# **NYCHA**
# Sustainability Agenda

NEW YORK CITY
HOUSING
AUTHORITY

# CONTENTS

Letter from Chair ..... 4
Letter from Executive Vice President of Capital Projects ..... 6
Executive Summary ..... 8
Stakeholder Engagement ..... 16
Introduction ..... 20
Reporting on our progress ..... 24
Carbon and Energy ..... 36
Goal 1: Reduce greenhouse gas emissions by 80 percent by 2050 ..... 36
Health and Wellbeing ..... 54
Goal 2: Cultivate healthy and resilient communities based on design excellence ..... 54
Community ..... 68
Goal 3: Empower residents through community activation and workforce development ..... 68
Facilities and Resources Management ..... 84
Goal 4: Ensure efficient building operations and resource management ..... 84
Economics ..... 102
Goal 5: Leverage all funding and financing toward healthier and decarbonized buildings ..... 102
Acknowledgments ..... 112

# LETTER FROM CHAIR

Dear New Yorkers,

Addressing climate change and creating a greener, more sustainable world is one of the most pressing issues of our time. As the nation's largest public housing authority, NYCHA is well positioned to help lead the way toward this imperative, and a better future.

NYCHA's Sustainability Agenda is our roadmap—and our commitment—for creating healthier, safer, and more comfortable homes for our residents. The Agenda will also help ensure that NYCHA is here to serve the generations to come, together with our Blueprint for Change plans to strengthen our buildings, improve our residents' quality of life, and transform our organization.

The Sustainability Agenda presents a viable path forward with critical strategies such as major reductions in greenhouse gas emissions, holistic and transformative building renovations that incorporate the latest technologies, and the creation of sustainable and equitable markets through the sheer size of our buying power. These achievements not only lower our operating costs but also encourage others to do their part for the environment as well, especially in light of our ability to model improvements and innovations on such a large scale. The benefits extend beyond a better living environment for our residents and a cleaner environment for all: Our efforts also provide our residents with opportunities to gain skills and employment in cutting-edge green industries.



**Greg Russ**
Chair & Chief Executive Officer

All of the projects outlined in the Agenda bring us closer to our sustainability goals. And they are all developed and carried out with our residents in mind. We know that our plans will only be successful if they incorporate the needs and insights of our stakeholders, and that it is why we have made it a top priority to engage partners such as residents, staff, community advocates, and industry experts in the course of our work.

This latest iteration of our Sustainability Agenda describes our accomplishments as well as new goals we developed based on the latest data and information. We will continue to update the Agenda every several years to reflect our progress and the broader advancements in sustainability.

Our Sustainability Agenda envisions a brighter future and creates the pathway to get there. While we are making progress, there is still a lot of work to do. The consensus from the scientific community has made it clear that there is no time to delay—the impacts of climate change are already here and will continue to worsen.

But we cannot go it alone. We look forward to our continued collaboration with residents, staff, and other fellow New Yorkers to bring our vision to fruition.

In partnership,

**Greg Russ**
Chair & Chief Executive Officer

# LETTER FROM EXECUTIVE VICE PRESIDENT OF CAPITAL PROJECTS

Dear New Yorkers,

Capital Projects Division is approaching building improvements in a new way. Guided by resident and stakeholder engagement, building science, comprehensive approaches and alternate delivery methods, we are striving to ensure that our work modernizes and sustains public housing for generations to come.  The Sustainability Agenda outlines NYCHA's ambitious approach to design, build and operate, utilizing industry best practices along with current and future technologies to decarbonize our buildings, decentralize heating systems, tighten building envelopes and move towards renewable energy to lower operational costs.

NYCHA's vision is to move away from one-for-one component replacement towards comprehensive building renovations. This is an important step to improve the performance and preservation of our portfolio of the over 2,000 buildings. NYCHA is leveraging all funding sources to design and execute holistic, transformative renovation projects, making sure that every construction project gets us closer to our sustainability goals.



**J. Steven Lovci**
Executive Vice President of Capital Projects

Driving innovation in energy and sustainability is a key component of the Sustainability Agenda. NYCHA is fostering partnerships with organizations such as the New York State Energy and Research Development Authority (NYSERDA) and New York Power Authority (NYPA) to advance new technologies that provide heating and cooling for our residents. Many of the programs move to create sustainable markets through NYCHA's buying capacity and scalability and foster sustainable careers through Section 3 business opportunities like the solar program. The Sustainability Agenda also outlines how Capital will update the Design Guidelines to ensure beneficial electrification, renewable energy production, sustainable materials and energy and water efficiency to be part of the normal course of business.

The Agenda was created through a collaborative process with NYCHA residents, City agencies, community-based organizations and technical experts through a series of workshops which developed the goals and bold actions that will showcase excellence in sustainable design for our current residents and future generations.

In partnership,

**J. Steven Lovci**
Executive Vice President of Capital Projects

# EXECUTIVE SUMMARY

## The Sustainability Agenda outlines NYCHA's commitment to healthy and comfortable homes that showcase environmental stewardship and sustainable design.

First released in 2016, this new Sustainability Agenda will illustrate the progress to date in accomplishing the original 2016 goals while setting new targets based on the latest data. By designing sustainability into its buildings and communities, NYCHA ensures that New York City will have an affordable housing stock for the next generation.

The Sustainability Agenda captures the changing nature of NYCHA. This includes a series of reforms to create a culture of service, empower staff and residents, and further enable data-driven decision-making. By re-evaluating the goals and strategies of the first Sustainability Agenda and setting more ambitious targets, NYCHA seeks to create a better environment for residents and staff while being at the forefront of innovation. While this document's planning horizon is long-term, the Sustainability Agenda will be released every five years to ensure it reflects technological advances and the needs of the agency.

The success and longevity of NYCHA's sustainability goals are greatly dependent on resident engagement. This document also summarizes the robust resident and stakeholder engagement process that NYCHA completed as part of the creation of this document. By collaboratively planning, NYCHA can ensure key stakeholders can weigh in on NYCHA's vision for sustainability and ensure our public housing stock survives and thrives for the next generation.



This document outlines five goals and 21 strategies to further advance NYCHA's vision for sustainability, centered on five themes: Carbon and Energy; Health and Wellbeing; Community; Facilities and Resources Management; and Economics.

Carbon and Energy

Health and Wellbeing

Community

Facilities and Resources Management

Economics

CARBON AND ENERGY

# Goal 1: Reduce greenhouse gas emissions by 80 percent by 2050

**Implement NYCHA's GHG reduction roadmap**

Building on NYCHA's 15-year history of successful energy efficiency programs and emissions reductions, NYCHA intends to meet its greenhouse gas (GHG) reduction goals by scaling up Energy Performance Contracts, integrating innovative technologies, transitioning away from systems that use fossil fuels, and participating in the Better Buildings Challenge and other partner programs.

**Advance electrification and deep energy retrofits**

To achieve 80 x 50, NYCHA must go beyond standard energy-efficiency measures and implement deep energy retrofits. NYCHA is working to achieve deep carbon reductions by advancing a series of innovative projects to electrify building heating and cooling systems. NYCHA is identifying buildings that can be fully electrified quickly and complete NYCHA's first Net-Zero Energy project through the RetrofitNY program.

**Expand distributed energy resources**

To achieve the goal of installing 30MW of solar on its buildings by 2026, NYCHA is scaling up the Community Shared Solar program as well as assessing other potential models for solar installation and the potential for battery storage for peak load shaving and emergency backup power.

**Expand electric vehicle program**

NYCHA is working to double its Clean Fleet program by 2026 to shift away from fossil-fueled vehicles and to help reduce GHG emissions from the transportation sector. NYCHA is also looking to install its first public-facing electric vehicle (EV) chargers to expand access to charging facilities for EV vehicles in environmental justice neighborhoods.

*Kingsborough Houses underwent exterior renovations which included façade repairs, asbestos abatement, brick replacement, parapet replacement and reroofing.*



HEALTH AND WELLBEING

# Goal 2: Cultivate healthy and resilient communities based on design excellence

**Update the NYCHA Design Guidelines and adopt sustainability standards**

NYCHA is looking at buildings and grounds holistically and treating them as integrated systems. To ensure excellence in design, NYCHA is updating the Design Guidelines for Rehabilitation of Residential Buildings with sustainable elements for the development, construction, rehabilitation, repair, and operation of housing facilities. The guidelines will include beneficial electrification, renewable energy production, sustainable materials, and energy and water efficiency. NYCHA will also incorporate health and sustainability-related elements into its Physical Needs Assessment process.

**Ensure healthy and hazard-free indoor environments**

NYCHA is responsible for ensuring that its apartments are comfortable, safe, and free of lead, mold, and pests. To keep residents safe and healthy and to meet the requirements of the HUD agreement, NYCHA is taking the following transformative actions: completing the expansion of the comprehensive mold management program, performing portfolio-wide ventilation upgrades, bringing elevators and roofs into a state of good repair, removing lead and pests, and reducing exposure to secondhand smoke.

**Expand the Green Infrastructure program**

NYCHA and DEP are partnering to install over $80M in investments in green infrastructure at 39 NYCHA developments by 2023 to help mitigate combined sewer overflows. In addition to the work with DEP, NYCHA is looking at additional projects to upgrade storm sewer networks, mitigate flooding, and build resilient landscapes.

*Fall Festival at converted PACT development, Ocean Bay Houses*

*Playground at converted PACT development, Baychester Houses* ©Andy Foster



COMMUNITY

# Goal 3: Empower residents through community activation and workforce development

### Connect residents to workforce development and entrepreneurship opportunities

Investments in energy and sustainability provide an excellent opportunity to connect NYCHA residents to jobs and career growth pathways. NYCHA will develop a Clean Energy Academy to train NYCHA residents for green careers in partnership with NYSERDA and expand resident hiring through its successful Community Shared Solar program and youth-focused programs with partners such as Green City Force.

### Mobilize community activation through resident-led sustainability programming

NYCHA will work with residents to develop programming to foster deeper engagement in environmental activism and participatory urban design. Through training, funding opportunities, engagement, and other resources, NYCHA residents will be positioned as key partners in programming to support and strengthen the Sustainability Agenda. Initiatives include a sustainability grant program for residents, launch of a Campaign for a Clean NYCHA, resident-led events, and improve transparency in the procurement process.

### Expand NYCHA farms, gardens, and urban agriculture programs

NYCHA farms and gardens combine youth workforce development, healthy food production and distribution, resident engagement, and sustainable open space activation to contribute to positive community development. Through partnerships, NYCHA will expand the number of farm sites from six to fifteen, ensuring at least two farms in each borough by 2026. NYCHA will expand work with Green City Force and collaborate to explore new farm models, including those that incorporate entrepreneurship, composting, and greenhouse projects.

### Develop resident stewardship programs for NYCHA's resilient landscapes

NYCHA is bolstering community stewardship programs that can help fully realize the benefits of resilient landscapes and provide an opportunity for both resident education and engagement. Resilient landscape features such as bioswales, rain gardens, and other practices help mitigate the effects of severe flooding due to climate change and include best practices in design.


*Grain Collective pop-up during Family Day at Bronx River Houses.*

FACILITIES AND RESOURCES MANAGEMENT

# Goal 4: Ensure efficient building operations and resource management

### Ensure proper maintenance and longevity of investments

To ensure staff have the proper training to efficiently operate and maintain equipment, NYCHA will increase training programs for operations and trades staff. NYCHA will also expand recognition programs to help build a culture of sustainability and ground up employee engagement.

### Re-envision waste management and recycling at NYCHA

NYCHA has committed to upgrading all of its waste handling infrastructure, including the full replacement of 194 waste yards and all interior compactors that are at the end of their remaining useful life. As two-thirds of NYCHA's waste is recyclable, NYCHA has committed to installing new recycling centers and making compost collection services available to all developments. NYCHA is also advancing the installation of innovative waste-handling technologies including pneumatic waste collection systems for improved efficiency.

### Design for circularity and recycle construction and demolition waste in Capital Projects

As NYCHA expands its capital construction program to bring NYCHA buildings into a state of good repair, a large volume of construction and demolition waste is generated. NYCHA is working to seek opportunities to reduce construction and demolition waste and design for circularity through the life of the building and beyond, starting with construction.

### Improve water management in buildings

Given that over 23 million gallons of water flow through NYCHA buildings every day, there are many possibilities to improve water efficiency and explore water reuse at NYCHA buildings. NYCHA will continue to install high efficiency water fixtures that will cover 63,743 units over the next five years. NYCHA is also advancing several efforts to stop and prevent building plumbing leaks to improve water management and reduce instances of mold, including cure-in-place piping and heating system technologies to identify leaks.

*Recycling bins being placed at Marcy Houses*



ECONOMICS

# Goal 5: Leverage all funding and financing toward healthier and decarbonized buildings

### Retain ownership of energy and water savings

NYCHA is exploring options to keep the energy and water savings that accrue from retrofit projects. Work includes establishing water usage baselines, changing policies around energy and water consumption and operational funding, removing restrictions on incentives stemming from Energy Performance Contracts, and investing savings back into projects.

### Bring in more funding through the Preservation Trust

While NYCHA is working to rehabilitate roughly 62,000 units through the Permanent Affordability Commitment Together (PACT), NYCHA must also generate more funding to address repairs in the remaining 110,000 units. The creation of a Public Housing Preservation Trust would allow NYCHA to be able to procure and expedite large capital works and gain access to federal Tenant Protection Vouchers (TPVs), which would provide a more stable and valuable flow of federal subsidies for building renovations.

### Bring in more funding through PACT

NYCHA is working to attract financing through the Permanent Affordability Commitment Together (PACT) to bring all NYCHA developments into a state of good repair. NYCHA is converting 62,000 units to the Section 8 program to provide a more stable flow of federal subsidies and allow NYCHA and its development partners to raise funds to address capital needs.

### Earn revenue through energy and sustainability incentives and demand management programs

Federal, state, and utility programs offer financial incentives and technical support for energy-efficiency projects. NYCHA is expanding participation in these programs to earn revenue while helping the utilities increase the reliability of the grid and reduce the need to run the least efficient, most polluting peaking powerplants.

### Establish a Green Revolving Fund

NYCHA is working to establish a Green Revolving Fund dedicated to paying for energy efficiency or sustainability projects that generate cost savings. It establishes an ongoing funding vehicle that ensures that capital is available for projects. Revenues earned through incentive programs are often placed into a general operating fund, instead these funds can create a dedicated revenue source for innovative and resident-led ideas.

### Advocate for equitable investment in NYCHA through carbon offsets

LL97 directs NYCHA to reduce GHG emissions by 40% by 2030 and 80% by 2050 (80 x 50). NYCHA is helping to shape the implementation of the law through participation in industry working groups. The law also requires a carbon trading study, which includes methods to ensure equitable investment in environmental justice, preserves a minimum level of benefits for all applicable buildings, and does not result in any localized increases in pollution. NYCHA is working to guide integrating environmental justice into the design of a potential carbon market and how NYCHA may benefit.

# STAKEHOLDER ENGAGEMENT

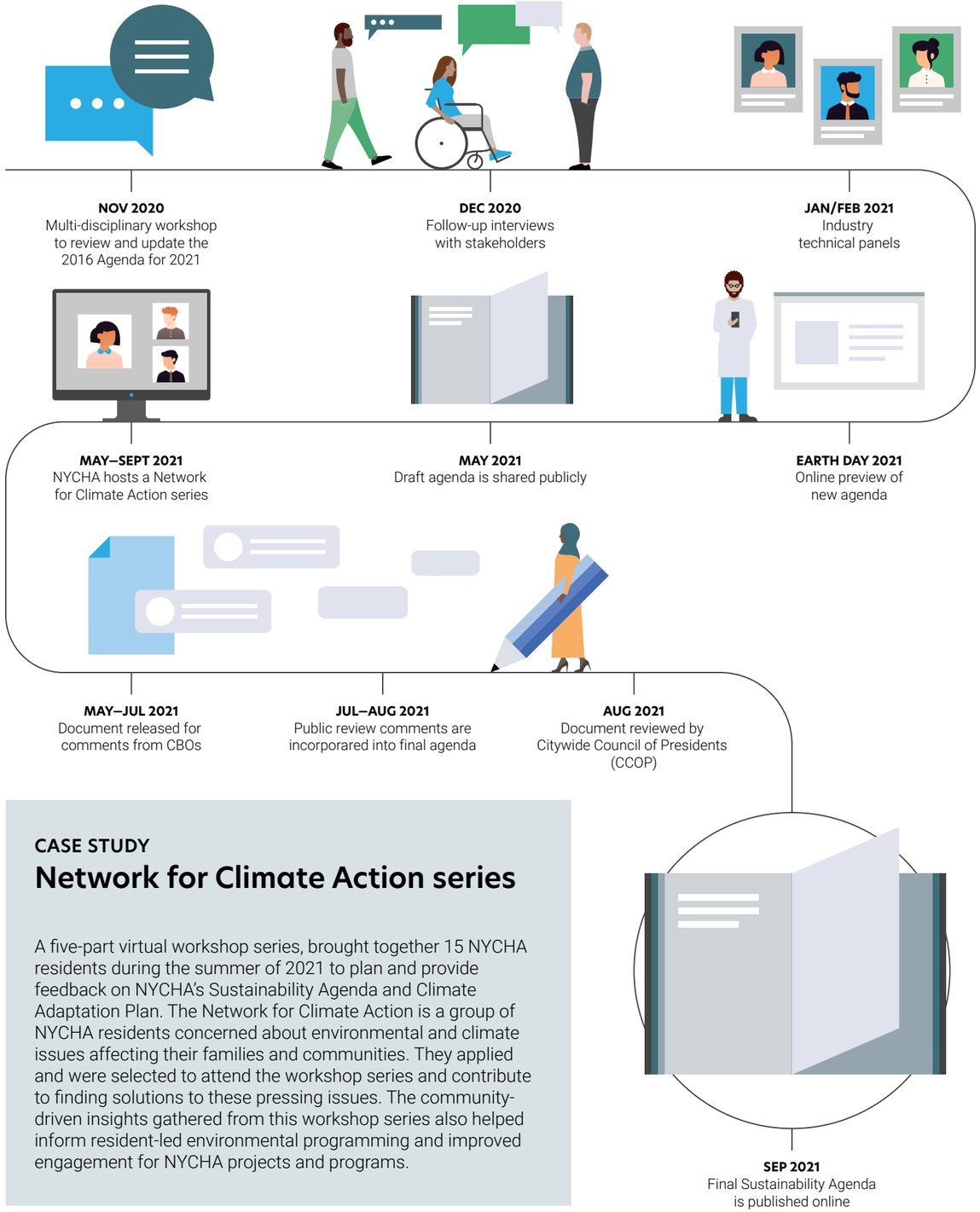
## How is this Agenda collaborative and inclusive?

NYCHA committed to working collaboratively with its residents and other key stakeholders to ensure transparency, trust, and an inclusive final product as part of the development of this important policy document. Through the engagement process, NYCHA hosted over a dozen community and resident workshops, staff charettes, and industry panels to develop this document. NYCHA created the Network for Climate Action, a series of five workshops with residents to garner feedback on this document and NYCHA's overall climate and sustainability planning efforts.

The stakeholder engagement process was designed to help NYCHA:

a. Build trust, transparency, and accountability amongst residents and stakeholders
b. Integrate feedback into the strategies and goals of this document
c. Increase community partnerships
d. Inform the program design for resident-driven activations
e. Build a network for resident-led green stewardship collaborations
f. Design more capacity building trainings and green workforce development opportunities






CASE STUDY

### Network for Climate Action series

A five-part virtual workshop series, brought together 15 NYCHA residents during the summer of 2021 to plan and provide feedback on NYCHA's Sustainability Agenda and Climate Adaptation Plan. The Network for Climate Action is a group of NYCHA residents concerned about environmental and climate issues affecting their families and communities. They applied and were selected to attend the workshop series and contribute to finding solutions to these pressing issues. The community-driven insights gathered from this workshop series also helped inform resident-led environmental programming and improved engagement for NYCHA projects and programs.

*This diagram shows the many ways NYCHA has made this process inclusive and reflective of the needs of NYCHA residents*

# Stakeholder Takeaways

As an inclusively designed document, the Sustainability Agenda prioritizes community participation. By centering the voices, policy priorities, and recommended strategies of its stakeholders, NYCHA can use this document to strengthen community-based alliances, create effective programming, and hold itself accountable for meeting the needs of its residents. The takeaways garnered from the stakeholder engagement process have informed NYCHA's action-based strategies and commitments. By documenting and drawing lessons from its current and past sustainability goals, the Sustainability Agenda pulls from a participatory process of combined monitoring, learning, and action.

### Visioning exercise

As part of the stakeholder engagement process, participants of the Network for Climate Action were asked to envision a future NYCHA where all their sustainability goals and ideas have been fully realized—where they and their children and grandchildren can lead healthy, safe, and fulfilling lives. These ideas helped the group identify their aspirations for a sustainable community and how they could be translated into near-term programs and projects to advance that vision. This served as a starting point for discussing the Sustainability Agenda and connecting synergies between technical feedback and community-driven solutions.

**Key themes emerged during the conversations with NYCHA residents and community partners:**

- Need for greater transparency and information sharing from NYCHA
- More vibrant communications with art, banners, and hands-on activities around sustainability
- Desire for an upgraded aesthetic and better utilized green spaces
- Need for basic human rights like safety, cleanliness, and functioning infrastructure
- Improved recycling infrastructure and messaging
- Trust building as a foundation for partnership
- Stronger role for residents in oversight and program delivery
- Support for resident-led sustainability efforts
- Multiple engagement channels in addition to flyers and Tenant Association President communications



# Pledge Statement

To honor resident and community feedback on the Sustainability Agenda, NYCHA pledges to:

- Actively listen to residents and document their feedback
- Balance local knowledge with technical information by creating co-learning opportunities between professional experts and community members
- Consider short– and long-term solutions and concerns regarding sustainability goals
- Establish long-term partnerships with residents and community stakeholders
- Acknowledge and address shared concerns among all the community members
- Ensure resident input has been considered in the final decision making
- Map out tangible next steps with residents and stakeholders

### Integrating resident and stakeholder feedback

NYCHA used the feedback received during the full engagement process to inform the goals, strategies, and structure of the Sustainability Agenda. New programs are being developed, including a grant program for resident-led sustainability projects and a new Clean Energy Academy training program focused on training residents for green jobs and connecting them to employers working on NYCHA buildings. NYCHA will expand stewardship programs and youth programming and will work to build a community around environmental activism.

CASE STUDY

## Profile of Network for Climate Action member

Devonna Commack is a resident of the South Jamaica Houses for the past 20 years and a Network for Climate Action participant. Serving as part of her development's community farm and Resident Green Committee, Devonna is committed to environmental stewardship. After her mom asked her in 2016 to join South Jamaica's community farm board for just a few months, Devonna has never left. When speaking about her fellow residents she said, "we're a family, a garden family, and that is why I've been here so long." Some of her on-the-ground organizing work involved partnering with local pantries to distribute the fruit and vegetables they grew to the community. She mentioned they would "give to the elders because, you know, they're the ones who can't physically come all the way down and grab any of the vegetation that we grow." Devonna mentioned that participating in the Network for Climate Action cohort has opened her eyes to the sustainability-related projects that NYCHA has underway. She hopes by participating she can get insight into ideas that she can bring to South Jamaica and help advocate for more resources and opportunities for NYCHA residents.

*Photo of Devonna Commack at a community farm.*

# INTRODUCTION

The New York City Housing Authority (NYCHA) works to provide safe, affordable housing for the over 380,000 low–and moderate-income New Yorkers in NYCHA's 335 developments. NYCHA is at a critical moment in its 87-year history. Years of disinvestment have led to a deteriorated housing stock that requires urgent action. For the first time in decades, NYCHA is poised to bridge its budget deficit through two visionary programs that will fund comprehensive renovations of NYCHA's full portfolio of buildings.



**If NYCHA (public housing and Section 8) were a city, it would rank 34th in population size in the United States, and is larger than Sacramento, Atlanta, and Miami; New York City is ranked first.**

— July 2019 U.S. Census Estimate

In 2020, NYCHA announced the Blueprint for Change, which outlined how NYCHA will raise capital by creating a Public Housing Preservation Trust, enabling it to address the physical needs of 110,000 apartments. The Blueprint for Change is a set of proposals for how NYCHA will strengthen as an organization and improve the quality of life for residents through top-to-bottom building renovations. It includes a Stabilization Plan: ideas for raising the much-needed funding to comprehensively rehabilitate the Authority's hundreds of developments while keeping them fully and permanently public and affordable and protecting residents' rights-investments that will also generate jobs and job training opportunities for residents. Blueprint for Change also includes a Transformation Plan: potential strategies for restructuring NYCHA's business model and operations to improve the delivery of services to residents.

Another major program that NYCHA is pursuing to stabilize and improve physical conditions within the portfolio is the Permanent Affordability Commitment Together (PACT) program. The remaining 62,000 NYCHA apartments are receiving much-needed renovations and improved resident services. Through PACT, developments will be included in the federal Rental Assistance Demonstration (RAD) program and will convert to a more stable, federally funded Section 8 program. This program will allow NYCHA to unlock funding to complete comprehensive repairs while ensuring homes remain permanently affordable and residents have the same fundamental rights they currently possess in the public housing program.

By bolstering NYCHA's financial solvency, these two programs will provide the resources needed to create healthy and comfortable homes. To further improve the condition of its buildings, in January 2019, NYCHA signed an agreement with the U.S. Department of Housing and Urban Development (HUD) committing to a set of reforms and performance targets across six areas of focus: inspections, lead, mold, pests and waste management, heating, and elevators. The agreement helps NYCHA to enact meaningful organizational changes to ensure safe, sanitary, and affordable housing.

NYCHA's efforts to address climate change, build a pipeline of green jobs and bring infrastructure into a state of good repair also align with planned investments from the Biden Administration. Through the American Jobs Plan, American Families Plan, and Bipartisan Infrastructure Framework, the Biden Administration is working to enact legislation and allocate federal funding to ensure the economy is sustainable, resilient, and just. These investments may serve as an additional funding source for NYCHA upgrades.

**Permanent Affordability Commitment Together (PACT)** is a program that allows NYCHA to unlock funding to complete comprehensive repairs at developments. Through PACT, the development will be included in the federal Rental Assistance Demonstration (RAD) and convert to a more stable, federally funded program called Project Based Section 8. This ensures homes remain permanently affordable and residents have the same basic rights as they possess in the public housing program. Resident voices are an important part of PACT; their expertise will shape what PACT investments are made at each development.



## SUSTAINABILITY TIMELINE

**1963**
First tenant gardens at 65 developments

**1974**
Oil-to-gas fuel conversions

**1988**
First recycling pilot program

**1996**
Super-efficient refrigerators (180,000 units)

**1997**
Creation of NYCHA Energy Department

**1998**
Computerized Heating Automation System (CHAS) pilot program

**2001**
Energy Performance Contract of $11.5m at 5 developments

**2006**
First instantaneous hot water heaters (810 buildings)

**2007**
Compact fluorescent bulb installations begin

**2009**
Resident Green Committees established 550 residents in first year

**2011**
$18M Energy Performance Contracts at 23 developments

Green infrastructrure project at Bronx River Houses

**2013**
Red Hook urban farm pilot

Ground source heat pump pilot

LEED Platinum building constructed on NYCHA property-Arbor House in the Bronx

**2015**
Installation of recycling infrastructure

Smoke-free housing pledge signed at 830 Amsterdam Ave. by 85% of the residents

### WHY PACT?

NYCHA needs an estimated $40 billion to fully restore and renovate all of its buildings, but the federal government has provided only a fraction of the funding needed for these improvements. We recognize that many of the conditions in NYCHA buildings are unacceptable and unsafe for you and your families. Renovations are long overdue and necessary to ensure that the day-to-day needs of residents are met and living conditions improve.

**PACT is a critical tool that allows NYCHA to:**

- Modernize and keep homes permanently affordable
- Upgrade kitchens, bathrooms, and living spaces
- Preserve resident rights and protections
- Upgrade lighting, security systems, doors, windows, and hallways and stairwells
- Invest in community spaces and amenities and enhance on-site community programs
- Replace or upgrade building systems such as roofs, façades, elevators, and boilers

# REPORTING ON OUR PROGRESS

NYCHA's first Sustainability Agenda, released on Earth Day 2016, was a roadmap and an invitation to residents, community-based organizations, sister agencies, and other partners to work together to create sustainable and resilient public housing. NYCHA has made significant progress in achieving the goals and strategies outlined in the 2016 Sustainability Agenda: releasing the NYCHA 2.0 Waste Management Plan, installing NYCHA's first Community Shared Solar projects, and exceeding the targets for Energy Performance Contracts (EPCs)—to name a few.

NYCHA's 2016 Sustainability Agenda outlined five goals to be implemented over a 10-year timeframe:

a. Achieve short-term financial stability and diversify funding for the long term
b. Operate as an efficient and effective landlord
c. (Re)build, expand, and preserve public and affordable housing
d. Engage residents and connect them to best-in-class social services
e. Work towards 80 x 50

These goals have built the foundation of sustainable practices within NYCHA by changing standards, design approaches, and establishing new programs. Through these practices, NYCHA has opened new avenues for funding while setting new guidelines and goals.



**2016**
Installed the first agency-owned and operated window A/C units in resident apartments

First Sustainability Agenda released on Earth Day

**2017**
Updated Design Guidelines for Rehabilitation of Residential Buildings

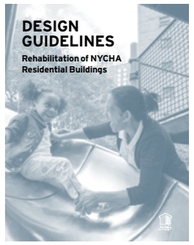
Committed to invest $1B in roof replacements at over 700 buildings under the City Roof program

Sheltering Seniors from Extreme Heat

**2018**
Launched the Mold Busters program

97% of NYCHA's heating plants were overhauled

Launched Smoke-Free NYCHA

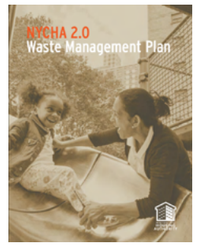


Design Guidelines: Rehabilitation of NYCHA Residential Buildings

South Jamaica Houses Cloudburst Master Plan

**2019**
Signed an agreement with the U.S. Department of Housing and Urban Development (HUD)

NYCHA 2.0 Clean Fleet Plan

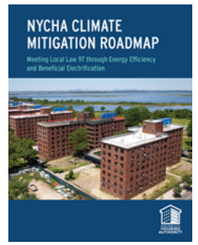


NYCHA 2.0 Waste Management Plan

**2020**
Released Blueprint for Change

Launched Skilled Trades Pilot Program

Connected Communities Guidebook



Climate Mitigation Roadmap

# Achieve short-term financial stability and diversify funding for the long term

Raising revenue and procuring service contracts advanced broad-scale investments in building efficiency. Through Energy Performance Contracts, NYCHA was able to finance $310M worth of energy and water efficiency projects and $17.2M in funding through the New York State (NYS) Weatherization Assistance Program (WAP). NYCHA raised $1.4M in revenue through the first two signed lease agreements to host 3MW of Community Shared Solar. The revenue earned goes to the developments hosting the solar, to be used on upgrades, supplies, or needed repairs.

Since the release of the 2016 Sustainability Agenda, NYCHA has converted nearly 10,000 units of housing to more stable Section 8 funding, leveraging that funding to make nearly $1.8B in comprehensive repairs, including many sustainability upgrades.

*Skyline view of NYCHA developments*



# Operate as an efficient and effective landlord

After making commitments to ensuring a healthy indoor environment, reliable heat and hot water, improved water and waste management, NYCHA rolled out a suite of programs to address these chronic building issues.

In 2019, NYCHA released the NYCHA 2.0 Waste Management Plan to make buildings and grounds visibility clean and pest-free by 2026. Through this plan, NYCHA is upgrading waste management infrastructure with over $37.5M in investment completed to date.

NYCHA has partnered with other agencies such as NYC's Department of Environmental Protection (DEP) to meter 500 buildings, and NYC's Department of Sanitation (DSNY) and GrowNYC to implement a holistic approach to waste management and recycling at 12 developments.

NYCHA completed several healthy homes initiatives and launched Smoke-Free NYCHA in 2018 to create healthier homes for residents and healthier working environments for employees by reducing exposure to secondhand smoke and providing support to residents and employees who smoke and want to quit. NYCHA has also created various standards such as Design Guidelines for Rehabilitation of Residential Buildings, to require safer paints, caulks, and other construction materials, and the Connected Communities Guidebook, which outlines NYCHA's priorities for urban design and community engagement.

Additionally, through PACT, NYCHA has transferred some of the most difficult-to-manage properties, such as smaller low-density buildings, to private property management. This ensures that these buildings and, in turn, the residents receive the proper attention and services.


*Surfside Garden residents and staff celebrate 3rd anniversary of a Smoke Free campus!*

# (Re)build, expand, and preserve public and affordable housing

After years of disinvestment and deterioration of NYCHA buildings, a concerted effort to rebuild, expand, and preserve affordable housing is now a priority. Through the PACT program, NYCHA has raised approximately $1.76B for capital repairs across nearly 10,000 units by leveraging a conversion to Section 8 project-based funding. These funds have had a transformative effect on the developments included in the program, including sweeping sustainability improvements and quality of life enhancements.

In 2017, NYCHA committed to invest $1B in roof replacements at over 700 buildings under the City Roof program—147 developments are under renovation with 118 roofs already replaced as of 2020. NYCHA has partnered with other agencies, such as DEP, to focus on green infrastructure initiatives at NYCHA developments to improve water management. DEP and NYCHA have completed $13.8M of green infrastructure projects at Hope Gardens, Seth Low, Edenwald, Bronx River, and Gowanus Houses to date, and together are currently investing in projects at multiple NYCHA sites across the city for underground stormwater storage.


*Renovated façade at converted PACT development, Baychester Houses ©Andy Foster*



# Engage residents and connect them to best-in-class social services

NYCHA focused its resident engagement strategies on supporting resident and community-led sustainability efforts and connecting residents to green jobs. During this time, NYCHA and the Fund for Public Housing launched the Ideas Marketplace, a digital platform to connect residents and funders for resident-led initiatives and promote healthy food access through the development of resident-led gardens and farms.

Through the Farms at NYCHA initiative, NYCHA worked with partners to build six new urban farms that improve access to healthy food and serve as a foundation for public housing resident leadership and workforce development. Additionally, NYCHA has employed over 280 residents through EPCs, while more NYCHA residents are being trained and hired for solar positions.

*Green City Force participant harvesting leafy greens at a NYCHA farm.*

# Working towards 80 x 50

As New York City (NYC)'s largest landlord and home to 1 in every 15 New Yorkers, NYCHA plays a vital role in helping to achieve the citywide goal of reducing greenhouse gas emissions by 80% by the year 2050 (80 x 50). To achieve this, NYCHA's strategies to date have included establishing a roadmap, creating incentives, and testing technologies.

In 2019, NYCHA released the NYCHA 2.0 Clean Fleet Plan to align NYCHA's fleet management with the City's and reduce vehicle-related carbon emissions by 40% by 2028 by switching to electric vehicles. Additionally, NYCHA has received grants from the New York State Energy Research & Development Authority (NYSERDA)'s Clean Energy Communities program to employ variable flow technology for heating and cooling and has participated in NYSERDA's RetrofitNY program. In 2020, NYCHA released its Climate Mitigation Roadmap and committed to portfolio-wide beneficial electrification.

*Rendering of NYCHA's first RetrofitNY project at Ravenswood Houses building 12. © Cycle Architecture + Planning*



*NYCHA staff volunteering during Earth Day at Forest Houses.*

# Urgent call for a just transition

The new Sustainability Agenda update will guide how NYCHA—the largest public housing authority in the country—embarks upon this transformation. This Sustainability Agenda update illustrates the progress to date in enacting the goals set out in 2016 while setting new targets based on the latest data and industry advancements. The Sustainability Agenda outlines how NYCHA can implement innovative technical solutions to reduce greenhouse gas (GHG) emissions while using an ethical and inclusive model to execute projects and support residents. By designing sustainability into its buildings, NYCHA ensures that the City of New York will have an affordable housing stock for the next generation.

The arrival of COVID-19 has presented an unprecedented challenge for NYCHA and its residents. Low-income families, including NYCHA residents, are bearing the brunt of the public health and economic fallout from the pandemic. More than 88,000 NYCHA residents are part of NYC's workforce, and of those, over 35% are front-line health care and service workers. The COVID-19 pandemic has shifted priorities, and NYCHA is spending resources to be certain that urgent needs are met. Buildings are being disinfected regularly to reduce the spread of the COVID-19 virus, and emergency food supplies are being distributed. At the same time, NYCHA works closely with the City's public health leaders to connect residents to COVID testing and vaccination. The environmental goals outlined in this Sustainability Agenda have taken on even greater importance; investments in heating, cooling, and other building retrofits are also needed to lessen the health impacts of COVID-19.

*Disclaimer: Numbers represent NYCHA portfolio that encompasses public housing and Section 8 programs.*



**335**
Individual developments

**2,212**
Residential buildings

**177,611**
Public housing apartments

**1 in 15**
New Yorkers are serverd by NYCHA Public Housing & Section 8 Programs

# Moving forward

The goals in this version of the Sustainability Agenda are based on sustainability-related themes that emerged from planning sessions on Carbon and Energy, Health and Wellbeing, Community, Facilities and Resource Management, and Economics.

## CARBON AND ENERGY

**GOAL 1**

Reduce greenhouse gas emissions by 80 percent by 2050

**STRATEGIES**

- Implement NYCHA's GHG reduction roadmap
- Advance electrification and deep energy retrofits
- Expand distributed energy resources
- Expand electric vehicle program

## HEALTH AND WELLBEING

**GOAL 2**

Cultivate healthy and resilient communities based on design excellence

**STRATEGIES**

- Update the NYCHA Design Guidelines and adopt sustainability standards
- Ensure healthy and hazard-free indoor environments
- Expand the Green Infrastructure program

## COMMUNITY

**GOAL 3**

Empower residents through community activation and workforce development

**STRATEGIES**

- Connect residents to workforce development and entrepreneurship opportunities
- Mobilize community activation through resident-led sustainability programming
- Expand NYCHA farms, gardens, and urban agriculture programs
- Develop resident stewardship programs for NYCHA's resilient landscapes



## Resident impact indicators

NYCHA has developed the Sustainability Agenda with the residents and the community in mind. Each strategy will have a resident impact indicator and a timeframe that will specify how that strategy impacts residents and when to expect this change.

**Timeframe**
The amount of time it will take to implement the action.

- Near (0-2 years)
- Mid-term (3-5 years)
- Long-term (6-8 years)

**Health and wellbeing**
Impacts resident quality of life through factors including improved safety, climate and environmental protection and healthy living environments.

**Community connectivity**
Promotes a sense of community cohesion through design that is accessible, equitable, and inclusive.

**Workforce development**
Enables livelihoods through training, education, and job creation.

## FACILITIES AND RESOURCES MANAGEMENT

**GOAL 4**

Ensure efficient building operations and resource management

**STRATEGIES**

- Ensure proper maintenance and longevity of investments
- Re-envision waste management and recycling at NYCHA
- Design for circularity and recycle construction and demolition waste in Capital Projects
- Improve water management in buildings

## ECONOMY

**GOAL 5**

Leverage all funding and financing toward healthier and decarbonized buildings

**STRATEGIES**

- Retain ownership of energy and water savings
- Bring in more funding through the Preservation Trust
- Bring in more funding through PACT
- Earn revenue through energy and sustainability incentives and demand management programs
- Establish Green Revolving Fund
- Advocate for equitable investment in NYCHA through carbon offsets

# CARBON AND ENERGY

## GOAL 1
## Reduce greenhouse gas emissions by 80 percent by 2050



New York leads the nation in adopting ambitious environmental and energy goals to help protect residents from the worst impacts of climate change. In 2019, NYC passed the Climate Mobilization Act: Local Law 97 (LL97), which directed NYCHA to reduce greenhouse gas (GHG) emissions by 40% by 2030 and 80% by 2050 (80 x 50). Similarly, New York State's Climate Leadership and Community Protection Act (CLCPA) set GHG reduction goals of 85% by 2050 and mandates 100% zero-emission electricity generation by 2040.

NYCHA's buildings produce GHG emissions primarily from heat and hot water, which constitute 2.5% of NYC's total building GHG emissions. Fossil fuels such as natural gas, moderate quantities of No. 2 fuel oil, and Con Edison steam are used for systems that are inefficient and costly to maintain. Currently, NYCHA's Heating Department maintains 1,384 individual fossil-fueled boilers, of which 60% produce low-pressure steam for heat and hot water. Electrification will eliminate on-site emissions and source GHG emissions as the State progresses towards a clean grid. As central steam plants in NYC buildings decline, the number of professionals and technicians who know how to run, repair, and maintain such systems will decrease and make maintenance and optimum performance of these systems more difficult and costly in the future.

### STRATEGIES

- Implement NYCHA's GHG reduction roadmap
- Advance electrification and deep energy retrofits
- Expand distributed energy resources
- Expand electric vehicle program

# STRATEGY 1
# Implement NYCHA's GHG reduction roadmap

NYCHA has a 15-year history of robust energy efficiency programs. While the goals of LL97 are ambitious and require the transformation of heat and hot water systems, energy efficiency is the most cost-effective way to reduce energy use and lower carbon emissions: the more efficient a building, the less energy required to operate it.

Currently, NYCHA has completed $310M worth of energy and water efficiency work, including:

- Lighting retrofits
- Implementing a building management system with apartment temperature sensors
- Boiler replacements
- Domestic hot water decoupling
- Low flow water fixture replacements
- Ventilation improvements

In 2020, NYCHA released a Climate Mitigation Roadmap and committed to meeting the requirements of LL97. While developing the Roadmap, NYCHA determined that following a business-as-usual approach of installing the most efficient fossil-fuel units available, such as hydronic boiler conversions, could achieve the LL97 intermediate 2030 emissions reductions; however, the 2050 goals would not be possible.

The Roadmap outlined four operational improvement strategies to achieve the deeper 2050 goals:

a. Reduce energy waste
b. Move away from steam heating technology
c. Improve critical building infrastructure
d. Incentivize residents to reduce in-apartment energy usage

The 80 x 50 effort includes:

- Electrify, convert to hydronic, or geothermal space heating
- Systems optimizations in the remaining buildings
- Decouple and electrify domestic hot water
- Electrify cooking gas stoves where feasible

**RESIDENT IMPACT**

**TIMEFRAME**

Mid to long-term

**BY THE NUMBERS**

Completed $310M worth of energy and water efficiency work.

Planned $300M of EPC projects to retrofit lighting, water, and building management systems with potential of 12-15% in energy savings.

As a current participant in HUD's Better Buildings Challenge: achieved 7% reduction in energy usage intensity

Planned $370M of Federal, State, and City funds to convert existing steam to hydronic (hot water) heating systems and high-efficiency electric heat pumps.



NYCHA is working with local utilities and the Mayor's Office of Climate and Sustainability to identify developments near high-pressure gas lines and preferred geographic areas for geothermal systems.

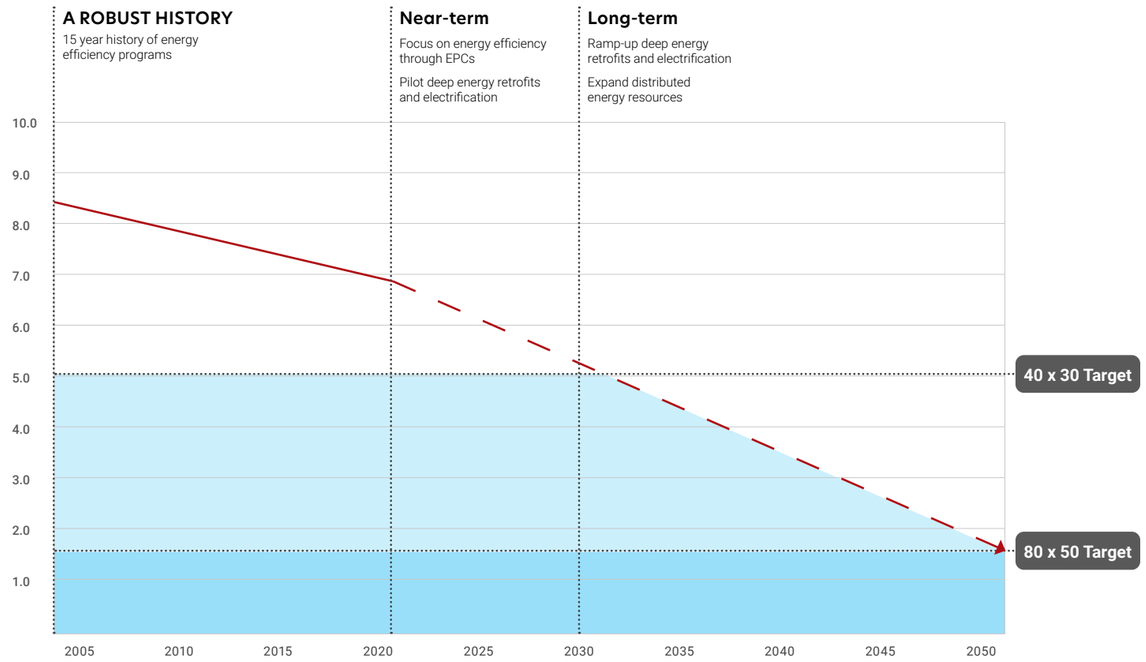
Electrifying the heating portfolio gives residents more control over their environment, lessens the potential mechanical errors that lead to heat and hot water outages, and will provide cooling to all residents. Electrification options include variable refrigerant flow (VRF) heat pump systems, packaged terminal heat pumps, and geothermal heat pumps.

Building on this success, NYCHA is pursuing a phased approach of upgrading heating systems. Work is currently planned at 62 developments. Twenty-five of these developments will decouple domestic hot water (DHW) from the central plant with high-efficiency condensing boilers to make DHW year-round. Savings from decoupling DHW will yield at least 10–12% energy savings and will allow the DHW to be electrified more easily in the future.

These investments represent a portion of the $4.1B needed to comprehensively modernize heating systems for 110,000 stabilized apartments that will remain under NYCHA management.

***New York leads the nation in adopting ambitious environmental and energy goals to help protect residents from the worst impacts of climate change.***

**NYCHA historical and target emissions graph, BAU, 80x50 scenarios**
*Thousand metric tons of carbon dioxide equivalent ($MtCO_2e$)*



# Implementation

### Achieve near-term carbon savings through EPCs

NYCHA will use Energy Performance Contracts (EPCs) to reduce energy consumption at its developments. EPCs do not require the outlay of capital dollars by NYCHA; instead, private lenders pay to install proven energy-efficiency measures. The debt is paid back through the energy savings generated by those measures. NYCHA plans to finance $300M in EPC projects and has hired four energy service companies to install measures such as lighting and water retrofits and building management systems. These measures will yield 12–15% in energy savings.

EPCs allow NYCHA to reduce water and energy usage, which will provide an opportunity to finance additional capital that can be used for more profound energy-saving measures. NYCHA will manage uncommon EPC measures such as behind-the-meter solar, heat pump technologies for heating and hot water, and ventilation. These measures will produce deeper energy savings of 50–80%, assuming a clean grid by 2040.

**Energy Performance Contracting (EPC)** is a method of financing energy upgrades based on the projected savings of those improvements.

The EPC model includes subsidies from the United States Department of Housing and Urban Development (HUD) and allows PHAs to improve their energy infrastructure without bearing the cost of the improvements.

### Participate in programs that drive innovation

In 2019, the New York City Economic Development Corporation (EDC) launched a property technology (Proptech) program to connect startups with participating City agencies, including NYCHA. The program aims to implement proof-of-concept Proptech products to enhance sustainability, increase health and safety, and improve operational performance using NYCHA buildings as demonstration sites.

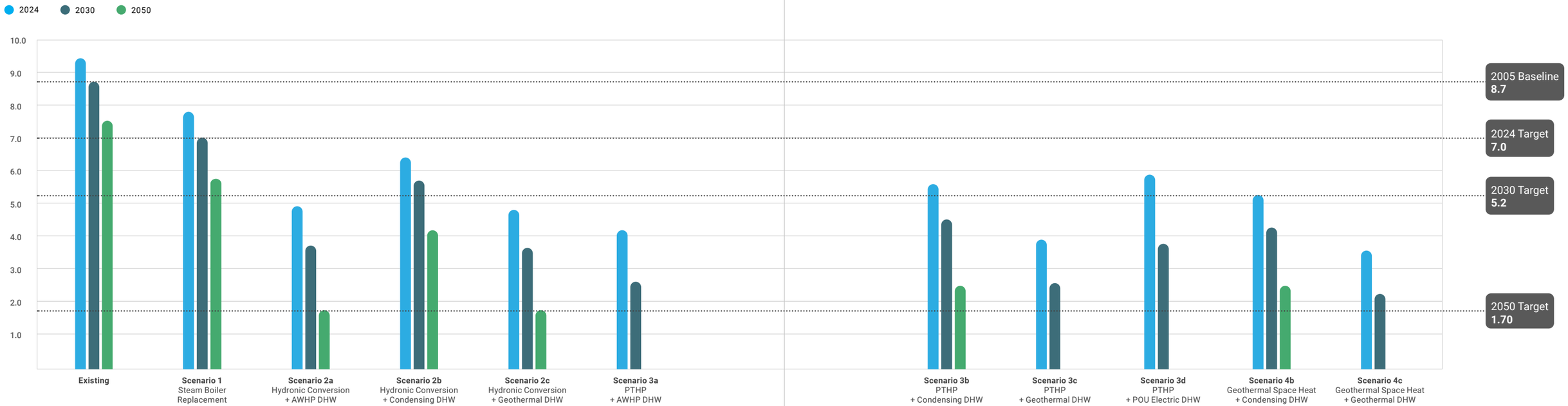
In December 2020, EDC released a request for proposal (RFP) to identify firms to connect local government agencies to Proptech technologies, and NYCHA is participating in the selection process. Through the program, NYCHA aims to work with vendors of innovative technologies to advance low-cost energy-efficiency technologies.

### Ramp up energy usage intensity reductions as part of the Better Buildings Challenge

The Better Buildings Challenge is a voluntary U. S. Department of Energy (DOE) program that encourages building owners and managers to make a public commitment to improve energy efficiency by 20% over 10 years and share data and strategies to promote best practices in the industry. Since joining the Better Buildings Challenge program in 2015, NYCHA has reduced its energy usage intensity by 7%. By 2026, NYCHA plans to meet the remaining 13% reduction of its promised energy usage intensity primarily through EPCs, WAP, and heating plant upgrades.

**Scenario comparison of emission targets for proposed decarbonization technologies**

*GHG Emissions ($tCO_2e$ per 1000sf)*

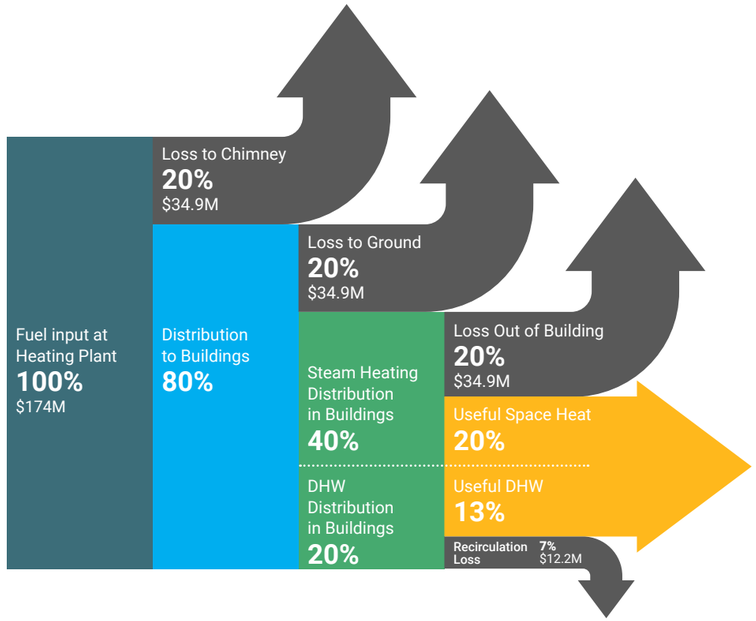


# STRATEGY 2
# Advance electrification and deep energy retrofits

NYCHA's commitment to deep retrofit technologies can profoundly influence the market for more affordable and efficient energy conservation methods. NYCHA can demonstrate the capabilities of these technologies and take advantage of its extensive portfolio to make them scalable.

To achieve 80 x 50 carbon reductions, NYCHA must go beyond standard energy-efficiency measures with a reduction between 15—25% and implement deep energy retrofits for the goal of 80% by 2050. NYCHA will accomplish this by implementing envelope improvements and efficient heat pump technology to provide heating and domestic hot water. By first improving the thermal envelope, NYCHA will reduce the building's heating and cooling loads and allow for smaller, more efficient heat pumps. Heat pumps are the preferred electrification approach since they can be three to four times more efficient than resistance heat while providing the added benefit of cooling and potentially ventilation in one system.

**Campus Steam Systems Lose 2/3 of Input Energy**




**RESIDENT IMPACT**

**TIMEFRAME**

Short to mid-term

**BY THE NUMBERS**

Through the PACT program, 1/3 of NYCHA's portfolio will convert to Project-Based Section 8 housing.

Partnered with NYC agencies to install approximately 12,000 new window ACs in apartments of heat-vulnerable residents

Planned demonstration of NYCHA's first all-electric building at 1471 Watson Avenue. Design is planned to start in 2021 and construction in 2023.



## Implementation

### Complete RetrofitNY net-zero energy project

In 2020, NYCHA began work on a design for its RetrofitNY project, aiming to retrofit one of NYCHA's campus steam buildings to make it net-zero energy. The project will use the Energiesprong method of an exterior panel and integrated HVAC construction to provide deep energy savings at a lower cost than traditional construction methods.

The project includes:

- Whole-building envelope retrofits
- Prefabricated packaged HVAC pods installed on the exterior of the building
- Electrification of cooking stoves
- Solar PV installation to offset some of the added electric load

The program is part of NYSERDA's statewide initiative to adapt this model to low–to moderate-income (LMI) multifamily buildings and develop a strong and competitive NY market for deep energy retrofits.

### Deliver a design-build program to electrify building heating systems

NYCHA is using a design-build contracting approach to upgrade the heating systems at eight developments. NYCHA will implement beneficial electrification technologies, such as air-source heat pumps (ASHP) and air-water heat pumps (AWHP), demonstrating that the projects out-perform the LL97's 2024 GHG emissions goal of 6.75 mtCO2e/ksf as a minimum requirement.

The proposed design solutions include space heating measures such as replacing the existing central boiler systems and electrification by installing Far Infrared Heating (FIR) panels and electric baseboard heaters. Domestic how water replacements include decoupling with the installation of geothermal (ground source) heat pumps, air-source heat pumps (AWHP), and tank-style electric heaters.

This program will help identify innovative future-looking heating and hot-water-making technologies helpful to NYCHA's low-carbon transition while providing reliable, comfortable, and consistent heat and hot water to residents.

*Outdoor units of heat pump system in Fort Independence.*

### Complete the Packaged Window Heat Pump Challenge with NYSERDA

To address the need for cost-effective retrofit electrification hardware, NYCHA worked with NYSERDA to issue a Packaged Window Heat Pump Challenge as part of NYSERDA's 2020 round of NextGen HVAC Program Opportunity Notices (PONs). The challenge invites manufacturers to submit design proposals for cold climate heat pump products created explicitly for retrofit that can be installed in existing window openings. The program aims to significantly reduce the installation cost of converting to electric heat pumps by leveraging NYCHA's size and willingness to be an early adopter. In 2022, NYCHA and its partners will launch an industrial design competition to improve in-unit and outdoor appearance of the cold climate air-source heat pumps.

The technology developed through the NYSERDA collaboration would give NYCHA the ability to provide reliable cooling and mitigate the health effects of extreme heat.

### Implement optimal heating and hot water upgrades

NYCHA analyzed portfolio to determine where single-building hydronic conversions are optimal due to their proximity to high-pressure gas lines. NYCHA also determined using the New York City Geothermal Pre-feasibility web map and other data where properties are best suited for geothermal energy production. All properties will be prioritized and ranked based on heating system replacement needs and geographic suitability.

### Identify buildings that can be fully electrified quickly

NYCHA has analyzed its portfolio to determine buildings are suitable for heat pump conversion using existing technology without making wall penetrations. NYCHA plans to obtain funding to retrofit these buildings from steam heat and through wall ACs to electric air source heat pumps with instantaneous point-of-use hot water. NYCHA will also electrify gas cooking stoves and upgrade electrical infrastructure to support these appliances. There are four developments where electrification can happen straight away.

NYCHA acquired multiple funding sources to completely electrify all energy uses such as heating (and cooling), domestic hot water, and cooking at 1471 Watson Avenue by the Fall of 2022.

### Leverage PACT Program to drive investment in electrification and deep energy retrofits

Through the PACT program, comprehensive repairs will also be accomplished through which NYCHA will convert approximately one-third of its portfolio to Project-Based Section 8 housing. This will allow NYCHA to unlock funding to complete comprehensive upgrades while maintaining permanent affordability. PACT work scopes will prioritize energy efficiency and sustainability by including electrification and deep energy retrofits. NYCHA is pursuing aggressive emissions reductions measures through PACT conversions that will contribute to NYCHA's LL97 goals.

Where electrification is not possible, developments undergoing PACT conversions will explore implementing the proper infrastructure to seamlessly switch to electricity as a fuel source for the following uses:

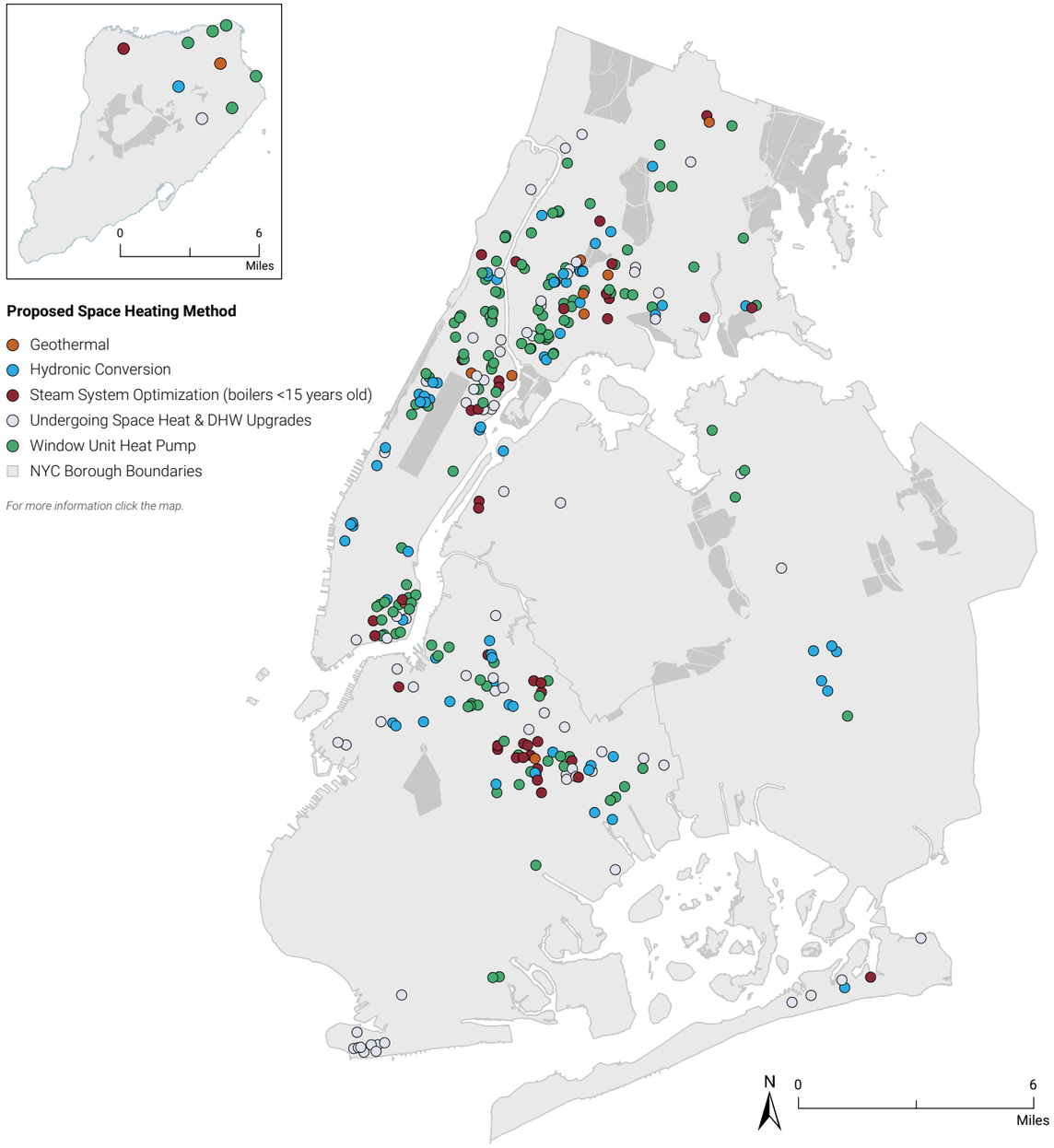
- Space heating and cooling
- Domestic hot water
- Clothes dryers
- Cooking equipment

To promote energy conservation and more efficient energy consumption in the common areas and residential areas, PACT projects will be required to sub-meter all residential units in master-metered buildings.



### NYCHA developments by proposed decarbonization method

*Displayed by space heating measures*




*Prepared by: NYCHA Performance Tracking & Analytics Department (September 2021).*
*Data Sources: NYC Department of City Planning (June 2021), NYC Department of Parks & Recreation (March 2021), NYC Housing Authority (November 2020, August 2021).*

CASE STUDY

# Ocean Bay (Bayside)

Ocean Bay is NYCHA's first development completed under HUD's Rental Assistance Demonstration (RAD). The project converted 1,395 apartments in 24 buildings to Section 8 funding, ensuring that the apartments remain permanently affordable. Ocean Bay received major apartment and common area upgrades, including new Energy Star appliances, elevators, high-efficiency windows, efficient plumbing fixtures, and landscaping with native plants. As part of the rehab, steam radiators were replaced with high-efficiency hot water convectors. The boiler rooms were assembled off-site in shipping-container-sized modules and lifted to the building's roof. Ocean Bay also received a 575 kW solar photovoltaic (PV) system installation, a secure flood wall around the entire 33-acre site, water retention swales, and stand-alone electric service buildings built above the flood zone. Through a phased restoration process, all tenants were able to remain living in their homes throughout the renovations.

## PACT Project Highlights

**Developer**

RDC Development *(MDG Design + Construction, Wavecrest Management)*

**Design**

- OCV Architects
- Bright Power

**Year completed**

2019

**Cost**

$560M

**Units**

1,393 (+2 super units), 24 buildings

*On the left, Ocean Bay apartment before PACT transition and renovations completed. On the right, Ocean Bay apartment after PACT renovations completed in 2019.*



CASE STUDY

# Baychester and Murphy Houses

A holistic approach to resident health and well-being guided the renovations of Baychester and Murphy Houses as part of the first round of completed PACT projects. The two Bronx developments received new playgrounds, activity spaces, and landscaping, which were united by eleven acres of walking paths. Comprehensive energy retrofits were completed that included insulative cladding and new roofs, energy efficient windows, low-flow plumbing fixtures, and overhauls to the campuses' heating & cooling, ventilation, and lighting systems. Operations and oversight at the buildings were streamlined, with building-level and in-unit timers and controls to help property management keep track of on-site energy performance. To provide long-term resiliency, backup generators were installed at Murphy Houses. Underutilized spaces at the ground floor of the Baychester Houses were repurposed as recycling rooms accessible to all tenants. A neighborhood organization is providing new on-site social services, including programs for employment, mental health, education, and food access support.

## PACT Project Highlights

**Developer**

- *Camber Property Group*
- *L+M Development Partners*
- *MBD Community Housing Corporation)*

**Design**

- Curtis + Ginsberg Architects
- Bright Power

**Year completed**

2020

**Cost**

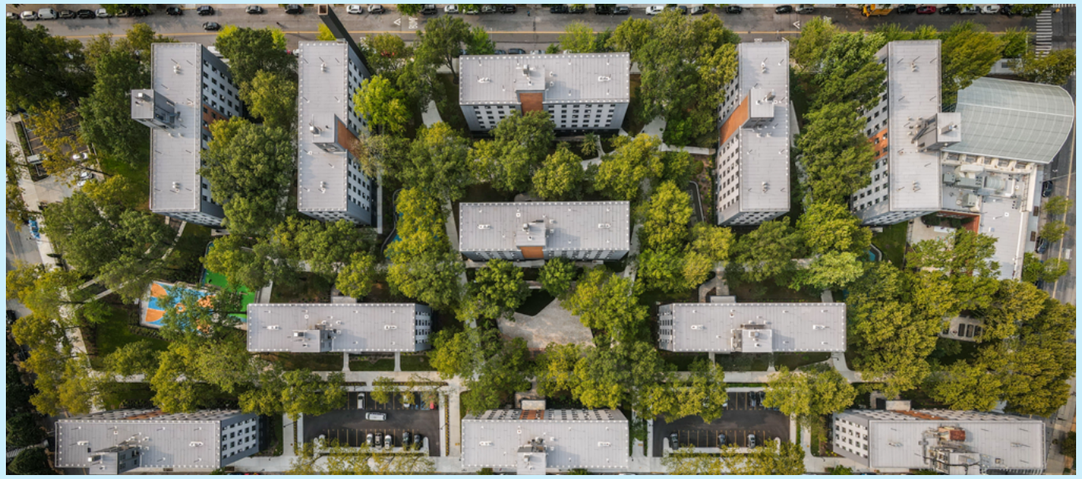
$170M

**Units**

***Baychester Houses***
440 Units, 11 Buildings

***Murphey Houses***
321 Units, 2 Buildings

***Combined***
721 Units, 13 Buildings



*Aerial image of Baychester Houses © Andy Foster*

CASE STUDY

# New programs provide cooling to NYCHA developments and demonstrate new technologies for electrification

As summers get hotter, NYCHA is working to provide cooling to residents like senior citizens who are vulnerable to extreme heat. Throughout the summer of 2020, in response to the closing of cooling centers because of COVID-19, NYCHA partnered with NYC agencies to install approximately 12,000 new window ACs in apartments of heat-vulnerable residents.

The installation of window air conditioners and the transition away from fossil fuels are anticipated to increase buildings' electrical loads. NYCHA is testing demand management strategies to accommodate the added load and reduce strain on the grid. At Meltzer Towers, a senior development in the East Village, NYCHA installed over 200 new "smart" window ACs to ensure that every resident has access to in-apartment cooling. The new units are being networked to reduce peak demand by intermittent cycling of the compressors. Similar strategies will be considered for future electric HVAC equipment as electrification accelerates.

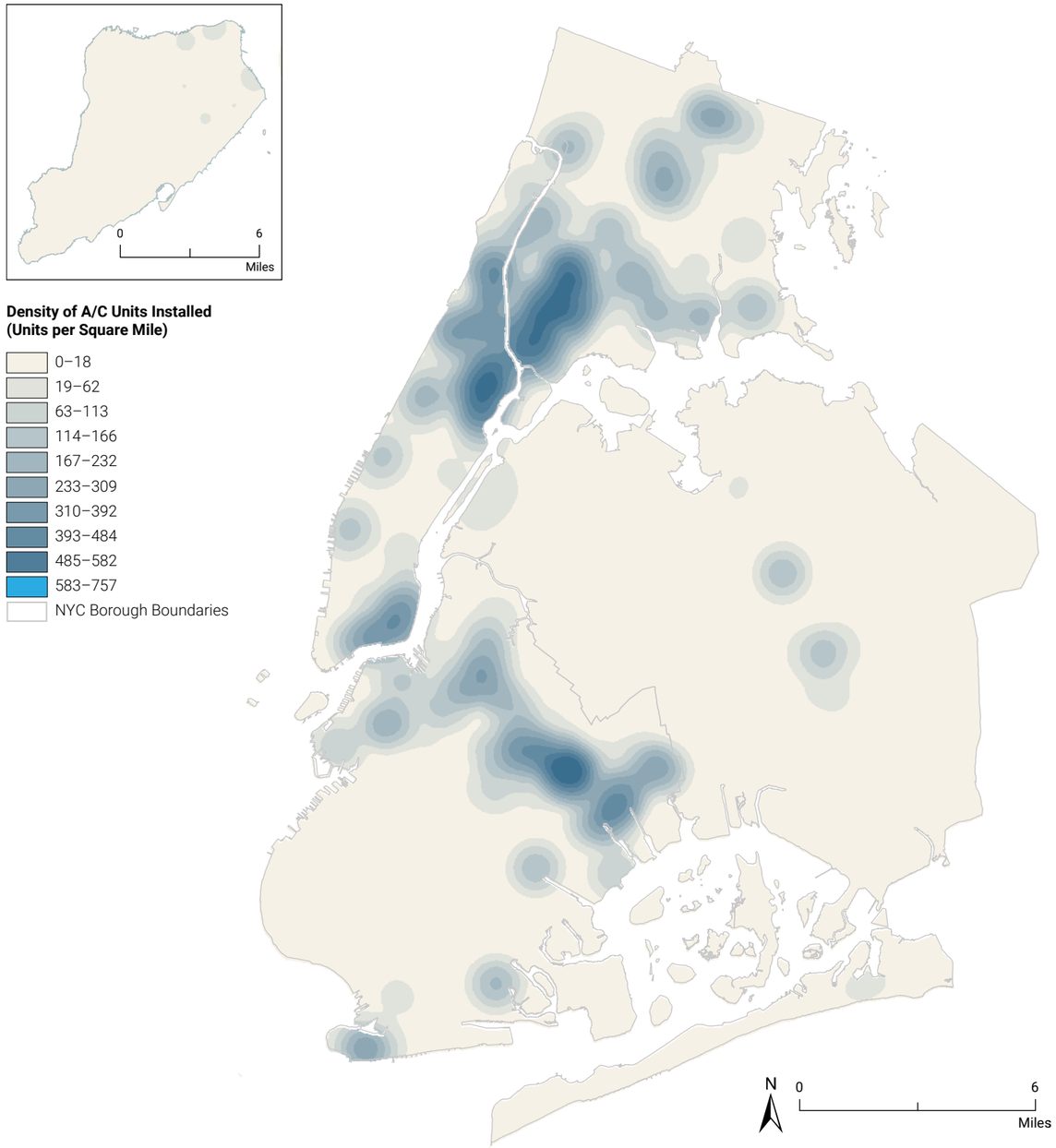
In 2020, NYCHA partnered with the Mayor's Office of Sustainability (now the Mayor's Office of Climate and Sustainability) and NYSERDA to demonstrate a cold climate VRF heat pump system at Fort Independence. The project converted seven apartments from hydronic loop heating and window ACs to new efficient VRF heat pumps that provide individual room heating and cooling. This project highlights both the promise of heat pump technology as well as the challenges to large-scale adoption.

*Resident standing next to newly installed "smart" AC at Meltzer Towers.*

*A prototype window-mounted heat pump is installed at Fort Independence.*



## Air Conditioners Installed through GetCool program (May 2021)




*Prepared by: NYCHA Performance Tracking & Analytics Department (May 2021).*
*Data Sources: NYC Department of City Planning (March 2021), NYC Housing Authority (November 2020, January/May 2021).*

# STRATEGY 3
# Expand distributed energy resources

Originally, NYCHA committed to hosting 25 megawatts (MW) of renewable energy on its property by 2025 as a part of the HUD Renew300 program. NYCHA is now increasing the goal to 30MW by 2026. Additionally, NYCHA has joined the Department of Energy's National Community Solar Partnership as part of the Multifamily Affordable Housing Collaborative. NYCHA is fulfilling this goal through roof leases for Community Shared Solar program, in which the electricity is fed back into the grid, and people who cannot site solar on their property subscribe to purchase the power. In addition to directing lease revenue to the host sites, these leases contain robust public benefit commitments—the developers hire and train NYCHA residents to install solar systems.

To date, NYCHA has released two solicitations for solar leases:

- Commercial Solar, for larger roofs
- First round of ACCESSolar (ACcelerating Community Empowered Shared Solar), an open solicitation tailored for smaller rooftops

Additionally, NYCHA requires that PACT conversions include solar power, where financially feasible. The Ocean Bay (Bayside) PACT conversion included 575 kW of solar power across 20 rooftops. NYCHA has also begun to use renewable energy elsewhere on its campuses. In 2020, solar-powered lighting was installed along the walk paths and on the farm at Howard Houses.

**RESIDENT IMPACT**

**TIMEFRAME**

Mid to long-term

**BY THE NUMBERS**

Committed to hosting 30MW of renewable energy on NYCHA property by 2026.

A minimum of 20% of the power generated through the Community Shared Solar program is dedicated to LMI New Yorkers, especially NYCHA residents who pay their own electric bills.

575 kW of solar power across 20 rooftops at Ocean Bay (Bayside) PACT conversion.

**Under construction**
1.8MW of solar power at Queensbridge North and South and 1.2 MW of solar power at Carver, Glenwood, and Kingsborough

**In development**
Four projects with 8 MW of capacity spread across 21 developments



## Implementation

### Expand the Community Shared Solar program

Building on lessons learned, NYCHA will expand the community solar pipeline to meet the 30MW goal. NYCHA is updating its estimates for rooftop solar potential to reflect a robust roof replacement program. NYCHA will continue releasing RFPs that follow the ACCESSolar model while completing projects underway. Internally, NYCHA's Energy and Sustainability team will work with the Real Estate team to strengthen renewable energy commitments in future PACT solicitations.

### Invest in battery storage

NYCHA is exploring methods to use solar power and battery storage to help provide on-site resilience. In the summer of 2021, NYCHA engaged two Environmental Defense Fund (EDF) staffers to explore the feasibility of incorporating on-site battery storage into future projects. This study explored financing options, technologies, and permitting processes. It modeled how batteries could either be used to provide backup power to critical loads such as elevators and health equipment or provide financial benefits in the form of demand response participation. As a next step, NYCHA is assessing potential projects for implementation.


© Angélica Acevedo

**"I feel like I'm a positive influence. I didn't think I was the person who would make a positive change or impact until I got here and started doing it, and it's been really moving so far."**

**Johan Ortiz** *(Albany House resident), Program participant*
*Source: Queens Eagle*

CASE STUDY

### Queensbridge Houses Community Shared Solar Installation

In December 2019, NYCHA signed its first Community Shared Solar lease with Bright Power and Sol Purpose to develop 1.8 MW of power on the rooftops of 27 buildings across the Queensbridge North and South developments. Construction was completed in March 2021; these installations will provide over $1 million in revenue to Queensbridge North and South over the life of the lease. Over a dozen NYCHA residents were trained and hired to work on the installation crews. The systems provide approximately 470 New York households, including over 100 LMI households and NYCHA residents, with access to low-cost solar power below the Con Ed residential rate.

# STRATEGY 4
# Expand electric vehicle program

To help reduce GHGs in the transportation sector, NYC will need to shift away from fossil-fueled vehicles. NYCHA is expanding its Clean Fleet program and setting new targets for installing electric vehicle (EV) chargers. NYCHA's fleet of 950 on-road vehicles is composed of light–(82%), medium–(13%), and heavy-duty (5%) vehicles. Since the release of NYCHA's Clean Fleet plan in 2019, NYCHA has purchased 48 battery electric vehicles, 12 Hybrid EV plug-in vehicles, and two six-yard Hybrid rear loaders for $2.6M. The Department of Citywide Administrative Services (DCAS)'s Fleet program covered the cost of the EV chargers.

**RESIDENT IMPACT**

**TIMEFRAME**

Short-term

**BY THE NUMBERS**

Purchased 62 electric or hybrid vehicles for $2.6 million.

Aiming to double NYCHA's EV fleet by 2026.

## Implementation

**Expand electric vehicle adoption and charging infrastructure**

NYCHA is working with the DCAS and Con Edison to double NYCHA's EV fleet by 2026 and install its first EV chargers available for the public to use. NYCHA will determine the number, placement, and suitability for additional EV chargers on NYCHA property. Through their New York Electric Vehicle Infrastructure Make-Ready Program, Con Edison is supporting the development of electric infrastructure and equipment necessary to accommodate the growing number of EVs within New York State. The program seeks to reduce the upfront costs of charging stations for light-duty EVs. By 2022, NYCHA, in partnership with DCAS, will purchase additional electric vans and trucks as outlined in NYCHA's Clean Fleet plan.




*Electric tilt trucks are helping NYCHA combat pests in the Mayor's Neighborhood Rat Reduction zones*


*Electric Tilt Truck Demonstration at Riis Houses.*

# HEALTH AND WELLBEING

## GOAL 2
## Cultivate healthy and resilient communities based on design excellence



NYCHA residents deserve a well-designed environment that is healthy and safe. NYCHA is working to institutionalize design excellence to connect NYCHA residents to their neighbors and surrounding communities. NYCHA's priorities for urban design include updating the 2016 Design Guidelines for the Rehabilitation of NYCHA Residential Buildings (Design Guidelines) to incorporate best practices in energy, sustainability, and resiliency while building a dynamic community engagement process. NYCHA is looking at buildings and grounds holistically and is treating them as integrated systems. This approach includes prioritizing implementing comprehensive scopes for capital projects rather than one-for-one in-kind replacements.

### STRATEGIES

- Update the NYCHA Design Guidelines and adopt sustainability standards
- Ensure healthy and hazard-free indoor environments
- Expand the Green Infrastructure program

# STRATEGY 5
# Update the NYCHA Design Guidelines and adopt sustainability standards

NYCHA released Design Guidelines in 2016 that included Enterprise Green Communities (EGC) guidelines before the passing of Local Law 97 by the City Council. As part of the Public Housing Preservation Trust, NYCHA is committed to establishing sustainable design guidelines for the development, construction, rehabilitation, repair, and operation of housing facilities. The guidelines will include criteria for beneficial electrification, renewable energy production, sustainable materials, and energy and water efficiency.

NYCHA will revise the 2016 Design Guidelines adhering to this commitment. NYCHA also designated the EGC strategies as the baseline standard for all PACT conversion projects. Developers submitting PACT proposals must include specific EGC strategies that conform to NYCHA's GHG and sustainability commitments.

**RESIDENT IMPACT**

**TIMEFRAME**

Short-term

**BY THE NUMBERS**

Design Guidelines released in 2016

Completed Physical Needs Assessment in 2017

NYCHA Capital Planning Department



## Implementation

### Update the Design Guidelines

NYCHA will use lessons learned from ongoing design-build projects to incorporate electrification and deep energy reductions into the Design Guidelines. Through updated Design Guidelines, NYCHA will improve the quality of life and health of its buildings. This will require designing for lower embodied carbon of construction materials, the inclusion of healthier materials with lower environmental impacts, and requiring circular building materials, non-toxic recyclable materials with high recycled content.

### Incorporate health and sustainability-related elements into Physical Needs Assessments

As part of NYCHA's Physical Needs Assessment (PNA) process, completed every five years, NYCHA will consider "green" costing opportunities for potential energy conservation and beneficial electrification measures at every development. PNAs determine the remaining useful life of equipment based on a physical inspection and generate estimates for the capital needs for each apartment, architectural, electrical, and mechanical system. These estimates help inform the capital planning for infrastructure improvements, modernization, and other systematic upgrades. The next PNA will be completed in 2022.


*Rendering of new energy-efficient entryway design standard. © Curtis + Ginsberg Architects*

# STRATEGY 6
# Ensure healthy and hazard-free indoor environments

NYCHA is responsible for ensuring that its apartments are comfortable, safe, and free of lead, mold, and pests. On January 31, 2019, NYCHA signed an agreement with the U.S. Department of Housing and Urban Development (HUD) committing to a set of reforms and performance targets across six pillar areas:

- Inspections
- Lead
- Mold
- Pests/waste
- Heating
- Elevators

By accomplishing these reforms, NYCHA will ensure healthy, comfortable, and reliable service for residents.

**RESIDENT IMPACT**

**TIMEFRAME**

Short to long-term

**BY THE NUMBERS**

NYCHA has committed $83M in Federal and City funding to perform portfolio-wide ventilation upgrades.

NYCHA has committed over $1.4B in City Capital funds to upgrade the roofs at 135 developments.

NYCHA is spending $4M to test breathable mineral coating technologies to coat façades that will prevent leaks and water infiltration.

In April 2019, NYCHA began XRF testing at 134,084 units built before 1978 that had never been tested.

NYCHA Monitor



## Implementation

### Expand mold management program to address water infiltration through capital upgrades

NYCHA is taking active steps to meet the mold reduction obligations of both the 2018 Revised Baez Consent Decree and the 2019 HUD Agreement. As part of this process, NYCHA has revised its standard procedure for addressing mold complaints and introduced Mold Busters—an innovative program informed by industry standards to remediate mold effectively and efficiently. The roll-out of the Mold Busters program started in January 2019 and was fully deployed citywide by September 2, 2019.

Currently, NYCHA is working to prevent the reoccurrence of mold by identifying buildings that require a large-scale capital upgrade to eliminate water intrusion and the resulting mold growth. NYCHA is working on a capital flag, a feature in work orders that are part of NYCHA's operational response to mold and leak repairs. By implementing a process to identify where capital upgrades are needed to address the root cause of mold, NYCHA can prevent reoccurrence and ensure the issue is fully resolved.

*NYCHA staff checking airflow during a Mold Busters training.*

### Upgrade mechanical ventilation systems for mold prevention

Fully operational mechanical ventilation systems in bathrooms and kitchens are critical to effective mold prevention; however, many NYCHA developments have aging fans that should be modernized. NYCHA has committed $83M in Federal and City funding to perform portfolio-wide ventilation upgrades, scheduled to be completed by August 2022.

NYCHA's Office of Mold Assessment and Remediation (OMAR) completed the installation of 4,063 new roof fans as part of NYCHA's ventilation upgrades. The combined number of fans replaced or retained after inspection accounts for 47% of the 8,843 roof fans providing mechanical ventilation to apartments and public spaces in residential buildings throughout the portfolio. In 2021, NYCHA is publishing a new standard procedure for monthly roof fan inspections to establish a uniform authority-wide approach and to ensure quality control.

Through the Clean Vents Initiative, OMAR has cleaned ventilation ducts in over 23,875 priority apartments, leading to increased airflow rates. NYCHA is also mobilizing an internal team that will focus on resident hiring to complement vendor capacity.

### Replace roofs and parapets

Roof leaks are a critical source of water infiltration and excessive moisture that can cause mold in apartments and damage a building's structure. In 2017, NYCHA developed a 10-year program to replace leaking roofs and parapets to reduce water intrusion substantially. NYCHA has committed over $1.4B in City Capital funds to upgrade the roofs at 135 developments. As of July 2021, 12 developments have been completed, and the remaining developments are targeted for completion by 2027. The projects adhere to new energy code standards and include a 30-year roof warranty.

### Test new cost-saving technologies to reduce water infiltration and seal façades to prevent leaks

NYCHA is spending $4M to test breathable mineral coating technologies to coat façades that will prevent leaks and water infiltration. These spray coatings allow moisture to migrate out of materials and evaporate. If they prove effective, they could eliminate the need for much more costly and time-consuming façade retrofits.

### Implement a standard procedure for leaks

NYCHA is creating a standard procedure for leaks to establish NYCHA-wide protocols to address the root causes of floods, leaks, and excessive moisture. This procedure aims to reduce mold growth by preventing and reducing leaks, excessive moisture, and associated water damage. The first pilot was conducted at three developments Brevoort, Low Houses, Roosevelt I/II, from September 2020 to January 2021. A second pilot will be conducted at the same developments from September 2021 to November 2021. The rollout of the standard procedure is anticipated to start in spring 2022 (the post pilot assessment will dictate the timelines).

### Implement an informational campaign for residents on mold awareness

In November 2020, NYCHA's Mold Response Unit (MRU) initiated a resident information campaign to educate residents to identify, prevent, and report mold growth. Through this outreach, NYCHA solicited resident volunteers to participate in a user testing workshop to help develop an educational booklet, posters, door hangers, and a mold instructional video for residents. The NYCHA working group is finalizing informational materials and videos. A phased campaign was rolled out the summer of 2021.

### Perform lead outreach and remediation

NYCHA is committing over $1B to remove lead-based paint. Based on gathered data, much of the lead within NYCHA developments is found on individual components rather than broadly throughout the buildings. NYCHA is developing a project execution plan that will take a phased systematic approach to remove lead. This plan will help NYCHA meet the HUD Agreement goal of abating all lead-based paint in 50% of apartment units and common interior areas by January 31, 2029.

Additionally, in July 2021, NYCHA launched the newly formed Team for Enhanced Management Planning and Outreach (TEMPO) program dedicated to outreach, inspection, and remediation in NYCHA apartments where lead-based paints are present.

### Complete XRF testing and lead-based paint reporting

Peeling lead-based paint can present a risk of lead exposure, especially to children under the age of six. NYCHA is taking meaningful steps to comply with the HUD Agreement and ensure the safety of all residents, including evaluating and addressing lead-based paint hazards. In April 2019, NYCHA began X-ray fluorescence (XRF) testing of 134,084 units built before 1978 that had never been previously tested. NYCHA's website has a dashboard to report the progress of inspections and test results.



*The Mold Busters process introduced new mold inspection tools including the Protimeter, a surface moisture detector.*

### Perform gut rehabs to address mold and lead comprehensively

To comprehensively address mold and lead at sites where it is widespread, NYCHA will renovate entire developments to bring them to a state of good repair. This gut rehab work is critical at sites where mold is pervasive and cannot be addressed selectively (e.g., replacing roof fans or roofs alone) and where lead-based paint is widespread. NYCHA has already committed $448M to making these upgrades at St. Nicholas and Richmond Terrace developments.

### Eliminate elevator outages

NYCHA owns, operates, and maintains 3,224 elevators across 266 developments. NYCHA's elevators suffer from outages due to high volume of use, aging stock, and building envelope decay that has caused structural issues in the elevator shafts. NYCHA will spend $664M to replace 275 of its worst-performing elevators by 2024 and is planning the repair or replacement of 1,000 elevators through the PACT program. NYCHA will also study solar power, battery storage, and regeneration measures to ensure service continuity and reap energy savings.

Read more:
Elevator Action Plan

### Adopt Integrated Pest Management

NYCHA's Waste Management and Pest Control Department has adopted Integrated Pest Management (IPM) to address the root causes of infestations. IPM requires NYCHA maintenance staff to actively prevent pests from harboring in NYCHA's buildings by collecting, storing, and disposing of waste promptly and minimizing the use of toxic pesticides. To implement IPM, NYCHA will provide guidance to all staff, issue pest standard procedures, distribute quick reference guides, enhance IT systems, and provide ongoing training for exterminators and property management staff.

### Reduce exposure to secondhand smoke

To create healthier homes for NYCHA residents and healthier working environments for employees, in July 2018, NYCHA prohibited the use of cigarettes, cigars, pipes, and hookah pipes anywhere inside public housing buildings and within 25 feet of any building. The Smoke-Free NYCHA initiative helps to reduce exposure to secondhand smoke and provides support to residents and employees who smoke and want to quit. NYCHA will promote resident leaders and activate the Smoke-Free NYCHA Liaison team. This policy implementation model has attracted national attention.

### Ensure every NYCHA family with a newborn or infant has a safe home and is connected to available supportive resources

NYCHA will implement a program to identify and address potential hazards in the apartments of expecting families or those with a child under one. The program will provide assessment to evaluate the conditions of the apartment for key environmental hazards such as lead, mold, pests, and asbestos. Working closely with citywide partners, NYCHA will also provide educational information on best practices for maintaining a hazard-free environment, baby-proofing tips and information on additional resources such as newborn home visiting programs.

### Partner with health care and community-based health organizations to improve asthma outcomes of NYCHA residents

As NYCHA invests in critical infrastructure to tackle hazards such as pests, mold and secondhand smoke it will expand targeted collaboration with health partners to ensure residents are optimally connected to education and services to advance asthma prevention and control. This includes programs that train and deploy NYCHA residents as community health workers who help bridge gaps in prevention and care.


*NYCHA kids celebrating the Smokefree Zone at Astoria Houses.*




*Exterminators investigating ground as part of pest management at Marcy Houses.*

# STRATEGY 7
# Expand the Green Infrastructure program

Over half of New York City's sewer pipes combine rain and wastewater, which can overflow and pollute the watershed during higher than average rain or snowstorms. Green infrastructure seeks to alleviate this problem by diverting runoff from impervious surfaces, such as streets, parking lots, and sidewalks, into engineered systems that infiltrate stormwater runoff into underlying soils or hold and slowly release it back to the city sewer system when more capacity is available to manage it. Green infrastructure practices include vegetated bioretention, permeable pavements, green roofs, and subsurface storage systems.

NYCHA's vast open spaces provide an ideal location for these projects and will help New York City's Department of Environmental Protection (DEP) to meet its legal mandate to reduce combined sewer overflows (CSOs) entering city waterways by 2030.

DEP has completed $13M in green infrastructure projects at Hope Gardens, Seth Low, Edenwald, and Bronx River Houses. Additionally, DEP and NYCHA partnered to install more than $800,000 in green infrastructure at the Gowanus Houses as part of a Superstorm Sandy reconstruction project.

**RESIDENT IMPACT**

**TIMEFRAME**

Short to long-term

**BY THE NUMBERS**

As of July 2021, DEP and NYCHA have completed green infrastructure projects at Hope Gardens, Seth Low, Edenwald, Bronx River, and Gowanus Houses totaling $13.8M in investment.

*Green Infrastructure display at Edenwald Houses.*



## Implementation

### Continue to expand green infrastructure investments in CSO areas

Building on the success of the first NYCHA green infrastructure projects, 38 additional projects, costing $70M, are being planned or are under construction. Once completed, NYCHA, in partnership with DEP, will have invested in green infrastructure at 42 developments.

### Address flooding beyond CSO areas

While the majority of DEP's green infrastructure work is focused in combined sewer areas, NYCHA is working to mitigate flooding and water infiltration on properties citywide. NYCHA surveyed more than 180 property managers in 2020 to determine the prevalence of rainwater-driven flooding, the problems experienced as a result, and the responses to the problems. This survey informed NYCHA's Climate Adaptation Plan and helped to prioritize sites slated for deeper investigation of their storm sewer network for potential capital upgrades and modification of staff procedures.

DEP is currently developing enhanced stormwater regulations, referred to as the Unified Stormwater Rule (USWR), which when in effect, will require developers to integrate green infrastructure into any development project that disturbs 20,000sf or more of soil or results in more than 5,000sf of new impervious surfaces. NYCHA is working with DEP to ensure compliance with the rules and understand its implications for future projects. Also, NYCHA will develop a standard operating procedure for cleaning storm sewers.

*Green infrastructure installation at Edenwald Houses.*

CASE STUDY

## Placemaking through stormwater management at South Jamaica and Clinton Houses

In partnership with NYCHA, DEP will install a first of its kind in NYC "cloudburst" green infrastructure project at the South Jamaica Houses. The installation is designed to capture 277,000 gallons of stormwater during a severe, cloudburst rain event that would otherwise contribute to flooding in the area. It will also serve as a placemaking tool for the community. Placemaking is a collaborative process of engaging the community to reinvent public spaces.

Over six months of community engagement preceded the schematic design of the system, which is now in design development. The project includes two sunken grass swales with landscaped boulder seating and a fully renovated basketball court with recessed seating and new lighting all overlaying a vast rainwater storage system. Additional amenities provided through a generous grant from Councilwoman Adams' office include benches and lighting along a brand new connecting pathway. The stormwater management phase is expected to begin construction in 2023 and is estimated to be completed in 2024.

NYCHA, DEP, and the Mayor's Office of Recovery and Resiliency received a $198,000 Federal Emergency Management Agency (FEMA) grant to evaluate options for stormwater mitigation at Clinton Houses and adjacent areas in East Harlem. The partner agencies will evaluate flood risk, identify mitigation solutions, and propose a cost-effective conceptual design. The final report is scheduled to be released in October 2021.

*Rendering of renovated basketball court with stepped seating.*

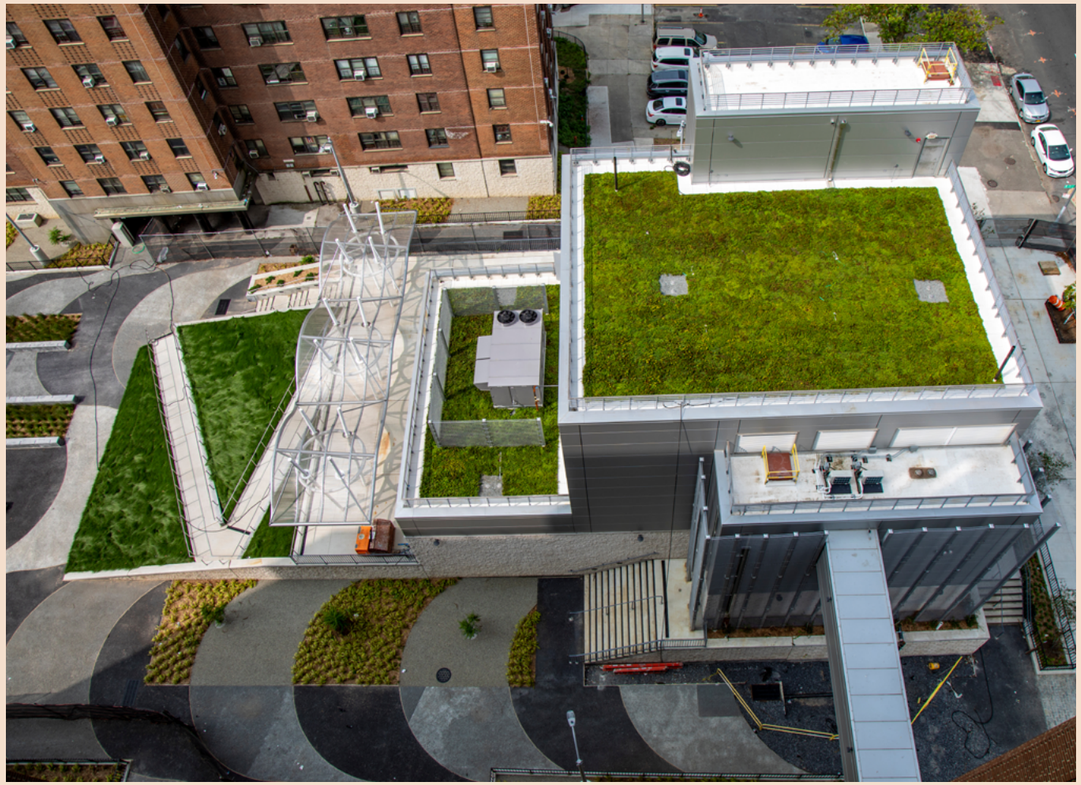


CASE STUDY

## Green roofs installed to complement Sandy recovery projects

In 2020, NYCHA completed the installation of a green roof at Coney Island Houses, and green roofs are planned for Gravesend and Red Hook. A green roof usually consists of a layer of vegetation installed on the surface of a traditional roof. Green roofs can improve roof longevity by protecting the roof surface and by reducing temperature variation and stress from thermal expansion and contraction. They also can provide a modest reduction in heating and cooling energy use.

*Front of Coney Island Houses*



*Aerial view of green roof*

# COMMUNITY

## GOAL 3
## Empower residents through community activation and workforce development



The expenditure of public dollars, especially on investments to improve energy efficiency and sustainability, provides an excellent opportunity to connect NYCHA residents to jobs and career growth opportunities. NYCHA will support resident and community-led sustainability initiatives and expand pathways for residents to connect to quality jobs and potential business development opportunities.

### STRATEGIES

- Connect residents to workforce development and entrepreneurship opportunities
- Mobilize community activation through resident-led sustainability programming
- Expand NYCHA farms, gardens, and urban agriculture programs
- Develop resident stewardship programs for NYCHA's resilient landscapes

# STRATEGY 8
# Connect residents to workforce development and entrepreneurship opportunities

As a recipient of public housing financial assistance, NYCHA is subject to Section 3, a HUD mandate that requires employment and other economic opportunities generated by HUD financial assistance shall be directed to low-and very low-income persons, particularly those who are recipients of government assistance for housing or residents of the community in which the federal assistance is spent. NYCHA shall also require Section 3-type requirements for contracts and projects funded with other sources of financial assistance. In addition to Section 3 employment, NYCHA created the Resident Employment Program (REP), which requires that 15% of the labor amount of NYCHA construction contracts greater than $500,000 be spent on resident hiring.

In Fiscal Year 2019, NYCHA engaged 27,858 residents in NYCHA initiatives, facilitated 6,007 economic opportunity service connections, made 2,933 job placements, and enrolled 675 residents in training programs. Building on these successes, NYCHA is advancing several initiatives to expand career pathways for residents in the energy and sustainability fields. NYCHA's Office of Resident Economic Empowerment & Sustainability (REES) measurably supports residents' increased income and assets through programs, policies and partnerships in the areas of employment and advancement, adult education and job training, financial literacy and asset building and resident business development. Additionally, in July 2021, NYCHA launched the Minority–and Women-owned Business Enterprise (M/WBE) program, which adopted M/WBE participation goals including 30% of the total contract value to be subcontracted to M/WBEs (15% MBE and 15% WBE).

**RESIDENT IMPACT**

**TIMEFRAME**

Mid-term to long-term

**BY THE NUMBERS**

288 NYCHA residents hired through EPCs

Over 40 residents have been trained through Solar Programs

25 NYCHA residents hired full-time through Solar Programs

6 GCF Alumni were hired for NYCHA's Tree Inventory Assessment

*Earth Day event at Pink Houses Farm*



## Implementation

**Expand service-learning programs to connect youth to emerging jobs in sustainability**

Investments in sustainability provide excellent learning opportunities for NYCHA youth looking to gain hands-on job experience. NYCHA is working with its partner Green City Force to expand youth workforce development opportunities. Building off the successful Love Where You Live model, Green City Force is expanding its service-learning program that helps participants develop practical job skills that help them succeed in the workforce, focusing on sustainability careers. Classroom training is paired with hands-on service learning at NYCHA developments.

Unemployed or under-employed young adults 18—24 years of age who live in NYCHA with a high school diploma or GED are eligible to become AmeriCorps members with Green City Force, gaining pre-apprenticeship-level, paid experience, training, certifications, and a college scholarship. Graduates work in all areas of the green economy including solar installation, energy efficiency data and fieldwork, entrepreneurship, training other young adults and kids in urban agriculture and electrical apprenticeships.

Currently, 45 Green City Force members are participating in a clean energy service-learning pre-apprenticeship program funded by NYSERDA. Service-learning projects include installing indoor temperature sensors for improved heating performance, assistance with resident education and outreach and performing energy audits to identify energy retrofit opportunities at NYCHA developments. A target of 90% of participants will be placed in clean energy employment or advanced education opportunities, including either post-secondary degree programs, national certifications, or a combination of both.

By 2026, Green City Force aims to double its program offerings. This includes doubling AmeriCorps recruitment and employment opportunities for graduates that are aligned with NYCHA sustainability priorities and national programs such as the Civilian Climate Corps.


*Green City Force Cohort 20 Graduation Ceremony © Green City Force*

CASE STUDY

## Green City Force participants complete NYCHA Tree Inventory Assessment

Leveraging partnerships with forest experts, NYCHA completed a Tree Inventory Assessment project in partnership with Green City Force. In 2020, NYCHA conducted a tree inventory and social assessment of green spaces for a subset of campuses in high heat vulnerability neighborhoods. The project took place across 18 developments located in three distinct geographic clusters: The South Bronx, East Harlem, and Brownsville. These neighborhoods suffer from low levels of green space and are considered neighborhoods of high heat vulnerability by New York City's Department of Health and Mental Hygiene. The goal of the assessment was to better understand the ecological and social benefits, challenges, and on-the-ground management concerns related to trees and open spaces.

The tree assessment helped quantify the ecological and social value of NYCHA's trees. It will provide green space and tree management recommendations to be included in NYCHA's Climate Adaptation plan.

For this assessment, NYCHA hired six Green City Force Alumni who live or previously lived in NYCHA campuses. They were trained to identify tree species and detect early pests along with interviewing development staff and social data gathering. In the future, Green City Force aims to foster this relationship and promote future collaboration involving tree maintenance and care throughout NYCHA's developments. With support from the City Clean Up Corps program, the tree inventory work will continue through 2021.



### Expand resident hiring through Community Shared Solar workforce development program

While NYCHA's community solar leases are not subject to Section 3, resident workforce training is a core commitment of the program. It is built into the solicitation process and lease agreements from the beginning. Any solar developer who signs a lease with NYCHA must commit to hiring and training residents; these jobs are primarily in solar installation but may also include community outreach positions to help teams meet low-and-moderate income households subscription requirements.

As of July 2021, NYCHA's solar leases have led to 25 full-time green jobs for NYCHA residents to assist on the installations: 13 on the Queensbridge project and 12 on the joint Kingsborough, Glenwood, and Carver project—of which, five on the Queensbridge project are now transitioning to permanent positions. It is also expected that some resident hires from the Kingsborough, Glenwood, and Carver project will transition to permanent positions.

Additionally, over forty NYCHA residents have received solar workforce training. Solar developers have worked with local organizations such as Solar One and Green City Force to connect residents to jobs and provide training in construction, solar installation, and OSHA 30. These efforts help connect NYCHA residents with the green jobs of the future and provide transferrable skills that will pay dividends beyond their initial solar work. NYCHA will build on this success and add to these numbers as additional solar projects are added to the pipeline.

*Solar panel being installed at Queensbridge Houses.*

### Support resident-led businesses and entrepreneurship

NYCHA is working to connect resident-owned firms with business opportunities. Through REES partners, NYCHA is connecting residents to business development programming to provide support with business planning and education to grow ideas. NYCHA is also revising procurement language to improve access to NYCHA contracting opportunities for resident-owned businesses. NYCHA partners Green City Force are also working to support resident entrepreneurship through cultivating and supporting Green City Force alumni entrepreneurs. Green City Force is identifying resident entrepreneurs to partner with each Eco Hub site. This effort seeks to leverage local talent to promote their success and enhance community-driven change and mobility. In 2021, NYCHA also kicked off a recycling program with Green City Force and Inner City Green Team, a resident-owned business working to promote recycling collection and education.

### Establish a NYCHA Clean Energy Academy

The clean energy transition planned by New York State and New York City cannot happen without a labor force prepared to install solar and wind equipment, HVAC, appliances for heating and cooling, and electrical upgrades for buildings. There are tremendous job and career pathways for NYCHA residents to participate in the clean energy transition. NYCHA is working with partners such as the Fund for Public Housing to secure funding for the Clean Energy Academy to offer training opportunities that focus on career awareness, paths, and specific trades programs that prepare NYCHA residents for existing and upcoming opportunities. NYCHA is targeting the training of 250 residents for green jobs by 2025.

# STRATEGY 9
# Mobilize community activation through resident-led sustainability programming

NYCHA's residents have a wealth of ideas on how to incorporate sustainability best practices at their developments. NYCHA will work with residents to develop programming to foster deeper engagement in environmental activism and participatory urban design. Through training, funding opportunities, engagement, and other resources, NYCHA residents will be positioned as key partners in programming to support and strengthen the Sustainability Agenda.

**RESIDENT IMPACT**

**TIMEFRAME**

Mid-term to long-term

**BY THE NUMBERS**

The Campaign for a Clean NYCHA is being implemented at 5 developments with $50,000 for resident-led programming



## Implementation

### Implementation of a resident-led recycling program at Wagner Houses

A new recycling and composting partnership kicked off at Wagner Houses with Inner City Green Team, Green City Force, and Compost Power. Led by the Inner City Green Team, a resident-owned business, the program aims to reduce the volume of landfill-bound waste through resident education and more convenient recycling access. The program also includes hands-on resident education on composting and recycling. Through the program, Inner City Green Team will also host events like Stop 'N' Swaps, which will collect items like gently used clothing for donation and recycling. The volume of NYCHA's landfill-bound garbage could be cut nearly in half if more materials were recycled and recyclables were properly sorted. By advancing this program at Wagner Houses, NYCHA is investing in a resident-led initiative to educate and engage residents around recycling, improve waste diversion rates and assess opportunities for expansion.

### Implementation of a sustainability grant program for residents

NYCHA is implementing a grant program to fund resident-led sustainability projects. This funding opportunity will help jump-start resident-led community projects focusing on recycling, gardening, art and educational programs around sustainability topics. These grants can offer capacity-building support for NYCHA residents interested in addressing sustainability priorities and improving public outreach and green education at NYCHA developments. The grant selection committee, comprised of NYCHA staff, residents, and community stakeholders, will award small grants for the most impactful, innovative, and self-sustaining projects. NYCHA will also organize complimentary programming to help build a community around environmental activism.


*Inner City Green Team members promoting recycling at Wagner Houses*


*Inner City Green Team member posing with recycling collection bin*



### Improve transparency and improve resident engagement through public procurement

NYCHA is advancing several changes to improve transparency and increase the participation of NYCHA residents and other stakeholders in the procurement processand future similar projects. These changes include engaging residents in the planning phase of the procurement process to enable more equitable outcomes. NYCHA will share drafts of key NYCHA's Energy and Sustainability department procurements for public review and comment and will share forecasts of upcoming procurements annually. NYCHA will use feedback from the public to strengthen the procurement design and approach. This approach will also help engage and prepare smaller businesses to enter the solicitation process and help to spread the word about upcoming opportunities.

### Implementation of a Campaign for a Clean NYCHA

NYCHA is working to change the culture of waste and celebrate environmental activism through implementing a Campaign for a Clean NYCHA. This campaign intends to improve the quality of life for NYCHA residents by reducing pests, eliminating visible litter, improving recycling rates, and helping the City meet its goal to reduce the amount of waste sent to landfills. With partners like Green City Force, resident-led environmental programming will be implemented as part of the campaign's rollout. NYCHA has committed $50,000 to support the kick-off of resident-led programming to support the Campaign roll-out which started in August 2021 at the five pilot developments: Marcy, Morris I/II, Butler, Drew-Hamilton, and Wald. As part of the program roll-out, the program will be evaluated to measure its success to inform broader NYCHA-wide deployment. By 2026, NYCHA will deploy the campaign at all developments.

CASE STUDY

## Compost Power brings compost activism to NYCHA

In partnership with Green City Force, of which he is an alum, Domingo Morales is working to expand composting at NYCHA developments through an initiative he started called Compost Power. In 2020, Compost Power organized composting at five NYCHA developments that now can process a minimum of 50 tons of waste per year. Compost Power seeks to provide residents in NYCHA developments with the opportunity to reduce waste from landfills while creating more eco-friendly jobs. In recognition of his compost activism, Domingo Morales was selected as a recipient of the inaugural David Prize, which comes with a $200,000 grant award. Mr. Morales is using the grant award to build career paths for fellow GCF alumni and other NYCHA residents.

# STRATEGY 10
# Expand NYCHA farms, gardens, and urban agriculture programs

Farms at NYCHA is a multi-site, multi-partner initiative to support New Yorkers' health and wellbeing through an innovatively designed urban agriculture program. The initiative combines youth workforce development, healthy food production and distribution, resident engagement, and sustainable open space activation to contribute to positive community development. The Initiative currently encompasses six large-scale urban farms at Mariner's Harbor, Forest Houses, Red Hook West, Bay View Houses, Howard Houses, and Wagner Houses. Separate from the Farms at NYCHA initiative, Pink Houses in Brooklyn hosts a community farm through a partnership with United Community Centers.

Since 2013, NYCHA has partnered with the Mayor's Office, Green City Force, and other partners on this cross-cutting initiative to expand healthy food access, youth workforce and leadership development, and create more sustainable public housing communities.

A study conducted to evaluate three years of the Farms program performance during 2016 to 2019 found that the Farms supported the recruitment and training of more than 111 young NYCHA residents as Service Corps Members. Programming at the farms engaged residents through farm stands, NYCHA resident volunteers in farm and food activities, and farm-based learning activities for youth. The program cultivated and distributed 56,715 pounds of fresh, sustainably grown produce to NYCHA residents, who self-reported an increased consumption of fruits and vegetables. The farms also helped divert approximately 13,816 pounds of food scraps from landfills.

NYCHA has a long-standing commitment to fostering resident access to green spaces on NYCHA property. A 2017 survey of NYCHA gardens conducted by the NYC Parks Department's GreenThumb program counted 595 gardens at 146 NYCHA developments. NYCHA continues to support resident gardeners through a service coordination model with trusted community partners, including GreenThumb, GrowNYC, and the Mayor's Office of Criminal Justice. This work helps to beautify unused and vacant plots at NYCHA properties.

**RESIDENT IMPACT**

**TIMEFRAME**

Mid-term to long-term

**BY THE NUMBERS**

The program cultivated and distributed 56,715 pounds of fresh, sustainably grown produce to NYCHA residents, who self-reported an increased consumption of fruits and vegetables.

The farms also helped divert approximately 13,816 pounds of food scraps from landfills.

Farms supported the recruitment and training of more than 111 young NYCHA residents as Service Corps Members.



*GCF participants at farm*

# Implementation

**Expand NYCHA farms and gardens**
Through partnerships, NYCHA will expand the number of farm sites from six to fifteen, ensuring at least two farms in each borough within five years. NYCHA will expand work with Green City Force and collaborate to explore new farm models, including those that incorporate entrepreneurship, composting, and greenhouses. Working with citywide and local farm partners, NYCHA will strive to enrich and preserve the network of farms built by and serving low–and moderate-income New Yorkers. Green City Force is also expanding its programming at farm sites they operate to focus on "Eco-Hubs", which include educational programming and learning opportunities focused on broader energy and sustainability concepts.

**Construct urban agriculture education center**
NYCHA, DDC, and the Bed-Stuy Campaign Against Hunger are working to construct a new urban agriculture education center at Marlboro Houses to serve as a source of fresh produce for the local community, as well as a hub for multi-generational education, job training, and community leadership. The project will include a building featuring a greenhouse with water reuse systems, a teaching kitchen, classrooms, administrative offices, restrooms, a partially outdoor farm stand market. The project has begun procurement.

*Forest Houses' farm tool shed*



CASE STUDY

## Mayor's Action Plan for Neighborhood Safety

In 2014, Mayor de Blasio launched the Mayor's Action Plan for Neighborhood Safety (MAP) to reduce violent crime in and around 15 NYCHA developments that account for almost 20% of violent crime within the NYCHA community. MAP has invested over $120M in support of vibrant public spaces at NYCHA developments, including more than 6,200 exterior lights for better security that have provided over 90% in energy savings in the fixtures they have replaced. These investments also provided improved safety infrastructure and increased play opportunities. MAP was integral in establishing and implementing NYCHA's new standard LED exterior site lighting and also supported various aspects of NYCHA's Waste Management Plan.

In partnership with the Center for Court Innovation, MAP has also supported resident-led action plans to design and implement projects that re-imagine public space. Building Healthy Communities, MAP's sister initiative, has provided support to community organizations to improve their parks, streets, and gardens and expand access to urban farms and fresh produce. At all 15 MAP developments, residents conducted audits to identify unsafe or neglected public spaces and design improvements. The teams have implemented 40 projects that re-imagine physical space and social programming, ranging from new gardens and murals to renovated basketball courts and community spaces, and dozens of creative activation events that open up new opportunities for all residents.

*Residents leaving a farm stand with fresh produce from Wagner Houses Farm. Photo taken from MAP's "SAFE PLACES ACTIVE SPACES!" playbook.*

# STRATEGY 11
# Develop resident stewardship programs for NYCHA's resilient landscapes

To help mitigate the effects of severe flooding due to climate change and to include best practices in design standards, NYCHA installed resilient landscape features such as bioswales, rain gardens, and other vegetative green infrastructure at six developments. Community stewardship programs can help fully realize the benefits of these resilient landscapes, providing an opportunity for both resident education and engagement. Residents can learn about the unique purpose of resilient landscapes while also assisting with planting, light gardening, litter removal, and develop environmental programming and activities. These programs can help to guarantee the longevity of plantings and other stormwater management investments.

**RESIDENT IMPACT**

**TIMEFRAME**

Mid-term to long-term

**BY THE NUMBERS**

6 NYCHA developments have resilient landscapes features

*Green Infrastructure resident engagement session held at the Bronx River Senior Center.*



## Implementation

### Develop Resilient Landscapes Stewardship program

NYCHA is working with the Grain Collective to develop a Resilient Landscapes Stewardship program. Starting with the Bronx River Houses, which has vegetative, place-based green infrastructure, NYCHA is developing a resident outreach and engagement program. As part of the program, a standard curriculum for green infrastructure resident and community education will be developed with resident input for broader deployment. NYCHA will scale this program to all sites with vegetative green infrastructure.

### Adapt groundskeeping procedures to meet new staffing models

NYCHA is seeking to improve soil health and resiliency of its existing lawns by raising awareness among residents and staff and adapting groundskeeping procedures to meet new staffing models.

*Rain garden at Hope Gardens.*

CASE STUDY

### Nurturing resilient landscapes

Resilient landscapes and other vegetative green infrastructure features nurture and restore ecological diversity and promotes community resilience. NYCHA and DEP are committed to the maintenance of these features, however for them to really thrive, the community must take responsibility for ensuring their upkeep. Trash, litter, and dog waste can damage the systems and pollute the soil. These systems provide excellent educational opportunities about the importance of incorporating resiliency elements into NYCHA's landscape. By organizing resident programming, NYCHA can build awareness and celebrate investments in environmental stewardship.


*A pictogram that was used during a green infrastructure educational workshop.*

# FACILITIES AND RESOURCES MANAGEMENT

## GOAL 4
## Ensure efficient building operations and resource management



NYCHA seeks to integrate sustainable practice into all aspects of NYCHA's work. That includes building a culture of sustainability amongst NYCHA staff. It is important to ensure that staff have the resources and knowledge to properly maintain capital investments and reduce the impact on the environment. NYCHA will empower front-line staff through training and workforce development programs to build pride in the workplace, to ensure the longevity of investments, and efficient resource management as environmental stewards. Important aspects of this work include waste and water management which impact frontline staff and resident quality of life.

### STRATEGIES

- Ensure proper maintenance and longevity of investments
- Re-envision waste management and recycling at NYCHA
- Design for circularity and recycle construction and demolition waste in Capital Projects
- Improve water management in buildings

# STRATEGY 12
# Ensure proper maintenance and longevity of investments

NYCHA's approximately 6,000 Operations staff maintain campus buildings, grounds, and equipment. As new investments require staff training, NYCHA will continue to revise procedures and offer training opportunities for NYCHA Property Management staff and other front-line personnel. Recognition programs and other internal workforce development efforts will help encourage best practices and pride in the workplace.

**RESIDENT IMPACT**

**TIMEFRAME**

Short-term

**BY THE NUMBERS**

Approximately 6,000 out of the 11,569 NYCHA workers (over 50%) are employed to maintain the grounds for developments


*Residents using the recycling bins at Morris Houses.*



## Implementation

### Enroll staff in training programs

New York City's Department of Citywide Administrative Services (DCAS) Division of Energy Management (DEM) offers a robust portfolio of training programs as part of the Energy Management Institute, which provides courses such as Building Operator Certification, trades-specific energy management classes, and Load Management training. NYCHA will continue to encourage and enroll staff in DCAS training programs.

NYCHA will also enroll staff in NYSERDA's Energy Efficiency and Clean Technology Training program. The training program focuses on operations and maintenance of existing systems, system being piloted in our developments currently, and future technologies to come to reduce our carbon emissions. To ensure heating personnel are properly trained, training outcomes are now tracked as part of NYCHA's reporting to HUD. NYCHA has also trained staff on using new waste management equipment such as cardboard balers, which also generate reports on usage to ensure investments are being used as intended to track metrics over time for improved management.

### Continue sustainability-focused recognition programs for staff

NYCHA will create an annual sustainability-focused recognition program for staff to encourage environmental stewardship and recognize when staff go above and beyond to improve the quality of life for residents. In 2020 NYCHA issued "Recycling Champion" awards to the Caretakers and Property Management staff at 12 developments who participated in a recycling program as part of their duties throughout the pandemic response. NYCHA will make the award program part of an annual cycle.



*Staff participate in Smoke-Free NYCHA campaign.*

# STRATEGY 13
# Re-envision waste management and recycling at NYCHA

NYCHA released the NYCHA 2.0 Waste Management Plan (Waste Management Plan) in April 2019, outlining a holistic approach to improving waste management infrastructure, procedures, and resident participation in waste and recycling programs. Implementation of the Waste Management Plan is underway, starting with replacing aging waste equipment at 57 developments within the Mayor's Neighborhood Rat Reduction zones. A total of $47M was allocated for this work, and all projects will be completed by the end of 2021. Based on this critical initial investment, NYCHA has identified a queue of work across the portfolio and secured the approval of $563.5M in City Capital Action Plan funds. With this funding and through other efforts, NYCHA will transform its waste management processes. Steps include re-envisioning waste infrastructure, increasing NYCHA's capacity for recycling, incorporating innovation, and other steps to improve infrastructure, management and oversight.

**RESIDENT IMPACT**

**TIMEFRAME**

Long-term

**BY THE NUMBERS**

Released the NYCHA 2.0 Waste Management Plan in April 2019

Secured $47M through Mayor's Neighborhood Rat Reduction zones, 57 developments are replacing aging waste equipment

Secured $563.5M in City Agreement funds to further overhaul NYCHA's waste infrastructure

*Marcy Houses caretakers modeling new recycling stations.*



## Implementation

### Increase capacity for effective waste management

NYCHA is working to increase the capacity for effective waste handling and to improve recycling rates. In 2020, NYCHA formed the Department for Waste Management and Pest Control (WMPC) to increase accountability and expand waste management and recycling oversight. The new department will provide better and more coordinated resources to developments and improve NYCHA's waste-handling capacity. The WMPC team is leading efforts to leverage NYCHA's assets and improve waste and bulk handling. To reduce uncontainerized waste, the WMPC team is purchasing and managing rear-loading compactor trucks and negotiating enhanced bulk waste removal procedures. Two trucks have already been purchased, and staff are being trained by Sanitation Department (DSNY).

### Develop tools for accountability to assure cleanliness of grounds and buildings

In order to assess the effectiveness of NYCHA's efforts to improve waste management and overall cleanliness, NYCHA is implementing a waste management scorecard. With this improved accountability, NYCHA can ensure that improvements to litter reduction, waste removal, and overall cleanliness are occurring. NYCHA will also add a recycling scorecard to track staff and resident recycling participation rates and assess where more education and training around recycling is needed. Existing recycling infrastructure inspections will be updated to reflect industry best practices and lessons learned from pilots.

In addition to physical inspections, NYCHA is also working to get real-time data on waste management equipment usage by integrating trash compactors to building management systems (BMS) and adding remote-monitoring software to individual machines like cardboard balers. All new compactor equipment is compatible with BMS, and NYCHA is integrating the first seven developments with BMS targeted for completion by the end of 2022.

These data sources will feed planning tools like NYCHA's waste calculator, based on the model developed for the Zero Waste Design Guidelines for New York City. NYCHA's calculator estimates waste storage needs at developments broken down by material type and projected levels of resident participation. The calculator helps NYCHA staff plan for infrastructure upgrades that are appropriate for the different waste streams and site conditions at individual developments.

### Re-envision waste infrastructure

Over two-thirds of NYCHA waste is recyclable or compostable. To meet its sustainability goals, NYCHA must manage an increasing volume of recyclables. To help accomplish this, NYCHA will make recycling more convenient for residents by installing new convenient outdoor recycling centers at all campuses. NYCHA will install these new recycling centers, which total $20.4M, as funding allows.

NYCHA currently has one recycling center for every three buildings. NYCHA buildings were not designed to accommodate space for recycling inside; however, new outdoor recycling centers can be sized to provide adequate capacity for the developments' population and be co-located with trash cans to reduce contamination. The first new recycling centers will be installed at Marcy Houses and Morris Houses. These infrastructure enhancements will be paired with wayfinding signage and clear communications for residents to help get household trash, recyclables, and bulk waste to their proper destination.

With funding from the City Capital Action Plan, NYCHA will completely overhaul the centralized waste yards at 107 developments by 2028, including installing bulk crushers at each of these sites. The new facilities will allow staff to manage waste and recycling more efficiently by including adequate storage and equipment for the separate streams of paper/cardboard and metal, glass, and plastic collected by DSNY. Facilities will be designed to accommodate organics collection as programs become available. New bulk crushers will reduce truck trips by 75% in comparison to existing open

containers. The reorganized facilities will address cleanliness, noise, odors, and improve quality of life and aesthetics in alignment with the Connected Communities Guidebook.

### Invest in innovative approaches to waste management

Until the 1970s, incinerators at the bottom of trash chutes did most of the work of moving trash off NYCHA developments. When NYCHA stopped burning its trash, caretakers were tasked with moving trash by hand. A single garbage bag gets handled about eight times between individual buildings and the exterior compactor.

NYCHA is using innovation to make transporting waste safer and healthier. NYCHA is procuring a design-build team to retrofit Polo Grounds Towers and neighboring Rangel Houses with a pneumatic waste collection system. A pneumatic collection system uses a powerful vacuum to move trash from individual buildings through underground pipes to a central collection facility. The same pipe network can be used to collect separate recycling streams by switching containers. This technology is now being required in new housing complexes in cities such as Hong Kong and Singapore. NYCHA's system is on track to be the first residential system in the USA since 1975.

The system will improve working conditions and free up caretaker time to address other needs around the development. NYCHA is engaging stakeholders to ensure that the system is designed, from the beginning, to meet the needs of residents and staff. Once it is built, NYCHA will ensure successful adoption of the system by contracting with local community organizations like Green City Force to support recycling and facilitate a new organics collection program. As the Polo Grounds Towers project moves forward, NYCHA is assessing the cost and scalability of retrofitting campuses with pneumatic collection, including opportunities to coordinate installation with other major renovation projects.

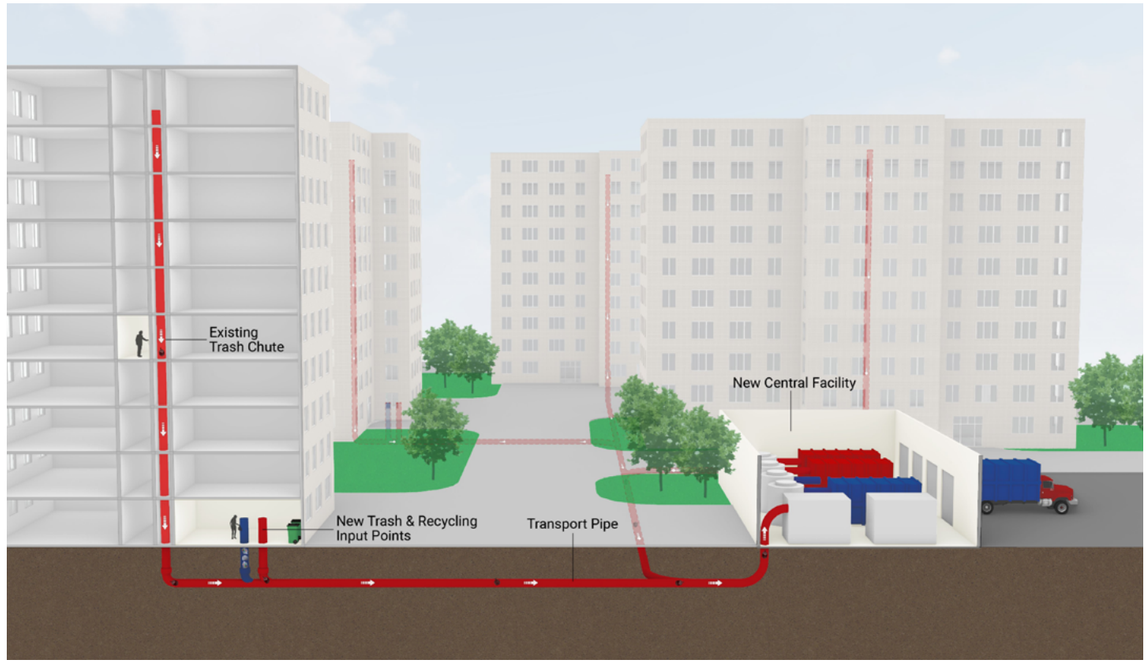



*Diagram of pneumatic waste collection system.*



CASE STUDY

## Neighborhood Rat Reduction program

In 2017, the Mayor's Office launched a Neighborhood Rat Reduction initiative (NRR) to reduce the city's rat population by 70% in the most infested areas—Grand Concourse, Chinatown/East Village/Lower East Side, and Bushwick/Bedford-Stuyvesant—by minimizing food sources and habitats. Methods for doing so include cementing dirt basements in public housing, buying better waste containers, increasing trash pickup, and enforcement of rat-related violations.

NYCHA received funding under the Mayor's NRR initiative and contributed additional resources to replace 223 interior and 43 exterior compactors and install five bulk crushers at 36 developments in NRR zones, totaling over $47M in investments. Since the initiative launched, waste management infrastructure has been updated, and targeted extermination work is continuing at regularly scheduled intervals. These developments have seen a 61% decrease in rat burrow counts. The program has since expanded to now include 112 developments in neighborhoods identified for targeted pest mitigation strategies. NYCHA considers NRR zones to hold prioritization weight in the capital plan.

*New bulk crusher at Bushwick Houses.*

### Establish a Zero Waste NYCHA program

In 2019, NYCHA formed a working group with DSNY's Bureau of Recycling Services to improve recycling collection procedures and confirm curbside set out locations at 12 developments. This successful initiative, called the Recycling Reset program, brought together the right stakeholders and resources to lead to improved recycling rates at participating NYCHA developments. Building on the success of the Recycling Reset program, NYCHA will kick off a Zero Waste NYCHA program to bring together its investments, operational changes and educational programming to create meaningful improvements in recycling for all waste streams. The Zero Waste NYCHA program will establish metrics like cardboard recycling rates and other means to measure and communicate progress on recycling between the waste characterization studies that DSNY conducts every ten years. Updated resources will be available online for residents and staff. NYCHA will expand to 30 additional developments by the end of 2022, and to all of NYCHA's campus developments by 2026.

CASE STUDY

# Recycling Reset program

Since recycling is required by Local Law 19 of 1989 and is a critical activity for environmental stewardship, NYCHA tested a recycling "reset" initiative at 12 developments located in the NRR zones. The sites included Baruch, Baruch Addition, Bushwick, Hylan, Butler, Marcy, Morris I and II, Riis I and II, Webster, and Morrisania. NYCHA partnered with DSNY and their contracted partner, GrowNYC, to help facilitate the program. NYCHA revamped staffing procedures in coordination with DSNY and updated equipment and infrastructure needed to properly sort recyclable material. Once that work was done, the "recycling reset" program officially started in December 2019, led by NYCHA's new Waste Management and Pest Control Department.

Once the program was launched, staff reported weekly bag counts of the recyclables. Since December 2019, developments went from setting out six bags of recyclables a week to over 250 bags a week. A key component of the reset's success was providing information and training to staff and adapting procedures to make managing recycling more practical. The reset also highlighted the importance of adequate recycling infrastructure and education.

**"Partnering with NYCHA to increase the amount of recyclables collected at the pilot sites has allowed us to divert a significant amount of material from landfills, helped us work towards making our communities cleaner and healthier, and has also shown that despite the many challenges impacting recycling at large public housing developments, successful recycling is not only possible, but worth the effort."**

**Kevin O'Sullivan**
*Deputy Director of Agencies, Institutions and Businesses*
*DSNY's Bureau of Recycling and Sustainability*


*DSNY Supervisor of Citywide Containerization dedicating hydraulic compactor to cardboard collection.*



CASE STUDY

# So Much Cardboard! Cardboard Recycling program

With the increase of mail order delivery services such as Amazon and increased shipping needs due to the COVID-19 pandemic, NYCHA developments have reported exponential growth in discarded cardboard. As an initial pilot, nine cardboard balers were installed in 2018. After receiving staff feedback, NYCHA expanded the program and enlarged the baler size to accommodate the growth of cardboard and the need for more efficient compaction for staff. In 2020, NYCHA entered into a contract with Premier Compaction Systems for new cardboard baler installations with a larger model to improve staff's experience with the baler and minimize time spent making bales. With the cardboard balers bundling cardboard for DSNY recycling pick up, cardboard is now being diverted from landfills, and the neat bales reduce the unsightliness of overflowing bulk containers.

In addition to installing balers, NYCHA has found success with converting 30-yard hydraulic compactors from trash compaction to dedicated cardboard collection. Morris and Marcy each have a converted compactor that serves as a shared collection and storage method with neighboring developments. These two cardboard compactor test locations collected 137.7 tons of cardboard over 22 months.

NYCHA has begun conversations to roll out cardboard compactors at 27 additional sites. By 2023, NYCHA will complete the installation of an additional 46 cardboard balers, and by 2028 all remaining possible developments NYCHA-wide will have cardboard compactors or cardboard balers as part of the waste yard redesigns. Compactors and balers have data tracking capabilities, allowing NYCHA to aim for cardboard diversion rates of 80% at sites with equipment by 2026.

**Before balers, loose cardboard would accumulate haphazardly throughout the waste yard.**

**After receiving balers, NYCHA staff are able to collect loose cardboard and put into balers to compact.**

**The result is nicely bundled cardboard that takes up less space and is set out for DSNY collection.**

# STRATEGY 14
# Design for circularity and recycle construction and demolition waste in Capital Projects

As capital work advances to repair and improve living conditions for residents, NYCHA will generate an immense amount of construction and demolition (C&D) waste. C&D waste includes building materials, concrete, fill, and soil. Plans to minimize and recycle C&D waste must happen early on in a capital project to provide the most benefit at the lowest cost. NYCHA is seeking opportunities to reduce C&D waste and design for circularity through the life of the building and beyond, starting with construction. As NYCHA starts major rehabilitation or renovation projects, circularity and C&D waste will be considered for inclusion as part of project performance.

**RESIDENT IMPACT**

**TIMEFRAME**

Short-term

**BY THE NUMBERS**

In 2001-2010, NYCHA's capital investments totaled $2.2B, compared to the last decade where NYCHA has managed $6.6B in capital work—triple the amount.

**C&D Waste**
According to the U.S. Environmental Protection Agency (EPA), Construction and Demolition (C&D) materials consist of the debris generated during the construction, renovation and demolition of buildings, roads, and bridges.



## Implementation

**Implement tree reuse program**

In construction projects where the removal of healthy trees is required, the wood could potentially be salvaged for reuse and simultaneously meet two sustainability goals: reducing waste and storing carbon sequestered by the trees while they were living. Both removed trees and C&D waste could be repurposed or recycled, if properly planned. NYCHA is exploring potential ways to identify opportunities to reuse tree wood, including best practices on salvage methods, tree tracking, storage, or salvage contracts.

Flood resiliency work at Red Hook Houses required many trees to be removed, highlighting the need for these reuse opportunities. NYCHA reached out to sawmills and wood reuse organizations. CityBench, a salvage wood mill in New Haven, harvested and milled some of the trees for reuse. On other Sandy Recovery projects, contractors are putting into practice sustainable strategies. This includes using removed trees to create mulch for construction areas and donate mulch to community composting sites. There are additional opportunities for tree reuse when trees need to be removed due to health and safety issues or storm damage. Tropical Storm Isaias, for example, required the removal of at least 369 storm-damaged trees in the summer of 2020. NYCHA will continue to investigate opportunities to sell or donate trees and reuse them as part of garden beds and mulch. To facilitate this work, NYCHA will incorporate tree reuse into pre-construction planning in parallel with C&D waste management plans. In addition, the trees that were removed in Red Hook will be replaced as part of a resilient landscape design that will provide flood protection to residents.

*Conceptual rendering from 2016 for Red Hook Landscapes. The new landscape will include spaces that are designed to be activated with temporary and pop-up events such as farmers markets. Disclaimer: the installed designs may be different at time of installation.*

*Conceptual rendering from 2016 for Red Hook Landscapes. The new landscape will include spaces that are designed to be activated with temporary and pop-up events such as farmers markets. Disclaimer: the installed designs may be different at time of installation.*

### Construction and demolition waste requirements for Capital Projects

NYCHA Division I specifications and the Enterprise Green Communities Criteria include construction and demolition waste plans, but oversight of C&D waste diversion remains a challenge. These specifications will be revised to require that projects meet a C&D waste diversion rate of at least 75% by weight. C&D waste diversion will be planned for and enforced through contract language for architecture and engineering firms and contractors, forms for data collection, and procedures for reporting on C&D waste during construction. NYCHA will also investigate C&D waste tracking through project management tools and incentivizing certified recycling facility usage.

NYCHA will continue to participate in an inter-agency Urban Resource Recovery working group to continue to learn from sister agencies and to implement new procedures based on successful demonstrations, lessons learned from other NYC projects, and shared resources that are available to agencies doing capital projects like the Clean Soil Bank. NYCHA will identify opportunities to incorporate curriculum for deconstruction, salvage, and reuse into training for green jobs for NYCHA residents.



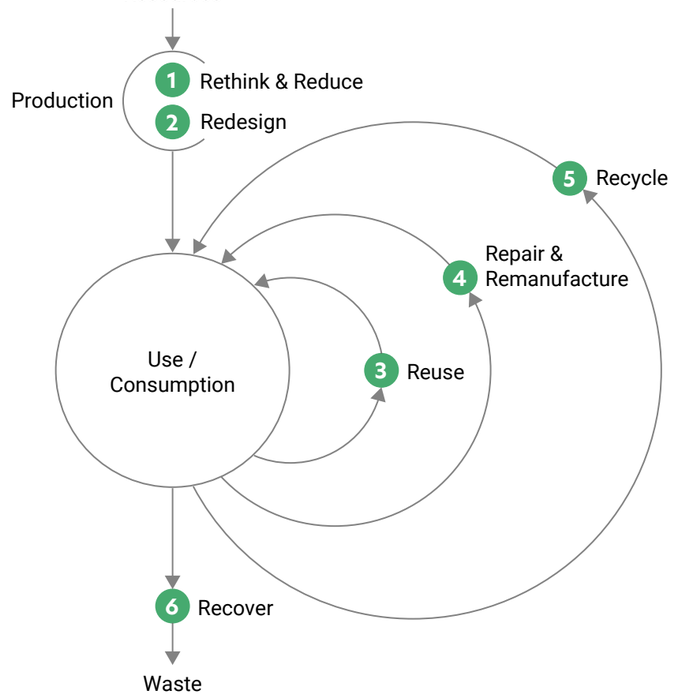
### Design for circularity

NYCHA will raise awareness of circular economy principles among staff and identify opportunities to minimize waste during projects and throughout the life of the building. These principles need to be designed for and applied early in the capital project design process. NYCHA will update design guidelines and procedures to design for deconstruction and future circularity, including building materials, planning for minimizing potential C&D waste, and reusing or salvaging existing materials onsite.

NYCHA will also look for circularity opportunities in operational work. Matching equipment across sites or improving soils and gardens with compost generated on-site from residents' food scraps are examples of operational circularity that NYCHA will look to standardize.

**Circular Economy**
The circular economy is defined by the Ellen MacArthur Foundation as the decoupling of economic activity from the consumption of finite resources by designing waste and pollution out of the system, keeping products and materials in use, and regenerating natural systems.

**Different approaches to the circular economy**



# STRATEGY 15
# Improve water management in buildings

There are many opportunities to manage water better within NYCHA buildings. The majority of NYCHA's portfolio remained unmetered until recently, and water demand management was not informed by robust data. Since 2016, NYCHA and DEP have completed installations of master meters at all developments. This has allowed NYCHA to make informed decisions about transitioning in certain developments to volumetric rates and pursue funding and retrofit opportunities.

**RESIDENT IMPACT**

**TIMEFRAME**

Mid-term

**BY THE NUMBERS**

NYCHA uses approximately 23 million gallons per day throughout its portfolio—3% of NYC's water demand

NYCHA installed over 100,000 high efficiency water fixtures since 2016

*Spray shower at NYCHA development.*



## Implementation

### Install water-saving fixtures

Through EPCs and WAP, NYCHA has installed over 48,200 efficient shower heads, 52,300 faucet aerators and 1,200 ultra-high efficiency toilets since April 2019. Starting in 2022, NYCHA will continue to install high efficiency fixtures at the set of EPCs which will cover 63,743 units over the next five years.

NYCHA will retrofit 60 spray showers with push-buttons which will reduce the continuous operation of spray showers to only when there is a need. The Parks Department completed similar retrofits across their entire portfolio and set new push-button timers to two minutes, saving 130,000 gallons per year during high demand months.

### Stop and prevent building plumbing systems leakage

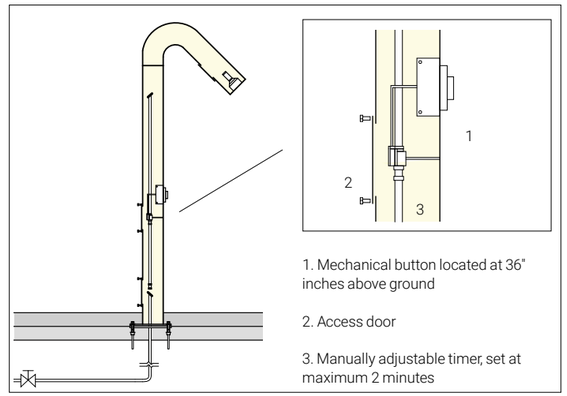
NYCHA buildings experience an average of 1.7 leaks per apartment annually, signaling failing water and sewer plumbing systems reaching the end of their useful lives. A completed assessment outlined a $15.2B need for plumbing system upgrades for the entire portfolio. In many instances, such upgrades require a building gut rehabilitation and will include kitchen and bath upgrades.

NYCHA is advancing several efforts to stop and prevent building plumbing leaks to improve water management and reduce instances of mold. NYCHA is testing cured-in-place pipe (CIPP) technology that can be used to rehabilitate existing pipes to reduce holes, breaks, and joint failures. These repairs upgrades can help minimize leaks, water infiltration, and mold growth.

Water inefficiencies can occur in heating systems. NYCHA will submeter make-up water usage and connect to BMS to monitor both boiler make-up water, condensate tanks, and pumps to identify leaks and quickly repair them.

### Conserve water through reclamation and reuse

NYCHA and DEP formed a partnership to implement a scalable water reclamation and reuse projects. While there are several water reuse options available to building owners, blackwater reuse is cost-prohibitive in retrofit buildings; greywater and rainwater reuse practices can help both agencies reach mutually beneficial goals. Amongst water reuse options considered are steam condensate recycling in heating systems and rainwater reuse for irrigation systems in gardens or green spaces. NYCHA and DEP will identify a delivery method and complete water reuse systems installations by 2023. To the extent possible, NYCHA will replicate the water reuse application in substantial renovations. Additionally, NYCHA will conduct a feasibility study at Marcy Houses where the groundwater table is high and exacerbates nuisance flooding. NYCHA will explore the feasibility of using ground water for toilet flushing.




*Spray detail section.*

### Complete a water monitoring study

NYCHA will complete a water monitoring study to understand water consumption patterns, help identify leaks, reduce utility costs, decrease consumption, and streamline operations. As part of the study, NYCHA will install in-unit water monitors on all bathroom and kitchen water fixtures and will receive access to a software platform to track water consumption and detect high water use events. One year after installation, NYCHA will develop a measurement and verification report that will include statistics such as total water consumption overall and by water fixture, frequency of high water use events, the severity and the cause of the high water use events, and whether water usage based on the number of fixtures in the development is higher than expected. This information will provide NYCHA with the data to make informed decisions on how to reduce water consumption and operating expenses as a model for broader implementation.

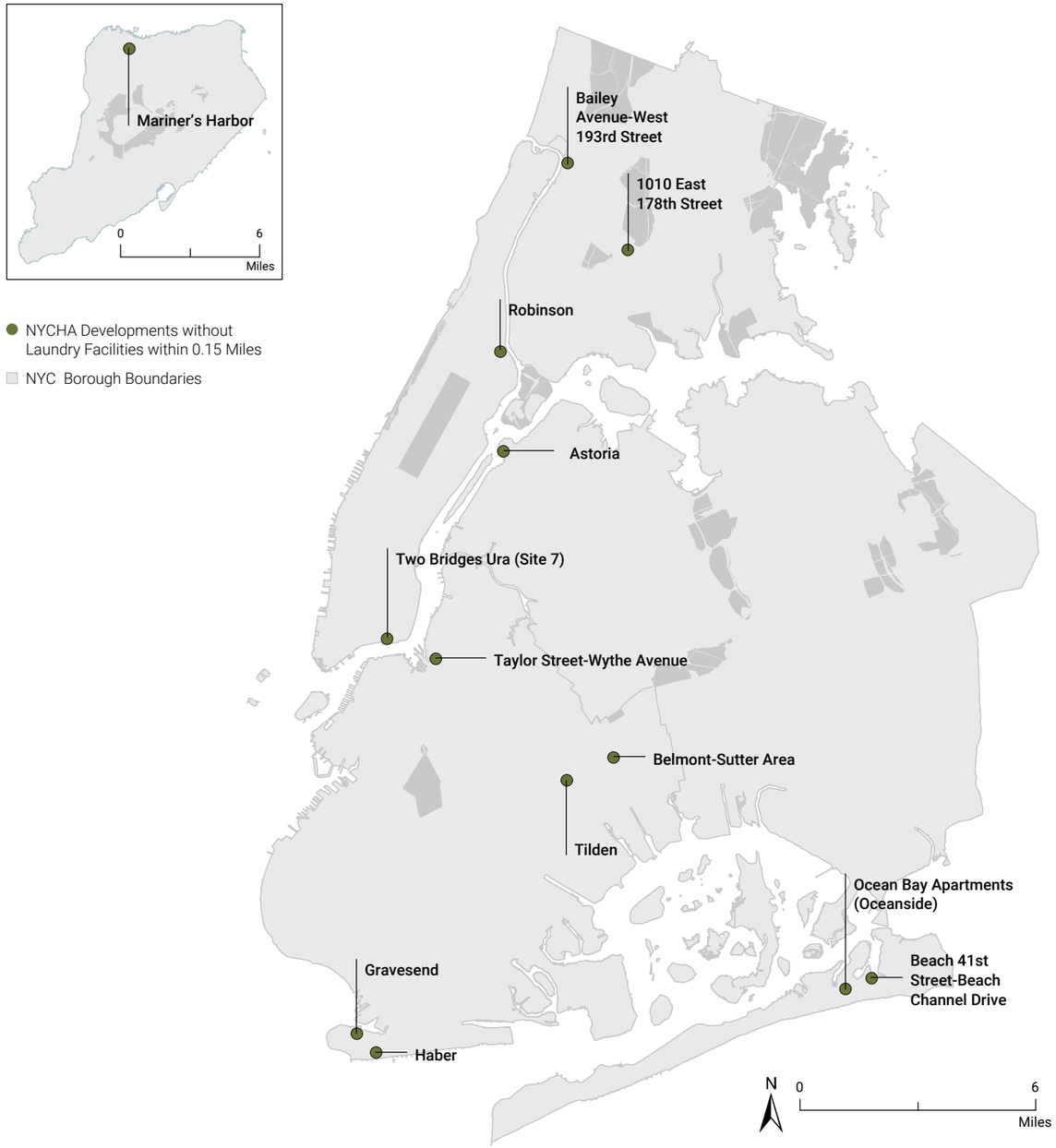
### Identify and remedy laundry facility "deserts" across the portfolio

Many NYCHA developments lack easy access to laundry facilities. This inconvenience leads residents to purchase their own in-unit washer and dryer appliances, which, when not properly installed, can result in burdens to the sanitary and energy infrastructure, cause leaks and mold growth. To remedy the need for accessible laundry facilities, NYCHA has identified "laundry deserts" or locations lacking convenient access to a laundromat—a map of these sites is included on the following page. Based on this information, NYCHA will plan investments in new in-building laundry facilities or upgrades to buildings to accommodate in-unit appliances.

*NYCHA water tower. ©TDX Construction Corporation*



### NYCHA developments lacking proximate laundry facilities (April 2021)

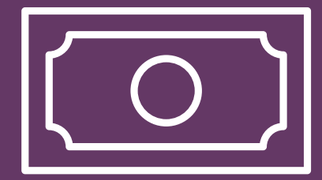



*Prepared by: NYCHA Performance Tracking & Analytics Department (April 2021).*
*Data Sources: NYC Department of City Planning (March 2021), NYC Department of Consumer Affairs (March 2021), NYC Department of Parks & Recreation (March 2021), NYC Housing Authority (January/March 2021).*

# ECONOMICS

## GOAL 5
## Leverage all funding and financing toward healthier and decarbonized buildings





NYCHA went from a single $18M EPC in 2013 to financing $310M in projects in 2020, exceeding the goals set out in the first Sustainability Agenda. Despite these meaningful gains, NYCHA still needs approximately $40B to upgrade its full portfolio of buildings. To address this need, NYCHA seeks to leverage all available funding and financing sources as it implements the Blueprint for Change. While PACT will allow NYCHA to renovate 62,000 units, NYCHA needs between $18 to $25B to renovate the remaining 110,000 units $40B to renovate. Out of that total, NYCHA estimates that for the two HUD pillars linked to energy and water efficiency—heating and mold—$13.6B alone is needed for upgrades.

### STRATEGIES

- Retain ownership of energy and water savings
- Bring in more funding through the Preservation Trust
- Bring in more funding through PACT
- Earn revenue through energy and sustainability incentives and demand management programs
- Establish Green Revolving Fund
- Advocate for equitable investment in NYCHA through carbon offsets

# STRATEGY 16
# Retain ownership of energy and water savings

In addition to $310 million in funds raised through EPCs that target energy and water efficiency, NYCHA is investing an unprecedented $930 million in City, State and Federal funding into building heating and hot water systems. NYCHA and HUD can leverage such investments that will generate utility savings,  remove restrictions on existing EPC and utility rate reduction rules that can accrue to. NYCHA will work with HUD to revisit policies and procedures around utility and water incentives and savings. With such proposed changes, over the course of 10 years, NYCHA can unlock $860M in additional funding and financing opportunities for operations or capital projects. NYCHA is exploring the following options with HUD:

**RESIDENT IMPACT**

**TIMEFRAME**

Short-term

**BY THE NUMBERS**

Over 300 buildings now have water meters to track usage

$310 million financed in EPCs

| Requested Change | Potential Financial Annual Benefit (Millions) | Potential Financeable/ Financial Annual Benefit (Millions) | Total Financing/ Financial Potential (Millions) | Access to Funding |
|---|---|---|---|---|
| 1. Accept Rate Reduction Benefit from All Utilities | $49 | $49 | $490[1] | Immediate |
| 2. Waive Three Year Water Baselines [2] | -$6 | $9 | $90 | In 2-3 years |
| 3. Permit Use of All Available Funding Sources to Generate Utility Savings, Including Frozen Base | $0 | $14 | $140 | In 3-4 years |
| 4. Remove Restrictions on EPC Incentives | $0 | $1 | $10 | Immediate |
| 5. Allow Structured Finance for Operations and Maintenance Reduced Costs | $0 | $11 | $110 | In 3-4 years |
| 6. Increase EPC Incentive Period to 25 years | $0 | $0 | $5 - $20 | Available upon EPC loan closing |
| **Total** | **$43** | **$84** | **$845 - $860** | |

*[1] Assumes 2021 projected RRI savings projected over a decade.Typically, cannot use RRI for financing.*
*[2] Per 20,000 DU converted to volumetric water billing*



## Implementation

### Access Full Rate Reduction Benefit from All Utilities

Rate reduction benefits to NYCHA have been limited by regulation to only 50% of what has been achieved; however, the Quality Housing and Work Responsibility Act of 1998 allows for housing authorities to receive 100% of its achieved cost reductions. NYCHA's rate reduction efforts have significantly reduced its utility costs for electric, gas, steam, and water. In 2020, NYCHA's rate reduction savings across its entire portfolio were $122M, but NYCHA was only allowed to keep half of these savings unless sites had EPCs. This resulted in an eligibility funding gap of more than $49M. NYCHA will work with HUD to close this gap.

### Establish water usage baselines

Where feasible, NYCHA will use newly installed meters in over 300 buildings to establish water baselines to inform financing decisions for projects that will reduce water leakage. The water-savings-financed work would be performed as part of EPCs along with the usual electric and gas measures. NYCHA estimates this will yield approximately a 50% increase in energy- and water-efficiency financing.

### Use savings from reduced operations and maintenance costs to fund sustainability projects

As capital projects reduce operations and maintenance costs, financing opportunities from operational savings increase. As an example, NYCHA's planned pneumatic waste project at Polo Grounds Towers is expected to reduce NYCHA staff hours spent moving trash by 90% – saving over an estimated 14,000 staff hours. Also, LED exterior lighting projects provide longer-life lamps (70,000 hours compared to 24,000 hours for typical high-pressure sodium lamps) and thus reduce lamp replacement labor hours. These and other labor-saving and innovative technologies could be funded from reduced operations and maintenance costs. It is estimated that for each $10M reduction in NYCHA's personal services labor budget, NYCHA could finance an additional $120M in sustainability projects.

### Change policies around energy and water consumption and operational funding

Outside of the existing EPC framework, NYCHA does not have the ability to retain benefits of reductions in utility expenditures or the creation of operational efficiencies. In fact, such savings result in lower subsidies or operating dollars.

NYCHA will continue to work with HUD to develop pathways to retain the full financial benefit of utility and waste reduction projects from equipment replacements, allowing NYCHA to explore freezing its rolling base consumption levels.

### Remove restrictions on EPC incentives

Savings provided from the HUD energy incentives (e.g., frozen base, additional subsidy) to NYCHA are frequently less than the full financial benefit from the savings achieved. Savings truncated by restrictions on incentives can be as high as 10% of estimated savings, or about $1 million annually. NYCHA will work with HUD to remove these restrictions. NYCHA will establish a new financing instrument that integrates EPC work with projected Section 8 transitions.

### Extend the Maximum Allowable Term for the EPC Program from 20 to 25 Years

The infrastructure work envisioned for NYCHA's buildings adopts a life cycle over 40 years. When the EPC program began in 1992, the maximum contract term was 12 years; it was later extended in 2005 to 20 years. Under the Federal Energy Management Program, 25 years is the maximum term allowed for performance contracting programs. An extension to 25 years can increase EPC funds by $5-20M from the extended-term savings streams from the longer life cycles of new equipment.

# STRATEGY 17
# Bring in more funding through the Preservation Trust

The establishment of a Public Housing Preservation Trust will allow NYCHA to generate the much-needed funding it needs to bring all NYCHA developments into a state of good repair.

**RESIDENT IMPACT**

**TIMEFRAME**

Mid-term to long-term

## Implementation

### Generate funding through the establishment of the Public Trust

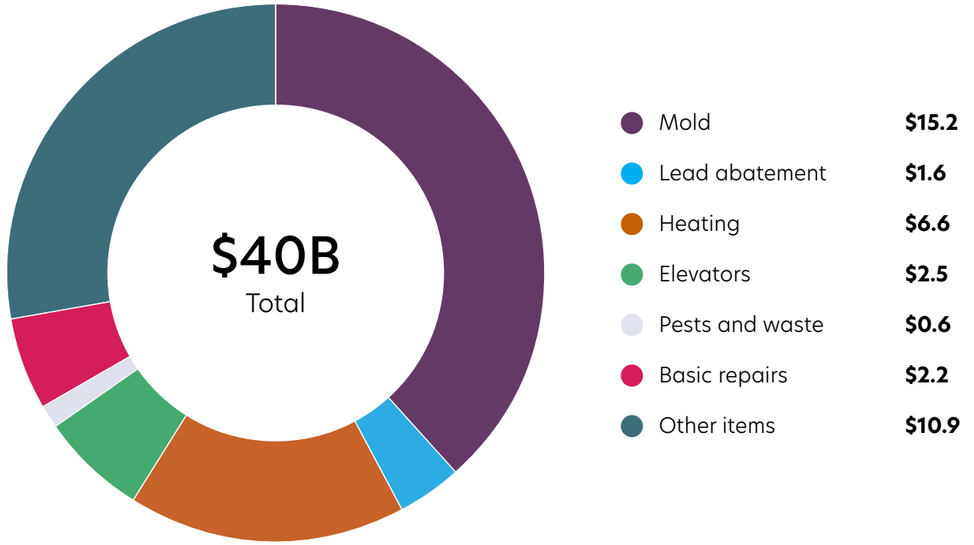
To prevent further building deterioration, NYCHA needs roughly $40B to address capital needs across the portfolio. This includes:

- **Mold:** Plumbing systems, roofs and façades, kitchens and baths, ventilation systems
- **Lead abatement:** Lead removal, enclosure, and/or encapsulation
- **Heating:** Heating system replacements
- **Elevators:** Elevator cab replacements, mechanical equipment
- **Pests:** Waste yards, interior compactors, exterior equipment
- **Other basic repairs:** Gas risers, security cameras, lobbies, doors and entrances, etc.
- **All other items:** Common areas, landscaping, external cladding, windows, apartment reconfigurations, etc.

The creation of the Public Housing Preservation Trust would allow NYCHA to procure and expedite large capital works and gain access to federal Tenant Protection Vouchers (TPVs). TPVs are HUD's most valuable voucher, worth nearly twice the subsidy of other federal sources. For every $1 in federal TPV subsidy, NYCHA could complete over $6 in capital repairs.



**NYCHA capital needs for entire portfolio**
*Billions*




*Birds-eye view of a NYCHA development*

# STRATEGY 18
# Bring in more funding through PACT

NYCHA's Permanent Affordability Commitment Together (PACT) program allows NYCHA to unlock funding to complete comprehensive repairs while ensuring homes remain permanently affordable.

**RESIDENT IMPACT**

**TIMEFRAME**

Mid-term to long-term

## Implementation

### Attract financing through PACT

NYCHA is converting 62,000 units to the project-based Section 8 program to provide a more stable flow of federal subsidies and allow NYCHA and its development partners to raise funds to address capital needs. By the end of 2020, NYCHA converted 9,500 apartments with investments of over $1.8B in capital upgrades. The overall PACT plan is to address $12.8B in vital capital upgrades. These comprehensive repairs must meet the NYC Overlay of the Enterprise Green Communities Criteria and align their energy efficiency guidelines to adhere to Local Law 97's ambitions goals.

*Renovated court yard at PACT development, Baychester. © Andy Foster*



# STRATEGY 19
# Earn revenue through energy and sustainability incentives and demand management programs

Several federal, state, and utility programs offer financial incentives and technical support for energy-efficiency projects. NYCHA is working to enroll in these incentive programs. NYCHA estimates it will receive $5.2M in incentives from Con Edison and National Grid in 2021. An estimated $3M in additional funds are anticipated from these two utility companies, depending on how well the completed energy projects perform.

NYCHA is also installing full backup power generators at over 200 buildings in developments that were severely impacted by Superstorm Sandy. Generators will be able to provide electricity in case of a power outage while also being available to turn on during peak demand, to reduce the stress on the electrical grid. NYCHA participated in utilities' demand response programs during the 2021 Summer season with 13 generators at five developments for a combined load reduction of 5400 kilowatts.

**RESIDENT IMPACT**

**TIMEFRAME**

Short-term

**BY THE NUMBERS**

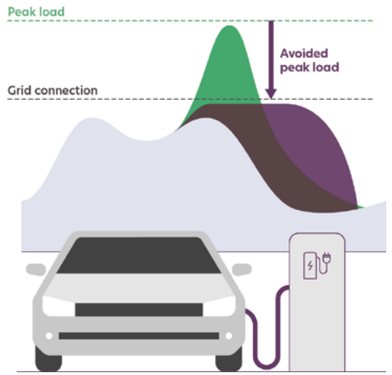
$5.2M in incentives received from Con Edison and National Grid in 2021

## Implementation

### Participate in demand response programs

Utility demand response programs provide incentives for reducing energy usage during times of peak demand. They include gas demand management (switching to alternate fuels during low outdoor temperatures in the winter) and electric demand management (shedding load during high outdoor temperatures in the summer). By participating in these programs, NYCHA can earn revenue while helping the utilities increase the reliability of the grid and reduce the need to run the least efficient, most polluting peaking powerplants. Over the next two years, NYCHA will study the potential of battery storage for peak load shaving. Additionally, NYCHA will continue to explore emerging programs such as Dynamic Load Management.

**Dynamic Load Management**
Lowering or shifting electrical loads within a property during peak electrical demand events.



# STRATEGY 20
# Establish Green Revolving Fund

Revenues earned through incentive programs are often placed into a general operating fund, however, the needs and opportunities of green programs depend on a steady stream of dedicated funding. As a result, NYCHA cannot administer these programs because funding and approval cycles misalign with the needs of green programs.

**RESIDENT IMPACT**

**TIMEFRAME**

Mid-term

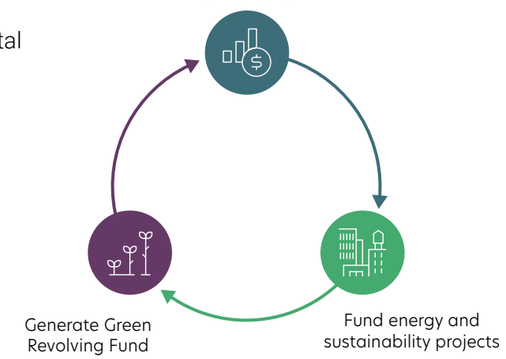
## Implementation

### Establish the Green Revolving Fund

The Green Revolving Fund can be dedicated to paying for energy efficiency or sustainability projects that generate cost savings. It establishes an ongoing funding vehicle that ensures that capital is available for projects.

NYCHA is working to establish the Green Revolving Fund by setting aside savings such as the utility incentive and demand response programs. The Fund will be used to:

- Provide discrete funding sources for small-scale green demonstration and innovation projects
- Pursue projects that generate deep utility savings and will replenish the Fund
- Supplement sustainability elements of capital projects
- Provide funding for resident-led initiatives






# STRATEGY 21
# Advocate for equitable investment in NYCHA through carbon offsets

In addition to setting building emissions limits, LL97 also requires the development of a citywide trading scheme for greenhouse gas emissions. The law requires a carbon trading study that includes methods to ensure equitable investment in environmental justice, preserves a minimum level of benefits for all applicable buildings, and does not result in any localized increases in pollution. The study also must include an approach to a marketplace for credit trading, pricing mechanisms, credit verification, and regular improvement of the scheme.

**RESIDENT IMPACT**

**TIMEFRAME**

Mid-term

## Implementation

### Shape the development of carbon trading market

NYCHA is helping to shape the implementation of the law through participation in industry working groups. NYCHA is working to guide integrating the integration of environmental justice into the design of a potential carbon market and how NYCHA may benefit. By working with agency partners such as the Port Authority of New York and New Jersey, NYCHA is assessing how carbon offsets could help finance investments in its building portfolio. By working with partners such as the Port Authority of New York and New Jersey (PANYNJ) and New York State Homes and Community Renewal (NYSHCR), NYCHA is assessing how carbon offsets could help finance necessary energy and water efficiency investments in its building portfolio.

# ACKNOWLEDGMENTS

NYCHA's Sustainability Agenda was made possible by the hard work of NYCHA staff and key contributions from many people at sister agencies, public and private, and NYCHA residents who gave us their time and ideas.

We deeply appreciate their time, insights, and enthusiastic support of public housing and sustainability and look forward to working together to realize the goals of the new Agenda.

## NYCHA Board

**Joseph Adams**, Resident Board Member
**Matt Gewolb**, Board Member
**Paula Gavin**, Board Member
**Victor A. González**, Resident Board Member
**Jacqueline Young**, Resident Board Member
**Magalie D. Austin**, Board Member

## Citywide Council of Presidents (CCOP) Executive Board

**Daniel Barber**
**Reginald (Reggie) Bowman**
**Verona Bradham**
**Lillie Marshall**
**Lilithe Lozano**
**Ethel Velez**
**Ann Cotton Morris**
**Brenda Harris**

## New York City Housing Authority

**Greg Russ**, Chair
**Vito Mustaciuolo**, Chief Operating Officer

## Executive Committee

**Joey Koch**, Chief of Staff
**Andrew Kaplan**, Deputy Chief of Staff
**Barbara Brancaccio**, Chief Communications Officer
**Patti Bayross**, Executive Vice President & Chief Information Officer
**Lisa Bova-Hiatt**, Executive Vice President of Legal Affairs and General Counsel
**Jonathan Gouveia**, Executive Vice President for Real Estate Development
**Kerri Jew**, Executive Vice President & Chief Administrative Officer
**Annika Lescott**, Executive Vice-President & Chief Financial Officer
**Steven Lovci**, Executive Vice President of Capital Projects
**Lakesha Miller**, Executive Vice President for Leased Housing
**Sideya Sherman**, Executive Vice President for Community Engagement & Partnerships
**Eva Trimble**, Executive Vice-President for Strategy & Innovation

## Department of Energy & Sustainability

**Vlada Kenniff**, Vice President
**Ellen Zielinski**, Director
**Edwin (Eddie) Mendez**, Deputy Director
**Harjit Singh**, Project Manager
**Kathryn (Katy) Burgio**, Program Manager
**MariaLisa Cuzzo**, Program Manager
**Jordan Bonomo**, Program Manager
**Adam Benditsky**, Program Manager
**Katya Spicer**, Assistant to the Vice President
**Juliette Spertus**, Urban Designer
**Jose Lopez**, Project Manager
**Kamlesh Patel**, Project Manager
**Akiera Charles**, Project Manager
**Magda Castellanos**, Project Manager
**Keanna Julien**, Program Associate
**Joel LeMaitre**, Program Associate
**Debora Lopes**, Program Associate
**Christopher White**, Program Associate
**April Rogers**, Administrative Assistant
**Niko Geoffroy**, Assistant Project Manager
**Lichen Bao**, Assistant Project Manager
**Tom Sahagian**, Consultant
**Rory Christian**, Consultant
**Matt Pesce**, Consultant
**Peter Deroche**, Consultant
**Catherine Brizo Saravia**, Intern



# Special Thanks

## To Contributing NYCHA Staff

**Joy Sinderbrand**, Vice President, Recovery and Resilience Department
**Michele Moore**, Director, Recovery and Resilience Department
**Siobhan Watson**, Program Manager, Recovery and Resilience Department
**Delma Palma**, Deputy Director of Architecture and Urban Planning, Design Department
**Keith Marshall**, Landscape Architect, Design Department
**Dubravko (Dan) Cebalo**, Studio Leader, Design Department
**Matt Charney**, Vice President, Design & Construction Department
**Michael Jones**, Director of Design, Design & Construction Department
**Patrick Love**, Senior Project Manager, Transactions Department
**Tischelle George**, Deputy Director, Resident Engagement Department
**Andrea Mata**, Director of Health Initiatives, Health Initiatives Department
**Al Ferguson**, Vice President, Waste Management & Pest Control Department
**Jennifer Hiser**, Senior Advisor to EVP for Real Estate Development, Real Estate Department
**Asia Mae Somboonlakana**, Project Manager, Recovery and Resilience Department
**Emma Boundy**, Chief, Mandated Reporting and Publications, Performance Tracking & Analytics Department
**Rachel Boeglin**, Community Coordination, Performance Tracking & Analytics Department
**Sybille Louis**, Senior Director, Performance Tracking & Analytics Department
**Leticia Barboza**, Photographer, Department of Communications
**Yuet Sim Cheung**, Assistant Director, Performance Tracking & Analytics Department
**Daniel Froehlich**, GIS Analyst, Performance Tracking & Analytics Department
**Joe LaMarca**, Director, General Services Department
**Anne-Marie Flatley**, Vice President, Performance Tracking & Analytics Department
**Daniel Froehlich**, Economist Performance Tracking & Analytics Department
**Simon Kawitzky**, Vice President, Portfolio Planning (Real Estate Development)
**Heather Beck**, Senior Policy Analyst, Portfolio Planning (Real Estate Development)
**Marvin Walton**, Vice-President for Property Management Operations for Manhattan
**Angela Gadson**, Vice-President for Property Management Operations for Bronx
**Wanjiru Bila**, Vice-President for Property Management Operations for Queens and Staten Island
**Joseph Courtien**, Vice-President for Property Management Operations for Brooklyn
**Cesar Gonzalez**, Acting Director for Property Management Operations for Queens and Staten Island
**Millie Molina**, Senior Manager for Events & Communications Services, Department of Communications
**Remya Thomas**, Senior Manager of Digital Marketing & Design, Department of Communications
**Nekoro Gomes**, Media Relations Director, Department of Communications
**Elena Tenchikova**, Senior Director, Office of Mold Assessment and Remediation
**Hannah Wolfe**, Program Manager, Waste Management & Pest Control Deptartment
**Shanna Castillo**, Director, Resident Economic Empowerment & Sustainability Department
**Jose Oquendo**, Director, Waste Management & Pest Control Deptartment

## To Blueprint for Change Committee

**Daniel Townsend**, Deputy Director of Strategic Planning
**Patricia (Trish) Ceccarelli**, Manager, Guidehouse
**Lane Tobias**, Senior Consultant, Guidehouse
**Erin Burn-Maine**, Senior Director of Policy and External Affairs, NYCHA
**Isaiah Fleming-Klink**, Strategic Planning Analyst, NYCHA
**Holly Martin**, Deputy Director of Policy, NYCHA

## To Technical Panel Participants

**Jennifer Leone**, Chief Sustainability Officer, New York City Department of Housing and Preservation and Development

**Matt Pesce**, Principal, Facility Strategies Group

**Ed Yaker**, Board Member for Amalgamated Housing Corporation

**Mark Ginsberg**, Principal, Curtis + Ginsberg Architects

**Jared Rodriguez**, Principal, Emergent Urban Concepts

**Fiona Cousins**, Principal, Arup

**Tonya Gayle**, Executive Director, Green City Force

**Kizzy Charles-Guzman**, Deputy Director, NYC Mayor's Office of Sustainability

**Margaret Donnelly Moran**, Director, Planning and Development Department at Cambridge Housing Authority

**Tony Piscopia**, Director of Housing Preservation, Magnusson Architecture & Planning

**Ibrahim Abdul-Matin**, Principal, Green Squash Consulting

**Michael Freedberg**, Sr. Advisor for High Performance Building, Office of Environment and Energy at U.S. Department of Housing and Urban Development

**Kevin O'Sullivan**, Deputy Director, Agencies, Institutions, & Businesses Bureau of Recycling and Sustainability at NYC Department of Sanitation

**Ron Reisman**, NYC Solar Partnership Program Manager, Sustainable CUNY at City University of New York

**Tria Case**, University Executive Director of Sustainability and Energy Conservation, The City University of New York

**Karen Blondel**, Community Organizer, Fifth Avenue Committee

**Justin Baker**, Managing Director and Partner, Lilker Associates Consulting Engineers, PC

**Sara Bayer**, Director of Sustainability, Magnusson Architecture and Planning

**Dennis Stanford**, Deputy Director, NYC Department of Environmental Protection

**Leigh Beer**, Chief Environmental Compliance, NYC Department of Environmental Protection

**Angelo Falabella**, Sustainability Analyst, NYC Department of Environmental Protection

**Amanda Kaminsky**, Founder + Principal, Building Product Ecosystems

**Clare Miflin**, Founder, Center for Zero Waste Design

**Naomi Cooper**, President, Cooper Tank & Welding Corp

**Ellen Honigstock**, Director of Education, Urban Green Council

**Justin Green**, Executive Director + Founder, Big Reuse

**Timothy Holcomb**, Community Engagement Coordinator, Urban Upbound

## To Consultants

**Pallavi Mantha**, Senior Consultant, Arup

**Amy Leitch**, Associate, Arup

**Alexandra Hyatt**, Graphic Designer, Arup

**Cameron Thomson**, Associate Principal, Arup

**Rebekah Morris**, Senior Program Manager, Pratt Center for Community Development

**Daphany Sanchez**, Executive Director, Kinetic Communities Consulting

**Emily Baumbach**, Senior Sustainability Analyst, Kinetic Communities Consulting



## To Stakeholders & Stakeholder Roundtable Participants

**Tonya Gayle**, Green City Force

**Lisbeth Shepherd**, Green City Force

**Wendy Lore**, WeAct

**Erin Johnson**, Director of Service, GCF

**Kate Boicourt**, Water Front Alliance

**Edda Santiago**, Ell pointe

**Juan Parra**, SolarOne

**Noah Ginsberg**, SolarOne

**DeNeile Cooper**, MSWAB

**Diana Blackwell**, MSWAB

**Tevina Willis**, Red Hook Initiative

**Catherine McBride**, Red Hook Initiative

**Maggie Lee**, Sanitation Foundation

**Sonal Jessel**, WeAct

**Marisa Prefer**, Manager of Environmental Engagement, Pioneer Works

**Maggie Lee**, Director of Cultural + Educational Programs, Sanitation Foundation

**Alan Cohn**, NYC Department of Environmental Protection

**John Brock,** NYC Department of Environmental Protection

**Melissa Enoch,** NYC Department of Environmental Protection

**Paul Wojtal,** NYC Department of Environmental Protection

**Erin Morey,** NYC Department of Environmental Protection

## To Network for Climate Action Participants

**Jasmine Campusano**, Sonia Sotomayor Housing

**Elliot Guilbe**, Bushwick Houses

**Talima Wilson**, Mott Haven Houses

**Ndeye Fatou Diop**, Baruch Houses

**Devonna Commack**, South Jamaica Housing

**Claudia Perez**, Washington Houses

**Brigitte Charlton**, Mott Haven Houses

**Mohammed Chowdhury**, De Hostos Apartments

**Georganna Deas**, Gravesend Houses

**Brandon Nixon**, Wagner Houses

**Amy Dench**, Red Hook West Houses

**Jean Chappell**, Woodside Houses

**Gabriela Gomez**, Flushing Houses

**Aissata Diaby**, East River Houses

**Oneika Johnson**, Astoria Houses

## Special thank you to the former leadership who have laid a foundation for this work:

**Deborah Goddard,** Executive Vice President for Capital Projects Division

**Bomee Jung,** Vice President for Energy and Sustainability

**Shibu Mammen,** Director for Energy

Published by NYCHA on September 20th, 2021.

NEW YORK CITY
HOUSING
AUTHORITY