



RESTART SOLAR

**Energizing Environmental
Justice Communities**

ABOUT THIS REPORT

About the Climate Works for All Coalition



Climate Works for All is a broad coalition of labor, environmental justice, community, faith and environmental groups united to ensure that efforts to address climate change in New York City also create good, career-track jobs and prioritize low-income, climate-vulnerable communities. Climate change presents immense challenges, yet also offers the opportunity to pursue policies that will have the biggest impact – both environmental and economic – on our communities. We believe New York City can continue to elevate the voices of residents and communities on the front-lines of a growing movement for climate justice, and in the process, become the national leader on climate jobs and resiliency. In December 2014, the coalition released *Climate Works for All: A Platform for Reducing Emissions, Protecting Our Communities, and Creating Good Jobs for New Yorkers*. This agenda offered a roadmap for reducing New York City's greenhouse gas emissions 80 percent by 2050, and reducing inequality.

About the NYC Environmental Justice Alliance



Founded in 1991, the New York City Environmental Justice Alliance (NYC-EJA) is a no-profit, 501(c)3 citywide membership network linking grassroots organizations from low-income neighborhoods and communities of color in their struggle for environmental justice. NYC-EJA empowers its member organizations to advocate for improved environmental conditions and against inequitable environmental burdens by the coordination of campaigns designed to inform City and State policies. Through our efforts, member organizations coalesce around specific common issues that threaten the ability for low-income communities of color to thrive. NYC-EJA is led by the community-based organizations that it serves, with its board elected by its member groups, who set policy and guide program development.

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Cover photo: Solar panels at Boys and Girls High School in Bedford Stuyvesant in Brooklyn. Photo by Neelu Marigoudar

INTRODUCTION

New York City has taken the first steps towards a clean energy future by setting a goal of installing 100 megawatts (MW) of solar power on public buildings by 2025.¹ Alongside expected private sector solar installations, this will help reduce our City's carbon emissions and our dependence on fossil fuels. Yet, if the first rounds of solar installations on over 100 public buildings are any indication of the goals of this program, the City is failing to prioritize those communities that are most in need of clean energy infrastructure. The communities that need solar the most are communities that have suffered from disproportionate amounts of environmental pollution. These are New York City's environmental justice communities, which have been hurt first and worst by environmental injustices. It is time to change that paradigm with the City's public solar program.

Currently, New York City prioritizes solar installations on buildings that have large rooftops less than 10 years old and in good structural condition.² These are important technical considerations to guide smart planning, but these criteria alone fail to take into account the vast social and economic inequalities in our city. To ensure the benefits of solar expand beyond the environmental realm, the City should prioritize low-income communities and communities of color by incorporating environmental justice criteria into its solar site selection process. By choosing to take

a first look at the communities that have been subjected to environmental burdens and harms, the City can demonstrate its commitment to bring environmental benefits to these communities to right historical wrongs, and to address immediate health and economic crises in these communities.

The primary City agency responsible for our public sector transition to renewable energy is the NYC Department of Citywide Administrative Services (DCAS). DCAS manages the City's public utility bill, totaling over \$770 million in fiscal year 2017.³ In December 2016, DCAS released the findings of an assessment of solar capacity in all public buildings in the report *Solar 100: New York City's Municipal Solar Strategy, Getting to 100 MW and Beyond*. DCAS assessed the "solar-readiness" of 2,008 public buildings across the five boroughs. Solar-ready means that the roof is 10,000 square feet or more, is less than 10 years old, and is in good structural condition. Of the 2,008 buildings assessed, only 429, or 21%, were deemed solar-ready.⁴

DCAS also assessed the solar potential of the 429 solar-ready buildings, and found the buildings to have a combined solar capacity of 35.6MW, one-third of the 100MW goal. Coupled with existing and in-progress installations, the City will have around 45MW of installed solar capacity. This means that the other 80% of our public buildings must undergo capital

improvements to become solar-ready prior to installing the remaining 55MW of solar.⁵

There are several opportunities to leverage public solar installations and their attendant benefits for the greater good of environmental justice communities. If the City maximizes its savings from these installations, the financial savings can be reinvested into these communities. In addition, solar installations are job creation engines that can offer employment opportunities for low-income people and people of color in New York City, if coupled with an appropriate workforce development system and targeted local hiring.



Figure 1: View of solar panels installed at Boys and Girls High School in Bedford Stuyvesant in Brooklyn.

We recommend that DCAS implement four strategies to ensure that our public solar installations not only reduce our City's carbon emissions, but also reflect our commitment to low-income communities and communities of color that continue to suffer the brunt of

environmental injustice in New York City:

- (1) Work with community-based organizations to incorporate environmental justice criteria into site selection for all future solar installations, including the 429 solar-ready buildings. Such criteria would include social, economic, environmental, and climate indicators.
- (2) Create a capital funding plan for making the remaining 1,579 buildings solar-ready, prioritizing those buildings that fit the environmental justice criteria;
- (3) Maximize the savings from solar installations by using appropriate cost-benefit analyses to direct financing decisions, and developing a program or mechanism to share the savings from these installations with environmental justice communities; and
- (4) Create good, local jobs in the solar industry.

This report identifies specific criteria that the City can incorporate into its decision making on where to locate public solar installations in order to prioritize environmental justice communities while also achieving the goal of 100MW of solar by 2025. By addressing climate change and environmental injustice, the City can lead the way in solving the dual crises of climate change and inequality. Given the national political landscape, New York City must create a progressive model for a fair and equitable transition to renewable energy, and be a counter-force to the rise of climate denialism in the federal government.

ENVIRONMENTAL INJUSTICE IN NYC

Environmental justice is more than environmentalism or sustainability – it means all communities have the right to be protected from environmental degradation in their natural and built surroundings.⁶ Environmental justice communities have been historically burdened by the disproportionate impacts of environmental hazards, and are now further threatened by climate change. In practice, this means that toxic industries were often sited in environmental justice communities. Much of this toxic legacy remains in place today in New York City, and must be actively countered by policy makers.

The following environmental justice communities in New York City should be prioritized for solar power installations:

- Low-income neighborhoods and communities of color;
- Neighborhoods in and around the City-designated Significant Maritime and Industrial Areas (SMIAs);
- Neighborhoods near power plants and dirty “peaker” natural gas power plants;
- Neighborhoods disproportionately impacted by the Urban Heat Island Effect;
- Neighborhoods in the Brooklyn Queens Demand Management (BQDM) area; and
- Neighborhoods that are vulnerable to flooding and storm surge.

These are the neighborhoods that should be targeted for clean renewable energy investments to address this toxic legacy. Furthermore, to effectively prioritize solar power siting in environmental justice communities, the City should focus on those communities with an intersection of two or more of the racial, economic, and environmental criteria. A discussion of each of the criteria follows below.

Low-Income Neighborhoods and Communities of Color

Low-income neighborhoods and communities of color in New York City are disproportionately burdened with the siting and clustering of dirty infrastructure that harms public health. In fact, NYC’s sustainability and resiliency plan, known as *OneNYC*, states “We recognize that equity and environmental conditions are inexorably linked. Environmental hazards translate into poor health, loss of wages, and diminished quality of life, particularly for residents of low-income communities that have historically been burdened with a disproportionate share of environmental risk.”⁷ Indeed, the term “environmental racism” was developed to explain the disproportionate impact of environmental hazards on people of color. The response of these communities to environmental racism is what became known as environmental justice.⁸ In fact, clear evidence points to the link between poverty, race, and pollution.

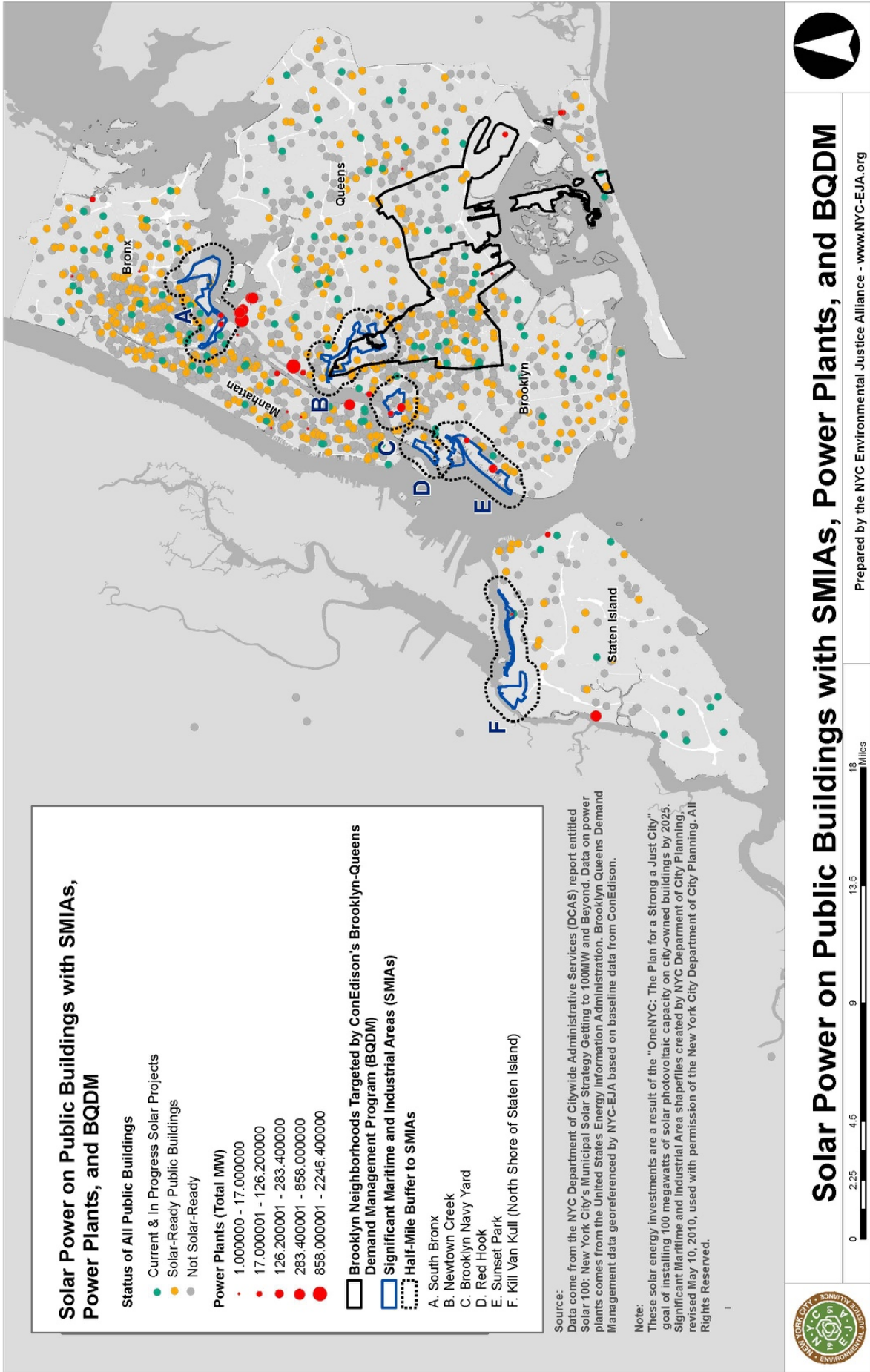


Figure 2: Citywide map showing the solar-readiness of all public buildings, along with the Significant Maritime and Industrial Areas (SMIA), Brooklyn Queens Demand Management (BQDM) area, and power plants.

The US Environmental Protection Agency, for example, released an environmental justice map that demonstrated that the lowest income areas in the country have the worst environmental justice indexes.⁹

The City should target clean energy infrastructure, like solar power, where race, class and pollution overlap. Low-income communities are defined by those census tracts that are at or below 60% of the Area Median Income (AMI). Communities of color are defined by those census tracts in which people of color make up the majority of residents.

Significant Maritime and Industrial Areas

Neighborhoods in and around Significant Maritime and Industrial Areas (SMIAs) are particularly burdened by polluting fossil fuel-based infrastructure that emit high levels of greenhouse gas and co-pollutants.¹⁰ SMIA's are City-designated areas that facilitate the siting of dirty, noxious infrastructure in industrial waterfront communities. Protecting working waterfronts is vital for the livelihoods of working class communities. These working waterfronts, however, coincide with clustered industrial firms that are particularly toxic and fossil fuel dependent.¹¹ There are six designated SMIA's, and the communities that live next to these concentrated industries are disproportionately burdened by the pollution from these SMIA's, resulting in high asthma rates and other respiratory conditions. (See Figure 2 for the location of the City's SMIA's)

Dirty Peaker Plants

Dirty peaker plants are a primary concern for environmental justice communities. These diesel and natural gas-fired electricity generation plants located in NYC neighborhoods are turned on when the city is reaching its maximum energy system capacity during hot summer months.¹² Renewable energy development should work toward ensuring these peaker plants are never turned on, undoing historic patterns of environmental racism that led to these plants being located in low-income communities and communities of color.¹³ The targeted siting and deployment of solar power can improve air quality and health benefits by displacing power plants that contribute the highest emissions rates, thereby maximizing greenhouse gas (GHG) emission and co-pollutant reductions. Prioritizing solar power and coupling it with energy storage in these areas can help set the city on the path toward a phase out of peaker plants, thereby reducing public health disparities. In order to do this, the City will have to shift its solar deployment strategy from a simple cost effectiveness analysis to an analysis of the most cost effective method coupled with maximizing co-benefits. These co-benefits include directly addressing environmental burdens, providing resilient back-up power during emergencies, and the phasing out of dirty peaker plants.¹⁴

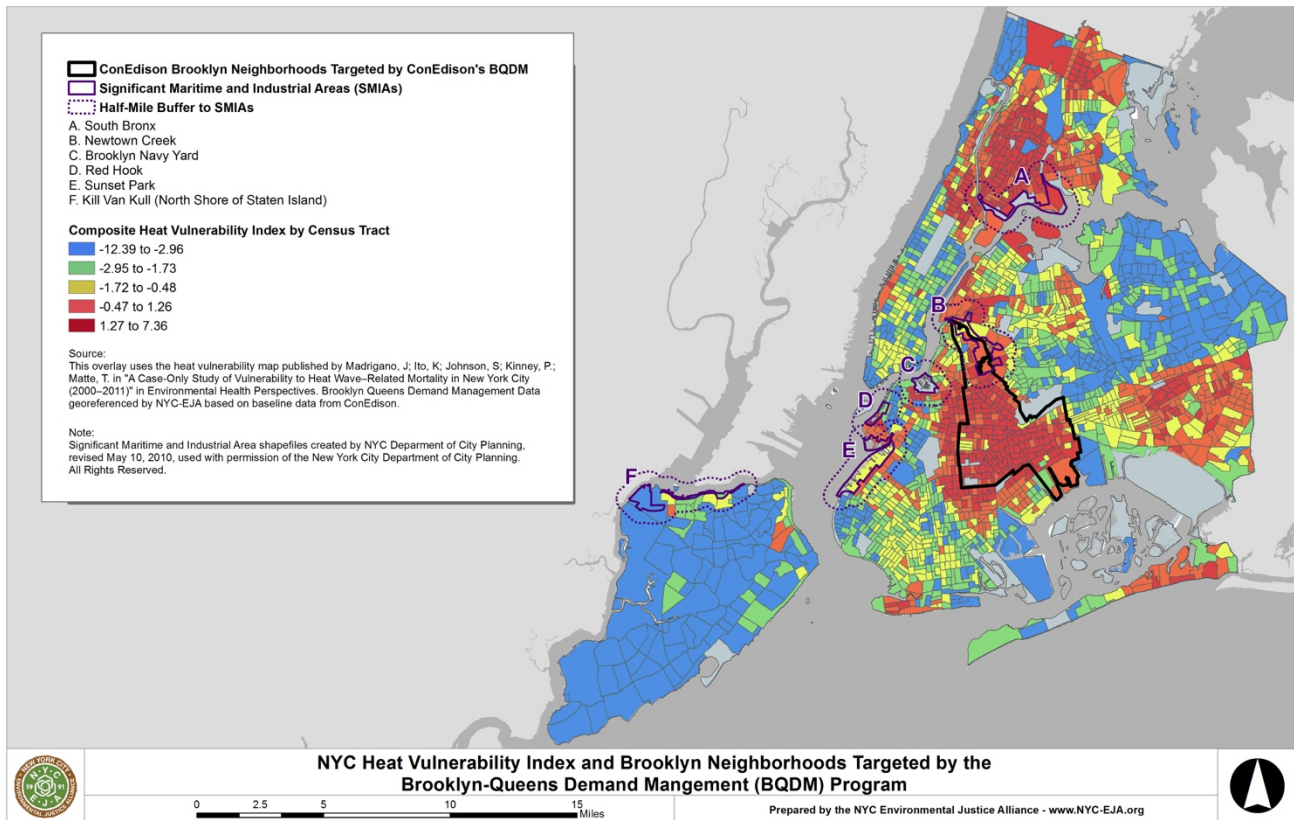


Figure 3: Citywide map of heat vulnerability and the Brooklyn neighborhoods in the BQDM.

Energy Shortfalls and the Brooklyn Queens Demand Management (BQDM) Area

Central Brooklyn and South Queens fall within Con Edison's Brooklyn Queens Demand Management (BQDM) area. Con Edison has predicted an energy demand shortfall within the next few years in the BQDM – meaning that Con Edison's current energy infrastructure cannot keep up with the area's growing energy needs on the hottest days when energy use peaks.¹⁵ Without increasing energy generation or decreasing energy demand in the area, it is at risk of regular power outages. The goal of the BQDM is to create solutions to this problem without building additional fossil fuel infrastructure.¹⁶ This area is ready for a

massive increase in solar power generation and energy storage capacity. This is also important because several Brooklyn communities within the BQDM area – such as Bedford Stuyvesant, Brownsville, East New York, Cypress Hills, and Bushwick – already have a high heat vulnerability index.¹⁷ The area's energy shortfall, coupled with high heat vulnerability, increases the risk of mortality. Prioritizing solar power plus energy storage in public buildings within the BQDM area can help make the city more resilient to extreme heat and can decrease the likelihood of blackouts that put vulnerable communities at risk.

Storm Surge Zones

Many low-income communities and communities of color lie within NYS Office of Emergency Management designated storm surge zones. Communities located within these zones are extremely vulnerable to future extreme weather events that result in coastal flooding, like the next Superstorm Sandy.¹⁸ All of the SMIA's (including South Bronx, Newtown Creek, Brooklyn Navy Yard, Red Hook, Sunset Park, North Shore of Staten Island, West Shore of Staten Island) and many other communities across the five boroughs are in storm surge zones. Coastal flooding threatens lives, can result in toxic exposure, causes power outages, and leads to property damage. Prioritizing solar plus storage and microgrids for backup power in communities that are vulnerable to coastal flooding is a critical emergency preparedness strategy. (See Figure 5 and 6 for storm surge zones).

Urban Heat Island Effect and Extreme Heat

Environmental justice communities are often the most vulnerable to climate change impacts - including the Urban Heat Island (UHI) effect and extreme heat. The UHI effect describes urban areas that experience hotter temperatures than nearby surrounding areas. In the evening, UHI effect can raise temperatures 22 degrees above surrounding areas.¹⁹ The UHI effect is due to various factors like the lack of green space and tree canopy, concentrated blacktop, and a lack of

permeable surfaces.²⁰ The higher temperature has dire consequences for certain communities, as the *NYC Climate Justice Agenda* highlights that heat-related deaths are more likely to occur in communities of color and low-income communities as a result of extreme heat. One legacy of environmental racism is that communities of color have less park space and green space to reduce the heat island effect. Compounding the problem is that many low-income communities lack the financial resources to continuously run air conditioning, or even lack air conditioning in their apartments. According to recent climate research, projections show that by the 2080's extreme summer heat could kill over 3,000 New York City residents annually, up from the current annual average of 100 residents.²¹

Cumulative Burdens

It is also important to recognize the risks of cumulative environmental burdens. For example, Sunset Park is located in a storm surge zone, overlaps with an SMIA with industrial businesses that use toxic chemicals,²² has a high asthma hospitalization rate,²³ and has a population well below the area median income. Yet, Sunset Park only has one public solar site to date. Bushwick - another community dealing with the cumulative environmental burdens including proximity to an SMIA, high heat vulnerability, and a potential energy shortage - has zero solar sites on public buildings.

DCAS must intentionally prioritize environmental justice communities based on these social, economic, environmental, and climate indicators. In doing so, DCAS can help to challenge the historical racism

that has left New York City's low-income residents and people of color with a toxic legacy of fossil fuel infrastructure in their neighborhoods.

SOLAR MAPPING

The City's report on public solar, known as *Solar 100: New York City's Municipal Solar Strategy Getting to 100 MW and Beyond*, lists the current and in-progress solar installations in NYC, and also assesses the solar-readiness of the remainder of the public buildings.

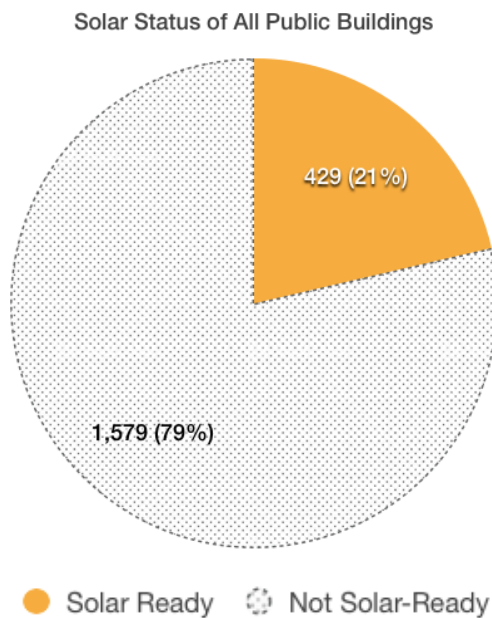


Figure 4: Chart of Solar-Ready Public Buildings.

The public buildings that were deemed solar-ready were also assessed for estimated solar capacity in kilowatts (kW), estimated annual kilowatt per hour (kWh) production, and estimated annual emissions reductions in metric tons of carbon dioxide (Mg CO₂). The data shows that only 21% of the City's municipal buildings are ready for solar installations (roof is in good structural condition, etc.) and that even if we install solar on all the 429 solar-ready buildings, we will have only achieved just over half of our solar goal of 100MW by 2025. There is much work to be done, and many opportunities to improve the program on behalf of all New Yorkers.

This data shows that to date, public solar projects have not been intentionally targeted in communities that need it most.²⁴ For example, in the most recent DCAS contract for solar installations, less than 25 percent of the 88 designated public buildings are located in low-income areas with a median household income below the City's poverty threshold (\$31,156).²⁵

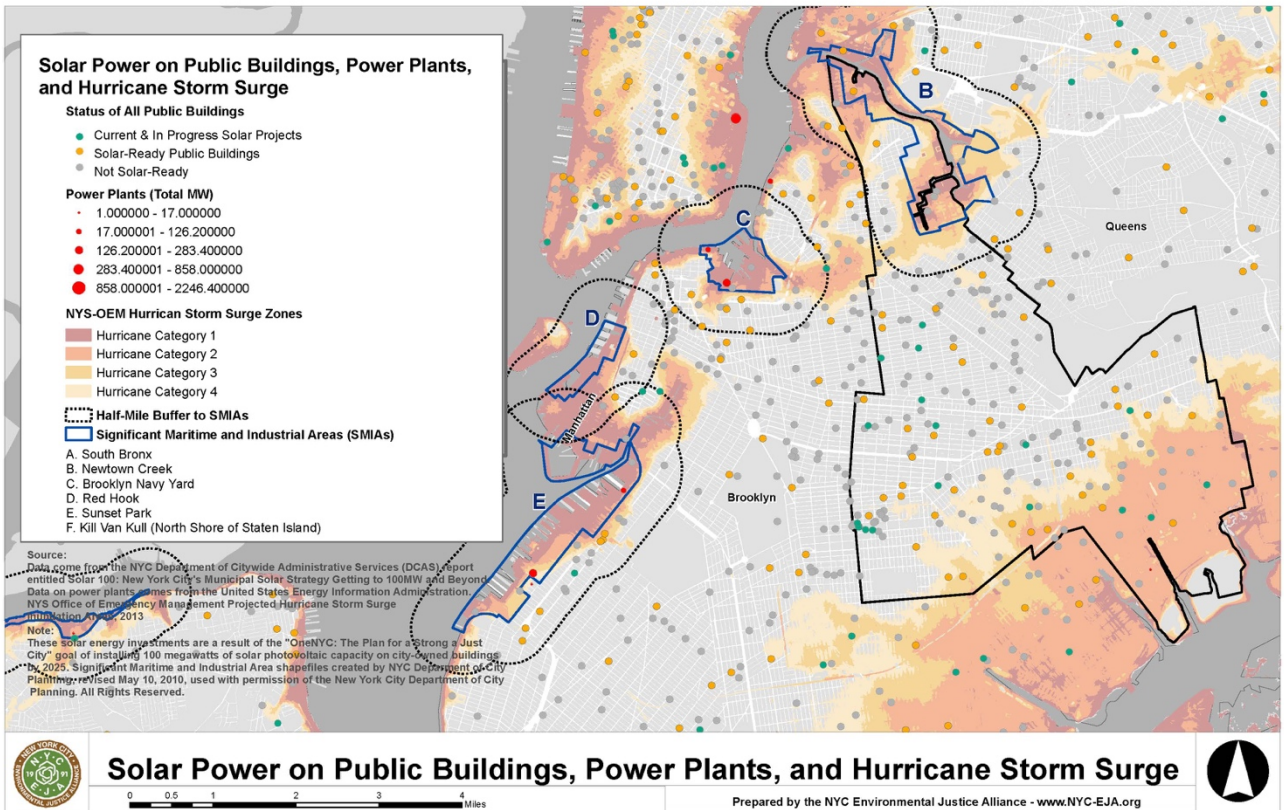


Figure 5: Brooklyn map showing the solar-readiness of public buildings, along with storm surge zones, SMIAs, and BQDM.

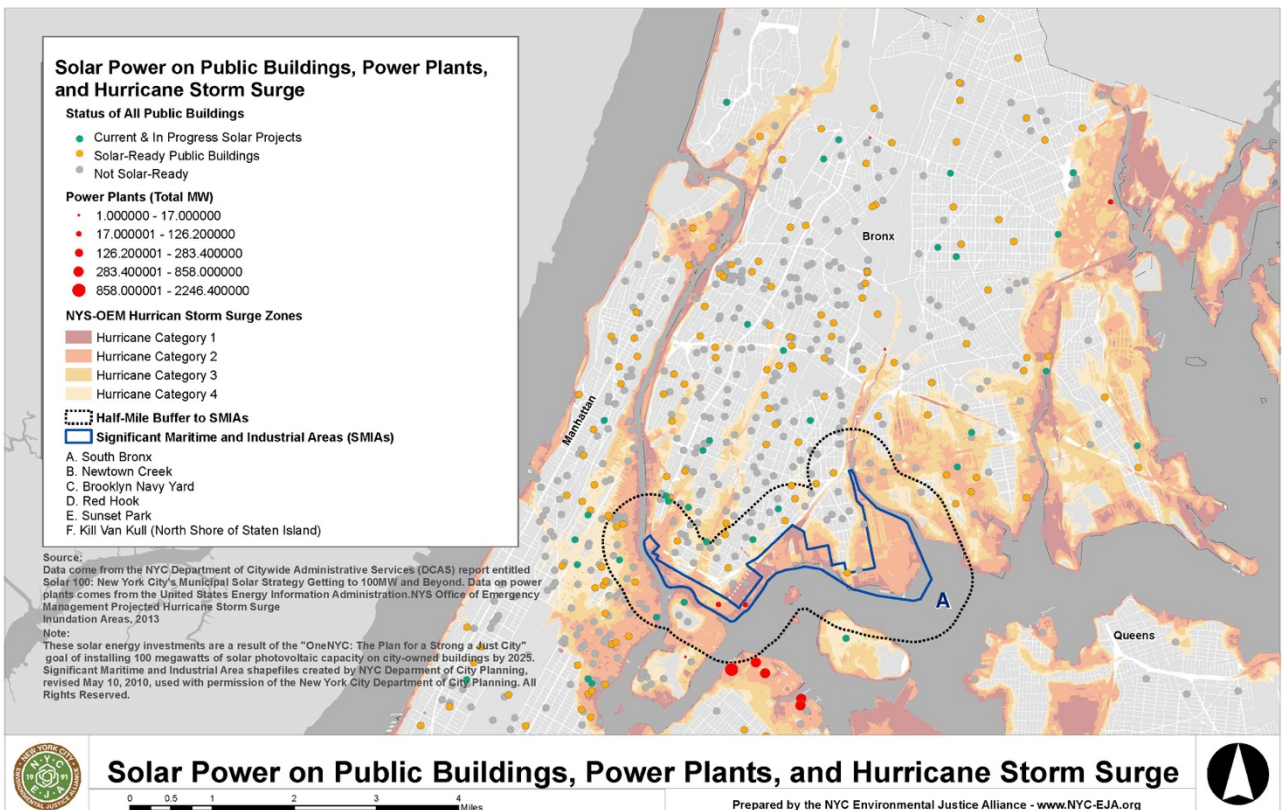


Figure 6: Bronx map showing the solar-readiness of public buildings, along with storm surge zones, SMIAs, and BQDM.

Given the lack of prioritization of environmental justice communities for the siting of the most recent solar projects, DCAS should ensure that the next contract for public solar installations prioritizes solar-ready buildings in the communities that need it most. The City should focus on communities like Central Brooklyn and the South Bronx that have cumulative environmental burdens and face higher barriers to accessing solar energy, using the criteria described above.

Moreover, even after the City installs solar on the 429 solar-ready public buildings, we are still 45MW short of the 100MW goal.²⁶ This means that the city must plan now for capital investments in the rooftops of public buildings to ensure they are solar-ready as soon as possible. DCAS notes in *Solar 100* that they will prioritize roof repair and replacement of those buildings with the largest solar capacity. We suggest that the City also assess where these buildings are located and link the largest solar capacity roofs

with the environmental justice criteria outlined above to ensure that the infrastructure work is centered first in those communities that need it most.

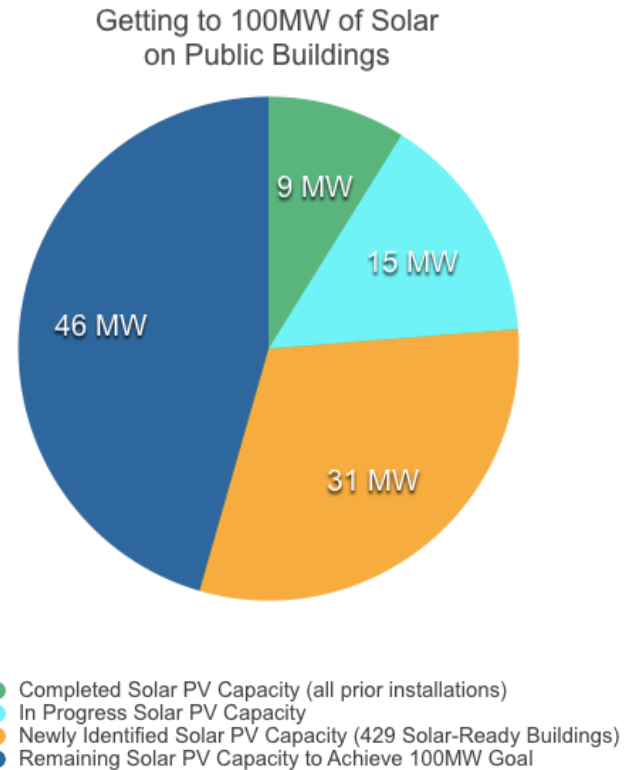


Figure 7: Chart of getting to 100MW of solar on public buildings.

COMMUNITY BENEFITS OF SOLAR

Siting public solar installations to prioritize environmental justice and other low-income communities is important as a matter of equity. As we described above, environmental racism in NYC has led to the placement of toxic infrastructure primarily in low-income communities and communities of color over many generations. The siting of solar on public

buildings in these communities, coupled with a local hiring program with training and access to career-track jobs, and directing savings from solar installations into these communities, can collectively create an avenue for addressing environmental injustice.

Although it is true that placing solar panels

anywhere in the city helps to reduce the load everywhere on the power grid, it is indisputable that infrastructure improvements that come with solar installations will enhance the quality of life for local residents, particularly in neighborhoods that have long been hosts to harmful infrastructure.

Take Sunset Park in Brooklyn, for example. As previously mentioned, this community faces cumulative burdens: it has multiple peaker power plants, it is located near an SMIA, and falls within a storm surge zone. In addition, the neighborhood has a 25% poverty rate, compared with a 17.5% rate citywide, and 45% of its population is composed of immigrants.²⁷ If solar panels on any City building can benefit NYC as a whole, why not strategically place them in a community like Sunset Park that stands to acutely benefit on multiple levels from direct investment in infrastructure?

First, Sunset Park would benefit from public buildings that are upgraded and improved with top of the line clean, renewable power. Second, economic activity will create local jobs, and access to these jobs can provide a direct stake for community members in neighborhood rehabilitation - drawing wealth back into the communities that need it most. Third, we can direct some portion of the savings from these projects back into the community in a way that allows for complimentary economic development, education, or other community building opportunities. UPROSE, a community

organization in Sunset Park, has outlined a similar innovative vision for renewable energy - one that provides sustained economic opportunity for community members and workers.

New York City should go further to maximize community benefits - these are not new ideas. San Francisco, for example, has a district wide "Shared Savings Program" that encourages schools to reduce their utility usage. Those schools that reduce their usage by 5% keep half of the savings.²⁸ Such a program with solar could reinforce the solar program as a net benefit for schools, leading to higher rates of support and advocacy for the solar program in the city.

Currently, however, New York City does not have a plan to re-invest funds created by energy savings from solar power to help address the needs and priorities of low-income communities despite widespread need for more resources for services and programs. With a budget of over \$770 million earmarked for heat, light, and power, the City is sinking an enormous amount of money into utilities for its public buildings.²⁹ Investments in renewable energy and energy efficiency in the public sector are not only strategies to reduce our energy budget, but also opportunities to free up funding for programs that address climate change and inequality in New York City. We urge the City to assess the opportunities for reinvesting or "sharing" these savings in the communities that need it most.



Figure 8: Largest solar installation in New York City located in the Brooklyn Navy Yard. Source: Brooklyn Navy Yard Development Corporation

Furthermore, given the importance of “re-investment” strategies to help address inequities in environmental justice and other low-income communities, the City should make every effort to maximize the savings from solar installations. Yet, over 70% of DCAS’ solar installations are financed through Power Purchase Agreements (PPA), which do not maximize the savings potential from solar. The PPA model shifts most of the savings from the solar installation to a private solar developer, preventing the City’s ability to reinvest these savings back into the community. Generally, if any savings result from solar PPAs, it is just two to five percent savings on energy costs for the

consumer.³⁰ While the benefit of a PPA is that the city pays nothing upfront for the solar installation, potentially freeing up existing funds for renewable energy installations, such an investment is not guaranteed. Indeed, in the New York private residential market, solar leasing through PPAs is becoming less popular as consumers increasingly opt for purchasing of the solar systems through traditional loans.³¹

If the City directly financed the solar installations through capital funding or bond sales, it could collect a larger share of the utility bill reduction.³² To ensure the City chooses the path that presents the

most benefits and return on investments, it should conduct a comprehensive cost-benefit analysis of a full range of financing strategies at its disposal, including direct City funding. This analysis should take into account commonly used mechanisms like tax equity partnerships that allow the city to own the installation, but the tax equity partner can claim available tax credits, greatly reducing the cost of the project.

Lastly, every public solar installation should create good, local jobs in the solar industry. This means ensuring there is a Project

Labor Agreement in place for all public solar installations, and also ensuring that there is a workforce development system in place to create a jobs pipeline for this work. The workforce development system needs a comprehensive recruitment system that hires locally within disadvantaged communities, as well as top notch training opportunities such as pre-apprenticeship and apprenticeship programs. It also needs a targeted local hiring requirement that sets standards for how many local workers from disadvantaged backgrounds need to be included in each project.

STRATEGIC COORDINATION

For a successful and equitable public solar initiative in New York City, environmental justice communities must be at the forefront of the transition to a renewable energy economy. For example, in 2014 community-based planning organizations and local development corporations formed the Brooklyn Alliance for Sustainable Energy (BASE) to advocate for cleaner sources of energy, and building a more efficient and resilient energy infrastructure. Ninety percent of residents in the BQDM catchment area are people of color, who are now facing increased climate risks due to the high likelihood of losing power during extreme weather events such as heat waves and storm surges that can disrupt the outdated energy infrastructure.³³ Brooklyn Movement Center is one of the leading organizations in the coalition, and is currently driving efforts to inform and activate local

stakeholders to identify opportunities for capturing the economic and environmental benefits of clean energy. El Puente, another BASE member, works on increasing sustainability through energy efficiency retrofits for Brooklyn communities. Conversations around opportunities for sustainability, renewable energy, and the risks of heat must be accountable to the communities most vulnerable to climate change.

Within New York City, the disparity in energy bills is acutely felt. For example, according to research by THE POINT, South Bronx residents devote 9.3% of their income to utilities – the highest in the city, compared with the 1-2% paid by most neighborhoods. The energy burden has large implications for low-income households, who often must choose between paying utility bills and paying for

other essential goods and services. THE POINT works on community energy planning that begins to address these disproportionate environmental burdens and ensure clear community benefits for the Hunts Point community.

The efforts of these groups, and many others, demonstrate the skill and experience that is present in NYC to advance an equitable clean energy economy. The City should tap into this skill and expertise to ensure that we are not only advancing our clean energy goals, but doing so in a way that addresses environmental racism and inequality in NYC.

CONCLUSION

While we understand that solar in the city will benefit the city as whole, we must be intentional about decreasing disproportionate environmental burdens by directing the benefits of these renewable energy investments to those communities that need it most. The Climate Works for All coalition will continue to hold the City accountable to ensure that the goal of 100MW of solar energy on public buildings by 2025 is achieved equitably.

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²⁹ New York City Department of Citywide Administrative Services (NYC-DCAS), DCAS DEM - Municipal Energy Use & GHG Emissions, FY 2017 N.p., n.d. Web. 12 Apr. 2017.

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³¹ Renewable Energy World, Solar Leasing Continues to Lose Share to Loans. Casey Anderson, February 23 3017, <http://www.renewableenergyworld.com/ugc/articles/2017/02/20/solar-leasing-continues-to-lose-share-to-loans.html>

³² It is often claimed that cities can save much more money through a PPA because tax credits are only available to private developers, not municipalities. This claim has been challenged by the use of creative financing strategies, such as tax equity partnerships, that allow a municipality to own a solar installation while also capturing the tax credits. Such strategies should be explored by any cost-benefit analysis conducted by the city.

³³ Brooklyn Alliance for Sustainable Energy, "Meeting Brooklyn's Energy Needs with Community-Owned Clean Power", New York City Environmental Justice Alliance, February 10, 2016, http://nyc-eja.org/public/publications/BASE_FactSheet_021016.pdf