Battery Park City Sustainability Implementation Plan

NEW YORK STATE OF OPPORTUNITY.

Battery Park City Authority

September 2020

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Battery Park City Sustainability Implementation Plan

September 2020

Version update in March 2022

Edits were made to the baseline values for Strategies E-2, E-4, and E-5. The target value for E-2 was also updated. These changes were made to reflect updates to the BPC Sustainability Plan and an adjusted methodology for GHG inventory calculations and corrections to data inputs and other calculations.

1 Introduction

Introduction

The Sustainability Implementation Plan provides a detailed roadmap for realizing Battery Park City's sustainability vision. The Battery Park City Sustainability Plan has set **18 Strategies, 46 Actions,** and **142 Sub-Actions** for Battery Park City to prioritize from 2020 to 2030. This Plan outlines specific steps and responsibilities for implementation as well as resources such as policies, programs, partnerships, tools, and funding mechanisms that can be used to assist in transforming the BPC Sustainability Plan into a reality. Where there are Actions that can be supported by technical guidance, references to the Green Guidelines are provided to direct users on implementing specific interventions. The Implementation Plan will act as a resource for BPCA, building owners and managers, community members, local businesses, and other stakeholders who may play a role in improving the sustainability of Battery Park City.

We envision a Battery Park City that will serve as an innovative model for urban climate action, where all of us who live, work, and spend time here mobilize to create a sustainable future. - Battery Park City Sustainability Plan

A Living Document

The Sustainability Implementation Plan is meant to be a valuable resource for the community as the BPC Sustainability Plan is realized. The resources included in this Plan are not exhaustive but represent the significant opportunities available while writing this Plan. Available resources are always changing and evolving, from fluctuating funding opportunities to shifting policies. Additionally, new resources and opportunities may arise over the next 10 years that can elevate the work at Battery Park City and should be included in this document. BPCA will maintain this document to ensure it remains a usable resource for the community with up-to-date programs, policies, and funding opportunities.

Tracking and Reporting on Progress

The BPC Sustainability Plan has established a series of Targets and Supporting Milestones. These will be measured and tracked as Battery Park City implements Actions and Sub-Actions. BPCA will publish a progress report on an annual basis with updates on the Sustainability Plan's implementation, including successes and lessons learned. The BPCA website will serve as the center of sustainability information in Battery Park City with updates, events, and programs.

Engage and Stay Up to Date

Explore sustainability at Battery Park City beyond this document, engage with events and programs, and stay up to date on progress at: www.bpca.ny.gov

Targets and Milestones

In the BPC Sustainability Plan, each Strategy was assigned a 2030 Target(s) and a set of Supporting Milestones to track and monitor over the preceding 10 years. The Sustainability Implementation Plan provides additional detail to support Battery Park City in achieving its collective sustainability goals.

Energy Strategies

[E-1] Deep energy retrofits

Baseline	2022	2024	2026	2028	2030
BPC 90% of Battery Park City buildings exceed the 2030 limit provisionally set by Local Law 97	All building operators have engaged in energy-focused operations and maintenance training	75% of buildings monitoring real time energy consumption	All buildings have an energy retrofit plan for LL97 compliance	All buildings monitoring real time energy consumption	**BPC Target** All buildings' operational emissions will be below Local Law 97 2030 targets by 2029
BPCA Spaces In 2019, BPCA indoor spaces had a carbon footprint of 1,200 tCO2e/yr equivalent to 135,000 gal of gasoline consumed each year		**BPCA Spaces Target** All BPCA indoor spaces will achieve net zero emissions by 2025 by prioritizing local renewable generation			

[E-2] Building electrification

Baseline	2022	2024	2026	2028	2030
BPC On-site combustion from fossil fuels provided approximately 887 million kBtu of energy in 2019	Electrification pathways and GHG savings potential study for BPC buildings	All BPC energy consumption transitioned off of high-emission fuel oil ("heavy oil")	Pilot residential electrification project complete	5 residential electrification projects complete	**BPC Target** On-site combustion from fossil fuels capped at 831 million kBtu of energy in 2030

[E-3] Low-carbon district energy systems

Baseline	2022	2024	2026	2028	2030
BPC In 2019, a district energy system serves Brookfield Place	District energy feasibility study complete			Other milestones to be established if district energy is determined to be feasible	**BPC Target** Based on feasibility, develop a district energy system for part of BPC

[E-4] Renewable energy supply and storage

Baseline	2022	2024	2026	2028	2030
BPC 14% of BPC electricity came from renewable energy sources in 2019	Inventory of existing green power ESCO utilization in BPC	Feasibility study of renewable energy generation potential in BPC complete	50% of power available through off-site renewables	On-site renewable energy/storage systems developed based on feasibility study	**BPC Target** 70% of BPC electricity to come from renewable energy sources by 2030
BPCA Spaces BPCA's electricity supply comes from a NYPA natural gas generation plant in Queens		**BPCA Spaces Target** 100% of electricity supplied to BPCA spaces to come from renewable energy sources by 2025			

[E-5] GHG emissions monitoring and reporting

Baseline	2022	2024	2026	2028	2030
BPCA Spaces BPCA's 2017 GHG emissions totaled 1,870 tCO2e	Climate Action Plan through 2050 developed		Embodied carbon of all new infrastructure projects reduced and remainder offset	GHG inventory updated and progress on Climate Action Plan provided	**BPCA Spaces Target** 50% reduction in GHG emissions from 2017 levels by 2030
BPC Battery Park City's 2017 GHG emissions totaled 168,900 tCO2e					**BPC Target** 33% reduction in GHG emissions from 2017 levels by 2030

Water Strategies

[W-1] Water conservation

Baseline	2022	2024	2026	2028	2030
BPCA Spaces 47 million gallons of water used by BPCA spaces in 2019	5 events held that encourage water conservation	District-scale irrigation plan completed	10 buildings have undergone water-related improvements	All buildings actively monitoring water consumption	**BPCA Spaces** Reduce the amount of potable water consumed by BPCA spaces by 20% by 2030
BPC Median multifamily water use intensity (WUI) in BPC was 41.7 gal/SF/yr in 2017; Median commercial WUI in BPC was 40.8 gal/SF/yr in 2017					**BPC** Reduce the water use intensity for residential and commercial buildings by 10% by 2030

[W-2] Water recycling systems

Baseline	2022	2024	2026	2028	2030
BPCA Spaces Of parks and landscape care at BPC, only Teardrop Park utilized recycled water in 2019	5 buildings have calculated and understand their non-potable water demand	1 pilot project completed to utilize recycled water in cooling towers	Blackwater treatment and reuse study completed	3 buildings have cooling towers that utilize recycled water	**BPCA Spaces** 15% of non-potable water demand for parks and landscape care provided by recycled water by 2030
BPC 11% of built area at BPC served by a water recycling system in 2019					**BPC** 29% of built area at BPC served by a water recycling system by 2030

[W-3] Resiliency and stormwater management

Baseline	2022	2024	2026	2028	2030
BPCA Spaces 38% of Battery Park City's parks and public open spaces were permeable in 2019	1 pilot project completed to test permeable pavement options	5 green infrastructure projects completed	Feasibility study for expanding separated sewer (MS4) network completed		**BPCA Spaces** All BPC Resiliency Projects completed and 46% of Battery Park City's parks and public open spaces to be permeable by 2030

Materials and Waste Strategies

[M&W-1] Sustainable consumption

Baseline	2022	2024	2026	2028	2030
BPC In 2019, BPCA was a leader in sustainable material consumption by avoiding single-use plastics and transitioning to reusable products	BPCA Procurement and Permitting Guidelines updated to include sustainable materials and waste guidance	15 water bottle refill stations installed across Battery Park City	5 restaurants and retail spaces in BPC have committed to ban single-use plastics	50 zero waste events held at Battery Park City, hosted or permitted by BPCA	**BPC Target** Achieve behavior change that supports waste reduction, recycling, and reuse in Battery Park City by 2030

[M&W-2] Sustainable building materials

Baseline	2022	2024	2026	2028	2030
BPC Sustainable building material use not tracked	Install indoor air quality monitors in all BPCA office spaces	1 building offsets its embodied carbon emissions	Complete one project that achieves WELL certification or LBC Materials Petal	Develop a materials database for 3 projects including identification of ILFI Red List Materials	**BPC Target** 25% of construction or renovation project materials, by weight, to be from the ILFI Declare database, Cradle to Cradle certified, or other comparable sustainable materials by 2030

[M&W-3] Waste diversion

Baseline	2022	2024	2026	2028	2030
BPCA Spaces 90% of 75 Battery Place waste was diverted from landfills in 2019	10 recycling bins stationed throughout Battery Park City parks	A program for quarterly waste audits for waste sent to compactors established	30 building staff members with zero waste training from TRUE, NYC, or another comparable program	6 reuse and donation centric events held annually by BPCA or individual buildings	**BPCA Spaces Target** Zero waste sent to landfills from BPCA-managed spaces by 2030
BPC 8.5 million pounds of residential landfill waste compacted in 2019					**BPC Target** 50% reduction in landfill waste sent to compactors by 2030

[M&W-4] Organics collection and composting

Baseline	2022	2024	2026	2028	2030
BPC An estimated 1% of Battery Park City organic waste was diverted from landfills in 2019	BPCA compost program able to accept all organic waste materials	20 buildings with compost collection programs that are connected to the BPCA compost program	10 events held that educate about organic waste disposal and composting	All buildings have compost collection programs that are connected to the BPCA compost program	**BPC Target** 80% of Battery Park City organic waste to be diverted from landfills in 2030

[M&W-5] Construction and demolition activities

Baseline	2022	2024	2026	2028	2030
BPC Construction and demolition waste not tracked	BPC construction activity guidance developed and shared		One construction, demolition, or renovation project completed with zero C&D waste		**BPC Target** 95% of construction and demolition waste recycled or reused by 2030

Site Strategies

[S-1] Biodiversity and habitats

Baseline	2022	2024	2026	2028	2030
BPCA Spaces Plant species richness, measured as number of species/cultivars per acre, varies across parks and Esplanade areas (26 to 140 species/acre)	Esplanade bulkhead modification pilot project to support intertidal/subtidal habitats	Saline-vulnerable plantings in 100-year floodplain replaced or protected from floods	3 new wildlife habitats established with landscape/flora modifications	As feasible, one-half mile of Esplanade bulkhead modified to support intertidal/subtidal habitats	**BPCA Spaces Target** Establish and advance toward appropriate biodiversity index targets for each park area

[S-2] Quality of life

Baseline	2022	2024	2026	2028	2030
BPC 680 street trees in 2015	Developed tree planting standards and tree-replacement policy during construction	0.5 miles of street (or other hardscape) redesigned with cool pavement	25% of street trees have improved tree pits	1.5 miles of street redesigned with cool pavement	**BPC Target** 720 street trees by 2030

[S-3] Environmental monitoring and data sharing

Baseline	2022	2024	2026	2028	2030
BPCA Spaces BPCA has one weather station, located in a plant nursery on North End Avenue		Geospatial data model of Battery Park City developed		15 buildings share real time or interval data (energy, water) with BPCA	**BPCA Spaces Target** Install air quality monitors, weather stations, and noise sensors, and share this environmental data with the public by 2030

[S-4] Active Transportation

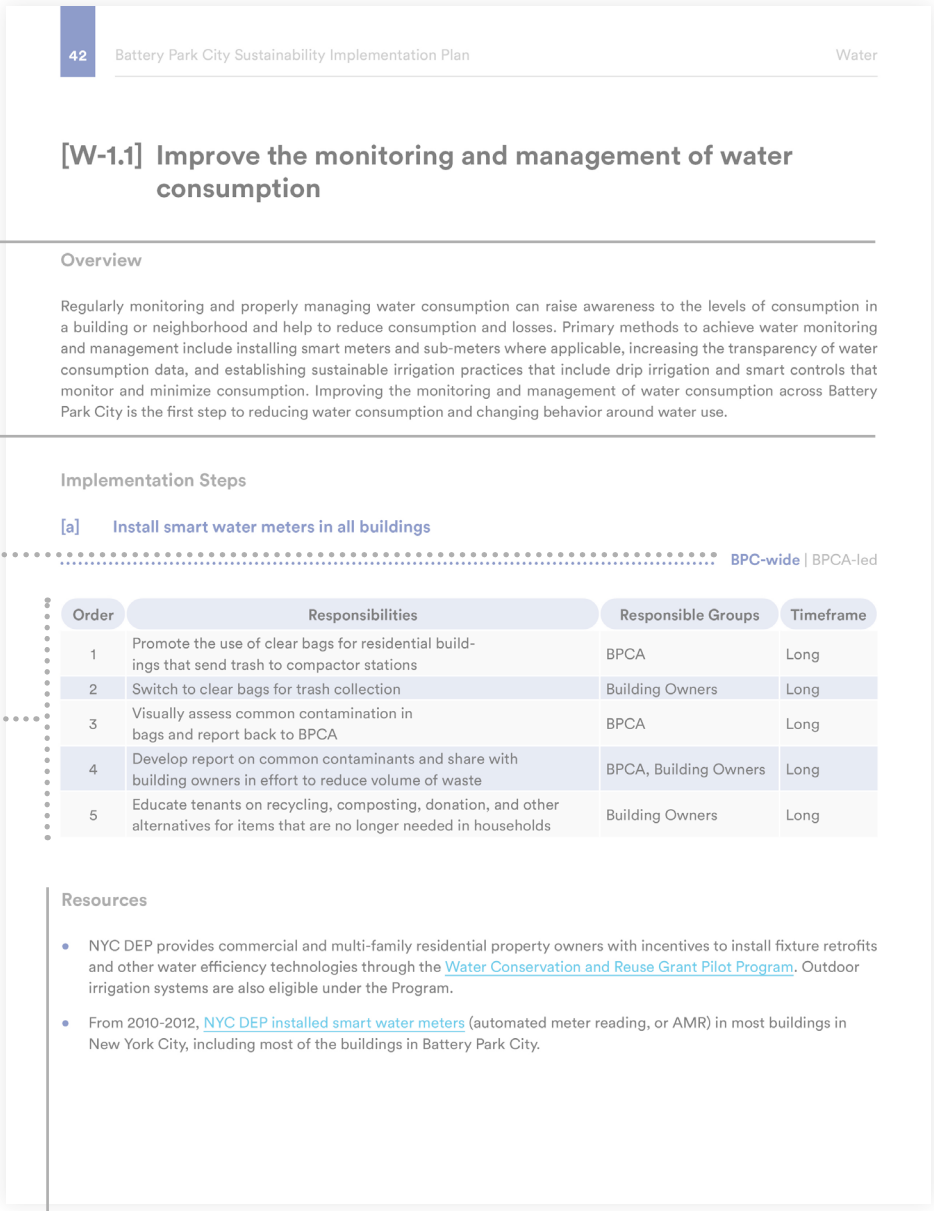
Baseline	2022	2024	2026	2028	2030
BPC Streets follow the NYC speed limit (25 mph)	20 mph speed limit in Battery Park City	10% reduction in on-street parking spaces	2 miles of street redesigned with shared street principles	15 mph speed limit in Battery Park City (5 mph on shared streets)	**BPC Target** All streets redesigned for pedestrian safety by 2030

[S-5] Electric vehicle infrastructure

Baseline	2022	2024	2026	2028	2030
BPCA Spaces Non-electric vehicles are used by BPCA for certain maintenance and operations procedures	50 electric scooter and/or electric bike public realm charging spaces	20 curbside EV charging spaces	500 EV charging spaces in building parking garages	200 electric scooter and/or electric bike public realm charging stations	**BPCA Spaces Target** 100% of BPCA vehicles are EVs by 2030
BPC 0% of public realm (curbside) spaces are for EV charging in 2019					**BPC Target** 25% of public realm (curbside) parking spaces are upgraded to allow for EV charging by 2030

How to Read this Plan

The Implementation Plan is organized by Topic Areas and Actions with Implementation Steps for each Sub-Action from the Sustainability Plan. Information on each page will include the following elements:



42 Battery Park City Sustainability Implementation Plan Water

[W-1.1] Improve the monitoring and management of water consumption

Overview

Regularly monitoring and properly managing water consumption can raise awareness to the levels of consumption in a building or neighborhood and help to reduce consumption and losses. Primary methods to achieve water monitoring and management include installing smart meters and sub-meters where applicable, increasing the transparency of water consumption data, and establishing sustainable irrigation practices that include drip irrigation and smart controls that monitor and minimize consumption. Improving the monitoring and management of water consumption across Battery Park City is the first step to reducing water consumption and changing behavior around water use.

Implementation Steps

[a] Install smart water meters in all buildings

BPC-wide | BPCA-led

Order	Responsibilities	Responsible Groups	Timeframe
1	Promote the use of clear bags for residential buildings that send trash to compactor stations	BPCA	Long
2	Switch to clear bags for trash collection	Building Owners	Long
3	Visually assess common contamination in bags and report back to BPCA	BPCA	Long
4	Develop report on common contaminants and share with building owners in effort to reduce volume of waste	BPCA, Building Owners	Long
5	Educate tenants on recycling, composting, donation, and other alternatives for items that are no longer needed in households	Building Owners	Long

Resources

- NYC DEP provides commercial and multi-family residential property owners with incentives to install fixture retrofits and other water efficiency technologies through the Water Conservation and Reuse Grant Pilot Program. Outdoor irrigation systems are also eligible under the Program.
- From 2010-2012, NYC DEP installed smart water meters (automated meter reading, or AMR) in most buildings in New York City, including most of the buildings in Battery Park City.

Overview

A brief, context-setting description for each Action.

Implementation Steps

Detailed steps for achieving each Sub-Action that provide the following information:

Tags

Each Sub-Action is marked with "BPC-wide" and/or "BPCA-led" depending on primary responsibility. Also those Sub-Actions that were generated through stakeholder engagement are marked with an E

Order

The order in which the implementation responsibilities should be addressed.

Responsibilities

The detailed items that need to be accomplished to achieve the Sub-Action. These responsibilities may evolve and change as implementation progresses.

Responsible Groups

The different stakeholder groups that assume primary ownership of each responsibility item.

Timeframe

The approximate timing (short: immediate - 2023, medium: 2024 - 2026, long: 2027+, or ongoing) for each responsibility item.

Resources

A list of resources to aid in implementation such as incentives, technical assistance programs, grant or funding programs, white papers or case studies. References to the BPC Green Guidelines can be found here where applicable.

Responsible Groups Maps

The Implementation Plan is meant for a variety of readers, as achieving Battery Park City's sustainability goals requires collaboration across many groups. To read the document based on responsibilities, refer to the Responsible Groups Maps in each Topic Area introduction.

The Responsible Groups Maps at the beginning of each Topic Area section show which Actions are relevant for different groups within Battery Park City based on their role in the implementation of the action. Groups with responsibilities in this Plan include: **BPCA**, the Battery Park City Authority, **Building Owners and Managers**, that represent those with control over building systems and operations, **Businesses**, that include retail, restaurants, offices and other commercial organizations, **Community**, or all those who live, work, or visit BPC, and **Implementation Partners**, be they local, state, non-profit, etc. entities who will be resources for collaboration and guidance.

Throughout the Plan, Responsible Groups will be listed for each Sub-Action. The Groups listed will include generalized categories, listed above, and occasionally more specific detail, such as "Residents" or "Commercial Tenants," depending on the Sub-Action.

Example Responsible Groups Map

Strategy	Action	Page #	Responsible Groups				
			BPCA	Building Owners and Managers	Businesses	Community	Implementation Partners
[W-1] Water conservation	[W-1.1] Improve the monitoring and management of water consumption	62	✓	✓			
	[W-1.2] Minimize wasteful water practices like sprinkler irrigation and leaks	65	✓	✓	✓		
	[W-1.3] Encourage water conservation in buildings	67	✓	✓	✓	✓	✓

2 Energy

Introduction

The Energy Topic Area addresses deep energy retrofits, building electrification, low-carbon district energy systems, renewable energy supply and storage, and GHG emissions monitoring and reporting in Battery Park City. Implementing these Strategies will significantly reduce energy demands and associated GHG emissions in Battery Park City and ensure that building systems are more efficient and healthier overall. These improvements will also deliver many co-benefits from simplified maintenance to reduced operational costs to improved air quality and controllability of systems. The best method for achieving these improvements is through collaboration across the diverse building portfolio in Battery Park City, supported by external partnerships and programs.

Key Resources

There are many resources available for implementing projects related to energy efficiency and renewable energy generation. As Battery Park City implements Energy Actions and Sub-Actions from the Sustainability Plan, major partners will include NYSERDA, NYPA, and Con Edison which all offer programs and resources that provide technical assistance or funding opportunities for energy-related improvements. Other agencies like the Mayor's Office of Sustainability and their NYC Retrofit Accelerator program, or the Building Energy Exchange can offer support and guidance to buildings owners and tenants as they navigate through upgrades and Local Law 97 (LL97) compliance.

Individual actions you can take now

- Replace light bulbs with LED light bulbs which are the most energy efficient option
- When possible, save energy by using daylight rather than turning the lights on
- Review your energy bill each month to determine energy consumption patterns
- Install shades on your windows to use in the summertime to keep your space cool
- Weather-strip your windows to reduce the amount of air leakage
- Use smart power strips, or keep things unplugged, to reduce 'phantom power' usage

Responsible Groups Map

Strategy	Action	Page #	Responsible Groups				
			BPCA	Building Owners and Managers	Businesses	Community	Implementation Partners
[E-1] Deep energy retrofits	[E-1.1] Conduct deep energy retrofits of buildings in Battery Park City	19	✓	✓	✓	✓	✓
	[E-1.2] Educate building operators and building users about energy efficiency opportunities	23	✓	✓	✓	✓	✓
	[E-1.3] Install Building Energy Information Systems (EIS) to both track and manage energy consumption	26	✓	✓	✓		✓
[E-2] Building electrification	[E-2.1] Assess potential to electrify building heating, domestic hot water, and cooking systems during upgrades and renovations	32	✓	✓			✓
	[E-2.2] Provide information and educational materials about the fossil fuel transition and electrification opportunities	35	✓				✓
[E-3] Low-carbon district energy systems	[E-3.1] Evaluate the potential for low-carbon district energy networks across Battery Park City	39	✓	✓			✓

Responsible Groups Map, continued.

Strategy	Action	Page #	Responsible Groups				
			BPCA	Building Owners and Managers	Businesses	Community	Implementation Partners
[E-4] Renewable energy supply and storage	[E-4.1] Increase renewable energy generation and storage at Battery Park City	43	✓	✓			✓
	[E-4.2] Procure 100% renewable electricity for Battery Park City	48	✓			✓	✓
	[E-4.3] Improve the energy resilience and flexibility of Battery Park City by exploring energy storage options	50	✓	✓			✓
[E-5] GHG emissions monitoring and reporting	[E-5.1] Lead by example in comprehensive decarbonization and carbon sequestration	54	✓	✓	✓		✓
	[E-5.2] Lead by example in the construction of net zero carbon buildings and spaces	56	✓	✓			✓

[E-1] Deep energy retrofits

Upgrade building facades, windows, and mechanical systems to reduce building energy consumption and costs, reduce GHG emissions, and meet NYC building emission compliance targets

2030 Target

Battery Park City Authority Spaces

Target: All BPCA indoor spaces will achieve net zero emissions by 2025 by prioritizing local renewable generation

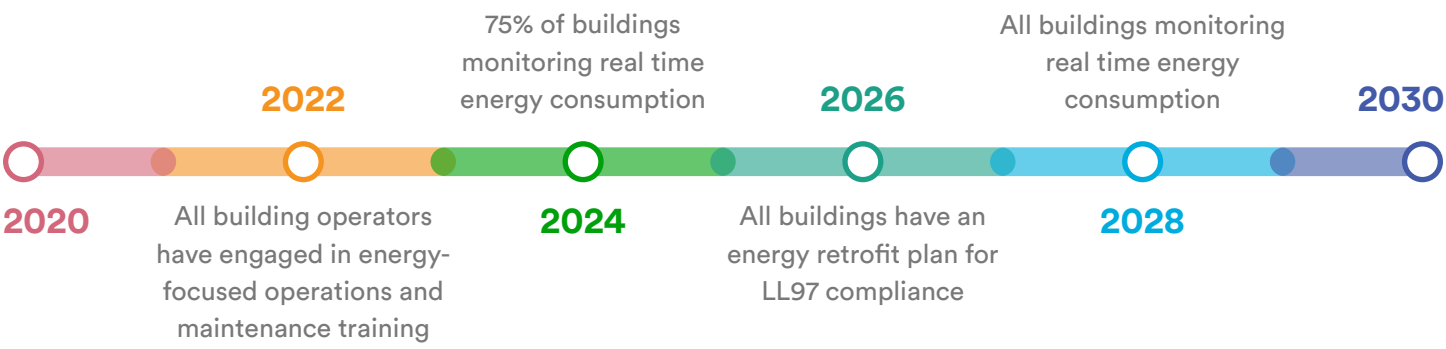
Baseline: In 2019, BPCA indoor spaces had a carbon footprint of 1,200 tCO_2e/yr, equivalent to 135,000 gallons of gasoline consumed each year

Battery Park City

Target: All buildings' operational emissions will be below Local Law 97 2030 target by 2029

Baseline: 90% of Battery Park City buildings exceed the 2030 limit provisionally set by Local Law 97

Supporting Milestones



Actions

[E-1.1] Conduct deep energy retrofits of buildings in Battery Park City

[E-1.2] Educate building operators and building users about energy efficiency opportunities

[E-1.3] Install Building Information Systems (EIS) to both track and manage energy consumption

[E-1.1] Conduct deep energy retrofits of buildings in Battery Park City

Overview

With the passage of LL97 in NYC, buildings are making plans for deep energy retrofits and decarbonization to comply with requirements or else face steep fines. Between 2020 and 2030, building retrofits will be major drivers for enhancing sustainability and reducing GHG emissions in Battery Park City. BPCA will support building owners in this process by sharing technical guidance and financing opportunities.

Implementation Steps

[a] Conduct a full inventory of existing buildings systems (type, installation date, maintenance issues, equipment lifetime, replacement/decommissioning plans) to inform opportunities to achieve economies of scale in retrofit strategies

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Develop a building survey and standard documentation request to disseminate to building owners	BPCA	Short
2	Include targeted survey guidance to gather information required to inform actions related to electrification (refer to Sub-Action E-2.1a), district energy (refer to E-3.1a), and renewable energy (refer to E-4.1a)	BPCA	Short
3	Collect building information and provide a response to the BPCA survey	Building Owners and Managers	Short

[b] Provide deep energy retrofit technical guidance and support to buildings E

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Provide workshops and trainings to orient building owners to the BPC Green Guidelines	BPCA	Short
2	Identify staff to attend retrofit management training courses, such as NYSERDA's Multifamily Retrofit Project Manager Courses, to support the facilitation of BPC retrofit projects	BPCA	Short
3	Work with building owners to determine applicable retrofit interventions and identify common technology needs across the BPC building portfolio	BPCA, Building Owners and Managers	Short
4	Work with building owners to develop technology specifications and financial arrangements to inform bulk procurement	BPCA, Building Owners and Managers	Short
5	Develop a request for information (RFI) to identify qualified equipment vendors for bulk procurement of retrofit technology	BPCA	Medium
6	Lead by example and retrofit BPCA spaces to be operationally net zero emission and share lessons learned with BPC buildings	BPCA	Medium

[c] Consider elements of indoor environmental quality, occupant health and comfort, waste, and water that can be improved through the process of deep energy retrofits E

BPC-wide | BPCA-led

Order	Responsibilities	Responsible Groups	Timeframe
1	At the time of an energy audit or planning for energy retrofits, consider other sustainability elements for a holistic approach – reference the BPC Green Guidelines or sustainability frameworks like LEED or WELL	Building Owners and Managers	Short
2	As they are conducted, review findings from water audits (refer to Sub-Action W-1.3a) and waste audits (refer to Action M&W-3.3) to identify synergies with deep energy retrofit opportunities	Building Owners and Managers	Short
3	Integrate indoor environmental quality and occupant health and comfort into building retrofit training programs developed for BPC (refer to Sub-Action E-1.2b)	BPCA, Implementation Partners	Short
4	Distribute guidance on healthy building operational practices for occupant health and disease prevention	BPCA	Short
5	Regularly perform building occupant surveys focused on indoor comfort, health, and safety	Building Owners and Managers	Ongoing

[d] Facilitate access to financing, technical support programs, and incentives to achieve cost-effective retrofits E

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Provide links to publicly available technical guidelines and financial programs on BPCA website and maintain an up-to-date inventory of programs offered by utility companies, New York City, and New York State	BPCA	Short
2	Connect with existing technical support providers, such as the NYC Retrofit Accelerator and NYSERDA Flexible Technical Assistance program, to inform projects	BPCA, Building Owners and Managers, Implementation Partners	Short
3	Connect tenants to energy improvement programs like NYSERDA's Commercial Tenant Program, to encourage energy efficiency in leased spaces	Building Owners and Managers, Businesses, Implementation Partners	Short
4	Work with NYSERDA FlexTech consultants to develop tenant fitout and retrofit guidelines that align with building energy goals	Building Owners and Managers, Businesses, Implementation Partners	Short
5	Collaborate with Green Jobs – Green New York to identify opportunities for free audits for residents and small businesses to identify energy upgrade opportunities	Businesses, Residents, Implementation Partners	Short
6	Provide project consultations to help building owners identify available support programs	BPCA	Ongoing

Resources

- **BPC Green Guidelines**: Energy Section
- **Clean Energy Workforce Development**: NYSERDA offers funding for training programs through the Clean Energy Workforce Development program. Funding is available for many training styles and recipients and encourages implementation activities to ensure that training is translated into long term energy savings. Building/portfolio owners or property management companies should submit the application.
- **Commercial and Industrial Program**: Con Edison's program offers financial incentives for electricity or natural gas customers for certain equipment upgrades such as boiler replacements, controls, insulation, lighting upgrades, variable frequency drives (VFD), and more.
- **Flexible Technical Assistance Program (FlexTech)**: NYSERDA's FlexTech program provides a cost share to energy consultants, hired by BPCA or BPC building owners, for feasibility studies ranging from distributed energy resources to energy storage to clean heating and cooling systems. As part of this program, NYSERDA pre-selects FlexTech Consultants who can provide support for this program and others. The FlexTech program offers support for both building and portfolio-scale projects.
- **Instant Lighting Incentives**: Con Edison's program provides immediate discounts on energy-efficient lighting.
- **Local Law 97 of 2019**: New York City passed Local Law 97 of 2019 that sets emissions limits for buildings over 25,000 sf beginning in 2024. An overview of the law has been published by the Urban Green Council. The Building Energy Exchange has published a webinar providing further advice for planning retrofits.
- **Multifamily Program**: Con Edison's program offers financial incentives for electricity or natural gas customers for certain equipment upgrades such as boiler replacements, controls, insulation, lighting upgrades, variable frequency drives (VFD), and more.
- **Multifamily Retrofit Project Managers Training**: NYSERDA offers a specific training course geared toward Multifamily Retrofit Project Managers. This program can be applied for through the Clean Energy Workforce Development program and is well-suited to BPCA staff or large multifamily portfolio owners that will oversee multiple retrofit projects.
- **NYSERDA's Net Zero for Economic Development**: This program supports net zero performance for communities as well as the building scale and can financially support portfolio-scale achievement of net zero energy. More details on this program will be made available in 2020.
- **P-12 Schools: Green and Clean Energy Solutions**: A NYSERDA program that provides funding for eligible schools to reduce energy use and assist in the conversion to carbon-free energy sources.
- **Property Assessed Clean Energy (PACE)**: NYSERDA's PACE program provides financing options for energy improvement projects in multifamily and commercial buildings that have undergone energy audits that recommend upgrades.
- **Residential Financing Options**: NYSERDA has several loan options, such as the On-bill Recovery Loan or the Smart Energy Loan, for financing energy improvements in residential buildings for those who own their homes and meet certain financial criteria.

[E-1.2] Educate building operators and building users about energy efficiency opportunities

Overview

As deep energy retrofits are conducted, it will be critical to ensure building operators and users are educated on new systems, including how to operate and maintain equipment and how to ensure operations remain energy efficient. Beyond education spurred by building improvements, energy guidance and green leases can be provided to residents and tenants to strengthen the awareness around sustainability and energy conservation. Through education and behavior change, Battery Park City buildings can reduce inefficiencies and reduce operational costs.

Implementation Steps

[a] Develop educational programs about building retrofits for building owners and operators as well as for residents and tenants E

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Develop a platform for community members to engage with BPCA about building retrofits and energy improvements	BPCA, Community	Short
2	Develop at-home energy efficiency recommendations, for renters and homeowners, and implementation guidance for BPC residents	BPCA	Short
3	Work with NYSERDA to develop energy upgrade training programs for homeowners and renters	BPCA, Implementation Partners	Medium
4	Identify buildings requiring O&M training or support and connect them with partner programs that facilitate this through an energy efficiency lens, such as NYSERDA's On-Site Energy Management program	BPCA, Building Owners and Managers, Implementation Partners	Medium

[b] Organize energy management training for facilities staff and building operators

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Use the building systems inventory (refer to Sub- Action E-1.1a) to create targeted retrofit training programs for building facilities teams	BPCA, Implementation Partners	Short
2	Connect building owners and managers with training opportunities offered by utilities and non-profits	BPCA, Implementation Partners	Short
3	Utilize on-site energy managers (refer to Sub-Action E-1.1b) to educate broader building staff on energy efficiency	Building Owners and Managers	Medium

[c] Publish educational materials such as case studies and toolkits to track and promote retrofit successes in the community E

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Interview building owners and condo boards to identify and promote BPC retrofit successes to date	BPCA, Building Owners and Managers	Short
2	Engage building owners to identify main barriers to retrofits for focusing case study identification and toolkit creation	BPCA, Building Owners and Managers	Short
3	Work with industry groups focused on energy efficiency, such as the Building Energy Exchange, to identify relevant toolkits and case studies for BPC building stock	BPCA, Implementation Partners	Short
4	Develop educational programming based on industry support materials	BPCA, Implementation Partners	Short
5	Document process, technical and economic analysis, outcomes, and lessons learned for all BPCA retrofit projects to share with BPC building owners	BPCA, Building Owners and Managers	Medium

[d] Facilitate the adoption of green leases between commercial building owners and tenants

BPC-wide | BPCA-led

Order	Responsibilities	Responsible Groups	Timeframe
1	Provide green lease sample language to commercial building owners and publish case studies highlighting energy efficiency in BPCA spaces	BPCA	Short
2	Promote participation of commercial tenants in the NYC Carbon Challenge by elevating and showcasing success stories	BPCA, Implementation Partners	Short
3	Leverage tenant energy efficiency process and resources developed by the Urban Land Institute (ULI) Tenant Energy Optimization program for BPC commercial tenants.	Building Owners and Managers, Businesses	Medium

Resources

- **Clean Energy Workforce Development**: NYSERDA offers funding for training programs through the Clean Energy Workforce Development program. Funding is available for many training styles and recipients and encourages implementation activities to ensure that training is translated into long term energy savings. Building/portfolio owners or property management companies should submit the application.
- **Commercial and Industrial Carbon Challenge**: NYSERDA program that funds large energy consumers to execute energy-saving and carbon-reduction projects. Large energy consumers are organizations or businesses with a 12-month average electricity demand of 3 megawatts (MW) or more at one site or aggregated across multiple sites. At least 1.5MW must be subject to the Systems Benefit Charge. The program awards up to $5 million per proposal.
- **Commercial Tenant Program**: NYSERDA runs the Commercial Tenant Program that covers the costs of engaging qualified consultants to identify energy saving opportunities in leased tenant spaces.
- **Green Leasing**: The Green Building Alliance provides guidance and resources on Green Leasing for tenant spaces.
- **NYC Carbon Challenge**: The NYC Carbon Challenge is a voluntary leadership initiative for organizations in NYC who have committed to reduce their GHG emissions by 30% or more over ten years.
- **Tenant Energy Optimization Program**: The Urban Land Institute (ULI) organizes this program that aims to ensure tenant spaces are energy efficient through design and operation.

[E-1.3] Install Building Energy Information Systems (EIS) to both track and manage energy consumption

Overview

Monitoring and tracking energy systems and consumption levels is the first step to reducing energy demands. Energy Information Systems (EIS) refer to those systems that collect energy-related data and information that can be used to provide insights into malfunctioning equipment or opportunities for improvements. Building owners can use EIS data to configure Building Automation Systems (BAS) to improve efficiency and control of building systems. Together, EIS and BAS systems facilitate strategic energy management to reduce demand costs and energy consumption while also streamlining maintenance and operations in these buildings.

Implementation Steps

[a] Work with the New York Power Authority (NYPA) to use the NY Energy Manager tool for all BPCA spaces

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Work with NY Energy Manager to develop a sub-metering plan for BPCA-owned and leased spaces	BPCA, Implementation Partners	Short
2	Implement NYPA's Energy Management Platform for all BPCA-owned and leased spaces	BPCA, Implementation Partners	Short
3	Identify benefits and savings associated with an active energy management program and share findings with BPC building owners	BPCA	Medium

[b] Work with the New York Energy Research and Development Authority (NYSERDA) to increase BPC building participation in the Real Time Energy Management program

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Share Real Time Energy Management (RTEM) case studies with BPC building owners	BPCA, Implementation Partners	Short
2	Develop recommended RTEM scopes of work for representative building typologies to share with BPC building owners	BPCA, Implementation Partners	Short
3	Aggregate a list of RTEM-qualified vendors to share with building owners	BPCA, Implementation Partners	Short
4	Aid building owners with RTEM project design, funding opportunities, and applications	BPCA, Building Owners and Managers, Implementation Partners	Ongoing

[c] Connect building owners to programs and partners to install building automation systems and sub-metering to improve consumption monitoring and control capabilities

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Collect information on residential and commercial building metering and sub-metering practices (refer to Sub-Action E-1.1a)	BPCA, Building Owners and Managers	Short
2	Provide resources to buildings on sub-metering to inform decisions on installation	BPCA	Short
3	Install sub-meters, where applicable	Building Owners and Managers	Short
4	Identify preferred building automation system (BAS) vendors and explore portfolio-scale procurement opportunities	BPCA	Short
5	Perform cost and savings analysis with BAS vendors for a sample set of system designs and space types to help identify cost share responsibility between owners and tenants	BPCA, Building Owners and Managers	Short
6	Facilitate portfolio-scale procurement of BAS systems or components based on applicability	BPCA	Medium
7	Perform outreach to raise awareness of sub-metering laws to take effect in 2025 for commercial tenant spaces over 5,000 sf (Local Law 132 of 2016)	BPCA, Building Owners and Managers, Businesses	Medium

[d] Work with Con Edison to increase participation in Smart Metering and Demand Response programs

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Work with building owners to determine which buildings currently participate in smart metering or demand response programs and educate them on the opportunity these programs provide	BPCA, Building Owners and Managers	Short
2	Reach out to participating Demand Response Program aggregators to perform a feasibility study for utilization of demand response across BPC residential buildings	BPCA, Building Owners and Managers, Implementation Partners	Short
3	Perform outreach to raise awareness of smart meters and the benefits of data availability	BPCA, Building Owners and Managers	Short
4	Work with building owners and managers to enroll BPC buildings in individual or aggregated Demand Response programs	BPCA, Building Owners and Managers	Medium

[e] Work with NYC Retrofit Accelerator to develop capital plans and educational strategies for all BPC buildings

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Identify NYC Retrofit Accelerator Efficiency Advisors to support the retrofit process for BPC buildings	BPCA, Implementation Partners	Short
2	Work with Energy Advisors to facilitate energy audits, financing, and implementation of energy retrofit projects	BPCA, Building Owners and Managers, Implementation Partners	Short
3	Coordinate with the NYC Retrofit Accelerator to promote their programs and available resources at BPC public programming events	BPCA, Implementation Partners	Ongoing

Resources

- **Commercial and Industrial Program**: Con Edison's program offers financial incentives for electricity or natural gas customers for certain equipment upgrades such as boiler replacements, controls, insulation, lighting upgrades, variable frequency drives (VFD), and more.
- **Commercial Energy Policy Toolkit**: The International Council for Local Environment Initiatives (ICLEI) and the Institute for Market Transportation's (IMT) Commercial Energy Policy Toolkit, published a Fact Sheet available on submetering as well as other Fact Sheets on a range of energy topics.
- **Green Jobs – Green New York (GJGNY)**: NYSERDA program provides New Yorkers with access to energy assessments, installation services, low interest financing, and options for "green" collar career training.
- **Local Law 132 of 2016**: This NYC law will take effect in 2025 and require sub-metering in tenant spaces over 5,000 sf.
- **NY Energy Manager**: NYPA created the NY Energy Manger platform to assist buildings with energy management, integration with sub-meters, and data analytics.
- **NYC Retrofit Accelerator**: The NYC Retrofit Accelerator offers free advisory services and resources to buildings looking to conduct and plan for retrofits.
- **On-site Energy Manager (OSEM)**: NYSERDA OSEM program offers a cost share to hire a full-time energy manager for multifamily or commercial buildings to perform operations and maintenance improvements, energy efficiency upgrades and more. This program is available for single buildings or for single owners with multiple buildings.
- **Real Time Energy Management (RTEM)**: NYSERDA's RTEM program provides funding for hard and soft project costs related to energy data collection and monitoring. RTEM systems continuously collect live and store historical performance data through a cloud-based or on-site system. That data can be analyzed to uncover optimization opportunities for the site's energy usage. Projects to install sensors, meters, and other equipment, along with data analytics and information services, that provide insight into real-time building performance qualify for these incentives. Case studies can be found on their website.
- **Smart Usage Rewards**: Con Edison offers demand response, or Smart Usage Rewards, programs.

[E-2] Building electrification

Transition building heating, hot water, and cooking equipment away from fossil fuel equipment and toward electric equipment to enable GHG reductions

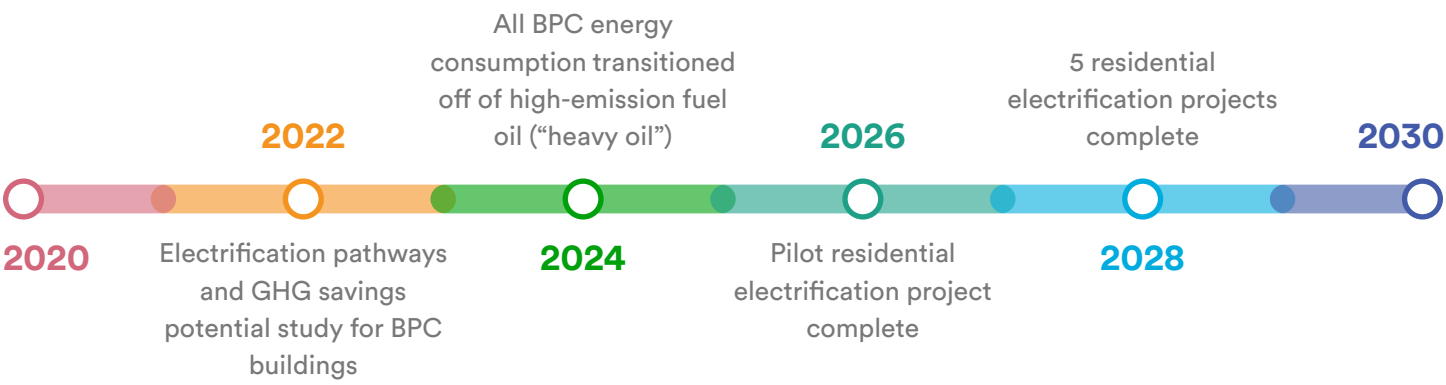
2030 Target

Battery Park City

Target: On-site combustion from fossil fuels capped at 831 million kBtu of energy in 2030

Baseline: On-site combustion from fossil fuels provided approximately 887 million kBtu of energy in 2019

Supporting Milestones



Actions

[E-2.1] Assess potential to electrify building heating, domestic hot water, and cooking systems during upgrades and renovations

[E-2.2] Provide information and educational materials about the fossil fuel transition and electrification opportunities

[E-2.1] Assess potential to electrify building heating, domestic hot water, and cooking systems during upgrades and renovations

Overview

For Battery Park City to achieve the goal of carbon neutrality by 2050, electrification of building systems will be a critical component. By upgrading and transitioning building HVAC systems away from fossil fuels and by supporting the clean and renewable transition of the electricity grid, Battery Park City can work to achieve zero emission building operations. However, these upgrades are not simple and can require major upgrades to building systems. The first step to determine the feasibility of electrification will be to study the building stock and condition of systems.

Implementation Steps

[a] Develop building electrification plans that consider available technologies, existing building typologies, business cases, and battery storage

BPC-wide | BPCA-led

Order	Responsibilities	Responsible Groups	Timeframe
1	Perform electrification feasibility studies for all BPC buildings with fossil fuel heating systems informed by the building survey from Sub-Action E-1.1a	BPCA, Building Owners and Managers	Short
2	Request electrification feasibility study reports from building owners to identify buildings that are best equipped for pilot electrification projects	BPCA	Short
3	Perform electrification feasibility studies on BPCA-owned and leased spaces	BPCA	Short
4	Work with Con Edison and NYPA to identify optimal utility tariff structures and electrical infrastructure needs for fully electrified systems	BPCA, Building Owners and Managers, Implementation Partners	Short
5	Develop a phased electrification plan based on feasibility studies and BPC building inventory	BPCA	Short

[b] Explore opportunities to aggregate electric heating equipment procurement to reduce costs

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Based on collected electrification feasibility studies from building owners (refer to Sub-Action E-2.1a), identify common technology needs	BPCA, Building Owners and Managers	Short
2	Create technical specifications for electrification technologies based on findings from feasibility studies	BPCA	Short
3	Identify a preferred list of vendors with proven success in electric heating during cold winter weather	BPCA	Short
4	Perform cost estimate for bulk procurement and installation of electric heating technology	BPCA, Building Owners and Managers	Medium
5	Based on findings, facilitate bulk procurement of electrification technologies	BPCA	Medium

[c] Study and implement building envelope improvements to reduce the heating load to improve the viability of electric heat pump heating systems E

BPC-wide | BPCA-led

Order	Responsibilities	Responsible Groups	Timeframe
1	Perform envelope audits of BPC buildings as part of electrification feasibility studies (refer to Sub-Action E-2.1a)	Building Owners and Managers	Short
2	Identify buildings with high heating loads that may require envelope improvements to transition to electrified systems	Building Owners and Managers	Short
3	Identify and perform low cost envelope upgrades in the short-term	Building Owners and Managers	Short
4	Create a long-term envelope improvement plan that will achieve the required load reduction for electric heating	Building Owners and Managers	Medium

[d] Pilot the full electrification (heating, domestic hot water, and cooking) of a residential or commercial building and share outcomes

BPC-wide | BPCA-led

Order	Responsibilities	Responsible Groups	Timeframe
1	Engage partners to lead electrification retrofit projects for pilot candidates identified as part of the feasibility studies (refer to Sub-Action E-1.3a)	BPCA, Building Owners and Managers	Short
2	Identify all technical and financial support programs earmarked for projects undergoing deep carbon reduction retrofits	BPCA, Building Owners and Managers	Medium
3	Lead by example by performing electrification retrofits in BPCA-owned spaces, as feasible	BPCA	Medium
4	Implement pilot electrification projects for space heating, domestic hot water, and cooking	Building Owners and Managers	Long
5	Work with retrofit design and construction teams to capture process and lessons learned	BPCA, Building Owners and Managers	Long
6	Publish pilot electrification project case studies and hold educational programming to share project outcomes	BPCA, Building Owners and Managers, Implementation Partners	Long

Resources

- **Climate Mobilization Series: Staircase to Electrification**: The Building Energy Exchange (BE-Ex) April 2020 webinar answers questions around the process and timing for building electrification.
- **NYC Climate Mobilization Act**: NYC passed the Climate Mobilization Act in 2019 which is a package of legislation include Local Law 97 - Building Emissions Limits, Local Law 92 and 94 - Green Roofs and Solar PV, Local Law 95 - Building Labeling, Local Law 96 - PACE, and Local Law 98 - Wind Energy.
- **NYSERDA's Net Zero for Economic Development**: This program supports net zero performance for communities as well as the building scale and can financially support portfolio-scale achievement of net zero energy. More details on this program will be made available in 2020.
- **The Economics of Electrifying Buildings**: Rocky Mountain Institute published report.

[E-2.2] Provide information and educational materials about the fossil fuel transition and electrification opportunities

Overview

To address climate change, New York City, New York State, and other jurisdictions across the globe recognize that the transition away from fossil fuels is critical. In the past, buildings and transportation systems have relied heavily on fossil fuels and transitioning away will require heavy investment and collaboration across many groups. Methods for transitioning away from fossil fuels are still being created and continue to evolve as technologies advance and funding opportunities arise. During this transition, BPCA will facilitate communication and information sharing to ensure that Battery Park City building owners, managers, and occupants are aware of programs and opportunities related to electrification.

Implementation Steps

[a] Review and disseminate information about forthcoming legislation impacting fossil fuel transition

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Provide information on Con Edison's tariff structures designed to favor heat pump heating and cooling	BPCA, Implementation Partners	Ongoing
2	Maintain up-to-date electrification incentive database for BPC Building Owners	BPCA	Ongoing
3	Provide guidance on new carbon-focused local laws and amendments to the Climate Mobilization Act, as well as State policies and initiatives around decarbonization	BPCA	Ongoing
4	Maintain contact with NYSERDA representatives and other State partners to stay informed of forthcoming legislation updates	BPCA	Ongoing

[b] Connect building owners and residents to programs to facilitate electrification of systems and appliances E

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Connect with the Con Edison Energy Efficiency and Demand Management team to identify applicable electrification incentives for BPC buildings	BPCA, Implementation Partners	Short
2	Aggregate electrification technical guidance documents and educational programming produced by NYC building industry for BPC building owners	BPCA	Short
3	Connect building owners to NYCEEC to develop financing solutions for electrification projects	BPCA, Implementation Partners	Medium

Resources

- **Advancing Electrification**: an Urban Green Council report, online courses, and an electrification blog series to further support electrification efforts in NYC.
- **Climate Mobilization Act, including LL97**
- **Climate Mobilization Series: Staircase to Electrification**: The Building Energy Exchange (BE-Ex) April 2020 webinar answers questions around the process and timing for building electrification.
- **Commercial and Industrial Carbon Challenge**: NYSERDA program funds large energy consumers to execute energy-saving and carbon-reduction projects. Large energy consumers are organizations or businesses with a 12-month average electricity demand of 3 megawatts (MW) or more at one site or aggregated across multiple sites. At least 1.5MW must be subject to the Systems Benefit Charge. The program awards up to $5 million per proposal.
- **Commercial and Industrial Program**: Con Edison's program offers financial incentives for electricity or natural gas customers for certain equipment upgrades such as boiler replacements, controls, insulation, lighting upgrades, variable frequency drives (VFD), and more.
- **Multifamily Program**: Con Edison's program offers financial incentives for electricity or natural gas customers for certain equipment upgrades such as boiler replacements, controls, insulation, lighting upgrades, variable frequency drives (VFD), and more.
- **Natural Gas Efficiency and Alternatives**: Con Edison offers programs for alternatives to natural gas such as for electric appliances and heating and cooling equipment, and geothermal or air-source heat pumps.
- **New York City Energy Efficiency Corporation (NYCEEC)**: can advise building owners on financing for electrification projects. NYCEEC is a non-profit specializing in closing the financial gap for clean energy projects.

Resources, continued.

- **New York State's Climate Leadership and Community Protection Act**
- **P-12 Schools Green and Clean Energy Solutions**: NYSERDA program that provides funding for eligible schools to reduce energy use and assist in the conversion to carbon-free energy sources.
- **Packaged Terminal Heat Pumps (PTHPs) Decentralized electric heating and cooling for multifamily buildings**: BE-Ex report that provides information on Packaged Terminal Heat Pumps (PTHPs) in its April 2019 Tech Primer.
- **Property Assessed Clean Energy (PACE)**: NYSERDA's Commercial PACE program provides financing options for energy improvement projects in multifamily and commercial buildings that have undergone energy audits that recommend upgrades. The program is administered by NYCEEC that can provide additional resources.

[E-3] Low-carbon district energy systems

Connect building heating or cooling systems to a district-scale energy network to realize efficiencies from balancing loads and centralized management

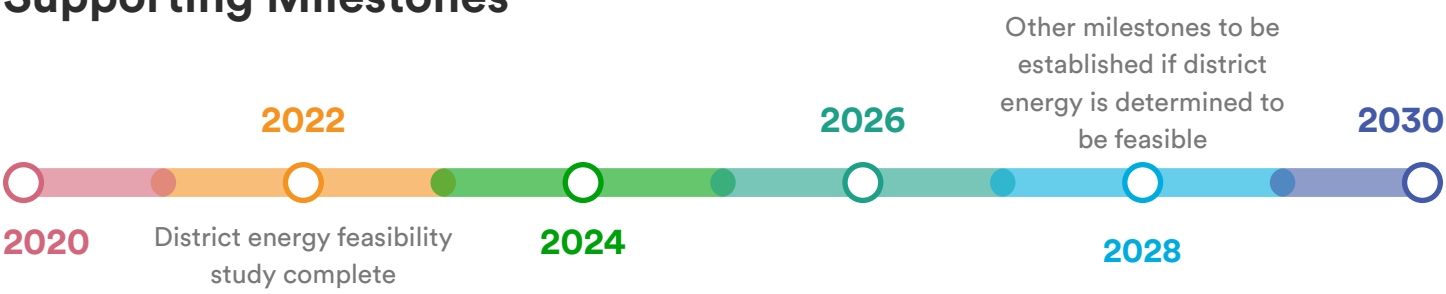
2030 Target

Battery Park City

Target: Based on feasibility, develop a district energy system for part of BPC

Baseline: In 2019, a district energy system serves Brookfield Place

Supporting Milestones



Actions

[E-3.1] Evaluate the potential for low-carbon district energy networks across Battery Park City

[E-3.1] Evaluate the potential for low-carbon district energy networks across Battery Park City

Overview

Low-carbon district energy systems can help to facilitate decarbonization in a neighborhood by offering shared renewable resources and low-carbon heating and cooling sources. These systems require a significant amount of infrastructure to connect buildings and utilities but can deliver benefits such as reduced space for mechanical systems, improved load management across the district, improved controllability and comfort in spaces, reduced heating and cooling demands, and centralized generation for consolidated maintenance.

Implementation Steps

[a] Conduct a full inventory of existing buildings heating and cooling systems (type, installation date, maintenance issues, equipment lifetime, replacement/decommissioning plans)

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Include evaluation of technical requirements for connecting to district heating and cooling systems in building survey (Refer to Sub-Action E-1.1a)	BPCA, Building Owners and Managers	Short
2	Include identification of available waste heat sources in building survey (Refer to Sub-Action E-1.1a)	BPCA, Building Owners and Managers	Short
3	Develop RFI to request energy demand profile data from building owners for use in district energy feasibility study (Refer to Sub-Actions E-3.1c and E-3.1b)	BPCA	Short

[b] Study the feasibility of establishing district energy solutions for different areas of Battery Park City and establish recommendations for low-carbon district energy systems

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Utilize BPC energy model (Refer to Sub-Action E-3.1c) to understand potential scenarios for district energy	BPCA, Implementation Partners	Short
2	Study the technical feasibility of a variety of district energy solutions, including pre-development issues, identification of anchor customers, and appropriate heat sources/sinks	BPCA, Building Owners and Managers, Implementation Partners	Short
3	Study the financial feasibility of a district energy systems including ownership and financing models, energy off-take arrangements, and impact on property marketability and valuation	BPCA, Building Owners and Managers, Implementation Partners	Short
4	Study the environmental and carbon reduction impacts, as well as the impact on LL97 compliance, for each district energy scenario	BPCA, Implementation Partners	Short
5	Study site installation logistics including equipment siting, distribution right of ways	BPCA, Building Owners and Managers, Implementation Partners	Short
6	Identify operations and maintenance scopes and responsibilities for district energy system owners and building owners	BPCA, Building Owners and Managers, Implementation Partners	Short
7	Based on findings from the feasibility study, create a request for proposals to recruit additional experts for the next steps of detailed design	BPCA, Building Owners and Managers, Implementation Partners	Medium

[c] Develop a model of Battery Park City building energy profiles to investigate district energy systems in collaboration with NYSERDA

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Using building survey data and energy demand profiles, identify scenarios for both electric microgrids as well as district heating and cooling	BPCA, Implementation Partners	Short
2	Package findings into discrete scenarios for further analysis and technical feasibility studies in E-3.1b	BPCA, Implementation Partners	Short

[d] Develop a district energy system in Battery Park City based on results of feasibility study

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Procure a design team to initiate the development of a BPC district energy system*	BPCA	Long
2	Develop detailed design with cost estimates and a financial plan for the proposed system*	BPCA, Implementation Partners	Long
3	Develop draft agreements with customers, including the customer billing structure*	BPCA, Implementation Partners	Long

* These responsibilities will be implemented only if recommended by the feasibility study and may change depending on the findings from the study.

Resources

- **District Energy Development Guidance**: The International District Energy Association provides district energy development guidance documents, case studies, and tools including U.S. Community Energy Guide and District Energy in Cities.
- **District Thermal Scoping Studies**: NYSERDA will offer District Thermal Scoping Studies, Design Studies, and Construction assistance to support communities in their exploration and implementation of district energy systems. BPCA will stay tuned for updates.
- **NY Prize**: NYSERDA program aims to reduce costs, promote clean energy, and build reliability and resiliency into the electric grid. The NY Prize program offers relevant resources about microgrids.

[E-4] Renewable energy supply and storage

Increase the amount of solar, wind, or other renewable energy generation systems at Battery Park City and procure cleaner electricity to meet the rest of the demand

2030 Target

Battery Park City Authority Spaces

Target: 100% of electricity supplied to BPCA spaces to come from renewable energy sources by 2025

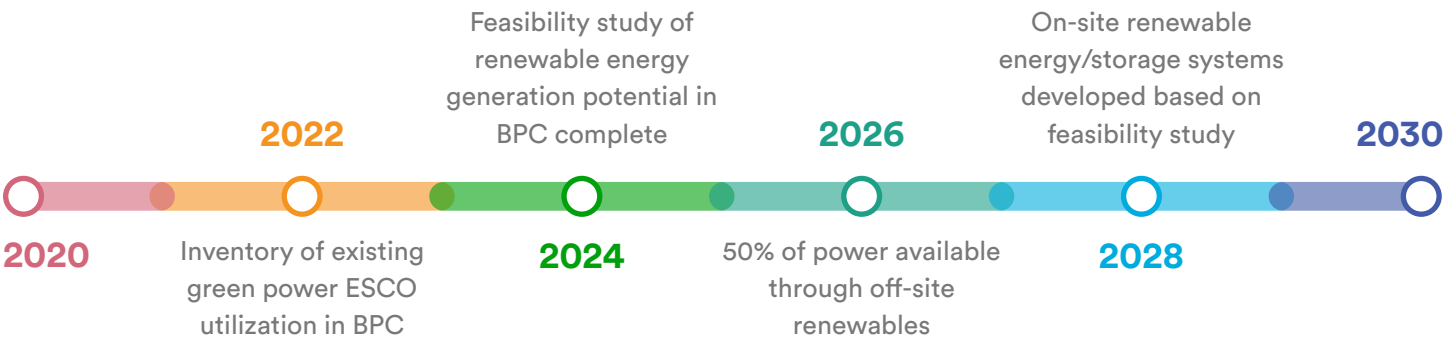
Baseline: BPCA's electricity supply comes from a NYPA natural gas generation plant in Queens

Battery Park City

Target: 70% of BPC electricity to come from renewable energy sources by 2030

Baseline: 14% of BPC electricity came from renewable energy sources in 2019

Supporting Milestones



Actions

[E-4.1] Increase renewable energy generation and storage at Battery Park City

[E-4.2] Procure 100% renewable electricity for Battery Park City

[E-4.3] Improve the energy resilience and flexibility of Battery Park City by exploring energy storage options

[E-4.1] Increase renewable energy generation and storage at Battery Park City

Overview

Battery Park City intends to have 70% of its electricity coming from renewable energy sources by 2030. To achieve this target, the community must increase its renewable energy generation and storage capabilities. BPC plans to analyze the potential for on-site renewable distributed energy generation and work with local partners to consider technical feasibility, potential sites, and financing needs for renewable energy expansion. Additionally, BPCA will align these activities with on-going and planned resiliency efforts in the community in order to make the most efficient use of resources and continue to improve the neighborhood's resiliency.

Implementation Steps

[a] Study opportunities to incorporate on-site distributed energy generation such as solar PV, fuel cells, wind turbines, and battery storage E

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Engage NYPA's Clean Energy Advisory Services team to perform distributed energy site identification and assessments for BPCA-owned spaces	BPCA, Implementation Partners	Short
2	Engage Con Edison to discuss interconnection considerations for distributed energy generation	BPCA, Implementation Partners	Medium
3	Using input from NYPA and Con Edison, determine methods of distributed energy generation that are appropriate for BPC	BPCA	Medium
4	Work with Con Edison to identify appropriate distributed energy tariff structures and bill credits for BPC utility customers	BPCA, Implementation Partners	Medium

[b] Engage Battery Park City in technical and financial support programs to facilitate renewable energy procurement available through government organizations and utilities

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Identify BPC audiences that may be interested in procuring renewable energy (i.e. residents, businesses, schools, building owners, etc.)	BPCA	Short
2	Work with partners like NYSERDA, NYPA, and Con Edison to develop educational materials identifying renewable energy procurement options, considerations, and financing available for residents and building owners	BPCA, Implementation Partners	Short
3	Identify and share financing and incentive opportunities, such as NY Sun and NYSERDA Flextech, with those who are interested in installing solar and help them understand eligibility	BPCA, Implementation Partners	Short
4	Connect building owners considering renewable energy storage to financing opportunities such as NYSERDA's Retail Energy Storage incentives which can help fund energy storage needs	BPCA, Implementation Partners	Medium
5	Work with NYSERDA and NYCEEC to help eligible property owners obtain PACE financing for on-site distributed energy projects	BPCA, Implementation Partners	Medium

[c] Engage solar installers to perform assessments of rooftop generation potential for buildings with excess roof space, prioritizing buildings with impending roof upgrades E

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Identify potential partners, such as NYPA, to assess rooftops for solar potential	BPCA	Short
2	Determine potential solar opportunities on rooftops by including a rooftop assessment in building survey data collection to inform Deep Energy Retrofits (Refer to Action E-1)	BPCA, Building Owners and Managers	Short
3	Perform initial feasibility study to identify buildings with rooftop solar PV potential, using a partner such as NYPA's Clean Energy Advisory Services Team	BPCA, Implementation Partners	Short
4	Engage with building owners to share rooftop assessment results along with information on Local Law 94 of 2019 and discuss timing of impending roof upgrades to help inform prioritization	BPCA, Building Owners and Managers	Short
5	Identify and engage qualified solar installers to perform solar PV assessments for identified buildings to determine system performance potential, construction considerations, and financing options	BPCA, Building Owners and Managers	Medium

[d] Identify additional opportunities to align resiliency actions and parks and open space projects with renewable energy generation in Battery Park City E

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Review BPC Resilience Action Plan for potential alignment with renewable energy generation, evaluating shocks and stresses in the plan that could be mitigated through on-site renewable generation	BPCA	Short
2	Once alignment opportunities are identified, take steps to synchronize resiliency and renewable generation activities (connecting appropriate teams, schedules, activities, etc.)	BPCA	Short
3	Review financing opportunities, such as the Mother Nature Bond Act, to determine eligibility of proposed renewable energy projects	BPCA	Medium
4	On an ongoing basis, evaluate proposed on-site renewable generation and storage project proposals against the goals of the BPC Resilience Action Plan and BPC Sustainability Plan	BPCA	Ongoing

Resources

- **Flexible Technical Assistance Program (FlexTech)**: NYSERDA's FlexTech program provides a cost share to energy consultants, hired by BPCA or BPC building owners, for feasibility studies ranging from distributed energy resources to energy storage to clean heating and cooling systems. As part of this program, NYSERDA pre-selects FlexTech Consultants who can provide support for this program and others. The FlexTech program offers support for both building and portfolio-scale projects.
- **Guidance on Using Private Generation Energy Sources**: Con Edison provides guidance on its website that contains information on solar installation and procedure, guides and specifications, as well as credits and incentives available to residents and commercial businesses.
- **K-Solar**: New York Power Authority (NYPA) helps schools go solar through their K-Solar services. These services assist schools in procuring affordable solar energy.
- **Local Law 92 of 2019 and Local Law 94 of 2019**: Green and Solar Roof Requirements for New Buildings and Complete Roof Replacements.
- **NY Solar Map**: the City University of New York has a NY Solar Map available to assist individuals or entities identifying the solar potential of their land. Information on financing options and incentives as well as storage information is also available.

Resources, continued.

- **NYSERDA's Net Zero for Economic Development**: This program supports net zero performance for communities as well as the building scale and can financially support portfolio-scale achievement of net zero energy. More details on this program will be made available in 2020.
- **Retail Energy Storage Incentive**: NYSERDA program that provides commercial customers with funding for grid-connected energy storage systems paired with clean on-site generation.
- **Shared Solar NYC Gateway**: technology platform that connects community solar developers with interested owners of potential host sites such as rooftops or open land. This platform helps overcome the challenge of finding suitable sites for solar generation and allows participants to investigate their potential to host or develop solar, or simply learn more about community shared solar.

[E-4.2] Procure 100% renewable electricity for Battery Park City

Overview

In order to move away from fossil fuels, Battery Park City needs the electricity it consumes within the community to come from renewables. While some of this renewable energy can be generated directly in BPC, steps will need to be taken to procure renewable electricity for BPC's remaining energy needs. To do this, BPC will explore Community Choice Aggregation (CCA), which allows communities to work together with a shared purchasing model that can reduce the cost of energy and increase the amount of renewable energy provided to the community. Additionally, it will be critical to engage the community, helping residents understand how to switch to clean power through purchasing options with Energy Supply Companies (ESCOs).

Implementation Steps

[a] Explore Community Choice Aggregation and other models and partnerships to procure 100% renewable electricity for all of Battery Park City E

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Work with NYSERDA and Mayor's Office of Sustainability to explore opportunity to pilot Community Choice Aggregation for NYC at BPC	BPCA, Implementation Partners	Short
2	Evaluate and compile information on additional models and partnerships that will assist in the procurement of 100% renewable electricity	BPCA	Short
3	Educate BPC residents on renewable energy and procurement options, helping them understand the energy cost offset and environmental impact of various renewable energy procurement options	BPCA, Community	Short
4	Evaluate potential to procure additional Renewable Energy Credits (RECs) from offshore wind projects to offset BPC carbon emissions	BPCA, Implementation Partners	Short

[b] Conduct outreach with residents to maximize awareness of clean power purchasing options through ESCOs

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Provide information to residents on New York's "Power to Choose" program	BPCA	Short
2	Facilitate navigation of ESCO options and provide recommendations on how to select clean energy ESCOs with competitive pricing	BPCA, Community	Short
3	Invite clean energy ESCOs to conduct outreach through events and programming	BPCA, Implementation Partners	Ongoing

[c] Work with developers to identify opportunities for off-site community energy for off-take by Battery Park City customers

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Purchase energy from NYPA renewable energy generation projects to supply all BPCA spaces with 100% renewable electricity consumption	BPCA	Short
2	Identify off-site renewable energy developments with energy available for public off-take, working with NYPA's Clean Energy Advisory Services Team	BPCA, Implementation Partners	Medium
3	Determine demand for off-site shared solar development by surveying and identifying BPC residents interested in shared solar ownership	BPCA, Community	Medium
4	Work with NYPA's Clean Energy Advisory Services Team to issue solicitation for renewable developments by third party developers for BPC resident off-take	BPCA, Implementation Partners	Medium

Resources

- **Guidance on Community Choice Aggregation**: NYSERDA offers guidance and tools for Community Choice Aggregation in New York State.
- **NYS Power to Choose**: New York State maintains a database of energy offers from local ESCOs, NYS Power to Choose, that can provide electricity of natural gas in New York.

[E-4.3] Improve the energy resilience and flexibility of Battery Park City by exploring energy storage options

Overview

The ability to generate and distribute energy within Battery Park City can improve the community's resiliency in case of large scale power outages due to storms, excessive heat, or other emergencies. BPC should understand which facilities in the community are most at risk in the case of power failures and explore opportunities to provide backup power through battery storage or heating or cooling through thermal energy storage. Furthermore, battery storage can be considered for other uses such as for EV charging stations or during solar power generation in order for the city to increase its backup power supply. Ultimately these efforts can increase BPC resiliency and flexibility regarding energy consumption.

Implementation Steps

[a] Identify critical facilities and community space which necessitate special energy backup/resilience

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Survey BPC outdoor spaces for critical power needs and perform gap analysis to identify additional energy storage backup requirements	BPCA	Short
2	Identify spaces that could serve as community shelters in an extreme weather event or power outage	BPCA	Short
3	Work with energy storage developers to perform feasibility study for implementing storage to provide backup to identified spaces and outdoor critical power needs	BPCA	Medium
4	Develop RFP for energy storage systems, as appropriate	BPCA	Medium

[b] Explore the addition of battery storage to provide backup power, as well as revenue generating grid services such as demand response and peak shaving

BPC-wide | BPCA-led

Order	Responsibilities	Responsible Groups	Timeframe
1	Identify existing backup power equipment and new backup power needs, informed by building survey from Sub-Action E-1.1a	BPCA, Building Owners and Managers	Short
2	Consider organizing contracts with emergency generator providers as a temporary action to improve resilience	BPCA, Building Owners and Managers	Short
3	Perform energy storage best-fit customer and use case modeling, working with a partner like NYSERDA	Building Owners and Managers, Implementation Partners	Short
4	Evaluate revenue generating opportunities working with Con Edison to identify optimal tariff structure and understand interconnection requirements	BPCA, Implementation Partners	Medium
5	Work with partners such as NYSERDA and energy storage installers to provide guidance to BPC Building Owners on storage installation and permitting considerations	BPCA, Building Owners and Managers, Implementation Partners	Ongoing
6	Connect building owners to available stand-alone energy storage incentives through NYSERDA and Con Edison	BPCA	Ongoing
7	Explore opportunities to aggregate buildings to improve BPC electric demand flexibility through programs such as the Department of Energy's Connected Communities	BPCA, Building Owners and Managers, Implementation Partners	Ongoing

[c] Explore opportunities to add battery storage to on-site solar systems and electric vehicle charging stations

BPC-wide | BPCA-led

Order	Responsibilities	Responsible Groups	Timeframe
1	Study the benefits of adding energy storage to on-site solar installations as a part of feasibility studies performed in E-4.1c.	BPCA, Implementation Partners	Medium
2	Study the addition of energy storage through feasibility studies for Level 2 charging stations as a part of feasibility studies performed in Sub-Action S-5.1c.	BPCA	Medium
3	Work with Con Edison to understand implications for utility tariffs and interconnection considerations	BPCA	Medium
4	Identify current incentives for solar plus storage systems	BPCA	Ongoing

Resources

- **Department of Energy Connected Communities program**: The US Department of Energy's Office of Energy Efficiency and Renewable Energy has released a Request for Information (RFI) to collect input on potential funding opportunities that would support the office's Grid-interactive Efficient Buildings research initiative.
- **Flexible Technical Assistance Program (FlexTech)**: NYSERDA's FlexTech program provides a cost share to energy consultants, hired by BPCA or BPC building owners, for feasibility studies ranging from distributed energy resources to energy storage to clean heating and cooling systems. As part of this program, NYSERDA pre-selects FlexTech Consultants who can provide support for this program and others. The FlexTech program offers support for both building and portfolio-scale projects.
- **Retail Energy Storage Incentive**: NYSERDA program that provides commercial customers with funding for grid-connected energy storage systems paired with clean on-site generation.

[E-5] GHG emissions monitoring and reporting

Prioritize actions that can reduce GHG emissions and move Battery Park City toward its goal of being carbon neutral by 2050

2030 Target

Battery Park City Authority Spaces

Target: 50% reduction in GHG emissions from 2017 levels by 2030

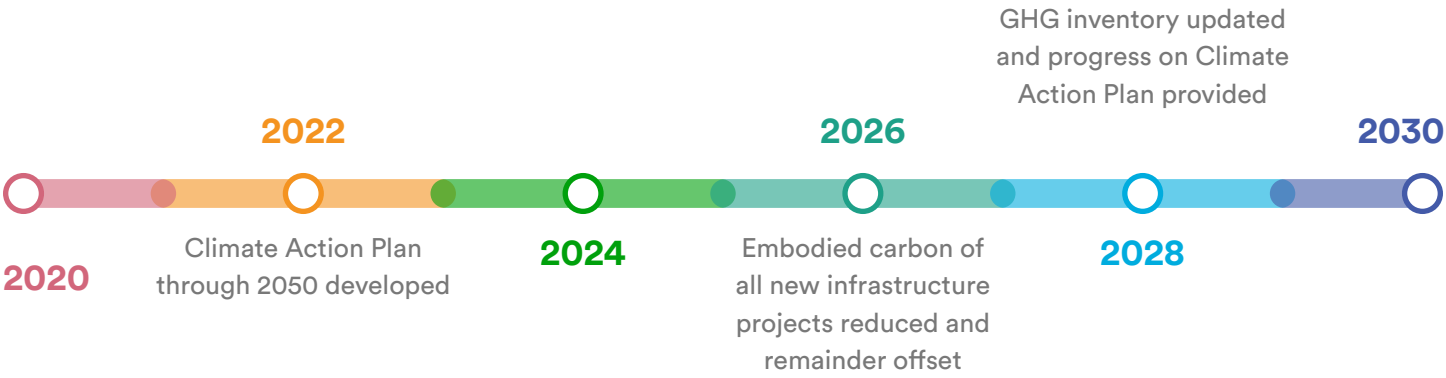
Baseline: BPCA's 2017 GHG emissions totaled 1,870 tCO2e

Battery Park City

Target: 33% reduction in GHG emissions from 2017 levels by 2030

Baseline: Battery Park City's 2017 emissions totaled 168,900 tCO2e

Supporting Milestones



Actions

[E-5.1] Lead by example in comprehensive decarbonization and carbon sequestration

[E-5.2] Lead by example in the construction of new zero carbon buildings and spaces

[E-5.1] Lead by example in comprehensive decarbonization and carbon sequestration

Overview

Decarbonization refers to reducing the amount of greenhouse gas emissions released into the atmosphere, while carbon sequestration refers to the natural or artificial process of removing carbon dioxide from the atmosphere. These combined efforts are needed to achieve carbon reduction targets and mitigate the effects of climate change. BPC has the opportunity to champion these efforts, setting an example for other communities to follow. Developing detailed plans and internal policy as well as analyzing carbon sequestration potential will help BPC take critical steps towards reducing its greenhouse gas emissions.

Implementation Steps

[a] Develop a Climate Action Plan that builds off of the Sustainability Plan and establishes GHG reduction pathways for buildings, transportation, and waste for 2020 - 2050

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Compile and model potential GHG reductions from Sustainability Plan Actions	BPCA	Short
2	Project GHG reduction potential of Sustainability Plan Actions over a 10 year period considering the Timeframe of Implementation Steps and determine the projected 2030 emissions compared to 2017 GHG inventory	BPCA	Short
3	Based on percent reduction from 2017 emissions, develop additional actions to implement from 2030 to 2050 to achieve carbon neutrality in Battery Park City	BPCA	Short
4	Publish and share a Climate Action Plan that summarizes responsibilities 1 through 3 and sets forth a path to carbon neutrality by 2050	BPCA	Short

[b] Develop a sustainability policy for the BPCA Employee Handbook

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Based on the BPC Sustainability Plan vision, integrate sustainability policies into the BPCA Employee Handbook and training processes	BPCA	Short

[c] Quantify the carbon sequestration potential of existing flora and soils

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Informed by Biodiversity and Habitats Actions S-1.3 and S-1.4, assess existing flora and soils and conduct research and analysis to determine the carbon sequestration potential across Battery Park City – opportunity to partner with an academic institution to conduct research and analysis	BPCA, Implementation Partners	Short
2	Include findings in the Climate Action Plan (E-5.1a)	BPCA	Short

Resources

- **Calculating Embodied Carbon**: The International Living Future Institute (ILFI) through their Zero Carbon Certification offers resources and guidance on calculating embodied carbon. ILFI also published Embodied Carbon Guidance that provides strategies and methodologies for limiting embodied carbon in buildings and construction projects.

[E-5.2] Lead by example in the construction of new zero carbon buildings and spaces

Overview

Given buildings contribute significantly to GHG emissions, efforts should be made to minimize both the embodied carbon of materials used in new construction as well the carbon generated from building operations (operational carbon). To accomplish this, coordinated efforts are required from building owners, developers, and designers. BPCA will work with these stakeholders to facilitate the pursuit of "zero carbon" buildings, providing guidance on carbon reduction, offsets, and available building standards.

Implementation Steps

[a] Work with building owners, developers, and designers to identify strategies and verified offsets to reduce embodied carbon of new construction

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Work with design and construction teams to determine the embodied carbon associated with any new construction projects	BPCA, Building Owners and Managers, Implementation Partners	Ongoing
2	Provide design and construction teams with resources and guidance on how to reduce embodied carbon of construction projects through material sourcing	BPCA, Building Owners and Managers, Implementation Partners	Ongoing
3	Provide design and construction teams with guidance on how to offset embodied carbon from a construction project	BPCA, Building Owners and Managers, Implementation Partners	Ongoing
4	Ensure that the design and construction teams associated with BPC construction projects have offset embodied carbon	BPCA	Ongoing

[b] Disclose one-time offset of embodied carbon for all new construction

BPC-wide | BPCA-led

Order	Responsibilities	Responsible Groups	Timeframe
1	Track and share embodied carbon offsets across Battery Park City new construction projects	BPCA	Ongoing

[c] Establish a standard for new building construction, or select from an existing one, such as the Passive House or Net Zero Carbon standards E

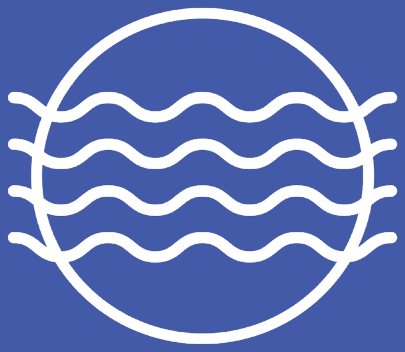
BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Refer to the Green Guidelines for New Construction requirements	BPCA, Building Owners and Managers	Short
2	Share and communicate New Construction requirements with developers interested in Battery Park City	BPCA	Ongoing

Resources

- **BPC Green Guidelines:** New Construction and Energy Sections

3 Water



Introduction

The Water Topic Area addresses water conservation, water recycling systems, and resiliency and stormwater management in Battery Park City. Through these Strategies, Battery Park City will strive to achieve reductions in potable water consumption, increases in recycled water use, improved stormwater management processes, and greater resilience to major storms. With the commitment of stakeholders across Battery Park City, a more water-efficient neighborhood can be achieved through the implementation steps outlined in this section.

Key Resources

In implementing the BPC Sustainability Plan Actions and Sub-Actions, several key resources will be important for success. The NYC Department of Environmental Protection (DEP) offers many resources from grant or incentive opportunities to guidance on water-related products and systems. Many non-profits also offer resources such as Green Roofs NYC that has valuable resources for schools in providing educational opportunities with green roofs. On resiliency, the main resources are available through plans and initiatives from NYCEDC's Lower Manhattan Coastal Resiliency Plan or the Mayor's Office of Resiliency. At the State level, potential funding for water-related projects may be available through the New York State Clean Water State Revolving Fund or through the Green Innovation Grant Program. BPCA will work with these agencies, non-profits, and programs to identify resources to support Battery Park City's Water Strategies.

Individual actions you can take now

- Review your water bill consumption patterns
- Install water-efficient appliances and low flow fixtures, such as showerheads
- Regularly inspect bathroom and kitchen fixtures for leaks
- Water your plants with leftover water
- Work with your Building Manager to look for spaces that can be transformed into rain gardens for stormwater capture
- Wash fruits and vegetables in a pot of water rather than letting the water run

Responsible Groups Map

Strategy	Action	Page #	Responsible Groups				
			BPCA	Building Owners and Managers	Businesses	Community	Implementation Partners
[W-1] Water conservation	[W-1.1] Improve the monitoring and management of water consumption	62	✓	✓			
	[W-1.2] Minimize potable water losses through sprinkler irrigation or leaks	65	✓	✓	✓		
	[W-1.3] Encourage water conservation in buildings	67	✓	✓	✓	✓	✓
	[W-1.4] Educate the community on water conservation practices through a behavior change campaign	70	✓	✓		✓	✓
[W-2] Water recycling systems	[W-2.1] Maximize greywater reuse for all non-potable demands at Battery Park City	73	✓	✓			
	[W-2.2] Expand blackwater treatment and reuse systems	76	✓	✓			
[W-3] Resiliency and stormwater management	[W-3.1] Work to make Battery Park City more resilient to major storms	79	✓	✓			
	[W-3.2] Increase the permeability of Battery Park City through pavement modifications and green stormwater infrastructure	80	✓	✓			
	[W-3.3] Improve stormwater infrastructure to limit combined sewer overflow incidents	84	✓				✓

[W-1] Water conservation

Reduce the amount of water that is consumed in Battery Park City through more efficient equipment and education aimed at behavior change

2030 Target

Battery Park City Authority Spaces

Target: Reduce the amount of potable water consumed by BPCA spaces by 20% by 2030

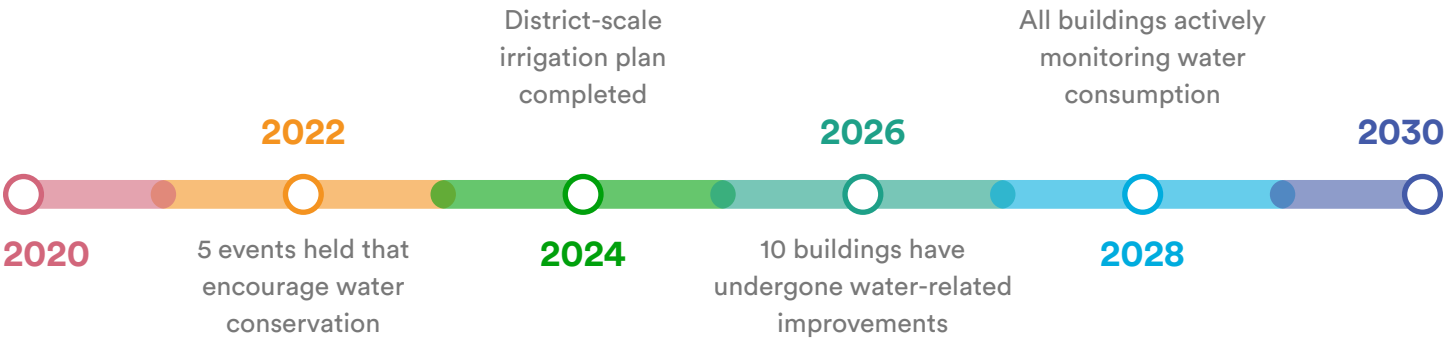
Baseline: 47 million gallons of water used by BPCA spaces in 2019

Battery Park City

Target: Reduce the water use intensity for residential and commercial buildings by 10% by 2030

Baseline: Median multifamily water use intensity in BPC was 41.7 gal/SF/yr in 2017; Median commercial water use intensity in BPC was 40.8 gal/SF/yr in 2017

Supporting Milestones



Actions

[W-1.1] Improve the monitoring and management of water consumption

[W-1.2] Minimize potable water losses through sprinkler irrigation or leaks

[W-1.3] Encourage water conservation in buildings

[W-1.4] Educate the community on water conservation practices through a behavior change campaign

[W-1.1] Improve the monitoring and management of water consumption

Overview

Regularly monitoring and properly managing water consumption can raise awareness to the levels of consumption in a building or neighborhood and help to reduce consumption and losses. Primary methods to achieve water monitoring and management include installing smart meters and sub-meters where applicable, increasing the transparency of water consumption data, and establishing sustainable irrigation practices that include drip irrigation and smart controls that monitor and minimize consumption. Improving the monitoring and management of water consumption across Battery Park City is the first step to reducing water consumption and changing behavior around water use.

Implementation Steps

[a] Install smart water meters in all buildings

BPC-wide | BPCA-led

Order	Responsibilities	Responsible Groups	Timeframe
1	Take inventory of water meters and install smart water meters, if not already installed	Building Owners and Managers	Short
2	Compile detailed reports of building-level water consumption trends and share with building ownership on a quarterly basis	Building Owners and Managers	Short
3	Report water consumption trends with residents or commercial tenants on a quarterly basis	Building Owners and Managers	Short

[b] Install smart sub-meters for residential units and commercial tenants to improve monitoring and consumption transparency E

BPC-wide | BPCA-led

Order	Responsibilities	Responsible Groups	Timeframe
1	Develop a list of possible vendors for water sub-metering and reporting and investigate negotiating a bulk purchasing pricing for Battery Park City buildings	BPCA	Short
2	Select a vendor and create a plan for sub-metering, installing sub-meters, or developing a platform for sharing consumption information with tenants/residents	Building Owners and Managers	Short
3	All buildings with cooling towers investigate sub-metering cooling towers to collect a NYC DEP Sewer Credit for the water that is evaporated through cooling towers rather than being disposed of through the sewer lines	Building Owners and Managers	Short
4	Install water sub-meters, where appropriate, to provide reports to tenants and residents on their water consumption (refer to Sub-Action W- 1.1.a)	Building Owners and Managers	Medium

[c] Establish and implement a district-wide smart irrigation plan

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Inventory vegetation types across Battery Park City and collect information on the levels of irrigation needed for each (refer to Sub-Action S-1.4b)	BPCA	Short
2	Determine which open spaces and vegetation in Battery Park City have the potential for smart irrigation measures	BPCA	Short
3	Evaluate different smart irrigation techniques such as drip irrigation, sensors, use of recycled water, etc.	BPCA	Short
4	Develop a holistic plan that addresses district irrigation water needs	BPCA	Short
5	Implement district-wide smart irrigation plan and ensure all irrigation systems provide water based on the soil needs and environmental conditions	BPCA	Medium

Resources

- **NYC Automated Meter Reading (AMR) FAQs**: From 2010-2012, NYC DEP installed smart water meters (automated meter reading, or AMR) in most buildings in New York City, including most of the buildings in Battery Park City.
- **NYC DEP 2013 Guide to Water Submeters**
- **NYC DEP Automated Meter Reading Tracking Portal**
- **NYC DEP Reimbursable Metering Program (RMP)**: A program under which property owners can have water meters installed or replaced by a New York City Licensed Plumber of their own choosing and receive reimbursements, under certain conditions.
- **NYC DEP Sewer Credit**: NYC DEP offers a sewer credit for any water lost through evaporation in cooling towers as well as any other processes as long as they are separately metered. Regulation for wastewater allowances can be found in the NYC Water Board Water and Wastewater Schedule, Part III, Section 7 and forms are available on DEP's website for cooling towers and not cooling towers. Information on cooling tower evaporation credits can be found on Aquaclear's Sewer Credits Available for Cooling Towers page and Water Signal's How to Save with Cooling Tower Evaporation Credits page.
- **NYC DEP Water Conservation and Reuse Grant Pilot Program**: NYC DEP provides commercial and multifamily residential property owners with incentives to install fixture retrofits and other water efficiency technologies through the Water Conservation and Reuse Grant Pilot Program. Outdoor irrigation systems are also eligible under the program.
- **The NYC Department of Education (DOE) Sustainability Program**: NYC DOE provides conservation guidance as well as information on grants for increasing sustainability in NYC schools. Since 2016, over $400k in grants have been awarded by the DOE Office of Sustainability. For more information please visit the Sustainability program page of the NYC Department of Education website.

[W-1.2] Minimize potable water losses through sprinkler irrigation or leaks

Overview

Robust leak detection programs and the use of drip irrigation can reduce the amount of water lost to the environment and reduce water costs at Battery Park City. Leaky irrigation piping and hoses can occur over time as equipment ages and be exacerbated by environmental conditions like extreme winter conditions or wildlife. Automated leak detection equipment can quickly identify any sources of leaks and direct maintenance to areas that need attention. Traditional sprinkler irrigation can be wasteful of water resources as the water is spread across a wide area. Drip irrigation is less water-intensive, as the water is targeted directly at the plant roots and there is very limited loss to evapotranspiration. Leak detection and drip irrigation will be maximized across Battery Park City.

Implementation Steps

[a] Install leak detection equipment for irrigation systems across Battery Park City E

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Evaluate the irrigation system across Battery Park City and develop a plan for identifying and addressing leaks (refer to Sub-Action W-1.1c)	BPCA	Short
2	Where appropriate, install automatic leak detection equipment for irrigation systems to minimize leaks (refer to Sub-Action W-1.1c)	BPCA	Medium

[b] Expand drip irrigation from flower beds to the majority of landscaped areas, including lawns

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Share information and lessons learned for drip irrigation systems with building owners who may have planted areas on or around their buildings that could benefit from drip irrigation	BPCA	Short
2	Identify gardens and other vegetated areas that could benefit from drip irrigation and consult and coordinate with BPCA on implementation	Building Owners and Managers, Businesses	Short
3	Expand drip irrigation to lawns and other vegetated areas, in alignment with Sub-Actions W-1.1c	BPCA	Medium

Resources

- **Natural Resources Conservation Service (NRCS) New York**: Irrigation water management and conservation practices are available from the USDA's NRCS for New York. Resources include NRCS New York Conservation Practice Standards, Environmental Quality Incentive Program information, and more.
- **Water Use & Conservation**: Learn more about New York State Water Use and Conservation efforts and requirements from the NYS Department of Environmental Conservation

[W-1.3] Encourage water conservation in buildings

Overview

Water conservation in buildings is a critical piece to reducing water use across Battery Park City. The steps to reducing water use in buildings include conducting water audits, installing low-flow fixtures and water-efficient appliances, and selecting water-efficient HVAC equipment at the time of upgrade. Water audits provide valuable insights into how much water a building or space is consuming and what uses require the most water. Water audits assess water-consuming equipment in a building and provide recommendations for reducing water consumption. With this information, buildings will have a plan for reducing water in their buildings through upgrades like low-flow fixtures or alternative HVAC systems.

Implementation Steps

[a] Conduct water audits of buildings to document efficiency of appliances, fixtures, and HVAC systems and provide recommendations for improvements

BPC-wide | BPCA-led

Order	Responsibilities	Responsible Groups	Timeframe
1	Select and retain one or more vendors to complete building water audits	BPCA, Building Owners and Managers	Short
2	Based on findings from water audits, develop a plan for making water-related improvements to buildings	BPCA, Building Owners and Managers	Medium

[b] Install low flow fixtures and water-efficient appliances

BPC-wide | BPCA-led

Order	Responsibilities	Responsible Groups	Timeframe
1	Research available rebates and financing opportunities for installing low flow fixtures and water-efficient appliances	Building Owners and Managers, Businesses	Short
2	In commercial buildings, install low-flow fixtures in common areas and bathrooms that are owned or maintained by building staff	Building Owners and Managers (Commercial)	Short
3	In cases where commercial building owners and managers do not maintain bathrooms or common areas, encourage tenants to renovate kitchens and bathrooms with more efficient fixtures and appliances	Building Owners and Managers (Commercial), Businesses, Community	Short
4	In residential buildings, install low-flow fixtures in all sinks and showers and water-efficient appliances for laundry and dishwashing	Building Owners and Managers (Residential), Community	Short, Medium

[c] At the time of building upgrades or renovations, install water-efficient HVAC systems E

BPC-wide | BPCA-led

Order	Responsibilities	Responsible Groups	Timeframe
1	During the initiation of energy retrofits, direct auditors and engineers to evaluate HVAC systems for their water consumption and recommend alternatives that are more water-efficient, as feasible	Building Owners and Managers	Short, Medium
2	As part of the retrofit analysis, ask auditors and engineers to model water savings in addition to energy savings for recommended upgrades	Building Owners and Managers, Implementation Partners	Short, Medium
3	Research potential financing available for water-efficient HVAC systems	BPCA, Building Owners and Managers	Short, Medium

Resources

- **BPC Green Guidelines**: Water Section
- **City Energy Project's Water Audit Guidance for Commercial Buildings**: 2019 guide that provides step by step instructions for executing water audits in commercial buildings. This guidance and approach to water audits can be applicable to multifamily residential buildings as well.
- **EPA WaterSense Products**: The EPA manages the WaterSense product label that ensures a product has met certain standards to be deemed water-efficient.
- **NYC DEP Water Conservation and Reuse Grant Pilot Program**: offers rebates and grants for both standard water fixture installations (WaterSense-certified, such as toilets) or custom retrofits. Residential properties can group together on a single application if they have the same owner. The last program application cycle ran from June to October of 2019, replacing a previous, more limited, program (the Toilet Replacement Program). It is anticipated that funding will recur year-over-year as part of the City's Water Demand Management Program.

[W-1.4] Educate the community on water conservation practices through a behavior change campaign

Overview

There are three types of behavioral change: forced change (mandatory efficiency standards and assuming consumer adoption), transformative change (incidental, such as having faster water heaters requiring less time for a shower to heat up), and voluntary (conscious decisions to change consumption habits). Irrespective of the water efficiency technologies being used in individual residential units or for commercial tenants, voluntary change will be key in achieving water conservation.

Implementation Steps

[a] Educate the community on water conservation and sustainable choices through a behavior campaign with informational materials and events

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Develop a "water conservation tips" handout that is posted on the BPCA website and is distributed to building managers for posting in buildings	BPCA	Short
2	Post "water conservation tips" in easily accessible areas of buildings and communicate with residents/commercial tenants the importance of water conservation	Building Owners and Managers	Short
3	Work with schools to develop educational materials and programs for educating students on water conservation and sustainable choices	BPCA, Implementation Partners	Short
4	Organize and conduct water conservation awareness events and organize outreach to schools and buildings	BPCA	Ongoing
5	Procure and distribute toilet leak detection tablets and other resources at events	BPCA	Ongoing
6	Adopt water conservation strategies to decrease individual water consumption	Community	Ongoing

Resources

- **Best Practices**: California's Department of Water Resources provides K-12 Education Materials for water conservation and Cool California's "Save Water at School" page offers guidance for school officials and teachers to be more water conscious.
- **New York City Soil & Water Conservation District's Educational Resources**
- **NYC DEP's Water Saving Tips**
- **NYS DEC's Water Conservation Tips**

[W-2] Water recycling systems

Install systems that treat wastewater from sinks and showers or stormwater for reuse in toilets, cooling towers, irrigation, and other uses at Battery Park City

2030 Target

Battery Park City Authority Spaces

Target: 15% of non-potable water demand for parks and landscape care provided by recycled water by 2030

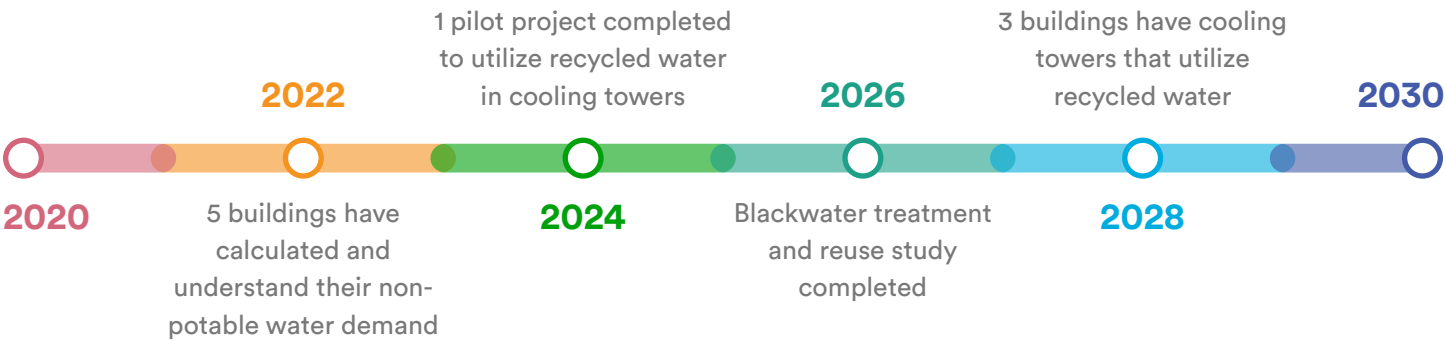
Baseline: Of parks and landscape care in BPC, only Teardrop Park utilized recycled water in 2019

Battery Park City

Target: 29% of built area at BPC served by a water recycling system by 2030

Baseline: 11% of built area at BPC served by a water recycling system in 2019

Supporting Milestones



Actions

[W-2.1] Maximize greywater reuse for all non-potable demands at Battery Park City

[W-2.2] Expand blackwater treatment and reuse systems

[W-2.1] Maximize greywater reuse for all non-potable demands at Battery Park City

Overview

One way to reduce potable water consumption in buildings is to identify and pursue opportunities to reuse greywater, or wastewater from baths, sinks, kitchen appliances and washing machines, for non-potable purposes like irrigation, cooling tower makeup, or toilet flushing. Taking inventory of non-potable water demand is the first step toward enabling greywater reuse in Battery Park City buildings. BPC already has five water reuse systems that serve six residential multifamily buildings that can be looked to as a model for water reuse. In addition to building uses, greywater reuse is a great option for irrigation and maintenance tasks like washing equipment. To maximize the use and efficiency of treated water use, a purple pipe network, or dedicated delivery system for recycled water that connects sources of treated water with demands for treated water, is an option for Battery Park City that will be explored.

Implementation Steps

[a] Determine non-potable water demand for each building

BPC-wide | BPCA-led

Order	Responsibilities	Responsible Groups	Timeframe
1	Evaluate water consumption and calculate non-potable water demand for the building	Building Owners and Managers	Short
2	Buildings that currently have reuse systems installed share lessons learned on implementing, using, and maintaining water reuse systems	Building Owners and Managers	Short

[b] Explore water recycling systems for use in cooling towers E

BPC-wide | BPCA-led

Order	Responsibilities	Responsible Groups	Timeframe
1	Facilitate an initial pilot to demonstrate value and feasibility of implementing a water recycling system for cooling towers	BPCA, Building Owners and Managers	Medium
2	Evaluate potential financing available for water recycling systems in cooling towers	BPCA, Building Owners and Managers	Medium
3	Leveraging lessons learned from the pilot, BPC buildings with cooling towers evaluate implementation of water recycling systems for their own cooling towers	Building Owners and Managers	Long

[c] Utilize treated water or captured stormwater for washing site pavement/walkways and for irrigation needs E

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Evaluate outdoor areas and maintenance practices to determine potential for utilizing treated wastewater or captured stormwater	BPCA, Building Owners and Managers	Short
2	Educate building owners or managers and the wider community on opportunities to use stormwater collection methods	BPCA	Short
3	Utilize treated wastewater for maintenance and operational needs such as washing equipment and spaces, where appropriate	BPCA, Building Owners and Managers	Short
4	Implement stormwater capture on-site for irrigation and other outdoor non-potable water needs	BPCA, Building Owners and Managers	Medium
5	Explore the potential to provide above-ground connections to greywater sources for property managers to use for pavement/walkway washing	BPCA	Medium

[d] Consider a Battery Park City "purple pipe network" for shared water treatment and reuse resources E

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Engage with building owners and residents/tenants to gauge interest in use of recycled water in buildings	BPCA	Short
2	Collaborate with NYC DEP to determine viable location and plants for purple pipe implementation if there is interest in the community	BPCA	Short
3	Utilize resources and engagement with building owners to understand existing water treatment assets and treated water demand in Battery Park City to understand the scale and costs of a potential purple pipe network	BPCA	Short
4	Implement a purple pipe network, based on feasibility and interest, and increase use of recycled water across Battery Park City	BPCA	Long

Resources

- **Best Practices**: The Buillit Center in Seattle is a net zero water facility that collects, manages, and treats rainwater, wastewater, and greywater on site. The building uses a combination of interventions like rainwater cisterns, bioswales, wetlands, and a UV treatment system to recycle water.
- **BPC Green Guidelines**: Water Section
- **New York State Clean Water State Revolving Fund**: Offers interest-free or low-interest rate financing for wastewater and water quality improvement projects throughout New York State including construction or restoration of sewers and wastewater treatment facilities, stormwater management, landfill closures, as well as habitat restoration and protection projects.
- **NYC DEP Rain Barrel Giveaway**: The NYC DEP offered a rain barrel giveaway program in April of 2019 – contact your local elected official to see if there will be a future rain barrel giveaway event.
- **NYC DEP Water Conservation and Reuse Grant Pilot Program**: Offers water and wastewater fee discounts for buildings with water reuse systems through the Comprehensive Water Reuse Program (CWRP). The CWRP provides a 25% water and wastewater fee discount to DEP customers who install water reuse systems that reduce the building's water consumption by at least 25%. CWRP applications are available online and include all necessary requirements.
- **On-site Non-Potable Water Reuse Practice Guide**: This guide, from the William J Worthen Foundation, provides practical guidelines for installing reuse systems. The guide offers an integrated approach for handling rainwater, stormwater, blackwater/greywater, and condensate from building projects.
- **Toward Net Zero Water: Best Management Practices for Decentralized Sourcing and Treatment**: Prepared by the Cascadia Green Building Council, this document, offers guidance for achieving net zero water through rainwater harvesting, greywater, and wastewater systems.

[W-2.2] Expand blackwater treatment and reuse systems

Overview

Treating and reusing blackwater (wastewater generated from toilets that may have fecal contamination) would further reduce potable water consumption and wastewater discharge. In the past, BPCA has successfully utilized on-site blackwater treatment for use in park operations and maintenance. Since blackwater contains potential pathogens it requires advanced treatment methods to ensure safety of reuse.

Implementation Steps

[a] Study the potential for blackwater treatment and reuse systems

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Restore the blackwater treatment system and utilize treated wastewater for washing down vehicles and maintenance needs	BPCA	Short
2	Conduct blackwater treatment and reuse study for BPC	BPCA	Short
3	Share findings and recommendations for building owners to implement blackwater treatment systems in their own spaces	BPCA, Building Owners and Managers	Short

Resources

- **BPC Green Guidelines**: Water Section
- **Dual Water Systems: Characterization and Performance for Distribution of Reclaimed Water**: From the Water Research Foundation, this report offers guidance and case studies for dual water systems or purple pipe infrastructure.
- **New York State Clean Water State Revolving Fund**: Offers interest-free or low-interest rate financing for wastewater and water quality improvement projects throughout New York State including construction or restoration of sewers and wastewater treatment facilities, stormwater management, landfill closures, as well as habitat restoration and protection projects.
- **NYC DEP Comprehensive Water Reuse Program (CWRP)**: As a part of the NYC DEP Water Conservation and Reuse Grant Pilot Program, the CWRP provides a 25% water and wastewater fee discount to DEP customers who install water reuse systems that reduce the building's water consumption by at least 25%. CWRP applications are available online and include all necessary requirements.

Resources, continued.

- **On-site Non-Potable Water Reuse Practice Guide**: This guide, from the William J Worthen Foundation, provides practical guidelines for installing reuse systems. The guide offers an integrated approach for handling rainwater, stormwater, blackwater/greywater, and condensate from building projects.
- **Toward Net Zero Water: Best Management Practices for Decentralized Sourcing and Treatment**: Prepared by the Cascadia Green Building Council, this document offers guidance for achieving net zero water through rainwater harvesting, greywater, and wastewater systems.

[W-3] Resiliency and stormwater management

Improve resiliency to protect against major storms, upgrade stormwater infrastructure, and increase the number of permeable surfaces in Battery Park City

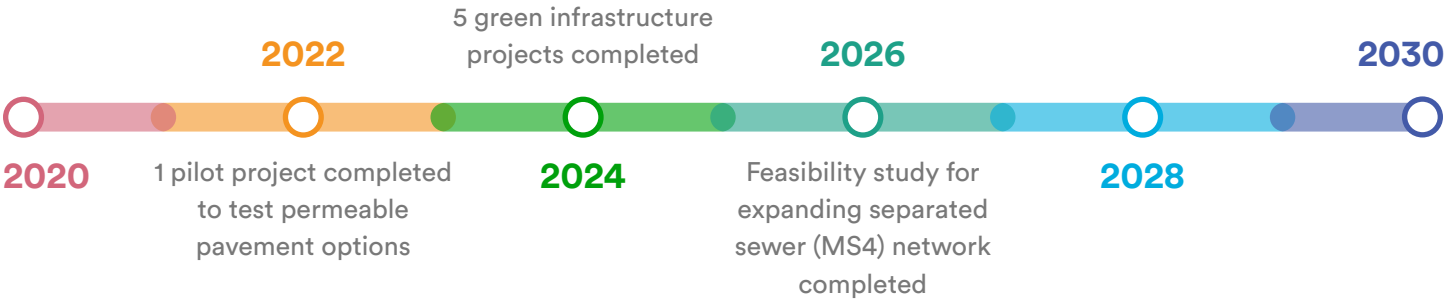
2030 Target

Battery Park City Authority Spaces

Target: All BPC Resiliency Projects completed and 46% of Battery Park City's parks and public open spaces to be permeable by 2030

Baseline: 38% of Battery Park City's parks and public open spaces were permeable in 2019

Supporting Milestones



Actions

[W-3.1] Work to make Battery Park City more resilient to major storms

[W-3.2] Increase the permeability of Battery Park City through pavement modifications and green stormwater infrastructure

[W-3.3] Improve stormwater infrastructure to limit combined sewer overflow incidents

[W-3.1] Work to make Battery Park City more resilient to major storms

Overview

Battery Park City is focused on increasing the neighborhood's resilience to storms to better protect both people and infrastructure. BPCA manages the BPC Resiliency Projects which allow for the study, design, and implementation of coastal and storm resiliency methods in locations throughout the community. Storm resilience will be achieved through the completion of these projects as well as from the commitment of BPC buildings to adapt and protect against major storms and other risks.

Implementation Steps

[a] Complete planned BPC Resiliency Projects (North, West, South, Ball Fields & Community Center) E

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Continue design and begin construction for BPC Resiliency projects	BPCA	Short, Medium
2	Carefully coordinate and complete each project	BPCA	Ongoing
3	Educate and collaborate with the community on the details and impact of the resiliency projects	BPCA	Ongoing

[b] Adapt BPC buildings to prepare for major storms and increased flooding

BPC-wide | BPCA-led

Order	Responsibilities	Responsible Groups	Timeframe
1	Assess building vulnerability to flooding and major storms	Building Owners and Managers	Short
2	Evaluate and prioritize options for adapting buildings to better protect infrastructure and occupants	Building Owners and Managers	Short
3	Upgrade buildings to be more resilient to storms and flooding	Building Owners and Managers	Medium, Long

Resources

- **Battery Park City Resiliency Projects**: Information on BPC resiliency projects can be found on the Battery Park City Resiliency Projects webpage.
- **NYCEDC's Lower Manhattan Climate Resilience Study**: Outlines the Lower Manhattan response to sea-level rise and climate change, post Superstorm Sandy.
- **NYC Mayor's Office of Resiliency**: New York City's larger resiliency response is conducted through the Mayor's Office of Resiliency and information on projects and plans can be found on their website.

[W-3.2] Increase the permeability of Battery Park City through pavement modifications and green stormwater infrastructure

Overview

One method for improving the management of stormwater is to increase the permeability of the landspace either by installing permeable pavements or by converting hardscape to softscape and installing green stormwater infrastructure. Hardscapes include areas such as sidewalks, parking lots, and courtyards that do not allow stormwater to infiltrate below the surface and can facilitate flooding. Permeable pavements and green stormwater infrastructure can help to reduce flooding risks by providing opportunities for stormwater to infiltrate or slow down runoff, while also filtering and cleaning stormwater runoff through green infrastructure. These methods for increasing permeability will help to improve the management of stormwater in Battery Park City.

Implementation Steps

[a] Explore opportunities to convert hardscape to softscape

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Evaluate hardscape in Battery Park City and identify areas in need of repair that may present a natural and cost-effective opportunity for conversion to softscape	BPCA, Building Owners and Managers	Short
2	Evaluate softscape replacements for hardscape areas and implement designs	BPCA, Building Owners and Managers	Medium
3	Determine maintenance plan for new softscape elements	BPCA, Building Owners and Managers	Medium

[b] Conduct a pilot project to test out different permeable pavement options

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Evaluate areas in BPC with the potential for pavement replacement with permeable pavers – areas in need of repair present a cost-effective option for testing permeable pavement	BPCA	Short
2	Oversee a pilot project for implementation and maintenance of permeable pavement options	BPCA	Short
3	Based on pilot project, expand permeable pavement coverage (refer to Sub-Action W-3.2.c)	BPCA	Medium

[c] Install permeable pavements in areas most impacted by rain events E

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Identify high-risk flood areas within BPC and prioritize those sites for replacing traditional pavement with permeable pavement	BPCA	Short
2	Lead installation of permeable pavement, focusing on areas where repair is already needed to paved surfaces	BPCA	Medium
3	Share benefits and lessons learned on permeable pavement with the BPC community	BPCA	Medium

[d] Identify locations for bioswales, green roofs, and rain gardens in Battery Park City and implement projects as upgrades are made to structures, streets, or parks E

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Identify possible locations for increased or new green infrastructure	BPCA	Short
2	Plan for installation of green infrastructure so that it aligns with infrastructure upgrades that are made on structures, streets, or parks	BPCA	Short
3	Lead installation of bioswales, green roofs, and rain gardens in public spaces and on BPCA-owned property	BPCA	Short, Medium
4	Identify opportunities to increase green infrastructure for buildings, whether on rooftops or surrounding grounds	Building Owners and Managers	Short
5	Evaluate financing opportunities to subsidize and/or cover the costs of green infrastructure projects	BPCA, Building Owners and Managers	Short

Resources

- **BPC Green Guidelines**: Water Section
- **EPA Green Infrastructure Funding Opportunities**: provides information for federal funding opportunities
- **Green Infrastructure Toolkit**: from Georgetown Climate Center, this toolkit offers guidance on funding and financing projects.
- **Green Roofs for Healthy Cities**: provides many resources for green infrastructure from policy resources to design standards and a green roof energy calculator.
- **Green Roofs NYC**: provides valuable resources for schools by providing educational opportunities with green roofs including curriculum ideas and educational initiatives in New York City.
- **New York State Clean Water State Revolving Fund**: offers interest-free or low-interest rate financing for wastewater and water quality improvement projects throughout New York State including construction or restoration of sewers and wastewater treatment facilities, stormwater management, landfill closures, as well as habitat restoration and protection projects.
- **New York State DEC's Stormwater Management Design Manual**: provides standards for the design of the Stormwater Management Practices (SMPs). Please refer to Chapters 3 through 9 for design standards and development principles for green infrastructure, soil preservation, permeable pavements, runoff reduction, and flood management.

Resources, continued.

- **New York State Green Innovation Grant Program**: offers financial support to projects that utilize unique stormwater infrastructure design and create cutting-edge green technologies. Eligible practices include permeable pavements, stormwater harvesting and reuse, floodplain restoration, riparian buffer, and biorientation, among others. The grant covers 40% to 90% of the eligible project costs. A match from state or local sources for the balance is required. Refer to the online application, or review the workshop presentation to learn more.

[W-3.3] Improve stormwater infrastructure to limit combined sewer overflow incidents

Overview

Combined sewer overflows (CSO) occur when major storm events overwhelm the combined sewer system which, as a result, mixes stormwater runoff and sanitary sewage. Most of Battery Park City is served by a combined sewer system and already takes some measures to reduce stormwater runoff and CSOs like green roofs and stormwater detention. Stormwater detention systems act as a temporary storage area for runoff that can reduce the risk of flooding and CSO by slowing the rate of water entering the sewer system. These systems can also act as a source for water treatment and reuse. Some areas of Battery Park City are served by the municipal storm sewer system (MS4) where stormwater and wastewater are separated. Where possible, Battery Park City could benefit from converting infrastructure to a complete MS4 system to reduce CSOs and better manage stormwater in the neighborhood.

Implementation Steps

[a] Identify and implement opportunities for additional stormwater detention and storage to improve stormwater management and enable water recycling systems

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Assess available and viable sites for stormwater storage either underground or above-ground, in conjunction with BPC Resiliency Projects	BPCA	Short
2	Determine maintenance needs and associated costs for implementation of the stormwater storage systems	BPCA	Short
3	Determine expected benefit from additional storage for flood reduction in Battery Park City	BPCA	Short
4	Install additional stormwater detention and storage systems across Battery Park City	BPCA	Medium
5	Connect stormwater storage resources with non-potable water demands in Battery Park City	BPCA	Medium

[b] Partner with DEP to study the feasibility of expanding separated sewer (MS4) network to areas north of Liberty Street

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Work with DEP to determine the feasibility of expanding the MS4 network	BPCA, Implementation Partners	Short
2	Based on findings from the feasibility study, initiate steps to expand the MS4 network	BPCA, Implementation Partners	Long

Resources

- **BPC Green Guidelines**: Water Section
- **NYC DEP Combined Sewer Overflows Best Management Practices**
- **NYC DEP Private Property Retrofit Incentive Program**: promotes installation of green infrastructure assets on private property that manage a stormwater volume equivalent to 200 "greened acres." The program targets large parcels, 50,000 square feet or greater, in the combined sewer areas of the City with large impervious (paved) areas. Visit the online application for more details.
- **NYC DEP Stormwater Management System Design Guidelines for New York City**
- **New York State Clean Water State Revolving Fund**: offers interest-free or low-interest rate financing for wastewater and water quality improvement projects throughout New York State including construction or restoration of sewers and wastewater treatment facilities, stormwater management, landfill closures, as well as habitat restoration and protection projects.

4 Materials and Waste

Introduction

The Materials and Waste Topic Area covers sustainable consumption, sustainable building materials, waste diversion, organics collection and composting, and construction and demolition activities in Battery Park City. The Actions, Sub-Actions, and Implementation Steps provide direction on how BPC can drive sustainable behavioral change; reduce the volume of waste sent to landfill from building materials, organics, and consumer products; and ultimately promote more reuse/circular economies. Implementing the Strategies in this section will require participation from BPCA, building owners, residents, local partners and more. All of these parties working together will help BPC reduce waste and the greenhouse gas emissions associated with its production.

Key Resources

Several resources are available for BPCA and the community to use in order to guide, implement, and fund the Materials & Waste Strategies. The New York City Department of Environmental Protection (NYC DEP) provides strategies for how New York City can become a zero waste city in the NYC Zero Waste Design Guidelines. Further tips are available on the DEP site to assist with waste reduction measures. At the State level, the NY Department of Environmental Conservation is a useful resource for potential grants and assistance in waste reduction and recycling. In addition, numerous non-profits exist that can accept donations of materials for reuse, like Big Reuse, or provide consolidated resources on NYC Zero Waste programs, like GrowNYC. These non-profits can serve as key partners for achieving BPC's waste reduction targets and provide meaningful reuse for materials that would have otherwise been wasted. Furthermore, financing may be available through NYC DEP waste reduction and prevention project grants.

Individual actions you can take now

- Use reusable bottles, bags, and containers to reduce single-use plastics
- When shopping, look for eco-labels and other sustainable products
- Purchase locally sourced goods when possible
- Join and host events centered on reuse, like a costume swap, a drop a bag/take a bag event, or fix it events where broken items can be brought in for repair rather than being thrown away
- Conduct an audit of the waste you produce to understand what can be diverted from the landfill
- Participate in the BPCA Composting Program, locations for community drop off are available online

Responsible Groups Map

Strategy	Action	Page #	Responsible Groups				
			BPCA	Building Owners and Managers	Businesses	Community	Implementation Partners
[M&W-1] Sustainable consumption	[M&W-1.1] Limit the amount of materials that enter and the amount of waste that exits Battery Park City, through procurement and permitting	92	✓	✓	✓	✓	
	[M&W-1.2] Reduce the use of single-use materials through infrastructure and programming	95	✓	✓	✓	✓	
	[M&W-1.3] Educate the community on consumption patterns and alternatives to reduce waste generation	97	✓	✓	✓	✓	
[M&W-2] Sustainable building materials	[M&W-2.1] Improve indoor health and wellness through material selection	100	✓	✓	✓		✓
	[M&W-2.2] Support the reduction of embodied carbon in buildings and materials	102	✓	✓	✓		
[M&W-3] Waste diversion	[M&W-3.1] Support the development of reuse centers and educational programs across Battery Park City to influence behavior change	105	✓	✓	✓	✓	
	[M&W-3.2] Expand recycling and composting activities through additional infrastructure, education, and training	108	✓	✓			
	[M&W-3.3] Conduct waste audits and collect waste data to better understand diversion and track progress	112	✓	✓	✓	✓	✓

Responsible Groups Map, continued.

Strategy	Action	Page #	Responsible Groups				
			BPCA	Building Owners and Managers	Businesses	Community	Implementation Partners
[M&W-4] Organics collection and composting	[M&W-4.1] Expand and improve the Battery Park City organic waste collection network	116	✓	✓	✓	✓	✓
	[M&W-4.2] Increase local capacity for composting and broaden the organic waste types that can be composted at Battery Park City	119	✓	✓			✓
[M&W-5] Construction and demolition activities	[M&W-5.1] Develop more sustainable construction practices at Battery Park City and increase the amount of C&D waste recycled or reused	122	✓	✓	✓		✓
	[M&W-5.2] Mitigate the impacts of construction and renovations by sequencing and coordinating activities and sharing materials	125	✓	✓			✓

[M&W-1] Sustainable consumption

Alter consumption patterns and reduce single-use materials and other wasteful items by encouraging reuse and donations

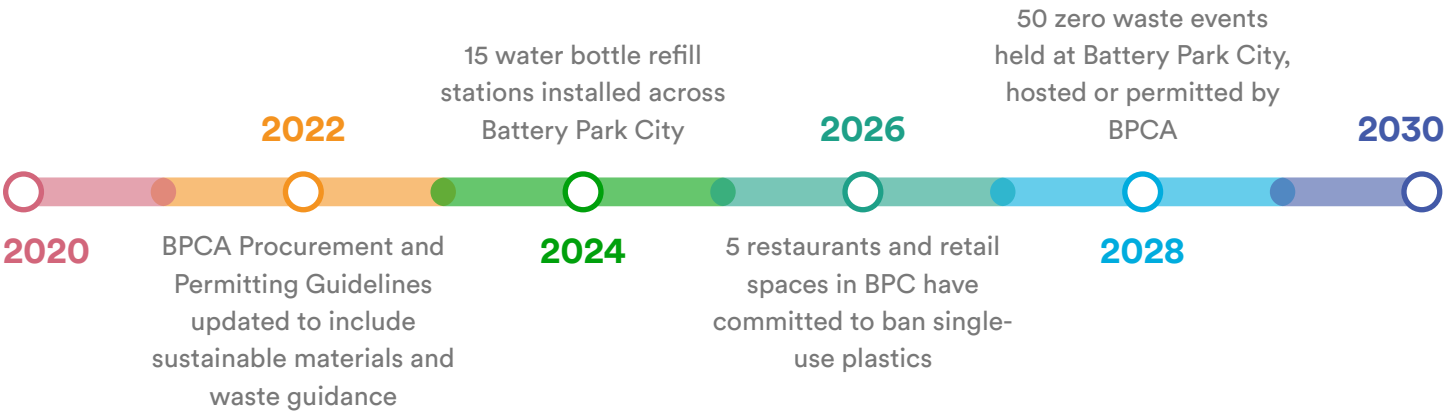
2030 Target

Battery Park City

Target: Achieve behavior change that supports waste reduction, recycling, and reuse in Battery Park City by 2030

Baseline: In 2019, BPCA was a leader in sustainable material consumption by avoiding single-use plastics and transitioning to reusable products.

Supporting Milestones



Actions

[M&W-1.1] Limit the amount of materials that enter and the amount of waste that exits Battery Park City, through procurement and permitting

[M&W-1.2] Reduce the use of single-use materials through infrastructure and programming

[M&W-1.3] Educate the community on consumption patterns and alternatives to reduce waste generation

[M&W-1.1] Limit the amount of materials that enter and the amount of waste that exits Battery Park City, through procurement and permitting

Overview

The procurement and permitting process can regulate what materials come into BPC and ultimately what waste the community generates. Procurement refers to the acquisition of goods or services, while permits provide authorization or consent for certain activities to take place within BPC. By adding directional guidance on sustainability to both BPCA procurement guidelines and permits, BPCA can provide direction on waste reduction during procurement and during events where permits are required. As a part of these activities, BPC will track and report on the impacts of updated procurement guidelines and permits on waste generation in the community.

Implementation Steps

[a] Ensure that BPCA Procurement Guidelines contain sustainability guidance and provide direction on the consumption and tracking of materials that enter and exit Battery Park City E

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Review Procurement Guidelines and identify opportunities to add sustainability focused content	BPCA	Short
2	Draft and finalize content that will provide guidance on the consumption and tracking of materials and waste during the procurement process	BPCA	Short
3	Track impacts of updated Procurement Guidelines	BPCA	Short, Medium

[b] Ensure that the BPCA permitting processes set sustainability goals and ensure limits on the materials that come in and go out of Battery Park City E

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Review current permit applications and identify opportunities to incorporate sustainability goals and requirements	BPCA	Short
2	Provide guidance on sustainability considerations for permitted events such as selecting sustainable vendors or providing recycling and composting disposal options during events (refer to Sub-Action M&W-1.1c)	BPCA	Short
3	Permit applicants work to achieve sustainability goals outlined in the permit in order to reduce the event's waste and overall environmental impact	Building Owners and Managers, Businesses, Community	Ongoing
4	Track impact of updated permit applications that incorporate sustainability goals and requirements	BPCA	Ongoing

[c] Procure zero waste or circular economy vendors for catering and other services E

BPC-wide | BPCA-led

Order	Responsibilities	Responsible Groups	Timeframe
1	Curate a list of zero waste or circular economy focused vendors to reference for event planning in Battery Park City	BPCA	Short
2	Evaluate opportunities to reduce material consumption and generate less waste in business operations	Businesses	Short
3	Develop working partnerships with zero waste and circular economy vendors to ensure vendor sustainability priorities align with those of Battery Park City	BPCA, Building Owners and Managers, Businesses	Ongoing

Resources

- **New York City Department of Sanitation (DSNY)**: provides a variety of education materials and resources for communities, schools, businesses and more.
- **NYC DEP Waste Reduction Measures**: available through the DEP website.
- **NYC Zero Waste Design Guidelines**: provides strategies on how New York can become a zero waste city by 2030.
- **NYC Zero Waste Event Tracking**: GrowNYC tracks zero waste events in New York City.
- **Stop 'N' Swap Events**: GrowNYC tracks Stop 'N' Swap events where attendees can bring clean and reusable items they no longer need.

[M&W-1.2] Reduce the use of single-use materials through infrastructure and programming

Overview

Single-use items that are used once and then disposed of contribute to the large volume of waste sent to landfills each year. While New York is making progress by banning the use of single-use items such as plastic bags and straws, there are still opportunities to further reduce consumption. For example, restaurants and retailers can eliminate single-use items such as utensils, bottles, cups and other disposable packaging or products by prioritizing reusable items. Expanding the availability of water bottle refill stations across Battery Park City can reduce the demand for single-use plastic water bottles and encourage reusable bottles. Overall, considering cost-effective reusable alternatives can help BPC reduce consumption of single-use materials and the amount of waste sent to landfills.

Implementation Steps

[a] Eliminate single-use plastics and other wasteful materials across Battery Park City restaurants and retail spaces

BPC-wide | BPCA-led

Order	Responsibilities	Responsible Groups	Timeframe
1	Evaluate use of single-use plastics by buildings, offices, or spaces, considering those used for food and drink, toiletries, shopping, etc.	Building Owners and Managers, Businesses, Community	Short
2	Develop a plan to shift to reusable and/or more sustainable materials as opposed to single-use plastics – if reusable items are not available, consider compostable alternatives (i.e. napkins, utensils, etc.)	Building Owners and Managers, Businesses, Community	Short

[b] Expand the availability of water bottle refill stations that encourage the use of reusable water bottles E

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Evaluate locations across BPC for potential water bottle refill station such as in parks and other public spaces	BPCA	Short
2	Engage with building owners and identify building-scale interest in water bottle refill stations	BPCA, Building Owners and Managers, Businesses	Short
3	Work to procure water bottle refill stations in bulk to reduce costs for BPC buildings	BPCA	Short
4	Install water bottle refill stations at pre-determined locations	BPCA, Building Owners and Managers, Businesses	Short
5	Measure, track, and report how many plastic water bottles are saved as a part of using water bottle refill stations	BPCA	Ongoing

Resources

- New York Department of Sanitation's Recycling Guidelines for Residents and Apartment Managers
- New York State Office of General Services GreenNY Tips for Reducing Single-Use Plastics
- NYS DEC Grants for Waste Reduction and Prevention Projects: use the NYDEC gateway portal to search for waste reduction and prevention project grants.

[M&W-1.3] Educate the community on consumption patterns and alternatives to reduce waste generation

Overview

The most effective way to reduce overall waste and improve recycling rates is to educate the community and alter behaviors through events and educational campaigns. BPCA can share tips with the community on reducing and properly disposing of waste, being a sustainable consumer, reducing natural resource consumption, and other pertinent sustainability topics. Helping the community as a whole use less, purchase local, purchase responsibly, and accurately sort waste can help BPC become an even more sustainable community.

Implementation Steps

[a] Host educational events to showcase sustainable behaviors and products for the home and workplace

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Put together information on sustainable shopping that suggests alternatives to single-use materials	BPCA	Short
2	Share ideas with BPCA on sustainability topics that are of interest	Community	Short
3	Organize sustainability events for the BPC community to showcase sustainable options and support behavior change around consumption	BPCA, Building Owners and Managers, Implementation Partners	Ongoing
4	Organize pop-up events around Battery Park City for educating residents, visitors, workers, and others about waste streams and proper disposal	BPCA, Building Owners and Managers	Ongoing

[b] Develop a guide for residents on sustainable materials and consumer goods to educate them while shopping including guidance on eco-labels, sustainable wood products, etc.

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Curate a list of eco-friendly labels and certifications that consumers can look for to indicate product sustainability (refer to Sub-Action M&W-1.3a)	BPCA	Short
2	Share information on sustainable options and considerations for common consumer goods	BPCA	Short
3	When shopping, reference resources identified by BPCA and Implementation Partners, and look for environmentally-friendly products	Businesses, Community	Short

[c] Develop a program to promote Battery Park City businesses to encourage local shopping

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Encourage shopping local across BPC through events and programming and partnerships with local businesses	BPCA, Businesses	Short
2	When shopping, consider local BPC businesses	Community	Ongoing

Resources

- **Certified Wood Products Databases**: The Forest Stewardship Council (FSC) and Sustainable Forestry Initiative (SFI) provide online databases of select retailers that carry certified wood products.
- **EPA Introduction to Eco-labels and Standards for Greener Products**
- **GrowNYC Instructional Videos on Recycling and Reuse**
- **GrowNYC Waste Audit Guide for Schools**
- **NYC Zero Waste Design Guidelines**: provides strategies on how New York can become a zero waste to landfill city by 2030.

[M&W-2] Sustainable building materials

Promote the reuse and recycling of building materials and the selection of materials that enhance indoor air quality

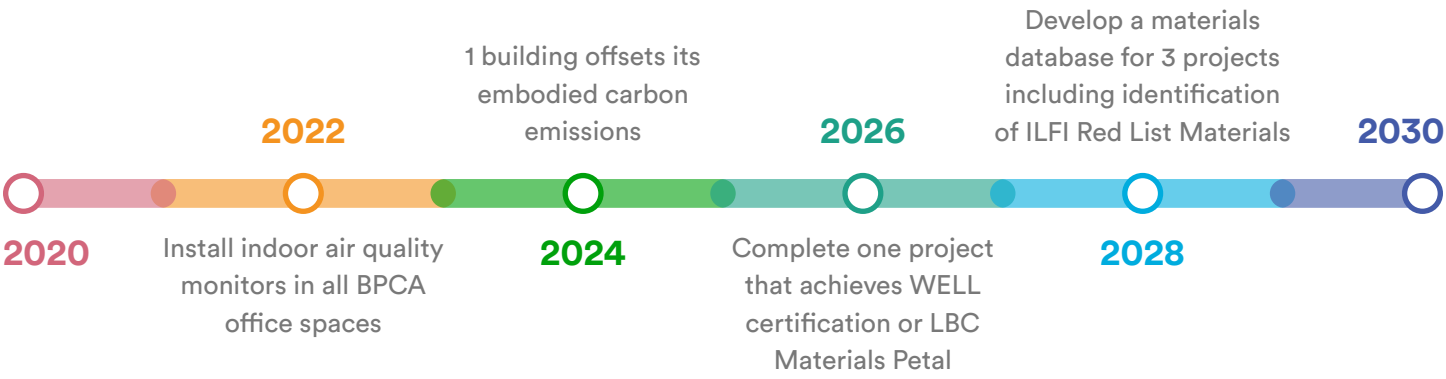
2030 Target

Battery Park City

Target: 25% of construction or renovation project materials, by weight, to be from the ILFI Declare database, Cradle to Cradle certified, or other comparable sustainable materials by 2030

Baseline: Sustainable building material use not tracked

Supporting Milestones



Actions

[M&W-2.1] Improve indoor health and wellness through material selection

[M&W-2.2] Support the reduction of embodied carbon in buildings and materials

[M&W-2.1] Improve indoor health and wellness through material selection

Overview

Material selection can greatly influence indoor air quality and occupant health and wellness. Volatile organic compounds (VOCs) are one reason for this. VOCs are organic chemicals that are common in household products, paints, and building materials. It is critical to reduce VOCs in homes and commercial spaces as they have adverse effects on human health and the environment. The International Living Future Institute (ILFI) maintains a list, the Red List, which provides a list of the worst in class materials that are prevalent in the building industry. When upgrades or renovations are made in a building or space, special attention should be paid to reducing VOCs and avoiding Red List items. Buildings should also consider indoor air quality monitoring to ensure levels are safe and appropriate.

Implementation Steps

[a] Avoid volatile organic compounds (VOCs) and VOC-emitting materials or equipment in homes and commercial spaces

BPC-wide | BPCA-led

Order	Responsibilities	Responsible Groups	Timeframe
1	Help inform BPC community on the dangers of VOCs and how to avoid or limit VOCs in office spaces and homes	BPCA	Short
2	Building owners and managers as well as commercial tenants and residents work together to ensure that VOCs are reduced where possible throughout a building	Building Owners and Managers, Businesses	Ongoing
3	When upgrading buildings or spaces, direct project teams to select materials that limit occupant exposure to VOCs and ensure there is proper ventilation	BPCA, Building Owners and Managers	Ongoing

[b] Reference the ILFI Red List during fit-outs, renovations, or construction projects to avoid harmful materials

BPC-wide | BPCA-led

Order	Responsibilities	Responsible Groups	Timeframe
1	Encourage avoidance of ILFI Red List items when selecting materials and recommend reductions in the use of harmful materials	BPCA	Short
2	Reference the ILFI Red List and discuss alternative materials selection during the design process	Building Owners, Implementation Partners	Ongoing

[c] Consider the installation of indoor air quality monitors throughout Battery Park City

BPC-wide | BPCA-led

Order	Responsibilities	Responsible Groups	Timeframe
1	Identify needs for indoor air quality monitors	BPCA, Building Owners and Managers	Short
2	Work to procure indoor air quality monitors in bulk, based on need in BPC, to reduce costs for buildings	BPCA	Short
3	Install indoor air quality monitors in BPC buildings	Building Owners and Managers	Short, Medium
4	Track and report on indoor air quality to inform building occupants	Building Owners and Managers	Short, Medium

Resources

- **BPC Green Guidelines**: Materials & Waste Section
- **EPA VOC Definition and Impact**: The EPA provides a definition and explanation of the impact VOCs can have on indoor air quality.
- **ILFI Red List**
- **NYC's Department of Health's Guidance on Improving Indoor Air Quality**

[M&W-2.2] Support the reduction of embodied carbon in buildings and materials

Overview

Embodied carbon refers to the greenhouse gas (GHG) emissions associated with the sourcing, production, transportation, installation, and end use of a material. Certain materials have lower levels of embodied carbon and reusing materials can significantly reduce the embodied carbon of a project. Developing a database with an inventory of building materials and associated embodied carbon can inform materials decisions to reduce the embodied carbon in a building, lowering the building's overall environmental footprint. When renovations or new construction arise in BPC, this database can be used as a reference to guide decisions.

Implementation Steps

[a] Develop material databases for buildings that identify the embodied carbon associated with the materials in a building that can be updated and used for assessment during renovations

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Put together material databases for buildings or spaces to create a baseline for the buildings' or spaces' embodied carbon	Building Owners and Managers, Businesses (i.e. Large Commercial Tenants)	Medium
2	Reference material databases during renovations to determine if lower embodied carbon materials can be selected	Building Owners and Managers, Businesses (i.e. Large Commercial Tenants)	Long

[b] During major renovation or construction projects, collaborate with BPCA and other partners to identify sources of reusable materials in Battery Park City or beyond

BPC-wide | BPCA-led

Order	Responsibilities	Responsible Groups	Timeframe
1	Develop a platform and resources for building owners to reference how to reuse or donate materials for reuse within BPC and beyond	BPCA	Short
2	During renovation planning, identify materials, appliances, furniture, and other items in good condition that have the potential for reuse and share with BPCA	BPCA, Building Owners and Managers	Short
3	Work with BPCA to identify other BPC projects that could utilize the materials or organizations that accept the used materials	BPCA, Building Owners and Managers	Short
4	Develop a plan for deconstruction and reuse or donation of materials (i.e. identify who will remove materials, date of removal, and time and place for material pick-up or drop-offs)	Building Owners and Managers	Medium, Long
5	Execute plan for deconstruction and reuse or donation	Building Owners and Managers	Medium, Long

Resources

- **Architecture 2030 Challenge**: provides information on programs, initiatives, and collaborations for embodied carbon for new buildings and guidance on reducing operating carbon for existing buildings.
- **BPC Green Guidelines**: Materials & Waste Section
- **Organizations for Material Donation**: Habitat for Humanity ReStores, Big Reuse, Goodwill, NYC Materials Exchange Development Program, Materials for the Arts, Build it GreenNYC.

[M&W-3] Waste diversion

Increase the amount of reused and recycled materials, and separately dispose of organic waste, to reduce the amount of waste sent to landfill and the associated GHG emissions

2030 Target

Battery Park City Authority Spaces

Target: Zero waste sent to landfills from BPCA-managed spaces by 2030

Baseline: 90% of 75 Battery Place waste was diverted from landfills in 2019

Battery Park City

Target: 50% reduction in landfill waste sent to compactors by 2030

Baseline: 8.5 million pounds of residential landfill waste compacted in 2019

Supporting Milestones

Actions

[MW-3.1] Support the development of reuse centers and educational programs across Battery Park City to influence behavior change

[MW-3.2] Expand recycling and composting activities through additional infrastructure, education, and training

[MW-3.3] Conduct waste audits and collect waste data to better understand diversion and track progress

[M&W-3.1] Support the development of reuse centers and educational programs across Battery Park City to influence behavior change

Overview

Education on opportunities and programs for reuse is a critical component of reducing waste in the BPC community. For unique items, individuals may not realize there are options for reuse or recycling, and instead just throw these items in the trash. Hosting creative reuse focused events can provide a fun way for residents to engage in reuse activities and conversations, ultimately strengthening connections with the BPC community and reducing waste. Furthermore, there are vast opportunities for donation of unused items, particularly food. Restaurants and food retailers contribute to food waste, as oftentimes unused food is discarded, resulting in both excess waste and a lost opportunity to feed those in need. By donating unused food, restaurants can help reduce the amount of waste sent to landfill.

Implementation Steps

[a] Host events for people to bring atypical waste and learn about options for reuse, donation, or recycling E

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Identify unique items where the proper disposal method is unclear and there is potential for reuse or recycling	BPCA, Building Owners and Managers, Businesses, Community	Short
2	Provide guidance to the community on available options for recycling, donating, or reusing atypical waste at BPC and encourage the proper disposal of these items	BPCA, Building Owners and Managers	Short
3	Plan and host events for educating on disposal of atypical waste streams like mattresses, electronics, and others	BPCA, Building Owners and Managers	Ongoing

[b] Host reuse events like a costume swap, a drop a bag, take a bag event, or fix it events where broken items can be brought in for repair rather than being thrown away E

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Work with residents and businesses to identify reuse events that would be of interest	BPCA, Building Owners and Managers, Businesses, Residents	Short
2	Provide guidance to building owners on how to host their own reuse events	BPCA, Building Owners and Managers	Short
3	Advocate for buildings to have dedicated space for reusing or swapping items among building residents/tenants where anything not needed is donated regularly	BPCA, Building Owners and Managers	Short
4	Plan and host reuse events where attendees can swap specific items or learn how to repair items	BPCA, Building Owners and Managers	Ongoing

[c] Donate unused food from food retailers and restaurants

BPC-wide | BPCA-led

Order	Responsibilities	Responsible Groups	Timeframe
1	Identify and collaborate with food donation & distribution organizations	Businesses (i.e. Restaurants and Food Retailers)	Short
2	Determine food items eligible for donation	Businesses (i.e. Restaurants and Food Retailers)	Short
3	Coordinate donation logistics with food donation & distribution organizations	Businesses (i.e. Restaurants and Food Retailers)	Ongoing

Resources

- **GrowNYC Zero Waste Programs**: Greenmarket Clothing Collection, GrowNYC Food Scrap Drop Off Sites, Stop 'N' Swap®, NYCHA Environmental Ambassadors.
- **NYC Zero Waste Design Guidelines**: provides strategies on how New York can become a zero waste to landfill city by 2030.
- **Organizations for Food Donation**: NYC Food Banks, City Harvest, NYC Food Donation Portal.
- **Organizations for Material Donation**: Habitat for Humanity ReStores, Big Reuse, Goodwill, NYC Materials Exchange Development Program, Materials for the Arts, Build it GreenNYC.

[M&W-3.2] Expand recycling and composting activities through additional infrastructure, education, and training

Overview

To increase waste diversion rates, Battery Park City must prioritize expanding recycling and composting offerings in the neighborhood and continue to educate residents, building owners, and businesses about these programs and proper disposal. A critical step to achieving success is through consistent and informative signage for landfill, recycling, and organics collection bins. As BPCA expands recycling bins in parks and grows the composting program and organic waste collection, proper signage will be important. To maximize recycling in Battery Park City, all buildings should explore non-traditional recycling programs for their buildings such as textile donations and e-waste recycling. Finally, promoting the use of these programs to residents, businesses, and building owners is a critical step in program expansion and participation.

Implementation Steps

[a] Develop consistent signage for waste, recycling, and organics collection across Battery Park City E

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Inventory existing signage for waste, recycling, and organics in BPC	BPCA	Short
2	Update any outdated information on recycling or organics	BPCA	Medium
3	Develop new signage for waste, recycling, and organics (where appropriate)	BPCA	Medium
4	Replace existing signage with updated signage	BPCA	Medium

[b] Pilot recycling bins in parks to assess the impact on waste diversion E

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Determine potential locations for recycling bins across parks in BPC, selecting areas with high amounts of foot traffic	BPCA	Short
2	Select 10 locations to pilot recycling bins in BPC	BPCA	Short
3	Assess use of recycling bins and contamination in bins as a part of the pilot program	BPCA	Medium
4	Measure total recycling volume diverted from landfill	BPCA	Medium

[c] Develop an education program to raise awareness about available recycling and composting programs and how community members can contribute

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Develop content for community member education on recycling and composting programs (refer to Sub-Actions M&W-3.1a and M&W-3.1b)	BPCA	Short
2	Determine appropriate methods for community members to participate such as through in-person events, online learning, or marketing campaigns	BPCA	Short
3	Launch education program for BPC community members	BPCA	Short

[d] Train at least one building management staff member for each building to achieve the NYC Zero Waste Building Maintenance Training Certificate, or similar E

BPC-wide | BPCA-led

Order	Responsibilities	Responsible Groups	Timeframe
1	Promote the NYC Zero Waste Building Maintenance Training with BPC building staff and share upcoming training dates	BPCA	Medium
2	Share a case study on BPCA's own journey with achieving the TRUE Zero Waste certification at the 75 Battery Place facility	BPCA	Medium
2	BPC building owners and managers to nominate staff members to attend training	Building Owners and Managers	Medium
3	Selected BPC maintenance staff to attend training	Building Owners and Managers	Medium
4	Trained maintenance staff to take experience and improve recycling programs in BPC buildings	Building Owners and Managers	Medium
5	Continue to encourage and coordinate training for BPC buildings staff	BPCA	Long

[e] Enroll in optional recycling programs such as e-waste recycling and clothing donations E

BPC-wide | BPCA-led

Order	Responsibilities	Responsible Groups	Timeframe
1	Compile a list of optional recycling programs available to NYC buildings and share with BPC buildings	BPCA	Short
2	Enroll in optional recycling programs, as appropriate, and encourage residents/tenants to utilize the programs	Building Owners and Managers	Short, Medium
3	Track weights or volumes of materials recycled or donated through these optional recycling programs and regularly communicate information back to residents and tenants	Building Owners and Managers	Ongoing

[f] Identify creative ways to reduce the amount of waste sent to landfill by BPCA Parks and Operations and Parks Programming events E

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Identify the types of waste generated by BPCA Parks and Operations activities and Parks Programming events	BPCA	Short
2	Evaluate opportunities to divert these waste streams from landfill, identifying creative ways for reuse or repair of harder to recycle objects	BPCA	Short
3	Implement plans to reduce waste from Park Operations and Parks Programming, educating staff and event participants on creative ways to reduce waste	BPCA	Short, Medium

Resources

- **How to Recycle Consumer Electronic Waste**: guidance available on the NY DEP site. Also visit New York City Electronics Drop-Off Locations to drop off e-waste.
- **Map of NYC Clothing and Textile Drop-Off Sites**: provided by DSNY. Note drop-off sites oftentimes accept additional items such as bedding and linens.
- **New York Department of Sanitation's Recycling Guidelines for Residents and Apartment Managers**
- **NYCEDC State Assistance Programs for Household Hazardous Waste**
- **NYS Electronic Equipment Recycling and Reuse Act**: (Environmental Conservation Law, Article 27, Title 26) requires manufacturers to provide free and convenient recycling of electronic waste to most consumers in the state, according to the NY DEP.
- **TRUE Advisor Certificate Program**: offers a robust curriculum on zero waste policies and programs.
- Zero Waste Building Maintenance Training: The DSNY hosted this training to help building maintenance staff establish and/or improve building recycling programs. This training was conducted in two 8-hour sessions and was free to participants. Check in with the DSNY on future Zero Waste Building Maintenance Training dates.

[M&W-3.3] Conduct waste audits and collect waste data to better understand diversion and track progress

Overview

A waste audit involves identifying and quantifying the different types of waste produced in a space, and how it is disposed of. Waste audits provide a baseline measurement on waste volume and composition, insight into opportunities for reduction or diversion, and a tool to measure effectiveness of waste reduction efforts over time. By auditing different waste sources throughout the neighborhood, BPC can understand and make recommendations to building owners and residents to reduce and/or divert waste. Furthermore, at Battery Park City most residential waste is funneled through BPCA compacting stations where BPCA can facilitate waste examination and auditing and help with education on waste disposal.

Implementation Steps

[a] Conduct regular audits of residential waste sent to compactors and public trash cans throughout the neighborhood, and report findings to residents and building owners E

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Identify partners or assemble team to conduct waste audits for trash sent to BPC compactors and public trash cans	BPCA, Implementation Partners	Medium
2	Determine dates for initial audits and schedule for continuous audits to analyze waste	BPCA, Implementation Partners	Medium
3	Conduct initial audit and evaluate waste volume and composition assessing opportunities for improvement	BPCA, Implementation Partners	Medium
4	Develop goals and recommendations for improvement and share with building residents and building owners	BPCA, Implementation Partners	Medium
5	Implement recommendations to reduce waste within buildings	Building Owners and Managers, Businesses, Community	Medium
6	Conduct future audits once recommendations are implemented to ensure continued best practices	BPCA, Implementation Partners	Medium

[b] Pilot weighing all building waste brought to BPCA compactors on a regular basis E

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Determine pilot duration including frequency and schedule for weighing building waste brought to BPCA compactors	BPCA	Medium
2	Determine and procure equipment needed to weigh building waste	BPCA	Medium
3	Weigh waste on a regular basis during pilot, keeping record of the data in order to track changes in waste volume over time	BPCA	Medium
4	Evaluate the expansion of the pilot for regular waste weighing	BPCA	Medium

[c] Conduct regular waste audits of commercial properties and tenant spaces E

BPC-wide | BPCA-led

Order	Responsibilities	Responsible Groups	Timeframe
1	Identify partners, such as waste haulers or auditors, and assemble a team to conduct waste audits	BPCA, Building Owners and Managers	Medium
2	Determine dates for initial audits and schedule for continuous audits to analyze waste	Building Owners and Managers, Businesses	Medium
3	Conduct initial audit and evaluate waste volume and composition assessing opportunities for improvement	Building Owners and Managers, Businesses, Implementation Partners	Medium
4	Develop goals and recommendations for improvement, with BPCA support, and share with building tenants	BPCA, Building Owners and Managers, Businesses, Implementation Partners	Medium
5	Implement recommendations to reduce waste within building	Building Owners and Managers, Businesses	Medium
6	Conduct future audits to analyze progress and refine recommendations	Building Owners and Managers, Businesses, Implementation Partners	Medium

[d] Send waste in clear bags to compactors to allow for a visual check for contamination

BPC-wide | BPCA-led

Order	Responsibilities	Responsible Groups	Timeframe
1	Promote the use of clear bags for residential buildings that send trash to compactor stations	BPCA	Short
2	Switch to clear bags for trash that is sent to BPCA compactors	Building Owners and Managers	Ongoing
3	Develop report on common contaminants and share with building owners in effort to reduce volume of waste	BPCA	Ongoing
4	Educate tenants on contamination and recycling, composting, and donation opportunities	Building Owners and Managers	Ongoing

Resources

- **BPC Green Guidelines**: Materials & Waste Section
- **GrowNYC Waste Audit Guide**

[M&W-4] Organics collection and composting

Expand organic waste collection and composting programs in Battery Park City with a wider network of collection bins and composting education

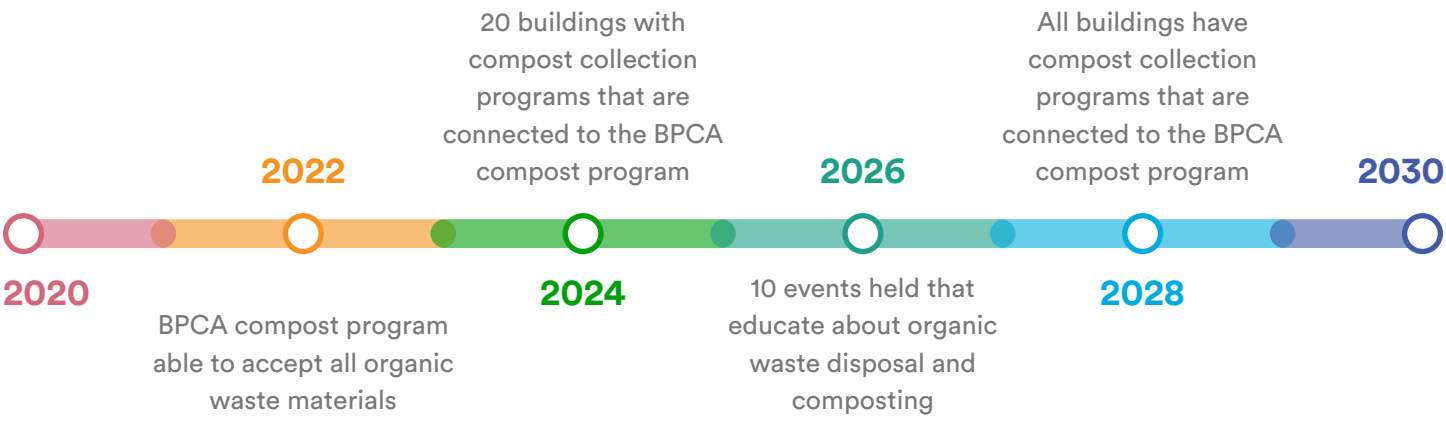
2030 Target

Battery Park City

Target: 80% of Battery Park City organic waste to be diverted from landfills in 2030

Baseline: An estimated 1% of Battery Park City organic waste was diverted from landfills in 2019

Supporting Milestones



Actions

[M&W-4.1] Expand and improve the Battery Park City organic waste collection network

[M&W-4.2] Increase local capacity for composting and broaden organic waste types that can be composted at Battery Park City

[M&W-4.1] Expand and improve the Battery Park City organic waste collection network

Overview

Organic waste that ends up in landfills produces significant amounts of methane, a potent greenhouse gas. The composting process reduces methane production and results in compost, a natural and beneficial by-product that provides nutrients to the soil. To expand organic waste collection and composting, BPCA must first increase its capacity to handle and process organic waste and develop a neighborhood-wide program for pick-up. Working with partners, BPCA can also host events that educate the community on composting methods, services, and drop-off locations, how to start composting in a building or office, and how composting can reduce landfill waste and emissions.

Implementation Steps

[a] Educate the community on composting practices and organic waste emissions through events and informational materials, partnering with DSNY and waste education non-profits

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Identify non-profits, in addition to DSNY, to collaborate with on composting-related events	BPCA	Short
2	Organize and promote events with community partners focused on compost education for residents	BPCA, Implementation Partners	Ongoing
3	Host events and share educational material that teach the BPC community about composting options and environmental benefits	BPCA, Implementation Partners	Ongoing

[b] Collaborate with Battery Park City's Liberty Community Garden to expand composting outreach and learning opportunities for the community E

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Collaborate with Liberty Community Garden to coordinate plans for composting outreach events	BPCA, Implementation Partners	Short
2	Promote event(s) within BPC community	BPCA, Implementation Partners	Short
3	Host event in collaboration with Liberty Community Garden	BPCA, Implementation Partners	Short

[c] Provide space in buildings for organic waste collection and educate occupants about the program E

BPC-wide | BPCA-led

Order	Responsibilities	Responsible Groups	Timeframe
1	Promote the use of organic waste collection programs in BPC buildings	BPCA, Building Owners and Managers	Short
2	Investigate opportunities to start organic waste collection programs, partnering with BPCA or NYC composting programs	BPCA, Building Owners and Managers, Businesses	Short
3	Identify locations within buildings and spaces for organic waste collection with clear signage for organic waste collection bins	Building Owners and Managers, Businesses	Short
4	Educate residents and tenants on organic waste collection and launch program	Building Owners and Managers	Short

[d] Encourage composting programs in neighborhood schools to educate Battery Park City's younger population E

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Promote the use of organic waste collection programs in BPC schools, sharing information on composting resources available in BPC	BPCA	Short
2	Work with schools to identify opportunities to start organic waste programs, potentially partnering with BPCA or other programs	BPCA	Short
3	Work with schools to find space within buildings for organic waste collection with clear signage for organic waste collection bins	BPCA	Short
4	Work with schools to educate students on organic waste collection and disposal	BPCA	Short

Resources

- **Battery Park City Composting**: BPCA manages composting for BPC and can be used as a resource for community members.
- **GrowNYC**: manages the city-wide composting program, collecting organic waste from farmer's market, and could be an additional partner for composting in BPC.
- **NYC Compost Green Map**: Battery Park City Parks Conservancy location included on map.
- **NYC Compost Project**: DSNY program that works to replenish NYC soil's by providing resources, skills, and opportunities to New Yorkers on how to produce and use compost within the New York Community.

[M&W-4.2] Increase local capacity for composting and broaden the organic waste types that can be composted at Battery Park City

Overview

BPCA desires to expand the current composting program in the Battery Park City community, increasing the amount of organic waste that can be accepted in BPC. Currently BPCA operates a composter on-site to process organic waste including fruits and vegetables, plant waste, and coffee grounds. Ideally, this program will grow to have the capacity to support all of Battery Park City's composting needs by providing additional capacity at BPCA and in BPC buildings, and accepting additional types of organic waste. To achieve this, new equipment with additional capacity and ability to manage all organic material is required. Where BPC generates more organic waste than can be processed locally, BPCA will turn to partners for pick-up and processing.

Implementation Steps

[a] Replace composting equipment and expand capacity to accept all organic waste materials and to meet all of Battery Park City's compost needs

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Assess current and future demand for compost services in BPC, as well as current condition of composting equipment	BPCA, Building Owners and Managers	Short
2	Determine new equipment needed to effectively expand the compost capacity and organic material accepted in BPC	BPCA, Building Owners and Managers	Short
3	Purchase and install new composting equipment	BPCA, Building Owners and Managers	Short
4	Educate community on new types of organic waste to be collected, enabled by new equipment	BPCA, Building Owners and Managers	Short

[b] Partner with DSNY and other organizations to collect organic waste that cannot be composted on-site to maximize organic waste collection at Battery Park City

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Determine additional compost needs that cannot be managed by BPCA on-site composting (refer to Sub-Action M&W–4.2a)	BPCA	Short
2	Identify potential organizations for partnership to manage excess BPC organic materials	BPCA, Implementation Partners	Medium
3	Reach out to organizations and explore partnership options – discussing needed services, schedule, and costs	BPCA, Implementation Partners	Medium
4	Determine appropriate partner(s) and start process of working with partner(s) to compost additional organic waste	BPCA, Implementation Partners	Medium

Resources

- **Battery Park City Composting**: BPCA manages composting for BPC and can be used as a resource for community members.
- **BPC Green Guidelines**: Materials and Waste
- **GrowNYC**: manages the city-wide composting program, collecting organic waste from farmer's market, and could be an additional partner for composting in BPC.
- **NYC Compost Project**: DSNY program which works to replenish NYC soil's by providing resources, skills, and opportunities to New Yorker's on how to produce and use compost within the New York Community.

[M&W-5] Construction and demolition activities

Reduce the impact of construction and demolition related activities in the neighborhood and recycle or reuse construction and demolition waste

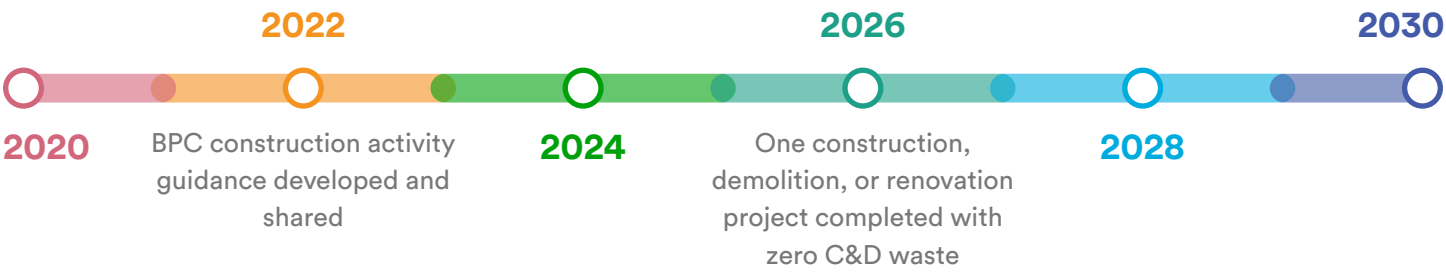
2030 Target

Battery Park City

Target: 95% of construction and demolition waste recycled or reused by 2030

Baseline: Construction and demolition waste not tracked

Supporting Milestones



Actions

[M&W-5.1] Develop more sustainable construction practices at Battery Park City and increase the amount of C&D waste recycled or reused

[M&W-5.2] Mitigate the impacts of construction and renovations by sequencing and coordinating activities and sharing materials

[M&W-5.1] Develop more sustainable construction practices at Battery Park City and increase the amount of C&D waste recycled or reused

Overview

Between 2020 and 2030, there will be a large amount of construction due to building renovation projects, resiliency projects, and others. Providing clear direction and requirements for recycling or reusing construction and demolition (C&D) waste can increase the amount of materials that get repurposed in Battery Park City. Members of the BPC community, such as residents or building owners, that may be completing renovation should pursue opportunities to recycle, reuse, or donate materials that are no longer needed through NYC programs or non-profits.

Implementation Steps

[a] Establish construction guidance with requirements for C&D recycling and reporting

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Reference the Green Guidelines "Construction and Demolition Activities" to develop a set of requirements for construction projects to be permitted in BPC	BPCA,	Short
2	Communicate construction requirements to buildings owners and managers, businesses, and residents who may have projects planned for construction or demolition	BPCA, Building Owners and Managers	Short
3	Ensure requirements are being met through tracking of C&D waste diversion (refer to M&W-5.1b)	BPCA	Ongoing

[b] At the time of major renovation or construction, develop a plan for managing C&D waste and reusing materials as applicable

BPC-wide | BPCA-led

Order	Responsibilities	Responsible Groups	Timeframe
1	Refer to the Green Guidelines "Construction and Demolition Activities" to understand the components of a C&D waste management plan and how to limit waste generated from the construction site	BPCA, Building Owners and Managers, Businesses, Implementation Partners	Ongoing
2	Determine which items can be recycled, reused, or donated during the construction and demolition process	BPCA, Building Owners and Managers, Businesses, Implementation Partners	Ongoing
3	Develop and follow a C&D waste management plan to reduce the amount of waste sent to landfills from C&D activities	BPCA, Building Owners and Managers, Businesses, Implementation Partners	Ongoing
4	Reach out to non-profits to determine appropriate method for recycling or donating materials	BPCA, Building Owners and Managers, Businesses, Implementation Partners	Ongoing
5	Coordinate time for deconstruction as well as pick-up or drop-off of materials	BPCA, Building Owners and Managers, Businesses, Implementation Partners	Ongoing
6	Work with construction teams to collect and track waste diversion data from projects	BPCA, Building Owners and Managers, Businesses, Implementation Partners	Ongoing

[c] At the time of major renovation or construction, post signage explaining sustainability elements of the project

BPC-wide | BPCA-led

Order	Responsibilities	Responsible Groups	Timeframe
1	Develop ideas for sustainability signage that reflects measures to be taken to reduce C&D waste to landfill – include this in the BPC construction activity guidance	BPCA	Short
2	Share signage ideas and sustainability tactics with building owners and those leading major renovation projects within BPC	BPCA	Short
3	Post signage during construction to demonstrate sustainability efforts that are occurring at the renovation/construction site	BPCA, Building Owners and Managers, Businesses	Ongoing

[d] Minimize C&D waste resulting from the construction of resiliency projects

BPC-wide | BPCA-led

Order	Responsibilities	Responsible Groups	Timeframe
1	Prior to construction phases for BPC resiliency and other major projects, define a plan for minimizing C&D waste	BPCA	Ongoing
2	Execute on plan to minimize waste – ensuring materials recycling and reuse is available for waste materials at construction sites	BPCA	Ongoing
3	Track the amount of waste to recycling/reuse vs. landfill to track BPC progress toward target	BPCA	Ongoing

Resources

- **BPC Green Guidelines**: Materials & Waste
- **Construction & Demolition Waste Manual**: guidance document developed by the New York City Department of Design & Construction (DDC). Additional publications are available from the DDC (on the DDC website) that can guide construction practices.
- **EPA Sustainable Management of Construction and Demolition Materials**
- **Organizations for Material Donation**: Habitat for Humanity ReStores, Big Reuse, Goodwill, NYC Materials Exchange Development Program, Materials for the Arts, Build it GreenNYC.

[M&W-5.2] Mitigate the impacts of construction and renovations by sequencing and coordinating activities and sharing materials

Overview

Construction and renovation projects occurring simultaneously in Battery Park City can share resources in order to reduce C&D waste. By sharing plans with BPCA, it allows the Authority to act as a coordinator across construction sites to optimize use of resources, including heavy equipment, and increase sustainability. For example, BPCA could help coordinate C&D item pick-up across sites or help identify opportunities to share materials with another site for reuse. This can make the sustainability activities at C&D sites more efficient in BPC.

Implementation Steps

[a] Work with BPCA in the development of construction plans and schedules to identify potential coordination with other projects

BPC-wide | BPCA-led

Order	Responsibilities	Responsible Groups	Timeframe
1	Inform BPCA of future plans for building construction and renovation	Building Owners and Managers	Ongoing
2	Track BPC construction plans and schedules for major construction/renovation projects using the permitting process	BPCA	Ongoing
3	Coordinate sustainability related activities across construction sites	BPCA, Building Owners and Managers	Ongoing

[b] Where possible, work alongside other ongoing local projects to identify material reuse opportunities, or other opportunities such as equipment sharing, during construction

BPC-wide | BPCA-led

Order	Responsibilities	Responsible Groups	Timeframe
1	In developing construction plans, identify heavy machinery and equipment that can be shared or utilized by other project sites in BPC	BPCA, Building Owners and Managers, Implementation Partners	Ongoing
2	Per BPCA's guidance, reach out to other project managers to share resources such as C&D items that can be shared or reused, heavy machinery and equipment, and other resources that can reduce costs and minimize redundancy and materials needs	BPCA, Building Owners and Managers, Implementation Partners	Ongoing
3	Coordinate schedules and site activities in order to allow for resource sharing	BPCA, Building Owners and Managers, Implementation Partners	Ongoing

Resources

- **BPC Green Guidelines**: Materials & Waste
- **Construction & Demolition Waste Manual**: guidance document developed by the New York City Department of Design & Construction (DDC). Additional publications are available from the DDC (on the DDC website) that can guide construction practices.
- **EPA Sustainable Management of Construction and Demolition Materials**

5 Site

Introduction

The Site Topic Area addresses biodiversity and habitats, quality of life, environmental monitoring and data sharing, active transportation, and electric vehicle (EV) infrastructure in Battery Park City. Focusing on these strategies will help Battery Park City improve biodiversity, expand tree cover, monitor pollution, increase pedestrian and cyclist safety, and expand EV infrastructure throughout the community. BPCA is responsible for the oversight and execution of the majority of site activities, but engagement and participation from key stakeholders will be critical for success. Overall, activities in the Site Topic Area will contribute to improving broader quality of life in Battery Park City.

Key Resources

Key resources were identified to support the successful implementation of Site Actions and Sub-Actions. Some of these resources include financing strategies for electric vehicle infrastructure such NYSERDA's Charge Ready New York or NYS income tax credits. Other resources point to local non-profits that could potentially support or serve as partners to Site Sub-Action efforts such as GrowNYC, which offers environmental education programs around food and agriculture, zero waste programs, community gardens, or green infrastructure. Furthermore, the City and State also provide literature and guidance on many initiatives that relate to Site and these have been populated accordingly in each section. For example, information from the NYC Biodiversity Assessment Handbook can support improving biodiversity in the BPC community.

Individual actions you can take now

- Attend educational events, where you can learn about the ecology of Battery Park City and participate in plant and wildlife inventories
- Utilize bike infrastructure, park space, and open space as much as you can — and minimize car-based trips
- Learn about BPC's Resiliency Projects
- Learn about BPCA Parks Operations organic practices, biodiverse plant selection, non-toxic means of cleaning, and horticulture management

Responsible Groups Map

Strategy	Action	Page #	Responsible Groups				
			BPCA	Building Owners and Managers	Businesses	Community	Implementation Partners
[S-1] Biodiversity and habitats	[S-1.1] Maintain status as a leader in sustainable parks and open spaces	132	✓				
	[S-1.2] Raise awareness about Battery Park City's rich biodiversity	134	✓			✓	✓
	[S-1.3] Enhance and expand existing habitats	137	✓	✓			✓
	[S-1.4] Ensure that plants are resilient to the changing climate	141	✓				
[S-2] Quality of life	[S-2.1] Mitigate the Urban Heat Island (UHI) effect	144	✓				
	[S-2.2] Mitigate high winds, noise pollution, and air pollution	148	✓				
	[S-2.3] Protect landscape environments during construction activities	150	✓	✓			✓
[S-3] Environmental monitoring and data sharing	[S-3.1] Increase internet connectivity in Battery Park City	153	✓				
	[S-3.2] Monitor environmental quality and provide real-time data to the public	155	✓	✓	✓	✓	
	[S-3.3] Develop digital tools for asset management and expand smart city initiatives	157	✓	✓			

Responsible Groups Map, continued.

Strategy	Action	Page #	Responsible Groups				
			BPCA	Building Owners and Managers	Businesses	Community	Implementation Partners
[S-4] Active transportation	[S-4.1] Prioritize shared streets design principles in street redesigns to encourage lower speeds and safer streets	160	✓				✓
	[S-4.2] Encourage commercial tenants to promote 100% transit/non-motorized transportation	164	✓	✓	✓		
	[S-4.3] Reduce heavy vehicle trips through Battery Park City	165	✓	✓	✓		✓
[S-5] Electric vehicle infrastructure	[S-5.1] Expand EV charging infrastructure across Battery Park City to incentivize the transition to EVs, electric bicycles, and electric scooters	169	✓	✓	✓		✓

[S-1] Biodiversity and habitats

Enhance the biodiversity of plant and animal life at Battery Park City and ensure that the flora and fauna is resilient to the changing climate

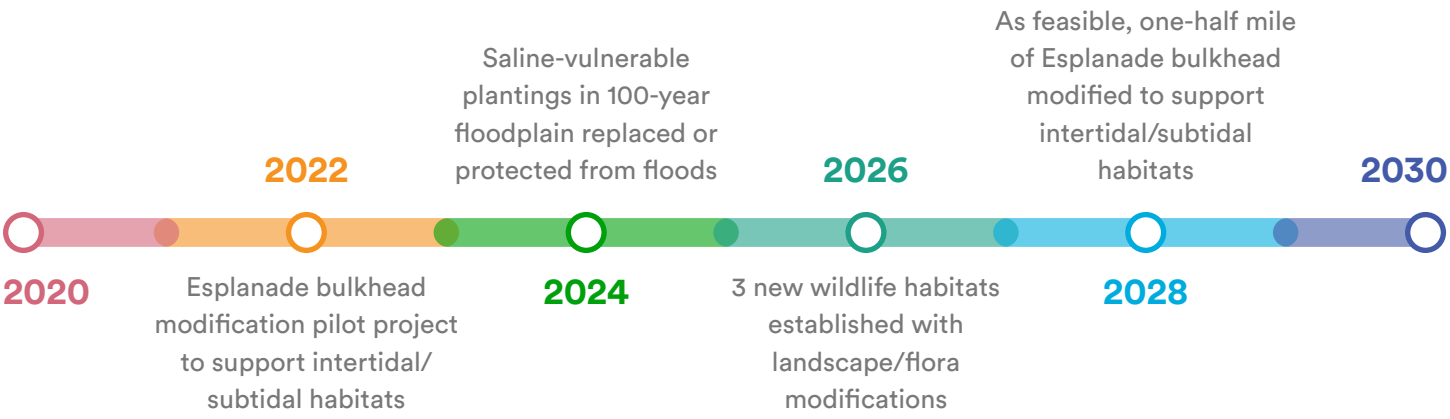
2030 Target

Battery Park City Authority Spaces

Target: Establish and advance toward appropriate biodiversity index targets for each park area

Baseline: Plant species richness, measured as number of species/cultivars per acre, varies across parks and Esplanade areas (26 to 140 species/acre)

Supporting Milestones



Actions

[S-1.1] Maintain status as a leader in sustainable parks and open spaces

[S-1.2] Raise awareness about Battery Park City's rich biodiversity

[S-1.3] Enhance and expand existing habitats

[S-1.4] Ensure that plants are resilient to the changing climate

[S-1.1] Maintain status as a leader in sustainable parks and open spaces

Overview

Battery Park City has 36 acres of parks and open space where BPC community members and visitors can enjoy nature and open space. Maintaining these spaces in a sustainable manner is critical to protecting local wildlife, vegetation, and ecosystems. BPCA will continue to manage these spaces and expand activities to increase park sustainability. Formalizing a wildlife inventory and establishing Standard Operating Procedures (SOP) for landscape management will promote biodiversity and enable proper management of these spaces.

Implementation Steps

[a] Formalize a role to document and manage wildlife inventories E

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Define process for inventorying wildlife, including sites and schedules, and determine how wildlife data will be stored	BPCA	Short
2	Determine BPCA resources to complete wildlife inventories, connecting BioBlitz events to the process (refer to Sub-Action S-1.2a)	BPCA	Short
3	Start data collection process – taking an initial inventory as a baseline measurement for wildlife in BPC	BPCA	Short
4	Continue taking inventory of wildlife on a regular basis, tracking changes over time, and using data to inform decisions to improve local habitats	BPCA	Ongoing
5	Communicate the results and information on BPC wildlife with the community and provide opportunities to participate in inventories (refer to Action S-1.2)	BPCA	Ongoing

[b] Develop a BPCA Parks Standard Operating Procedures (SOP) for sustainable landscape management E

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Determine and formally document sustainable landscape management practices to be used in BPC, referring to Green Guidelines	BPCA	Medium
2	Formalize practices in a Standard Operating Procedures (SOP) document	BPCA	Medium
3	Promote the launch of SOP in the BPC community, making the document available for building owners, residents, and others who may oversee property with landscaping needs	BPCA	Medium

Resources

- **BPC Green Guidelines**: Site Section
- **Pollinator Pathway Project**: organized by NYS DEC publishes information on pollinator-friendly plants.
- **Pollinator Protection Plan**: NYS Department of Environmental Conservation published the Pollinator Protection Plan that summarizes the findings from the NYC Pollinator Task Force including best management practices, research and monitoring efforts, and outreach and education programs.
- **Potential Non-Profit Partners**: GrowNYC, New York Botanical Garden, Lower East Side Ecology Center, Audubon Society New York.
- **New York City Nature Goals 2050**: a declaration of rights to New York City Nature. It is supported by a coalition of urban nature professionals that developed 25 targets that advance Nature Goals in New York City.
- **WildlifeNYC**: This campaign, organized by New York City, is intended to increase public awareness about wildlife in the city and promote coexistence between humans and wildlife. Regularly check the WildlifeNYC website for information on sponsored events that can provide opportunities for learning about local wildlife and conservation. You can also report a sighting of any wildlife.

[S-1.2] Raise awareness about Battery Park City's rich biodiversity

Overview

There is a rich opportunity to enhance community members understanding of biodiversity activities in the neighborhood. Engaging residents, visitors, and students through events, signage, and BPCA-led instruction & tours can raise awareness of the rich biodiversity present in Battery Park City. Further, this engagement can help the community support and even contribute to the tracking of BPC flora and fauna.

Implementation Steps

[a] Host "BioBlitz" education events, where the community can participate in learning about and inventorying plant species

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Develop educational BioBlitz event content including information on plants in BPC, how to identify species, and the benefits of biodiversity	BPCA	Ongoing
2	Determine time and place for BioBlitz events and promote event to community members	BPCA	Ongoing
3	Host a BioBlitz event engaging the community in activities to learn more about BPC biodiversity	BPCA	Ongoing
4	Attend BioBlitz events to learn more about biodiversity	Community	Ongoing
5	Gather feedback from attendees and continue to host BioBlitz events to educate and engage the community	BPCA	Ongoing

[b] Develop biodiversity signage throughout Battery Park City to highlight different species E

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Determine signage location and content needs based on desired species to highlight in BPC	BPCA	Medium
2	Develop engaging and educational content for signage for specific species	BPCA	Medium
3	Install signs at locations in BPC where pedestrians can read about biodiversity of local plant life	BPCA	Medium
4	Add or update signage as needed to showcase additional species or changes in habitat	BPCA	Ongoing

[c] Facilitate walking tours of Battery Park City with biodiversity-related topics such as birds, insects, or plants E

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Develop routes, schedules, and educational content for walking tours	BPCA	Medium
2	Train guides (volunteer, BPCA staff, or otherwise) on tour content	BPCA	Medium
3	Promote walking tour launch in the BPC community and post the walking tour map on the BPCA website	BPCA	Medium
4	Start walking tours in BPC and solicit participant feedback to continue to improve on content	BPCA	Medium
5	Attend BPC walking tours on biodiversity	Community	Ongoing

[d] Partner with BPC schools to establish "in-the-field" biodiversity education programs E

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Work with BPC schools to determine opportunities to add biodiversity content into existing student education programming	BPCA, Implementation Partners	Ongoing
2	Develop content for “in-the-field” sessions and incorporate into programming	BPCA, Implementation Partners	Ongoing
3	Lead “in-the-field” education sessions with students	BPCA, Implementation Partners	Ongoing

Resources

- **BioBlitz Resources**: There are resources available for organizing a BioBlitz event such as those from National Geographic and iNaturalist.
- **Biodiversity Assessment Handbook for New York City**: Handbook published by the American Museum of Natural History.
- **How to Conduct Biodiversity Audits**: Through the Eco-Schools USA program, the National Wildlife Federations provides online instruction for conducting biodiversity audits for students in grades K-2. More resources are available for environmental education on the National Wildlife Federation Eco-Schools USA webpage.
- **iNaturalist**: offers an app that allows for crowd-sourced identification of wildlife and measuring of biodiversity in an area.
- **NYC Biodiversity & Species Conservation**: The NYC Department of Environmental Conservation provides information on NYC Biodiversity & Species Conservation efforts and shares definitions, resources, and a free critter guide online.

[S-1.3] Enhance and expand existing habitats

Overview

By increasing the types of flora and fauna and enriching and expanding existing habitats, BPC can work towards its target to increase biodiversity. Activities such as biodiversity audits, improving rooftop ecosystems, and building and connecting natural areas can enhance habitats in BPC.

Implementation Steps

[a] Conduct a simplified audit of biodiversity within park and Esplanade spaces over 0.75 acres, excluding special landscapes (such as paved plazas/memorials), to calculate a biodiversity index for each space

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Determine site(s) within Battery Park City for a biodiversity audit	BPCA	Short
2	Determine audit approach and objectives	BPCA	Short
3	Conduct audit and calculate the biodiversity index for each space	BPCA	Short
4	Compile information into a centralized database and integrate findings into park planning and programming	BPCA	Short
5	Collect information from BioBlitz events in Battery Park City to inform biodiversity audits (refer to Sub-Action S-1.2a)	BPCA	Ongoing

[b] Provide support for buildings that have already installed green roofs to enhance their habitat functionality

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Engage with building owners and staff to discuss techniques for enhancing green roof habitats	BPCA, Building Owners and Managers	Short
2	Provide reference materials and guidance on vegetation types, landscaping techniques, and other measures that improve habitat functionality as well as any materials on available financing	BPCA	Short

[c] Study and establish flora and fauna patches and corridors to enhance local biodiversity as well as contribute to the larger urban ecosystem

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Determine targeted flora and fauna to support in BPC park areas and identify specific locations for patches and corridors in BPC which will provide breeding or feeding areas for flora and fauna	BPCA	Medium
2	Once sites are selected, build flora and fauna patches and corridors based on the needs of the targeted flora or fauna	BPCA	Medium
3	Monitor the sites to determine success in attracting fauna and pollinators, acting as a breeding or feeding ground, and increasing biodiversity	BPCA	Medium
4	Use data from site monitoring to determine the need for additional sites	BPCA	Medium

[d] Connect with NYC Department of Parks & Recreation (DPR) and the Hudson River Park Trust to coordinate broader ecosystem planning efforts and potential habitat linkages

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Determine opportunity for habitat linkages to connect natural areas to each other and avoid isolated habitat patches	BPCA, Implementation Partners	Medium
2	Prioritize sites that can be easily connected or present significant opportunities to increase biodiversity	BPCA, Implementation Partners	Medium, Long
3	Coordinate planning efforts including activities, schedules, and funding to effectively link habitats	BPCA, Implementation Partners	Long
4	Build habitat linkages and execute ecosystem planning activities	BPCA, Implementation Partners	Long
5	Connect with NYC Department of Parks & Recreation (DPR) and Hudson River Park Trust to learn of those organizations' ecosystem planning efforts	BPCA, Implementation Partners	Ongoing

[e] As feasible, develop subtidal and intertidal habitats along the Esplanade bulkhead

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Assess sites along Esplanade bulkhead for potential subtidal or intertidal habitat development	BPCA	Medium
2	Determine necessary activities and associated costs to develop habitats	BPCA	Medium
3	Prioritize sites for habitat development and begin building habitats	BPCA	Medium
4	Monitor success of sites and increase number of habitats, as feasible	BPCA	Medium

Resources

- **BPC Green Guidelines**: Site Section
- **New York State Clean Water State Revolving Fund**: offers interest-free or low-interest rate financing for wastewater and water quality improvement projects throughout New York State including construction or restoration of sewers and wastewater treatment facilities, stormwater management, landfill closures, as well as habitat restoration and protection projects.
- **NYC Biodiversity & Species Conservation**: The NYC Department of Environmental Conservation provides information on NYC Biodiversity & Species Conservation efforts and shares definitions, resources, and a free critter guide online.
- **NYC DEP Marine Habitat Protection**: The NYC DEP is a resource for information on Marine Habitat Protection. The Marine Habitat Protection page under Oceans & Estuaries on the NYC DEP site provides information and links to learn more about tidal wetlands, estuary management, and NYC seagrass management.
- **Restore Mother Nature Bond Act (Tentative)**: NYS Executive Budget request for fiscal year 2021 includes a $3 billion Restore Mother Nature Bond Act. If the Bond Act is passed in the FY 2021 Budget, and ultimately approved by the voters in November, it will fund critical environmental restoration projects throughout state to decease flood risk, increase resilience to storms, restore wildlife habitats, and better prepare the state for climate change.
- **The NY/NJ Harbor and Estuary Program (HEP)**: created by the EPA in an effort to protect, conserve and restore the estuary. The HEP website provides information on the work of the program, partners, grants, state of the estuary, publications and more.

[S-1.4] Ensure that plants are resilient to the changing climate

Overview

Climate change can lead to more intense storms, extreme temperatures, and an increased risk of physical devastation to infrastructure and ecological environments. BPC is already taking action to boost resiliency of the community through a variety of large-scale resiliency projects. To bolster resiliency of ecological systems, selecting plant life that can adapt to a changing climate can limit the destruction of natural places as New York City navigates more extreme weather events.

Implementation Steps

[a] Consider salinity-resilience in park plantings E

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Determine sites in BPC parks with greatest risk of salt exposure or those areas at risk of flooding from storm surge	BPCA	Medium
2	Assess vegetation and landscaping at those sites and determine when new landscaping is needed	BPCA	Medium
3	Change plant species in sites with greatest risk of salt exposure once planting is needed in those areas	BPCA	Medium
4	Assess resiliency of those plants over time compared to species more vulnerable to saltwater	BPCA	Medium

[b] Phase out plant species that are not adapted to the changing climate / hardiness zone

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Inventory current plant species in BPC parks, gardens, and open spaces and compile research on local hardiness zone	BPCA	Medium
2	Assess hardiness of plants and determine alternative plantings that will better adapt to a changing climate (including flooding and extreme heat)	BPCA	Medium
3	Once replanting is required, plant vegetation that is adapted to the hardiness zone for the area and will therefore likely be more resilient	BPCA	Medium

Resources

- **BPC Green Guidelines**: Site Section
- How to Maintain a Drought-Tolerant Garden: guidance provided by the New York Botanical Garden.
- USDA Plant Hardiness Zone Map: The USDA provides an interactive map of plant hardiness zones by State available of the USDA.gov website.

[S-2] Quality of life

Improve the environmental quality and pedestrian environment of Battery Park City by addressing air quality, noise pollution, and the urban heat island effect

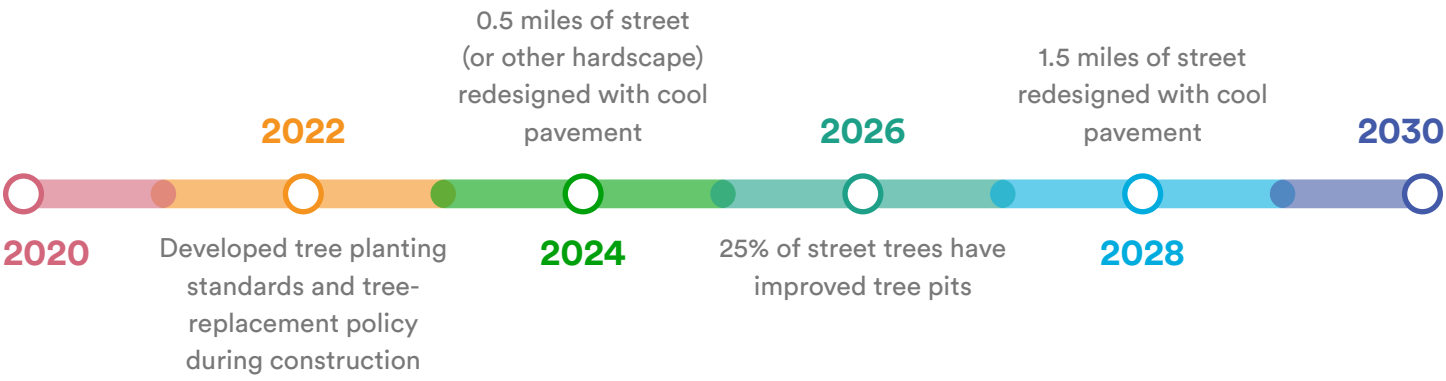
2030 Target

Battery Park City

Target: 720 street trees by 2030

Baseline: 680 street trees in 2015

Supporting Milestones



Actions

[S-2.1] Mitigate the Urban Heat Island (UHI) effect

[S-2.2] Mitigate high winds, noise pollution, and air pollution

[S-2.3] Protect landscape environments during construction activities

[S-2.1] Mitigate the Urban Heat Island (UHI) effect

Overview

An Urban Heat Island (UHI) is a dense urban area that experiences a higher average ambient air temperature than more rural areas. The Urban Heat Island effect is created by the heat associated with people, cars, buses, trains, and other activities. Many steps can be taken to reduce UHI in cities, reducing the health risks of excessive heat exposure. Some of the tactics BPC is pursuing include increasing tree volume and density throughout the neighborhood, implementing shading structures, assessing microclimates, and using materials that result in cooler surfaces for hardscapes, like sidewalks.

Implementation Steps

[a] Measure and assess the Battery Park City tree canopy, including both streets and parks/open spaces

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Plan approach for tree canopy assessment, including goals, data collection method, sites, and schedule, using the Green Guidelines for reference	BPCA	Short
2	Complete tree canopy data collection, documenting the size of the tree canopy and the health of trees in Battery Park City	BPCA	Short
3	Assess urban tree canopy data against BPC urban heat island reduction needs, biodiversity goals, and stakeholder interests to determine steps for expanding and protecting the tree canopy	BPCA	Short
4	Use outcomes of assessment to inform strategy and policy for urban tree planting and maintenance	BPCA	Short
5	Repeat tree canopy assessment every 3 - 5 years	BPCA	Medium, Long

[b] Study existing microclimates and wind conditions in Battery Park City

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Evaluate BPC neighborhood for differences in climate, suggesting a microclimate – to be informed by environmental sensors from Action S-3.2	BPCA	Short
2	Analyze data sets for key findings that could influence living conditions for vegetation and wildlife in Battery Park City	BPCA	Short
3	Use study to inform strategies for tree plantings, shading structures, wind barriers, and other measures to increase comfort and resiliency in BPC	BPCA	Short

[c] Increase the density of street trees and park trees in less dense areas E

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Identify sites in BPC with low tree density for potential future plantings based on findings from the tree canopy study (refer to Sub-Action S-2.1a)	BPCA	Short
2	Prioritize sites and select species based on planting best practices and microclimate	BPCA	Short
3	Schedule tree plantings in less dense areas and complete planting	BPCA	Medium, Long

[d] Install shading structures on sidewalks and in parks/open spaces to decrease the heat index

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Analyze BPC parks and open spaces, identifying areas with high pedestrian use and prolonged sun-exposure	BPCA	Short
2	Evaluate different types of shading structures, considering design & aesthetics, opportunity for community engagement, as well as cost & sustainability of materials	BPCA	Short
3	Prioritize sites and determine funding mechanism for installing shading structures	BPCA	Short

[e] Implement cool surfaces for sidewalks, roadbeds, and other hardscape areas in parks and open spaces (as appropriate)

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Evaluate hardscape surfaces in BPC and determine which areas need repair/resurfacing (potential to complete this when assessing permeable pavement opportunities in Sub-Action W-3.2b)	BPCA	Short
2	Based on conditions of hardscapes, develop schedule for re-paving/replacing hardscape	BPCA	Short
3	Determine materials for re-pavement or replacement of surfaces that would result in cooler surfaces (i.e. reflective coating, lighter color, etc.)	BPCA	Short
4	When maintenance and/or re-pavement is needed, select cool surfaces to replace pavement or coat with a reflective coating	BPCA	Ongoing

Resources

- **BPC Green Guidelines**: Site Section
- **New York City Street Trees Map**: NYC Parks provides a map which can be used as a resource to learn about New York's urban forest. NYC Parks also manages a Request a Street Tree program for property owners to advocate for a tree to be planted on their street for free.
- **NYC Parks Tree Planting Standards**
- **Tree Care Guide**: The MillionTreesNYC initiative was born from NYC's PlaNYC and offers resources like the Tree Care Guide which provides information on caring for street trees.
- **U.S. Department of Agriculture (USDA) Urban Tree Canopy Assessment**: provides instruction on managing a community's urban forest.

[S-2.2] Mitigate high winds, noise pollution, and air pollution

Overview

To increase comfort and safety for Battery Park City residents and visitors, BPCA should expand efforts to mitigate high wind, noise pollution, and air pollution in the community. Developing and executing new planting strategies and wind barriers can help BPC address these challenges. Specific sites should be prioritized for improvement, such as the park area adjacent to the Battery Park City ferry terminal. Steps taken to improve noise and air pollution should be continuously studied and measured to see if actions are resulting in desired improvements.

Implementation Steps

[a] Consider planting strategies and wind barrier installations to mitigate winter wind effects while accentuating cooling summer breezes

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Evaluate shrub and/or tree types, plant height, distance between plants, proximity to other buildings, and other factors to determine a planting strategy that can mitigate winter wind effects	BPCA	Short
2	Select sites to test planting strategies that can decrease winter wind and increase summer breezes (consider alignment with testing at the ferry terminal in Sub-Action S-2.2b)	BPCA	Short
3	Based on findings from the pilot, plant new trees and shrubs in BPC to mitigate winter winds	BPCA	Medium

[b] Study the planting of additional park trees and shrubs adjacent to the Battery Park City ferry terminal to determine the sound dampening and air pollution mitigation effects E

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Take a baseline measurement of current noise and air pollution levels near the Battery Park City ferry terminal	BPCA	Short
2	Select and plant new shrubbery and trees along the Battery Park City ferry terminal – considering which locations and types of plants might best mitigate noise pollution	BPCA	Medium
3	Determine cadence for measuring pollution levels after planting	BPCA	Medium
4	Begin noise and air pollution monitoring, tracking changes in pollution with additional shrubbery and trees – use insights to inform future planting strategies	BPCA	Medium

Resources

- **City of New York Environmental and Health Data Portal**: tracks over 200 environmental health indicators across outdoor air and weather, built environment, food and drink, pests and pesticide use, environmental sustainability, behavior and social factors, as well as health outcomes. Users can download data from the portal as well as review narratives and visuals for data interpretation.
- **EPA Best Practices for Reducing Near-Road Pollution Exposure at Schools**: EPA 2015 report provides guidance for not only vegetation best practices, but also design, transit, and occupant considerations that can be considered for schools and other BPC locations to reduce air pollution.
- **NYC Parks Request a Street Tree**: program for property owners to advocate for a tree to be planted on their street for free.
- **NYC Parks Tree Planting Standards**

[S-2.3] Protect landscape environments during construction activities

Overview

Construction not only generates waste of building materials but can also have a negative impact on nearby landscapes, by destroying trees and vegetation surrounding construction sites. To better protect local landscapes during construction, BPCA will develop standards for tree care during construction and establish policy that requires new trees to be planted for those that must be removed during construction. This will allow for BPC to maintain its considerable and expanding tree canopy in the community.

Implementation Steps

[a] Develop a standard for tree plantings and tree bed care, as well as protection standards during construction activities

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Reference the Green Guidelines "Terrestrial Habitats," "Street Tree Diversity," and "Construction and Demolition Activities" sections to understand best practices and recommendations for tree planting and protection across BPC's different spaces including streets, parks, and courtyards, and integrate into BPCA practices	BPCA	Short
2	Share best practices with building owners and managers in BPC, educating them on how to properly plant and protect trees, especially during construction and demolition activities	BPCA, Building Owners and Managers	Short
3	Integrate best practices into design and construction plans to properly plant and protect trees and tree beds during construction and demolition activities	BPCA, Building Owners and Managers	Ongoing

[b] Develop a tree replacement policy that requires that during construction, a replacement tree or trees must sequester the same amount of carbon dioxide within 5 years as the tree before

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Determine policy fulfillment requirements and calculations to demonstrate that a tree will sequester the same amount of carbon within 5 years as the removed tree	BPCA	Short
2	Write policy on replacement tree requirements	BPCA	Short
3	Provide guidance on tree selection and how to calculate whether enough carbon dioxide will be sequestered	BPCA	Short
4	Incorporate policy into tree planting standards	BPCA	Short
5	Follow tree replacement policy when trees must be removed due to construction	BPCA, Building Owners and Managers	Ongoing

Resources

- **BPC Green Guidelines**: Site Section
- **NYC DPR Tree Protection Best Practices and Protocol**: provides guidance on requirements for anyone performing work within 50 feet of a City Tree. Working near street trees may require a permit – for more information visit the Tree Work Permit & Building Plan Review Application on the NYC Department of Parks & Recreation website.
- **NYC Parks Tree Planting Standards**
- **Tree City, Tree Campus, and Tree Line USA Programs**: The National Arbor Day Foundation sponsors programs in cooperation with the USDA Forest Service and DEC's Urban and Community Forestry program. These programs include Tree City USA, Tree Campus USA, and Tree Line USA – all of which are varying programs that provide guidance, assistance, and recognition for community forestry programs. To learn more, visit the Tree City, Tree Campus, and Tree Line USA page under Urban and Community Forestry on the New York City DEP website.

[S-3] Environmental monitoring and data sharing

Measure site environmental conditions and building performance, use it to improve BPCA's operations and decision-making, and share this data with the public

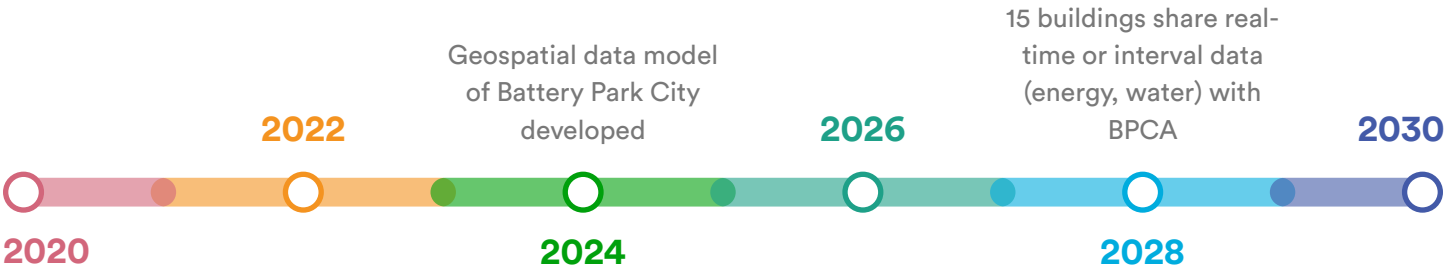
2030 Target

Battery Park City Authority Spaces

Target: Install air quality monitors, weather stations, and noise sensors, and share this environmental data with the public by 2030

Baseline: BPCA has one weather station, located in a plant nursery on North End Avenue

Supporting Milestones



Actions

[S-3.1] Increase internet connectivity in Battery Park City

[S-3.2] Monitor environmental quality and provide real-time data to the public

[S-3.3] Develop digital tools for asset management and expand smart city initiatives

[S-3.1] Increase internet connectivity in Battery Park City

Overview

Enhancing the availability of internet connectivity and the connectivity of things can enable data collection across Battery Park City and lead to reduced resource demands. Technologies like “smart poles” can provide public WiFi that increases connectivity for residents and visitors and provide other features like lighting control sensors that reduce energy consumption. Expanding free public WiFi will also allow the residents and visitors to connect to the internet which provides a variety of benefits from making BPC a destination to visit, ensuring residents can get real-time messaging in case of emergencies, and improving access to online education materials for students.

Implementation Steps

[a] Where appropriate, replace existing light poles with multi-feature "smart poles" that have light sensors for auto-dimming, expanded free public WiFi, and other features

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Evaluate sites in BPC for potential for “smart poles” – sites should be prioritized based on plans for replacement, pedestrian traffic, lighting needs, etc.	BPCA	Short
2	Evaluate potential financing and procure smart poles for installation in BPC	BPCA	Short
3	Install smart poles in BPC and promote benefits, such as public WiFi, within the community	BPCA	Short
4	Collect data from smart poles and use to inform additional smart pole installations	BPCA	Ongoing

Resources

- **2020 Lighting Rebate Catalog**: The New York State Electric and Gas Corporation (NYSEG) offers rebates for energy-efficient and smart lighting solutions. The 2020 Lighting Rebate Catalog provides a list of retrofit options for indoor and outdoor lights, fixtures and controls. For more information and to research additional NYSEG smart energy and rebates programs, please visit the NYSEG website.
- **Small Cells on Pole Facilities Report**: The Wireless Infrastructure Association (WIA) published a Small Cells on Pole Facilities Report to share information on how smart poles can contribute to the next generation mobile broadband networks.
- **Smart City Grant Application**: NYPA expanded its Smart City Lighting NY efforts to include additional smart city technologies, such as smart streetlights. Communities can apply for this grant to fund smart street lighting.

[S-3.2] Monitor environmental quality and provide real-time data to the public

Overview

Being able to advise residents on air quality and weather in BPC starts with accurately capturing data. Installing sensors for monitoring air, weather and noise data, and pushing this data to public displays will increase the availability of information for BPC residents and visitors. Implementing these strategies can help BPCA achieve its target of monitoring and sharing environmental data with the public by 2030. Furthermore, digital displays can share other content relevant for BPC on sustainability activities within the community, mobility information, emergency updates, and more.

Implementation Steps

[a] Study potential locations and financing mechanisms to install localized air quality, temperature, and humidity, wind, and noise sensors throughout Battery Park City E

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Develop a program for the community to request and identify locations for environmental sensors in Battery Park City	BPCA	Short
2	Provide recommendations for the location of environmental sensors such as air quality, temperature, humidity, wind, and noise sensors throughout Battery Park City	Building Owners and Managers, Businesses, Residents	Short
3	Based on community input, develop a plan for installing environmental sensors and measuring and reporting on data	BPCA	Short
4	Evaluate financing needs and mechanisms for installing sensors and monitoring and sharing data with the community	BPCA	Short
5	Install sensors and regularly share environmental data with the community	BPCA	Medium
6	Utilize environmental data to inform plans and projects in Battery Park City and to improve local air quality and reduce noise pollution	BPCA	Medium, Long

[b] Explore the installation of public display panels which provide visitor information, real-time information (weather, mobility, etc.), and updates on sustainability initiatives at Battery Park City

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Evaluate use of public displays in other NYC parks and/ or US communities to determine best practices	BPCA	Medium
2	Determine sites in BPC for real-time displays, prioritizing sites with high pedestrian traffic	BPCA	Medium
3	Select, evaluate financing, procure, and install displays for BPC sites	BPCA	Medium
4	Update displays with real time data for BPC residents and visitors	BPCA	Medium
5	Consider capturing feedback from pedestrians on whether data is helpful to inform changes in information in displays	BPCA	Medium

Resources

- **NYC Air Quality Monitoring Program**: New York City Department of Environmental Conservation (DEC) manages an Air Quality Monitoring Program to monitor levels of outdoor pollution – a potential partnership with the city's broader program can allow BPC and the city to share data, best practices, and potentially additional resources.
- **NYC Community Air Survey**: The New York City Department of Health (DOH) Community Air Survey provides the results of air sample monitoring at specific sites across NYC. Using both air sample data and information on emissions sources, DOH predicts pollutant concentrations across NYC locations.
- **Smart Cities Innovation Partnership**: funds initiatives that leverage technology solutions to promote public health, safety, and welfare, and improve quality-of-life. Applications are available for municipal testbeds. Examples of Smart Cities technologies include but are not limited to smart sensors to streamline traffic flow to reduce vehicle idling and emissions, clean water leakage detection systems to preserve clean drinking water, and advanced air quality monitoring systems.

[S-3.3] Develop digital tools for asset management and expand smart city initiatives

Overview

To manage data on building and public space conditions and performance, BPCA needs to be able to effectively collect, analyze, store, and share data. Furthermore, collaboration is needed among stakeholders to share data so that it can be collated by BPCA in order to inform recommendations for improvement. Establishing a data model and working with stakeholders, such as building owners, will help BPCA better capture and share information.

Implementation Steps

[a] Develop a data model of Battery Park City's buildings and public spaces, to be used for internal asset management and as the basis of a public-facing mapping platform and environmental and building performance data-sharing gateway

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Determine requirements for Battery Park City data model for monitoring performance of buildings and collecting data on public spaces	BPCA	Short
2	Design data model based on requirements	BPCA	Short
3	Evaluate methods for sharing information through the data model, and incorporate capability into design	BPCA	Short
4	Estimate costs for building data model and explore potential financing available	BPCA	Short
5	Develop, test, and build BPC data model	BPCA	Short
6	Deploy data model, gathering data, and informing recommendations to continue to improve community sustainability	BPCA	Ongoing

[b] Work with property managers and building owners to share data from building Energy Information Systems (EIS) to a BPCA-managed data platform, on a real-time or interval-reported basis

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Engage property managers and building owners in demonstrating the data model and discussing the potential for sharing building data with BPCA	BPCA, Building Owners and Managers	Medium
2	Determine methods for sharing data with the Battery Park City data model from current building and EIS systems	BPCA, Building Owners and Managers	Medium
3	Select and implement data transfer methods (via automated or manual method)	BPCA, Building Owners and Managers	Medium
4	Collect selected building performance data, analyze, and share recommendations for improvement	BPCA, Building Owners and Managers	Medium

Resources

- **Mobility on Demand (MOD) Sandbox Program**: This Federal Transit Administration's program is for any projects that demonstrate innovative MOD and transit integration concepts, such as planning and developing business models, obtaining equipment and service, acquiring/developing software and hardware interfaces to implement the project, and operating the demonstration.
- **Smart Cities Innovation Partnership**: funds initiatives that leverage technology solutions to promote public health, safety, and welfare, and improves quality-of-life. Applications are available for municipal testbeds. Examples of Smart Cities technologies include but are not limited to smart sensors to streamline traffic flow to reduce vehicle idling and emissions, clean water leakage detection systems to preserve clean drinking water, and advanced air quality monitoring systems.

[S-4] Active transportation

Change commuting and transportation patterns so that more people choose non-motorized travel such as walking, biking, or scootering

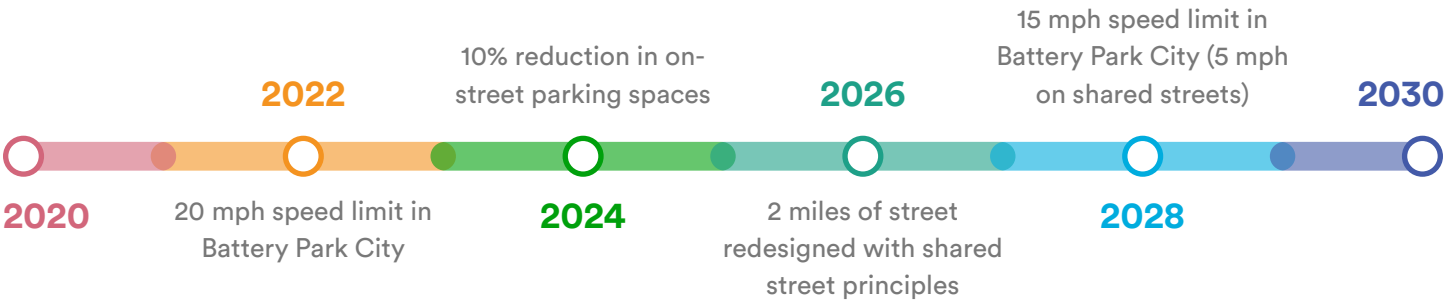
2030 Target

Battery Park City

Target: All streets redesigned for pedestrian safety by 2030

Baseline: Streets follow the NYC speed limit (25 mph)

Supporting Milestones



Actions

[S-4.1] Prioritize shared streets design principles in street redesigns to encourage lower speeds and safer streets

[S-4.2] Encourage commercial tenants to promote 100% transit/non-motorized transportation

[S-4.3] Reduce heavy vehicle trips through Battery Park City

[S-4.1] Prioritize shared streets design principles in street redesigns to encourage lower speeds and safer streets

Overview

To increase transportation safety for all modes of transit, BPCA will prioritize shared street design principles. Some of these efforts include reducing vehicular traffic, improving infrastructure for bikes and scooters, and adding signage to prevent bicyclist and pedestrian conflict. These measures can make BPC streets safer and encourage use of non-vehicular means of transportation, ultimately improving air quality and reducing noise pollution in Battery Park City.

Implementation Steps

[a] Evaluate opportunities and locations for the reduction of on-street parking E

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Take inventory of streets that provide on-street parking in Battery Park City, identifying types, quality, and quantity of parking spaces	BPCA	Medium
2	Select sites where shared street infrastructure can be implemented and on-street parking can be removed or relocated	BPCA, Implementation Partners	Medium
3	Prioritize and sequence opportunities for on-street parking reduction	BPCA, Implementation Partners	Medium

[b] Improve/install bike and pedestrian facilities, such as curb extensions, street narrowing, and bike lanes E

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Evaluate current bike and pedestrian facilities in Battery Park City and determine need for maintenance or enhancements	BPCA	Medium
2	Identify sites in BPC for new or improved bike and pedestrian facilities and develop plan for implementation based on street upgrade schedules and other projects	BPCA, Implementation Partners	Medium
3	Explore available financing for covering installation/improvement costs	BPCA, Implementation Partners	Medium

[c] Incorporate high-contrast and/or raised pavement treatments at intersections, as well as mid-block crossings, to enhance safety for pedestrians and bicyclists E

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Evaluate intersections and mid-block crossings for potential high contrast or raised pavement measures – prioritizing sites based on level of traffic and impending maintenance needs	BPCA	Medium
2	Implement measures to increase safety for pedestrians and bicyclists	BPCA, Implementation Partners	Medium
3	Track whether safety has increased post-implementation of high contrast and/or raised pavement measures and report findings to the community	BPCA	Medium

[d] Install road and other wayfinding signage to protect against pedestrian-bicyclist conflicts

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Evaluate progress of 2020 Wayfinding Signage Program by monitoring utilization and safety improvements and identifying any issues	BPCA	Medium
2	Based on progress, evaluate the need for new signage and supplement, as needed	BPCA	Medium
5	Explore and apply for programs that may provide funding for future improvements, such as the New York Main Street Program	BPCA	Medium

[e] Develop a plan for improving ride-sharing logistics and minimizing traffic

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Evaluate the current usage patterns of ride-sharing services in BPC, using TLC ride-share data and commissioned traffic counts	BPCA, Implementation Partners	Medium
2	Identify potential locations for centralization of drop-off and pick-up services for ride-share, considering curb space time-of-day needs (i.e. cargo loading zones)	BPCA, Implementation Partners	Medium
3	Develop signage and establish dedicated curb space for ride-sharing in BPC, establishing "geofences" (similar to airports or large venues)	BPCA, Implementation Partners	Medium
4	Liaise with DOT to notify ride-hailing companies to implement geofences in their apps	BPCA, Implementation Partners	Medium

Resources

- **Community Grant Program**: Launched by CitiBike and Healthfirst, the program supports initiatives, events, and activities that increase bike share access in New York. The program is focused on increasing usage of bike share by engaging people of all ages and leveraging bike share as a tool to champion equitable access to safe streets and green space in urban areas.
- **New York Main Street Program**: The program provides financial resources and technical assistance to communities to strengthen the economic vitality of the state's traditional main streets and neighborhoods. As part of this program, streetscape enhancement funds may be requested and used for activities such as: planting trees, installing street furniture and trash receptacles, providing appropriate signs in accordance with a local signage plan, and performing other relevant activities.
- **NYS DOT Funding**: The New York State Department of Transportation (NYSDOT) provides funding for bicycle, pedestrian, multi-use path and non-motorized transportation-related projects through the Transportation Alternatives Program (TAP). This program is also complimented by NYSDOT's Congestion Mitigation and Air Quality Improvement Program (CMAQ) that funds projects that reduce congestion and improve air quality. NYSDOT's TAP-CMAQ program collectively provides reimbursement of up to 80 percent of project-related costs with the remaining 20 percent provided by project sponsors. The solicitation guidebook and additional information for the Program can be found on NYS DOT's website.

[S-4.2] Encourage commercial tenants to promote 100% transit/ non-motorized transportation

Overview

Since 99 percent of people who work in Battery Park City live in another neighborhood, how these individuals commute to work has a significant impact on the community. By using transportation demand management (TDM) programs, commercial tenants in BPC can encourage employees to use public transit and non-motorized transportation. TDM programs not only incentivize alternative modes of transportation but can also increase employee health and wellness (e.g., through use of subsidized bike share programs) or increase employee satisfaction (e.g., by implementing flextime or telecommute options).

Implementation Steps

[a] Educate commercial tenants on transportation demand management (TDM) strategies, such as transit pass subsidies, providing employee shower facilities, and flextime/telecommute options

BPC-wide | BPCA-led

Order	Responsibilities	Responsible Groups	Timeframe
1	Consolidate TDM strategies and share with building owners and their commercial tenants	BPCA	Short
2	Review strategies and benefits and determine which strategies are relevant for the organization	Building Owners and Managers, Businesses (i.e. Commercial Tenants)	Medium
3	Engage employees to determine which strategies are relevant and most interesting to employees that the organization can test and implement	Businesses (i.e. Commercial Tenants)	Medium
4	Test TDM strategies and gather employee feedback after implementation	Businesses (i.e. Commercial Tenants)	Medium
5	Determine budgeting needs and select TDM strategies to officially launch and maintain in the long term	Businesses (i.e. Commercial Tenants)	Medium

Resources

- NYC Mobility Management Resource Guide: a resource for communities to learn more about transportation programs that can improve mobility. While not focused on 100% non-motorized transit, it does provide information on transit options in the city.

[S-4.3] Reduce heavy vehicle trips through Battery Park City

Overview

Heavy vehicles traveling through Battery Park City results in increased noise pollution, air pollution, and vehicular traffic. By reducing heavy vehicles, BPC can be a more pleasant and healthy place to live, work, and interact. Through Strategies in the Sustainability Plan, BPCA is planning to accomplish this reduction by taking measures to streamline waste collection, encourage cargo sharing among retailers, and establish logistics centers for residential packages. These activities will be accomplished in collaboration with community members as well as different service providers.

Implementation Steps

[a] Centralize waste collection points on-site to limit garbage truck trips through the neighborhood

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Map out current waste collection points in BPC and work with DSNY to enhance existing locations and determine possible additional locations for consolidated pick-up	BPCA, Implementation Partners	Medium
2	Engage with building owners and managers, businesses, and schools to review new pick-up points and establish schedules and logistics for waste collection	BPCA, Building Owners and Managers, Businesses	Medium
3	Officially roll out new waste collection points, support roll out with appropriate signage so building staff, schools, and businesses understand where to drop-off trash	BPCA, Building Owners and Managers, Businesses	Medium
4	Measure whether centralized collection points reduce noise and air pollution in the evenings (refer to Sub-Action S-3.2)	BPCA	Medium

[b] Encourage retail tenants to coordinate logistics and seek "cargo sharing" opportunities

BPC-wide | BPCA-led

Order	Responsibilities	Responsible Groups	Timeframe
1	Provide guidance on how to start “cargo sharing” conversations among retailers in BPC and identify retailers to champion cargo sharing	BPCA	Long
2	Pilot cargo sharing among a subset of retailers in BPC and communicate the pilot, sharing lessons learned and recommendations	BPCA, Businesses	Long
3	With findings from pilot, select materials ideal for cargo sharing and identify local businesses with similar cargo needs	Businesses	Long
4	Determine the proportional breakout of materials being shipped and logistics for sharing materials	Businesses	Long
5	Check in on success of cargo-sharing and identify any metrics that indicate a reduction in greenhouse gas emissions, street traffic, etc.	BPCA, Businesses	Long

[c] Establish north and south logistics centers for residential packages E

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Evaluate potential locations for north and south logistic centers to reduce heavy truck traffic, improve local air quality, and reduce noise levels in Battery Park City	BPCA, Building Owners and Managers	Short
2	Determine potential sites and needed procurement and financing process required for future construction	BPCA, Building Owners and Managers	Short
3	Evaluate methods for delivering packages from the logistics centers to residential buildings	BPCA, Building Owners and Managers	Short
4	Work with logistics organizations to determine optimized routes based on potential logistic center placements	BPCA, Building Owners and Managers	Medium
5	Depending on recommendations from the assessment, plan for future construction of north and south logistics centers	BPCA, Building Owners and Managers	Long

Resources

- **Freight NYC**: The New York City Economic Development Corporation (NYCEDC) Freight NYC plan addresses challenges within the NYC freight system. An aspect of this plan is to reduce truck traffic congestion in the city through improved infrastructure, modernization of distribution centers, and other strategic investments. This plan can provide guidance to BPC on strategies to reduce truck traffic.

[S-5] Electric vehicle infrastructure

Expand the availability of electric vehicle charging infrastructure to transition from gasoline-powered vehicles to electric vehicles, electric bikes, and electric scooters

2030 Target

Battery Park City Authority Spaces

Target: 100% of BPCA vehicles are EVs by 2030

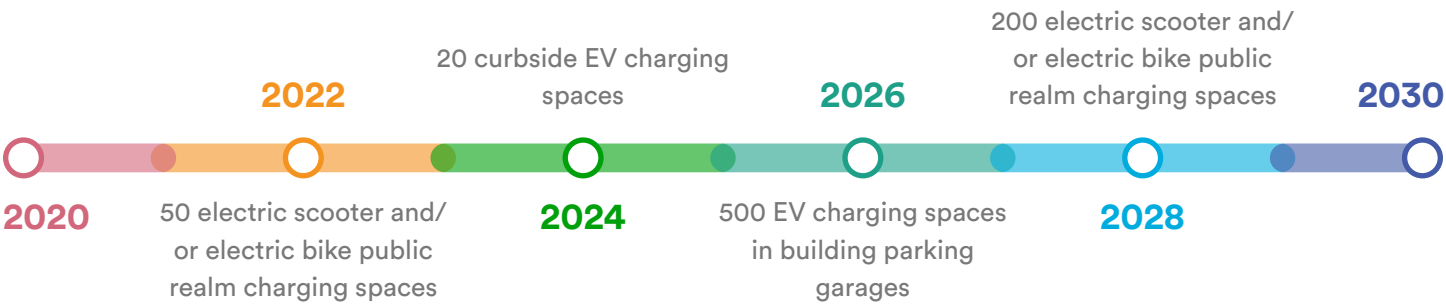
Baseline: Non-electric vehicles are used by BPCA for certain maintenance and operations procedures

Battery Park City

Target: 25% of public realm (curbside) parking spaces are upgraded to allow EV charging by 2030

Baseline: 0% of public realm (curbside) spaces are for EV charging in 2019

Supporting Milestones



Actions

[S-5.1] Expand EV charging infrastructure across Battery Park City to incentivize the transition to EVs, electric bicycles, and electric scooters

[S-5.1] Expand EV charging infrastructure across Battery Park City to incentivize the transition to EVs, electric bicycles, and electric scooters

Overview

By expanding EV charging infrastructure in Battery Park City, the community can continue to support carbon neutrality efforts. Both BPCA and the broader BPC community can take action to expand charging infrastructure, providing additional charging stations, retrofitting parking spaces, and requiring EV charging capabilities with new construction. Additionally, many funding opportunities exist in the state to support the expansion of EVs, which the community can use to subsidize EV charging investments.

Implementation Steps

[a] Install curbside electric bicycle/scooter charging infrastructure E

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Identify micro-mobility partners with potential to pilot programs in BPC	BPCA, Implementation Partners	Short
2	Evaluate use of current bike share programs – review usage data as available and gather stakeholder feedback on use of electric bicycles and scooters instead of traditional bikes and scooters	BPCA, Implementation Partners	Short
3	Based on usage data and stakeholder feedback, map most frequently traveled routes and identify needs and locations for charging stations. Also consider charging stations near highly frequented areas (i.e. near retail, commercial, parks, or other attractions)	BPCA	Short
4	Evaluate suppliers and determine appropriate financing method for adding charging stations	BPCA	Short
5	Procure and install curbside electric bicycle/ scooting charging infrastructure in BPC	BPCA, Implementation Partners	Short, Medium

[b] Work with partner organizations to install curbside Level 2 EV charging stations

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Identify partners, such as NYSERDA, that could assist in selecting and installing curbside Level 2 charging stations in order to reduce charging times for electric vehicles in BPC	BPCA, Implementation Partners	Medium
2	Conduct feasibility study, analyzing demand and future estimated demand as well as technical requirements needed to support EV charging stations	BPCA, Implementation Partners	Medium
3	As a part of feasibility study, investigate financing opportunities such as tax incentives, grant programs, and other financing to support charging infrastructure	BPCA, Implementation Partners	Medium
4	Evaluate and select sites in BPC for Level 2 EV charging stations – considering factors like existing parking condition, level of traffic, etc.	BPCA, Implementation Partners	Medium
5	Install charging stations with help of partners and monitor use of stations	BPCA, Implementation Partners	Medium

[c] Connect building owners to EV charging station installation partners and financing

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Based on work from Sub-Action S-5.1b, connect with potential partners and providers for installing EV charging	BPCA	Medium
2	Identify and compile guidance on financing strategies for EV charging stations and share with local building owners	BPCA	Medium
3	Review options for EV charging stations and available financing programs, such as Charge Ready NY, and determine feasibility of installing charging stations	Building Owners and Managers	Medium
4	Determine number of stations that can be supported on the premises and evaluate demand for an EV charging station – engaging building residents	Building Owners and Managers	Medium
5	Install charging stations with help of partners and monitor use of stations	Building Owners and Managers	Medium

[d] Mandate EV-ready and EV-installed spaces for any new construction that has parking

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	When drafting or modifying construction guidance (refer to Sub-Action M&W-5.1a), include language that outlines terms for including EV-ready or EV-installed spaces for new construction that has parking	BPCA	Medium
2	Consider best practices for percentage of spaces in a parking lot that are EV-ready or have EV charging stations installed	BPCA	Medium
3	Discuss EV charging parking space needs at the onset of new construction	BPCA, Building Owners and Managers	Medium
4	Oversee installation of EV charging stations or EV-ready spaces	Building Owners and Managers	Medium
5	Follow-up to ensure spaces for EV meet construction guidance requirements	BPCA	Medium

[e] Retrofit existing parking structures to have EV-installed spaces E

BPC-wide | BPCA-led

Order	Responsibilities	Responsible Groups	Timeframe
1	Discuss opportunities to retrofit traditional parking spaces into EV-installed spaces, discussing benefits to the building owner and community	BPCA, Building Owners and Managers, Businesses	Medium
2	Share a list of potential partners and financing options for retrofitting EV spaces with building owners	BPCA	Medium
3	Work with partners to investigate feasibility and secure financing for EV parking space installation	Building Owners and Managers, Businesses, Implementation Partners	Medium
4	Determine number of spaces needed/desired and pursue installation with assistance from partners	Building Owners and Managers, Businesses, Implementation Partners	Medium

[f] Replace BPCA's on-road/off-road vehicle fleet with 100% electric vehicles, and explore opportunities for biofuels for other maintenance/specialized equipment

BPC-wide | **BPCA-led**

Order	Responsibilities	Responsible Groups	Timeframe
1	Create an inventory of all on-road and off-road vehicles in the fleet with information on vehicle/fuel type, annual fuel consumption, and expected remaining lifetime	BPCA	Short
2	Develop a plan to replace fleet vehicles with EVs as vehicles reach the end of their useful lives	BPCA	Short
3	Evaluate sustainable alternatives for specialized vehicles/ equipment where EV options are not currently available	BPCA	Short
4	Evaluate potential financing and upgrade fleet vehicles with EVs and other more sustainable options	BPCA	Ongoing

Resources

- **Charge NY**: New York State's initiative, run through NYPA, that provides programs and guidance to progress the adoption of electric vehicles in New York.
- **Charge Ready NY**: NYSERDA program that offers rebates for EV charging stations and resources.
- **Drive Clean Rebate**: Through New York State's Charge NY initiative, NYSERDA offers the Drive Clean Rebate for the purchase of electric vehicles.
- **New York State Income Tax Credits**: available for the purchase and installation of EV charging stations.
- **SmartCharge New York**: Con Edison offers an incentive for EV owners who sign up for the SmartCharge New York program and charge their vehicles during off-peak times.

6 Appendix

Acronyms

BAS	Building Automation System
BPC	Battery Park City
BPCA	Battery Park City Authority
C&D	Construction & Demolition
CCA	Community Choice Aggregation
CSO	Combined Sewer Overflow
DDC	New York City Department of Design & Construction
DEC	New York State Department of Environmental Conservation
DEP	New York City Department of Environmental Protection
DOE	New York City Department of Education
DOH	Department of Health
DPR	New York City Department of Parks & Recreation
DSNY	New York City Department of Sanitation
EIS	Energy Information System
EPA	US Environmental Protection Agency
ESCO	Energy Services Company
EV	Electric Vehicle
GHG	Greenhouse Gases
HVAC	Heating, Ventilation, and Air Conditioning
ILFI	International Living Future Institute
LEED	Leadership in Energy and Environmental Design

LL97	Local Law 97
MS4	Municipal Storm Sewer System
NY DOT	New York Department of Transportation
NYCEDC	New York City Economic Development Corporation
NYCEEC	New York City Energy Efficiency Corporation
NYPA	New York Power Authority
NYSDOT	New York State Department of Transportation
NYSERDA	New York State Energy Research and Development Authority
O&M	Operations and Maintenance
REC	Renewable Energy Credit
RTEM	Real Time Energy Management
RFI	Request for Information
RFP	Request for Proposals
SOP	Standard Operating Procedures
TDM	Transportation Demand Management
UHI	Urban Heat Island
ULI	Urban Land Institute
VOC	Volatile Organic Compound

Glossary

#	100-year Floodplain	The area that is susceptible to flooding during a 100-year flood, or a flood event that has a 1 in 100 chance of occurrence in any given year.
A	Active Transportation	A mode of transportation that includes walking, running, biking, skateboarding, traveling by scooter, and other human-powered forms of transportation.
	Audit	Energy, water, or waste audits. The practice of documenting existing conditions and current performance and recommending improvements to reduce energy or water consumption, or the amount of waste sent to landfills.
B	Battery Storage	A type of energy storage that stores power from the grid or local renewable energy generation for use in offsetting peak electricity consumption or as back-up energy for added resilience. See "Energy Storage."
	Biodiversity	The variety and variability of flora, fauna, and ecosystems. Biodiversity supports many aspects of human life from food and medicine to environmental quality.
	Biodiversity Index	A biodiversity index is a relative scale of how many plant or animal species are in a defined area (e.g., plants per acre). As the types of species can vary, biodiversity indices are generally calculated for different target populations (separate index calculations for plants, for birds, for insects, etc.).
	Bioswale	A type of green infrastructure. Shallow trenches that retain and direct stormwater runoff while passively removing debris and pollution with vegetation.
	Blackwater	Wastewater generated from toilets that may have fecal contamination. Blackwater requires extra levels of treatment for safe reuse.
	Building Envelope	The physical separator between the interior and exterior of a building including the resistance to air, water, heat, light, and noise transfer.
C	Carbon Dioxide (CO_2)	CO_2 is a greenhouse gas made up of one carbon atom and two oxygen atoms that is released primarily through the burning of fossil fuels, other hydrocarbons, solid waste, and trees and wood products.

Carbon Dioxide Equivalent (CO2e)	CO2e is a composite unit that expresses the relative global warming impacts of other gases (methane, for example, is far more potent than CO2).
Carbon Footprint	The total greenhouse gas emissions caused by an individual, event, organization, or product, expressed as carbon dioxide equivalent (CO2e).
Carbon Neutral	A system or jurisdiction that has net zero greenhouse gas emissions. Carbon neutrality may require carbon sequestration technologies to capture the remainder of GHG emissions or, as a last resort, rely on carbon offsets.
Carbon Sequestration	The process of capturing and storing atmospheric carbon dioxide in an effort to mitigate climate change.
Circular Economy	An economic system that aims to eliminate waste and preserve resources for continual reuse and restoration.
Clean Energy	Energy resources that are derived from renewable, zero-emission sources such as solar, wind, and hydropower.
Clean Power	Power that is generated from clean energy sources. See "Clean Energy."
Climate Action	Action that is taken to either reduce the impacts of climate change or prevent climate change from worsening in the future, or both.
Combined Sewer Overflow	A discharge from a Combined Sewer System that is caused by large amounts of rainfall. Combined Sewer Overflows contain a mixture of domestic sewage, stormwater runoff, and sometimes industrial wastewater that can pollute local water bodies. See "Combined Sewer System."
Combined Sewer System	A sewage collection network that collects both stormwater runoff and sewage water in a shared system. See "Combined Sewer Overflow."
Community Choice Aggregation	A program that allows for local governments or agencies to procure energy supply and distributed energy resources for eligible customers in the community. Community choice aggregation allows communities to work together with a shared purchasing model that can reduce the cost of energy and increase the amount of renewable energy provided to the community.
Compactor	A centralized location for collecting, combining, and densely packing waste that is to be sent to a landfill.

	Compost	The product, rich in nutrients, resulting from the decomposition of organic material. Material used to make compost includes landscape trimmings, agricultural crop residues, paper pulp, food scraps, and wood chips.
	Cool Surfaces	High albedo, or reflective, surfaces that reflect more light and trap less heat than conventional surfaces. These surfaces can help mitigate the heat island effect. Examples include cool roofs, green roofs, or light colored pavement and roads.
	Cooling Tower	Cooling equipment that is used to reject heat from a chilled water system, often located on the roof of a building.
	Cradle to Cradle Certified	A globally recognized measure of safer, more sustainable products made for the circular economy. For certification, products are assessed for: material health, material reuse, renewable energy and carbon management, water stewardship, and social fairness. (Source: Cradle to Cradle Products Innovation Institute)
	Critical Facilities	Those facilities that carry out essential community functions and are particularly important during or after a disaster.
D	Decarbonization	The process of reducing embodied and operational greenhouse gas emissions.
	Declare Database	A platform and product database created and managed by the International Living Future Institute (ILFI) for identifying healthy products. The Declare label includes information on where a project comes from, its embodied carbon, end of life options, and whether it contains red list materials, among other information.
	Deep Energy Retrofits	Major changes to the structure or systems of an existing building for the purpose of achieving significant reductions in energy consumption (and operational costs) with the use of more efficient technologies, products, and designs. Deep energy retrofits may also reduce water consumption and improve occupant amenities, consumption and costs, and reduce GHG emissions and meet NYC building emission compliance targets.
	Demand Response	The process of managing electricity loads during peak periods that either reduces or shifts the peak power load to reduce demand costs.
	Distributed Energy Generation	Systems in which energy production facilities are located closer to the site of consumption. Distributed generation is the optimal use of renewable energy and can reduce any power transmission and distribution losses.

	District Energy System	District energy systems provide a central plant for generation of, and network to deliver, heating, cooling and potentially power to buildings and spaces in a community. District energy systems are able to balance loads throughout the community and achieve energy savings due to the efficiency.
	Diversion Rate	The amount of waste that does not end up in landfills either through recycling, reuse, composting, or another method. See "Waste Diversion."
	Drip Irrigation	A type of irrigation system that provides water directly to a plant's roots at a slower rate than sprinklers or hoses. Drip irrigation can reduce the amount of water needed for irrigation by reducing the amount of evaporation.
E	Economies of Scale	The cost advantage that is obtained due to the scale of an operation, with cost per unit of output decreasing with increasing scale.
	Ecosystem	A biological community of interacting organisms and their physical environment.
	Electric Vehicles	An umbrella term to describe a variety of vehicle types that use electricity as their primary fuel source for propulsion or as a means to improve the efficiency of conventional internal combustion engines.
	Electrification	The process of transitioning building heating, hot water, and cooking equipment away from fossil fuel equipment and toward electric equipment. Electrification of building systems paired with a power grid with 100% renewable energy sources can significantly reduce GHG emissions.
	Embodied carbon	Embodied carbon is the GHG emissions footprint of a product or materials. The emissions associated with a product or material come from its production, transport, use, and disposal.
	Emissions	Gases and particles which are put into the air or emitted by various sources. See "Greenhouse Gases."
	Energy Information System	Web-based software that is used to collect, track, analyze, and display building energy data.
	Energy Storage	Technologies that collect generated energy so it may be used at another time. Energy storage includes electric systems such as batteries as well as thermal systems such as hot and cold water storage tanks.
	Energy Tariff	A method of charging a consumer for consuming energy. A tariff defines the service charges, time of use periods, or consumption tiers.

	Energy Service Company	A business that provides a wide range of services for reducing energy consumption from design and implementation to financing.
	Environmental Footprint	The impact of a development or community on the local environment including its resource demand such as energy, water, and goods and materials.
	Flora and Fauna Patches	Habitat patches are specific, discrete areas often established within a larger park, open space, or natural area with the purpose of providing a breeding or feeding area for flora or fauna.
F	Fossil Fuels	Hydrocarbon fuels formed over millions of years by natural processes such as the anaerobic decomposition of organic matter. Typical fossil fuels include coal, oil, and natural gas.
G	Geofence	A virtual boundary that allows software to respond when a user is within that boundary
	Geothermal Energy	A renewable energy source. Geothermal energy utilizes the natural thermal energy generated and stored in the Earth.
	Green Infrastructure	A method for naturally managing rainfall. Green infrastructure reduces and treats stormwater runoff while also improving the local environment by mimicking natural processes. Green infrastructure includes strategies such as green roofs, bioswales, and rain gardens.
	Green Leases	Rental agreements where tenants commit to defined standards for sustainability such as energy efficiency, water conservation, or waste reduction and recycling.
	Green Roof	A building roof that is partially or completely covered with vegetation. Green roofs can reduce the Urban Heat Island effect, improve stormwater management, and reduce cooling demands in a building.
	Greenhouse Gases	Gases that trap heat in the atmosphere by absorbing and emitting solar radiation within the atmosphere, causing a greenhouse effect that warms the atmosphere and leads to global climate change. The main human-made GHGs are carbon dioxide, methane, nitrous oxide, sulfur hexafluoride, hydrofluorocarbons, and perfluorocarbons.
	Greywater	Wastewater generated in homes and offices, sourced from baths, sinks, washing machines, or kitchen appliances. Greywater may contain amounts of dirt, food, grease, or cleaning products, but does not have fecal contamination.

H	Habitat Linkages	Natural areas that connect patches of habitat to each other so that local species can travel between otherwise isolated patches of habitat.
	Hardiness Zone	An area that is defined by its ability for certain plant species to thrive. Hardiness zones are based on the annual minimum winter temperature of an area.
	High-Emission Fuel Oil (Heavy Oil)	Types of fuel oil—fuel oil #5 and #6—that are thicker and more viscous. These types of oil are often contaminated with different compounds such as sulfur and nitrogen and mean that upon combustion, these oils are much more carbon-intensive than others. Fuel oil #6 is illegal in NYC.
	Horticulture	A type of agriculture that is focused on fruit, vegetables, flowers, and plants.
I	Intertidal Habitats	Habitats that thrive in the area of a shore that is above water level at low tide and underwater at high tide.
L	LEED	Leadership in Energy and Environmental Design (LEED) is a rating system devised by the United States Green Building Council (USGBC) to evaluate the environmental performance of a building.
	Local Law 97	A piece of NYC legislation that was passed as part of the 2019 Climate Mobilization Act (CMA). LL97 establishes and enforces strict carbon emission targets for different building use typologies. LL97 sets carbon emission targets for the years 2024 to 2029 and 2030 to 2034.
M	Materials Petal	A certification pathway from Living Building Challenge. The Materials Petal includes several imperatives including a materials red list, embodied carbon footprint, responsible industry, living economy sourcing, and net positive water.
	Methane (CH4)	A gas made up of one carbon atom and four hydrogen atoms. Methane is the main component of natural gas, commonly used as a fuel for heating. Methane is released during the production and distribution of natural gas but also through livestock and other agricultural practices and by the decay of organic waste in landfills. Methane is a greenhouse gas with a much higher global warming potential than carbon dioxide meaning methane has a much larger effect than the same amount of CO2.
	Microclimate	The climate of a small area with a distinct set of environmental variables such as temperature, light, wind speed, or moisture.
	Mitigation	Actions that aim to limit the amount of GHG emissions that are released into the environment. See also "Climate Action."

	Municipal Separate Storm Sewer System	An underground network that is designed or used for collecting and conveying stormwater that discharges to local water bodies. In comparison to a Combined Sewer System, MS4 acts as stormwater infrastructure separate from domestic sewer infrastructure.
N	Net Zero Carbon	A system, process, building or community that mitigates any operational greenhouse gas emissions associated with its resource use or does not use energy sources that contribute greenhouse gas emissions.
	Net Zero Emissions	See "Net Zero Carbon."
	Non-Motorized Transport	See "Active Transportation."
	Non-Potable Demand	Water demand that does not require water quality to achieve potable standards. Non-potable demands may include irrigation, heating/cooling applications, or process water needs. See also "Potable Water."
O	Off-take	In the context of solar and wind power facilities, an agreement to purchase part of the energy being produced.
	Operational emissions	GHG emissions that occur during the day-to-day operation of a building or community including activities like energy use or commuting.
	Organic Waste	Biodegradable waste containing materials from living organisms. Organic waste may include food waste, green waste, landscaping and pruning waste, nonhazardous wood waste, or food-soiled paper waste that is mixed in with food waste. Organic waste is often processed using composting.
P	Passive House	The Passive House Institute US (PHIUS) Passive Building Standard requires progressive design considerations for the building envelope, air tightness, high-performance windows and doors, heat recovery and moisture recovery ventilation techniques, and optimized solar gain through the facade.
	Pedestrian facilities	Street design features that promote pedestrian safety and active transportation, such as crosswalks and mid-block crossings, median extensions and refuge islands, raised/tabled intersections, and speed bumps.
	Permeability	The ability of a surface to allow stormwater infiltration.
	Potable Water	Water that meets potable water quality standards, or water that is safe to drink.
	Purple Pipe Network	A piping system for recycled water. A purple pipe network connects water treatment equipment with wastewater sources to provide treated water to a community for reuse.

R	Rain Garden	A type of green infrastructure meant to collect stormwater runoff for detention. A rain garden aims to improve the infiltration of stormwater through deep rooted plants.
	Real Time Energy Consumption / Real Time Energy Management	Real time energy data is collected using cloud-based sensors and equipment and sent to a management platform where it is automatically analyzed, and anomalies are identified for building operators to investigate. Live and historical energy data can be a useful tool for identifying opportunities for energy savings.
	Red List Materials	A list of materials developed by the International Living Futures Institute that are the worst in class based on their harmful chemical use. Red List items are known to pollute the environment, bio-accumulate in the food chain until they reach toxic concentrations, or harm construction and factory workers.
	Renewable Energy Sources	Energy that comes from resources that are naturally replenished on a human timescale, such as sunlight, wind, tides, waves, bioenergy, hydrogen and geothermal.
	Resiliency	The capacity to survive, adapt, and thrive in the face of chronic stresses and acute shocks and to transform as conditions require.
S	Saline-Vulnerable	Plants that are susceptible to salt damage exacerbated by sea level rise and salt-based ice melting practices.
	Salinity-Resilience	Plants that are resilient to salt and saltwater. These plants are ideal for coastal zones that might be impacted by sea level rise and coastal flooding.
	Shared Street	Streets that are designed for low vehicle speeds, removing formal distinctions between pedestrian, cyclist, and vehicle spaces.
	Single-Use Materials	Disposable materials that are used only once before they are thrown away or recycled. Food packaging, plastic bags, straws, and water bottles are all examples of single-use materials.
	Smart City Infrastructure	Infrastructure in a community that utilizes internet of things technologies to collect data and utilize the data to manage operations and resources efficiently, improve sustainability, create economic development, reduce emergency response times, and enhance quality of life.
	Smart Meter	Digital meters that record energy or water consumption and communicate the information to the supplier or building operator for monitoring and billing.

	Smart Pole	A lamp post that can have a variety of different internet-connected features, such as light sensors for automatic dimming, WiFi hotspot, USB outlets, security cameras, and digital displays.
	Sound Dampening	The process of reducing the resonance in a space through absorption or redirection of sounds.
	Stormwater Management	The process of managing stormwater on-site either through methods such as infiltration, detention, or capture and reuse. Stormwater management includes managing the volume of rainfall to avoid flooding as well as ensuring that stormwater does not become polluted and runoff into local water bodies. See also "Green Infrastructure."
	Sub-Meter	Individually meter and bill units based on consumption in a traditionally master-metered building (or one where a single meter measures the entire building's consumption). Sub-metering can also refer to separately metering different energy or water end uses, such as lighting separately from space conditioning, to better understand building energy use and identify potential maintenance issues or efficiency opportunities.
	Subtidal Habitats	Habitats that thrive in the area of a shore that is below low tide levels.
T	Thermal Energy Storage	A type of energy storage that stores thermal energy such as ice or hot water for use at a later time. Thermal energy storage can be utilized to reduce peak demands for heating and cooling. See "Energy Storage."
	Transportation Demand Management	Strategies to change travel behavior in order to reduce traffic congestion, increase safety and mobility, conserve energy, and reduce greenhouse gas emissions. Strategies may include ride-sharing, telecommuting, park-and-ride programs, and alternative work schedules.
	Tree Canopy	The layer of tree leaves, branches, and stems that provide tree coverage of the ground when viewed from above. (Source: United States Department of Agriculture)
	TRUE Zero Waste Certification	Facilities that achieve the TRUE Zero Waste certification must meet a number of requirements and prove the space has achieved an average of 90%, or higher, diversion rate from landfills through 12 months of data collection.
U	Urban Heat Island	An Urban Heat Island, is a dense urban area that experiences a higher average ambient air temperature than more rural areas. The Urban Heat Island effect is created by dense areas of pavement, buildings, and the heat associated with people, cars, buses, trains, and other activities.

V	Volatile Organic Compounds	Airborne chemicals that are given off by many indoor sources, such as paints or carpeting, and can pose health hazards to occupants.
W	Waste Diversion	The process of managing a waste stream such that waste products do not end up in landfills either through reuse, recycling, composting, or another method. See "Diversion Rate."
	Water Recycling Systems	Systems that capture and treat wastewater to acceptable standards for reuse. Water recycling systems often treat wastewater for non-potable use, such as for irrigation, but can also treat wastewater to potable standards for broader use.
	Water Reuse	The practice of capturing wastewater, treating it, and reusing it. See "Water Recycling Systems."
	Water Use Intensity	The amount of water consumed in a building per unit area. The metric is used to compare building performance within a certain building use type. Water use intensity is often in units of gallons per square foot per year.
	WELL Building Standard	A performance-based system for measuring, certifying, and monitoring building elements that impact occupant health and wellness. WELL analyzes building qualities such as air, water, nourishment, light, fitness, comfort, and mind. WELL certification is designed to work in parallel with other existing frameworks such as LEED, Living Building Challenge, or BREEAM.
Z	Zero Waste	A system, process, building or community that sends no waste to landfills by reducing consumption and maximizing recycling, reuse, and composting.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