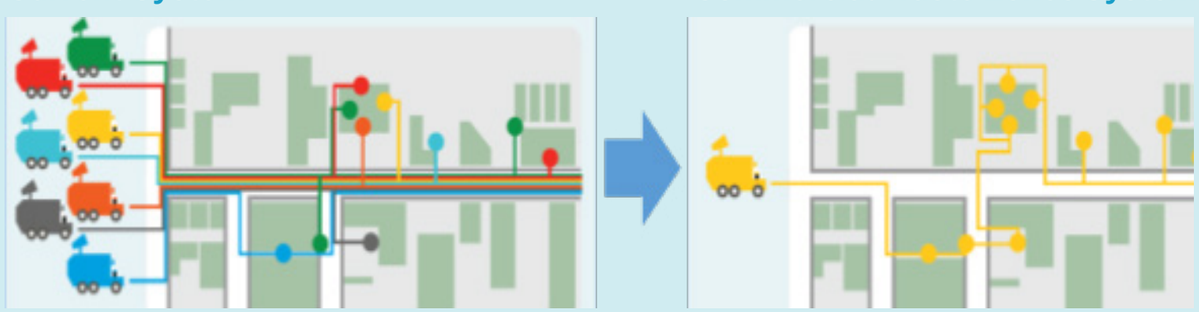
# Public Waste Management

New York City faces a unique opportunity to transform its public waste management system. This sector has the potential to not only help the City advance towards its climate goals, but also to create green jobs in environmental justice communities across the city. **To truly commit to its 2050 climate goals, the City must implement Commercial Waste Zones and expand its organics recycling program. By investing $1 billion over three years into its waste diversion programs, the City could create 6,885 direct and indirect jobs.**[106]

### Implementing Commercial Waste Zones

Private waste management is one of the most dangerous jobs in the country. Currently more than 90 different private carters service 100,000 commercial businesses. Carting trucks crisscross all over the city, often going through multiple boroughs on long and overlapping routes, contributing to excess truck traffic, noise, and air pollution. New York City must implement the Commercial Waste Zones (CWZ) policy as soon as possible to promote financial stability, high recycling and waste reduction standards, and good living wage jobs in the commercial waste sector.

After six years of organizing led by the Transform Don't Trash NYC coalition, Commercial Waste Zones were signed into law.[107] The law proposes a comprehensive blueprint for a safe and efficient collection system. It would take 18 million miles of truck traffic off city streets each year and would provide carters with predictable business.[108] The plan builds on the existing carting system by dividing the city into twenty geographic zones, each served by three to five carters selected through a competitive RFP process. The New York Department of Sanitation (DSNY) would require carters to develop zero waste plans and identify innovative practices to support waste reduction, reuse, and recycling. Carters would be awarded long term contracts, and in turn would offer its customers transparent pricing and improved environmental performance. Researchers estimate private carters could save up to $14 million dollars through the CWZ plan.[109] By rezoning their routes to be more efficient, carters would reduce both payroll and trucking operating costs.






### Expanding Curbside Pick-up Organics Recycling for All

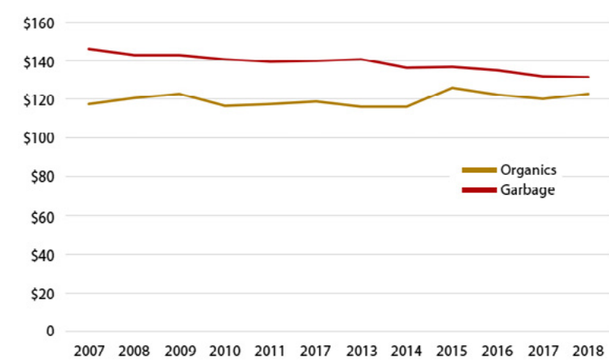
Expanding New York's curbside organics recycling program stands to be the largest opportunity for the City to invest in jobs in the public waste industry. The program has the potential to earn over $20 million in revenue each year. Currently, the City's organic waste system can compost as much as 500,000 tons. At a price of $10 per cubic yard, this would be worth an estimated $12.5 million for use in landscaping and farming.[110] The City could also invest in producing biogas to generate electricity. The New York City Independent Budget Office (IBO) projects New York's organic waste could produce an estimated $22.5 million per year in revenue based on a wholesale electricity price of $0.04 per kWh.[111]

Cities across the country have found success in this model. Seattle's organics program has helped the City invest in long-term waste diversion strategies. By incorporating incentives and regulations, Seattle's program has achieved three major goals: 1) steadily decreasing disposal per household; 2) cost savings for ratepayers; and 3) substantial reductions in public health and other environmental pollution impacts.[112]

Seattle shows what's possible with an organics recycling program that can take advantage of economies of scale, i.e., the efficiencies gained from operating a large scale recycling program. The City's cost per ton of organic waste has steadily decreased over the past 10 years, showing organics diversion is not only cost-effective, but also possible on a large scale (figure 9). When organics collection tonnage goes up, garbage collection tonnage goes down. Futher city-level waste diversion policies correlate closely with job creation. Studies also show that recycling materials in our waste stream create far more good local jobs per ton of waste, than trucking materials to an incinerator out of the city.[113] Though New York City's organics recycling program is currently suspended until 2021, research shows promising results once an expanded program goes operational. The City could lead the region in creating jobs in the recycling industry.

The City must address issues of access and equity within its current organics recycling system before considering expansion. To ensure the vitality and sustainability of an expanded organics recycling program, New York City must maximize the quantity and quality of organics collected. Despite being one of the largest curbside organics recycling programs in the world, only 24 neighborhoods across the city were given the opportunity to participate — leaving mostly Black and brown neighborhoods without access.[114] Opening up parks as local drop-off sites, incentivizing participation, and conducting public education campaigns are strategies the City can immediately implement to build community buy-in and boost local participation. Additionally, forming public/private partnerships and investing in modern facilities needed to process organic waste would develop the infrastructure needed to give the program a running start in 2021.

**Figure 9. Municipal Solid Waste management costs go down, as more investments are made in organics diversion programs**[115]




Seattle Public Utilities variable cost/ton for residential garbage and organics, 2007-2018 (in 2018 dollars)

# Workforce Training and Development

In an effort to rebuild an economy that mitigates climate change while repairing systemic racism in the labor market, the Climate Works for All Platform offers a path towards well-paying, local jobs for all New Yorkers. Investments in the Platform will create over 100,000 direct and indirect jobs that will demand a newly trained workforce. If fully implemented, the Platform would offer a pathway to the middle class for both new-entry workers and workers transitioning into the climate industry, across ages and genders.

Creating over 100,000 direct and indirect jobs across the climate industry over the next three years necessitates the expansion of New York City programs. The City must not only ensure it is investing in job creation strategies, but also investing in the systems that support those proposals. There are already existing education programs that help connect New Yorkers with unionized industries. New York's construction unions have successfully built an education pipeline that supports both incoming and established workers transitioning into construction jobs. Local construction trades have seen above-average growth in recent years and are expected to continue this trend through 2024[116]. If other renewable energy sectors applied the construction training model to establish apprenticeships and job placement programs, they would support in establishing a strong economic engine for the city.

**Construction Training Model**

There are four Building Trade sponsored job placement programs in New York City. These programs offer New York City workers and high school seniors the opportunity to enter the trades by providing direct-entry to those who successfully graduate. New York's renewable sectors should look to these programs as potential models to incorporate into their practice. These job placement programs include:

- The Edward J. Malloy Initiative for Construction Skills works closely with high schools across the five boroughs to support young people of color secure the experience needed to afford them the opportunity of a career in the unionized construction industry. They also work closely with the New York City Department of Small Business Services and the City Workforce One to recruit adults.[117]
- Nontraditional Employment for Women (NEW) places women in careers in the skilled construction, utility and maintenance trades.[118]
- Helmets to Hard Hats's New York chapter helps veterans to get back to work.[119]
- Pathways 2 Apprenticeship assists people from low-income communities to access union construction apprenticeships, striving to serve justice involved individuals, residents of public housing, and the under-employed.[120]



There are many workforce development organizations working to ensure workers in New York City have access to gainful employment. Some focus on making sure workers receive the appropriate training; and others focus on the policy and system wide issues. The Consortium for Worker Education (CWE) is a private, non-profit agency that provides a continuum of workforce preparation, industry specific training and employment services to over 60,000 New York City workers annually.[121] CWE partners with 35 unions and 40 CBOs to reach New York City workers. These include: Workforce Professional Training Institute,[122] the HUB,[123] and New York Training and Employment Coalition,[124] among others.

The job creation strategies outlined in this report offer the City a plan to put good, public sector jobs back into Black and brown environmental justice communities. Many of these positions will be Civil Service positions, which eventually require taking a civil service exam, though some do not. Some require specific educational qualifications, others require none. Almost all have career tracks as well as full union benefits such as health insurance, pensions, and job security. Some entry level civil service titles include Custodial Assistant, Construction Laborer, City Park Worker, Park Service Worker, and City Laborer. New York City must invest in certification training programs in addition to apprenticeship programs to fully support the growing climate industry. Some training programs the City and other renewable sectors can look to model include:

- 32BJ's Green Building Training Program
- Green City Force
- Association for Energy Affordability, Inc. (AEA)
- CUNY Building Performance Lab
- The Hope Program
- Solar One
- DC 37 Green Jobs Training Program


Ricardo Gomez Angel/Unsplash

Efforts must be made by the state and local governments to fill gaps in industries with rapid growth and employment needs. Not only do these essential training and apprenticeship programs need to be invested in, but the City must also develop relationships between industry market players. The City University of New York (CUNY) and the New York City Department of Youth and Community Development (DYCD) programs must be established and funded to provide new pathways for all New Yorkers to access these newly created jobs. Funding youth summer programs for older high school students, in addition to programs supporting veteran workers transitioning into the climate industry, will also train the workforce needed to support the job creation strategies outlined in the Platform.

Infrastructure jobs in New York City skew male, white and Latinx, with women representing just 9 percent of the workforce in 2017.[125] New York City must prioritize investment in training programs that enable women to enter the construction trades workforce, such as the NEW training program identified above, and programs that provide childcare and other accessibility measures. New York City must also prioritize formerly-incarcerated individuals in all aspects of career education, apprenticeships, and unionized job placement. There are several organizations across the City providing life-changing services to this population including, The Osborne Association, The Doe Fund, and Exodus Transitional Community, among others. It is paramount that the City creates strong partnerships with these organizations, and expands its investment to guarantee continuation of services. The first step towards equity is lowering barriers on finding employment. Many of the programs incorporate immediate tactics including, distributing reduced-price Metrocards, providing housing assistance, and expanding mental health resources. These are foundational resources for reentry.[126]



**We recommend an investment of $1 billion over three years into the creation of a CUNY program, and the existing apprenticeship and job training programs above to help us prepare workers for the jobs identified throughout the report.** These investments in training, education, expanded partnerships, and youth summer programs will ensure that the new economy will be one for all New Yorkers. With this critical funding, we ensure that a green economy is one that involves all stakeholders and provides opportunities for everyone.


**Nontraditional Employment for Women (NEW)** is a training program that prepares women to participate in the construction, utility and maintenance trades in New York City. NEW's goal is to provide paths to fields of employment that have been traditionally harder to access for women, increasing the number of women employed in the construction trades. NEW has placed over 3,000 women into trades careers in the last ten years. The average starting wage of a NEW graduate is 19 dollars an hour.

## Conclusion

We must take action now to protect our climate. We are in the midst of a climate crisis, and we only have a few years left to take aggressive action to slow and try to stop the effects of climate change. According to the Intergovernmental Panel on Climate Change's 2018 report, we could arrive at irreversible climate change as soon as 2030. Locally in New York, we know climate change has led to warmer temperatures that have created deadly summers, rising sea levels that threaten communities, and superstorms that have destroyed homes and lives. We are already feeling the impacts of this crisis. We have no time to waste to implement solutions.

The Climate and Community Stimulus Platform is an effective tool to put New Yorkers back to work and boost our local economy, its an aggressive plan to address climate change locally, and it invests in low income communities of color that have historically been left out and underfunded by our government.

The Platform invests in climate adaptation, mitigation, and recovery measures in environmental justice communities most impacted by: 1) climate change; 2) the COVID-19 pandemic; 3) racial violence; and 4) existing processes, practices, and infrastructure. By investing $16.2 billion over three years, the City will prioritize local solutions and put over 100,000 jobs back into New York's environmental justice communities.

New York City is in crisis. Low-income Black and brown communities are still recovering from COVID-19's wake, while working essential jobs at higher rates to support themselves and their families..[127] New York must actively invest in a fair and equitable recovery for all. The Climate and Community Stimulus Platform offers a roadmap that creates local jobs and offers New York a pathway towards its carbon neutral, climate goals.



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# Appendix

## Methodology

### Criteria and Considerations

All of the job creation strategies in this report were proposed by faith, labor, and community based organizations that represent directly impacted workers and community members on the frontlines of environmental injustice in New York City. While developing the strategies, our analysis prioritized three main considerations:

- Centering low income Black and brown environmental justice communities
- Creating good union jobs within the climate industry
- Meeting New York City's 2050 climate goals

### Job Creation Analysis

To fully capture the impact each proposal has on job creation, our analysis followed the Political Economy Research Institute's (PERI) macro-level job methodology. PERI estimates the total jobs created per $1 million spent in New York State ranges between 50-70 percent of the total jobs created per $1 million in spending in the US. We applied a low end adjustment of 45 percent to PERI's national figure, in order to estimate direct and indirect job creation specific to New York City.

### Investment Costs

Research shows localities typically use diversified funding to pay for infrastructure projects. There are existing funding sources New York City can tap into to finance the Platform. The investment figures highlighted throughout the report are informed by those sources. If the City pursues a combination of grants, state bond proceeds, and federal funds, it would only need 9 percent ($8.4 billion) of the City's $92.5 billion fiscal budget to fund the Platform.

### Limitations

In cases where there was a lack of research specific to New York City, we used data from comparable programs to base our cost analysis. For more information on these programs, refer to the following:

- New Jersey 1-4 retrofits
- Los Angeles GreenPort
- RDM Rotterdam
- Northwest Resiliency Park
- Lincoln Park West Wetland Restoration Project
- Seattle's municipal solid waste management system



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