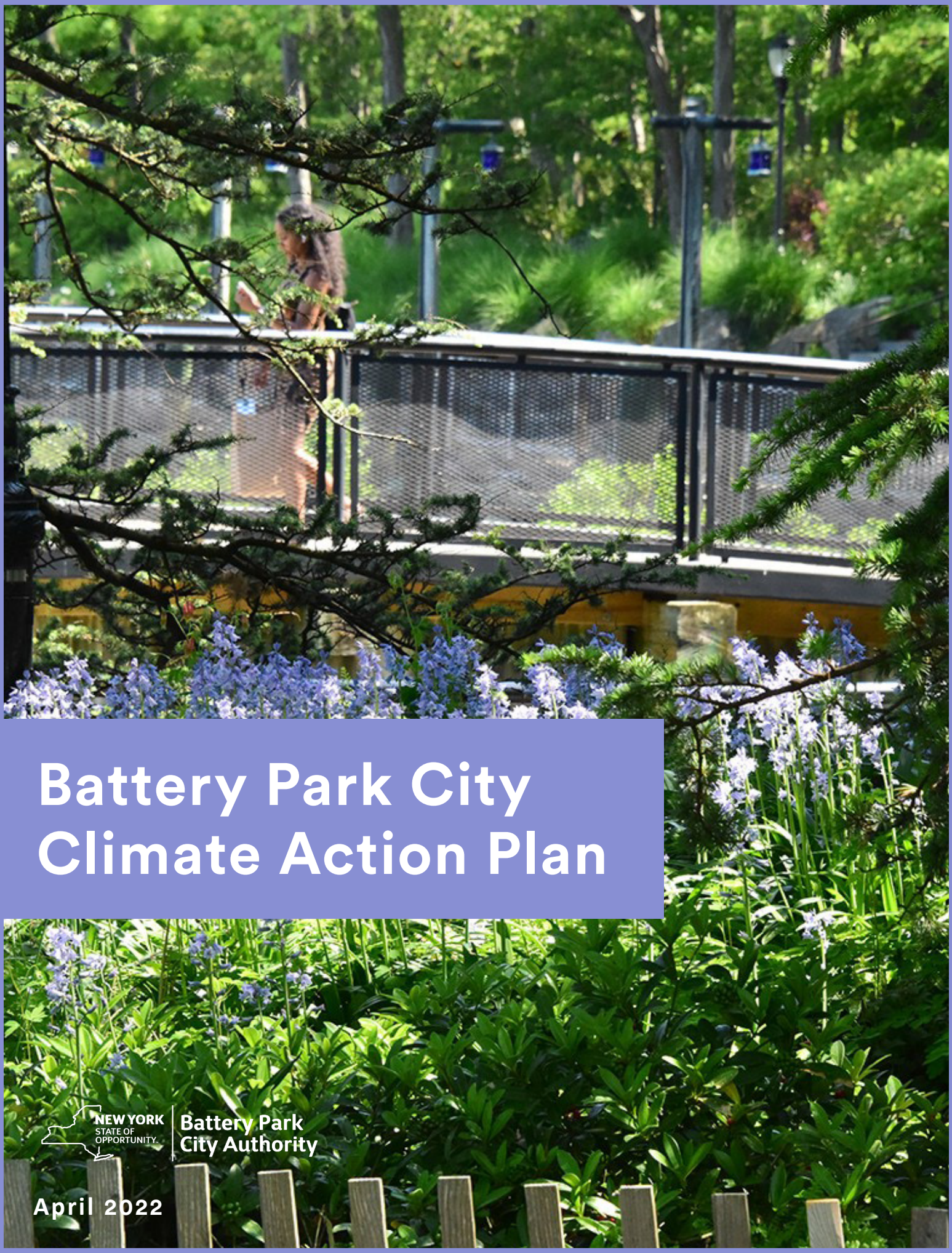

Battery Park City Climate Action Plan

NEW YORK STATE OF OPPORTUNITY.

Battery Park City Authority

April 2022

NEW YORK STATE OF OPPORTUNITY. | Battery Park City Authority

Battery Park City Climate Action Plan

April 2022

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Introduction

1

A Call to Action

The time to act on climate is now. The latest Intergovernmental Panel on Climate Change (IPCC) report, The Sixth Assessment Report (AR6) Climate Change 2022: Impacts, Adaptation, and Vulnerability, made the strong case that we are already on a path toward a future of significant climate-related impacts and our window for action is narrowing. The report states with very high confidence that: "Near-term actions that limit global warming to close to 1.5°C would substantially reduce projected losses and damages related to climate change in human systems and ecosystems... but cannot eliminate them all." It is clear that we must do everything in our power to both prepare for climate change but also significantly reduce our contribution to global GHG emissions and limit the severity of climate change in the future.

In May 2019, the Board of the Battery Park City Authority passed a Sustainability Resolution that committed Battery Park City (BPC) to carbon neutrality by 2050. This resolution set the impetus for developing the BPC Sustainability Plan, which was released in 2020, initiating the next generation of BPC environmental efforts. Within the plan, the greenhouse gas (GHG) emissions monitoring and reporting strategy (Strategy E-5) focused on climate mitigation targets and actions for BPC to implement within the next ten years. This strategy reinforced BPC's carbon neutrality commitment with an interim 2030 target for BPC to achieve a 33% reduction by 2030 compared to 2017 levels. Additionally, many other strategies in the BPC Sustainability Plan have GHG reduction potential and serve as the foundation for the Climate Action Plan.

BPC is proud to join in the local and global efforts to combat climate change and embrace this challenge head-on. Together we can reduce our emissions and ensure a safer, healthier place for us all.

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.

–BPC Sustainability Plan Vision Statement

BPC Carbon Neutrality Timeline

The Climate Action Plan

The BPC Climate Action Plan (CAP) is a direct outcome of the BPC Sustainability Plan, putting a focus on the climate mitigation potential of BPC sustainability actions, quantifying and mapping GHG reductions between now and 2050. The CAP provides a high-level roadmap for Battery Park City to successfully achieve a carbon neutral neighborhood, where GHG emissions are net-zero over the course of a year with deep reductions and carbon offsets, as needed. While the CAP illustrates one way forward, GHG reductions require alignment with many external policies and programs, as well as the participation of different stakeholders inside and outside of BPC. Therefore, actual GHG emission reductions will not align perfectly with the CAP projections. Even so, the CAP provides a beneficial guidepost for BPC as decisions are made year over year, marching toward 2050.

The BPC CAP includes the following components:

Baseline Emissions and Business-as-Usual Scenario	Includes an overview of: the BPC 2017 carbon footprint, the baseline year for BPC emission reduction targets; the BPC 2019 carbon footprint; and the business-as-usual scenario, which illustrates how BPC GHG emissions may change over time without mitigating actions.
Carbon Neutral Pathway	Includes findings from the CAP and introduces the pathway for BPC to achieve carbon neutrality by 2050.
Energy	Models the stationary energy sector, or BPC building-scale energy, and outlines the pathway to energy-related GHG emissions through 2050.
Transportation	Models the transportation sector and outlines the pathway to transportation-related GHG emissions through 2050.
Waste	Models the waste sector and outlines the pathway to waste-related GHG emissions through 2050.
Residual Emissions and Carbon Offsets	Summarizes the annual GHG emissions projected to remain in 2050 and discusses the potential for carbon offsets, or the reduction or removal of GHG emissions used to compensate for GHGs emitted elsewhere.

Baseline and Business -as-Usual

2

Baseline GHG Emissions

The first step for achieving GHG reductions is to understand annual baseline GHG emissions. Annual GHG emissions are reported by sector and sub-sector to illustrate where emissions originate within Battery Park City.[1] Emissions sectors include energy/buildings, transportation, and waste.

Energy Waste Transportation

2017 serves as the baseline year for BPC, where GHG emissions totaled 168,879 tCO_2e, equivalent to driving 424 million miles.[2] In 2017, about 88% of emissions came from the stationary energy sector, mostly allocated to grid electricity consumption. Transportation contributed 11% of total BPC emissions and waste contributed 1% of the total. While annual waste emissions are lower than the energy and transportation sectors, they still represent an important opportunity for reduction of GHG emissions in BPC as a means of both advancing sustainability efforts and realizing wider benefits to the neighborhood.

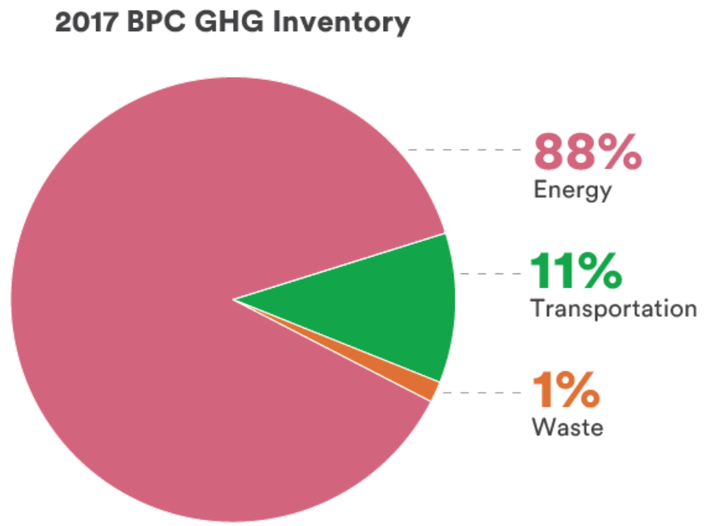
A GHG inventory was also compiled for 2019, which showed a 5.5% increase from 2017 emissions. The increase in emissions is predominately due to: (a) an increase in fossil fuel consumption, (b) an increase in the electricity grid's emissions intensity, or the amount of emissions associated with each kilowatt-hour used, impacting building electricity emissions as well as transit emissions, and (c) an increase in water consumption and resulting wastewater emissions. With each year, it is expected that emissions will fluctuate based on shifting consumption and emission factors, but it is the hope that regular inventorying of annual GHG emissions will show a downward trend over time.

BPC 2017 Emissions

Sector	Sub-Sector	GHG Emissions	
Energy	Grid electricity use	88,880 tCO_2e	53%
	Fossil fuel combustion	26,865 tCO_2e	16%
	District energy use (steam and chilled water)	32,211 tCO_2e	19%
Transportation	Passenger vehicles	9,335 tCO_2e	5.5%
	Public transit	9,020 tCO_2e	5.3%
	BPCA vehicle fleet	25.6 tCO_2e	<1%
Waste	Landfilled waste	2,138 tCO_2e	1.3%
	Biologically treated waste	6.8 tCO_2e	<1%
	Wastewater treatment	397 tCO_2e	<1%

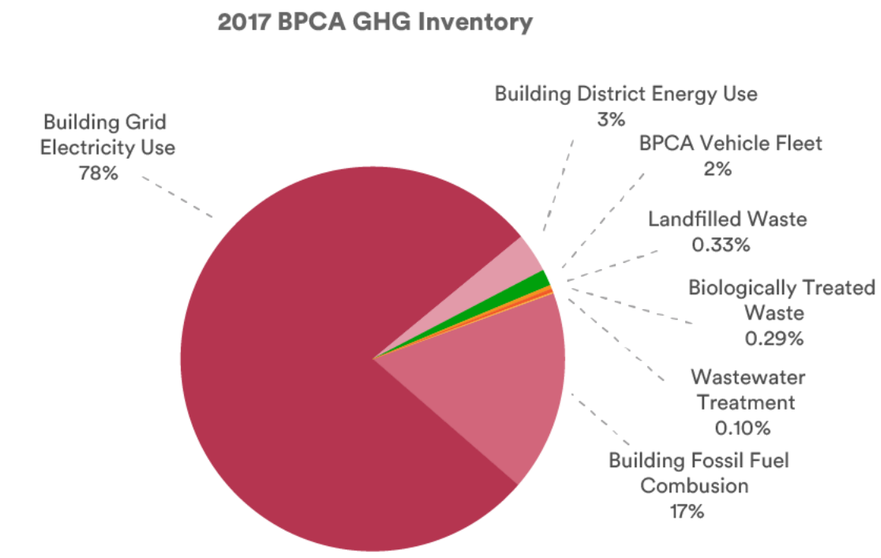
[1] BPC emissions are also tracked based on the Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (GPC) scope framework. A summary table of BPC and BPCA emissions based on the scope framework is provided in the appendix.

[2] Based on the EPA equivalency calculator.



BPCA GHG Emissions

BPCA tracks its own emissions to better understand its contribution to BPC emissions. In 2017, BPCA emissions totaled 1,867 tCO_2e, or roughly 1% of the total BPC emissions. Most BPCA emissions come from energy use in parks and BPCA spaces as well as the BPCA vehicle fleet. Per the BPC Sustainability Plan, BPCA is working to lead by example and achieve a 50% reduction in emissions from the 2017 baseline by 2030.

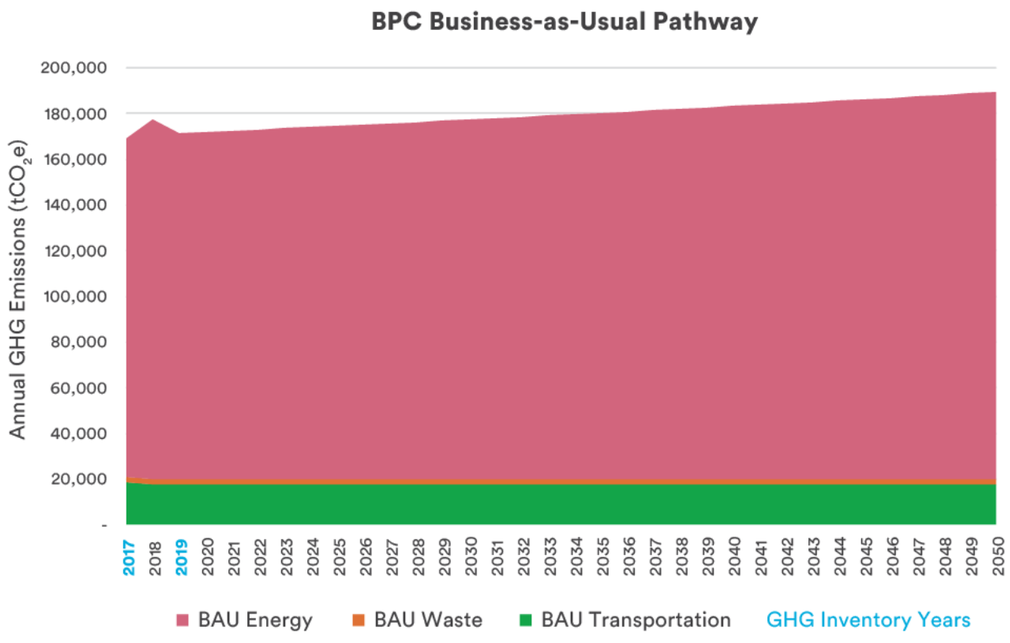


Business-as-Usual Scenario

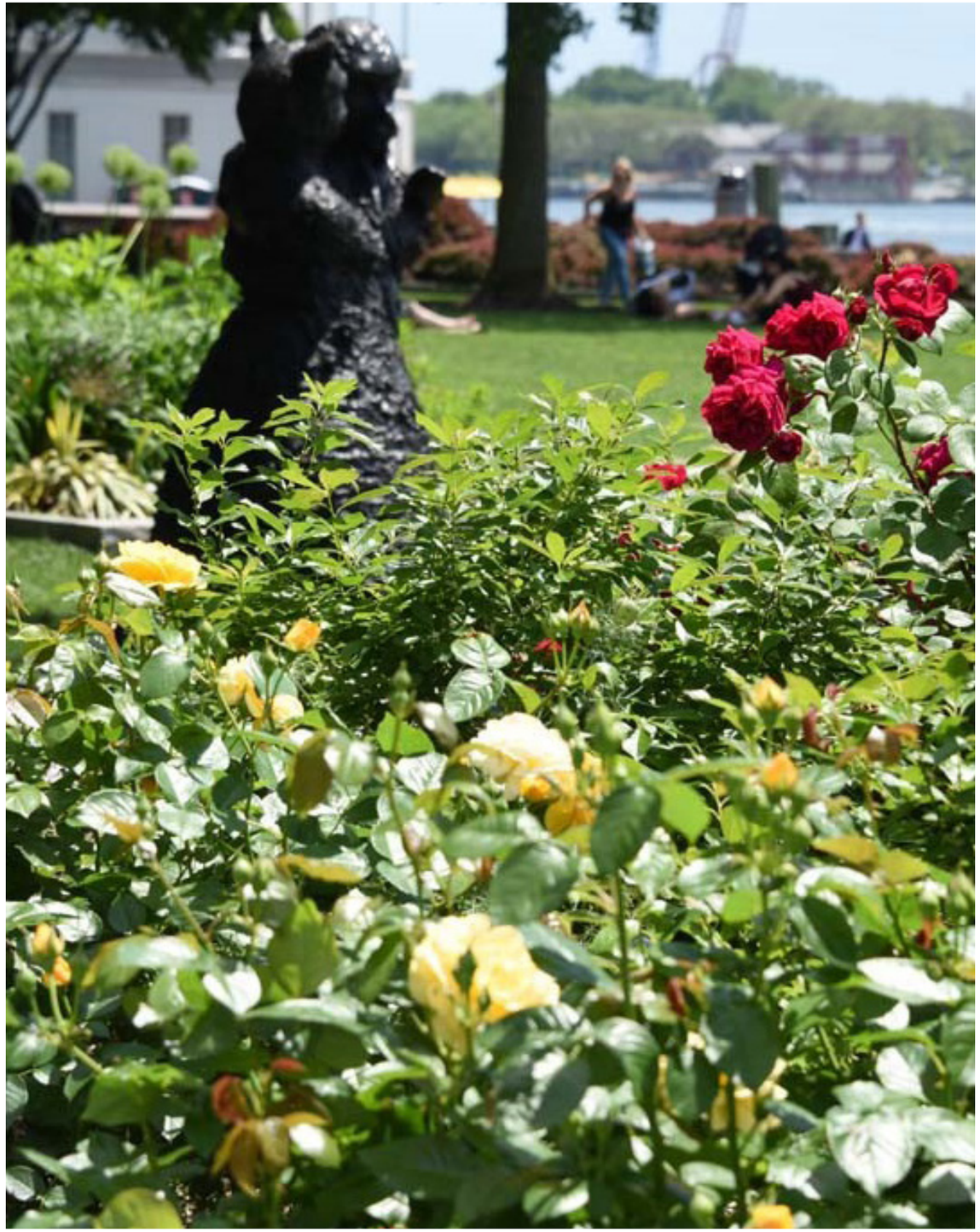
The business-as-usual (BAU) scenario acts as an important reference, creating a baseline measurement from which future scenarios to reduce GHG are created. The BAU depicts changes in GHG emissions in a scenario without any Federal, State, or local climate actions. Most changes documented in a BAU projection are due to population changes or building area development and growth. Since BPC is not expected to have population or building area growth between now and 2050, the change in BAU emissions over time is limited.

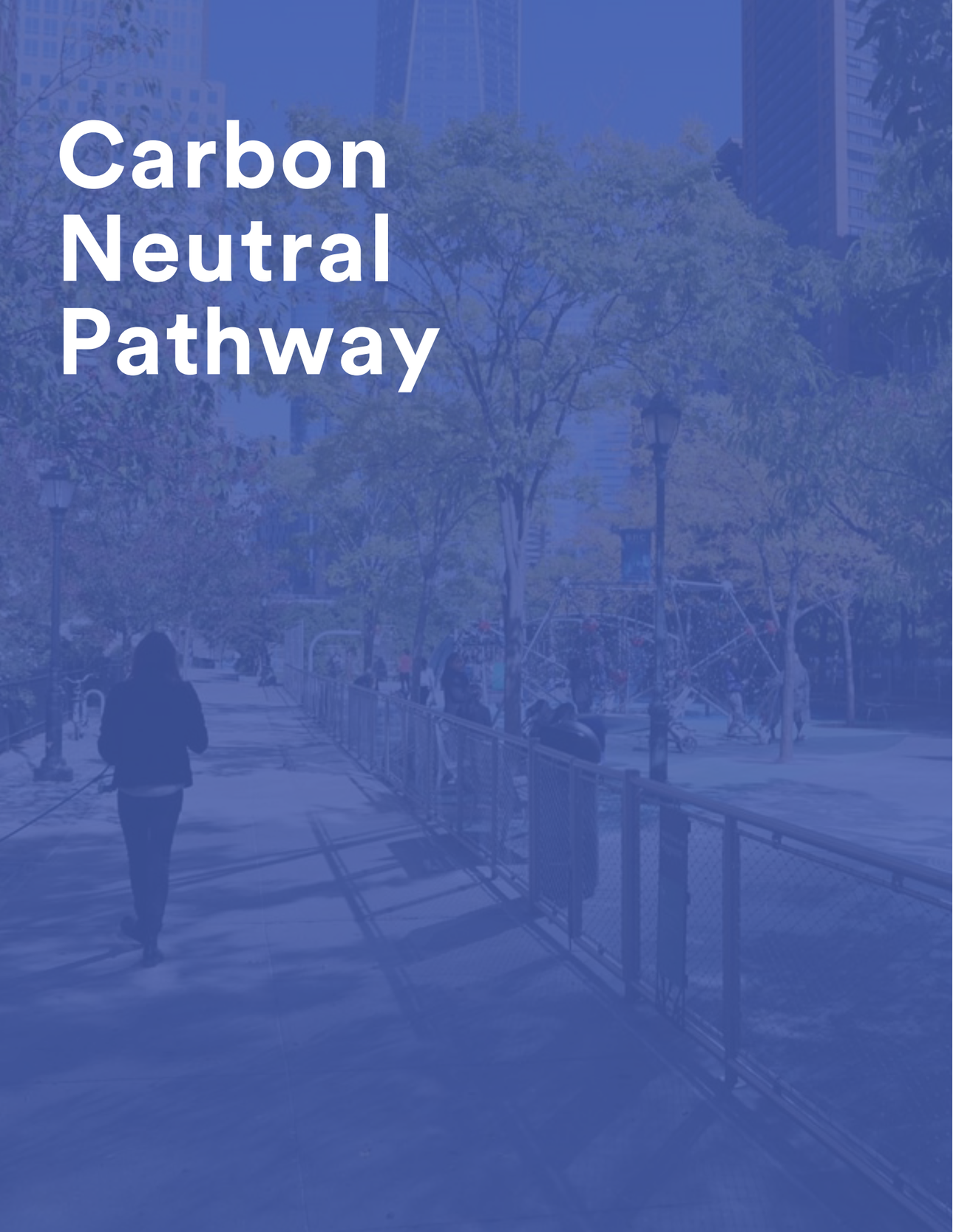
Changes in waste and transportation emissions are predominantly driven by population changes, and because BPC anticipates little, if any, it is not expected that these emissions will materially change without action over the next thirty years. Energy emissions, however, are also influenced by weather and climate change, leading to shifts in energy demand and consumption no matter the population or area growth. In New York City, climate change is projected to lead to rising temperatures, which will significantly increase cooling demand while reducing heating demand in buildings. This shift will increase energy consumption in BPC and increase energy-related emissions over time.[3]

The BAU scenario shows that by 2050 there will be an increase of approximately 12% for total emissions in BPC, as compared to the 2017 baseline. This increase will need to be offset by GHG reduction actions in BPC to achieve the carbon neutrality goal.



[3] Year-to-year energy demand forecasts were retrieved from the NYISO Climate Change Impact Study..





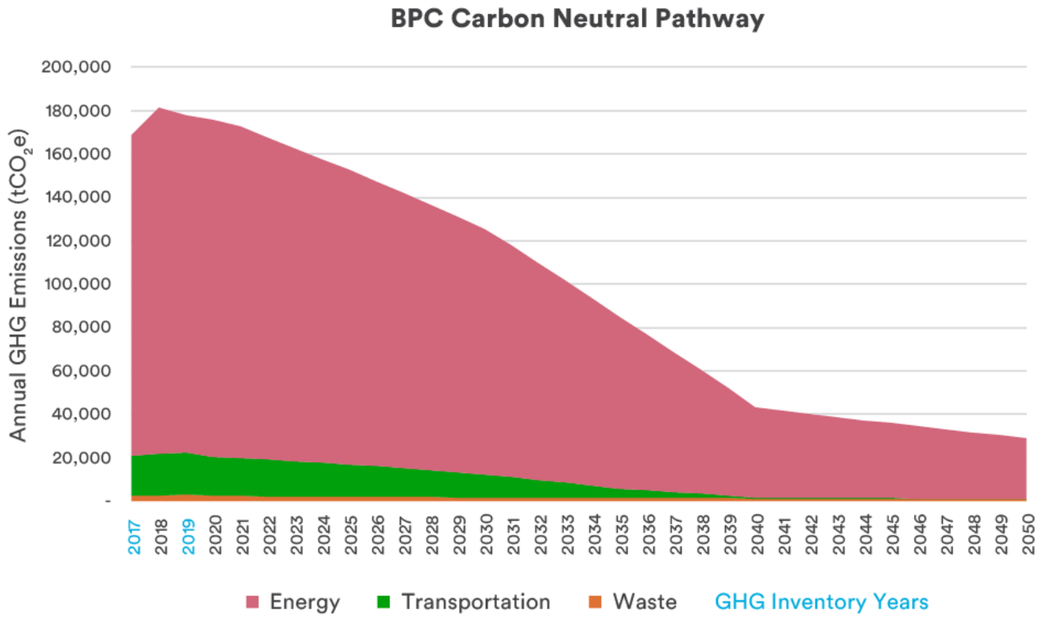
Carbon Neutral Pathway

3

Summary

The Carbon Neutral Pathway maps out how BPC can achieve carbon neutrality by 2050 while achieving interim targets and milestones. This pathway takes any foreseeable regulatory changes across Federal, State, and local scales into account. It also captures local strategies identified in the BPC Sustainability Plan that will deliver GHG reductions. The BPC Sustainability Plan outlined 2030 targets across all strategies that serve as the foundation for the Carbon Neutral Pathway. In order to develop a pathway through mid-century, additional targets were set for the year 2050.[4] The relevant BPC Sustainability Plan 2030 targets, those associated with GHG emissions reductions, and new CAP 2050 targets are included in the table on page 17.

Achieving these reductions would put BPCA ahead of New York City's goal to achieve an 80% reduction in citywide emissions by 2050 and just under New York State's goal for an 85% reduction by 2050. The largest contributors to GHG emission reductions in BPC are from integrating renewable energy sources, conducting deep energy retrofits, and transitioning to building electrification. The stationary energy sector will remain the largest contributor to BPC GHG emissions through 2050, where it will represent most of the remaining, or residual, emissions. Transportation will see the largest reductions, achieving a 99% reduction in emissions from the 2017 baseline.



[4] Targets for 2050 were developed to be aspirational yet practical for BPC to achieve and in alignment with the 2030 Sustainability Plan targets.

Come 2050, after implementing the strategies for the Sustainability Plan and meeting CAP targets, it is forecasted that BPC may have just over 32,700 tCO_2e of residual emissions. This means that to achieve carbon neutrality by mid-century, BPC will need to engage in carbon offset projects, additional GHG reduction actions, or more aggressive implementation of Sustainability Plan actions.

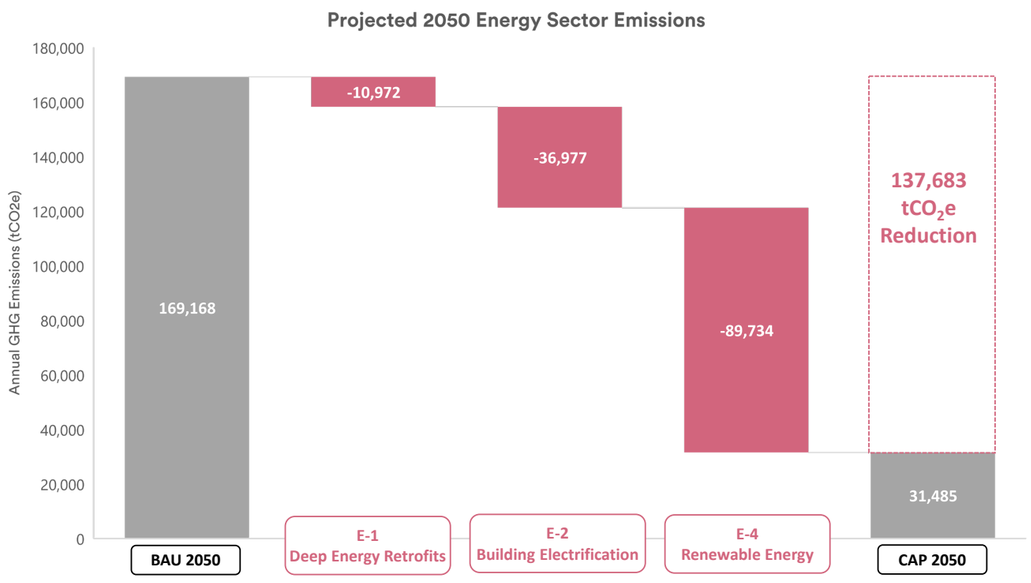
BPC CAP Targets

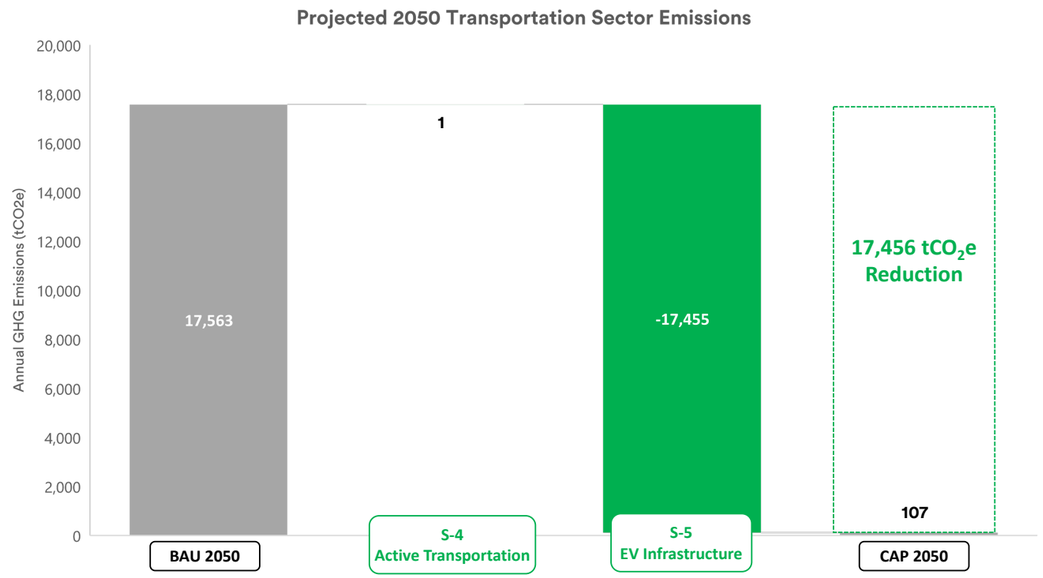
Sector	Strategy		2030 Target	2050 Target
Energy	E-1	Deep energy retrofits	All buildings' operational emissions will be below LL97 2030 target by 2029	Achieve building emissions intensity of less than 0.0014 $tCO_2e/sf/yr$ by 2050
	E-2	Building electrification	On-site combustion from fossil fuels capped at 893 million kBtu of energy by 2030	
	E-4	Renewable energy supply and storage	70% of electricity to come from renewable energy sources by 2030	100% of electricity to come from renewable energy sources by 2040
Materials and Waste	M&W-1	Sustainable consumption	Achieve behavior change that supports waste reduction, recycling, and reuse in BPC by 2030	75% reduction in landfill waste sent to compactors by 2050
	M&W-3	Waste diversion	50% reduction in landfill waste sent to compactors by 2030	
	M&W-4	Organics collection and composting	80% of Battery Park City organic waste to be diverted from landfills in 2030	90% of Battery Park City organic waste to be diverted from landfills in 2050
Water	W-1	Water conservation	Reduce the water use intensity for residential and commercial buildings 10% by 2030	Reduce the water use intensity for residential and commercial buildings 20% by 2050
Transportation	S-4	Active transportation	All streets redesigned for pedestrian safety by 2030	Increase sustainable mode share to 80% by 2050
	S-5	Electric vehicle infrastructure	25% of public realm (curbside) parking spaces for EV charging by 2030	Achieve 75% EV stock in BPC by 2050

Achieving each of these targets is projected to reduce BPC emissions by 80.6% from the 2017 baseline emissions.

Strategy-specific waterfall charts were developed to demonstrate at a high-level which BPC sustainability strategies will play the biggest role in overall GHG reductions. The charts compare BAU 2050 to carbon neutral 2050 pathways and show us the relative reduction steps. Waterfall charts have their technical limitations as some strategies are multiplicative in terms of GHG reduction impacts, and they show a 2050 snapshot, not cumulative reductions. However, these charts help visualize which strategies have the largest impact.

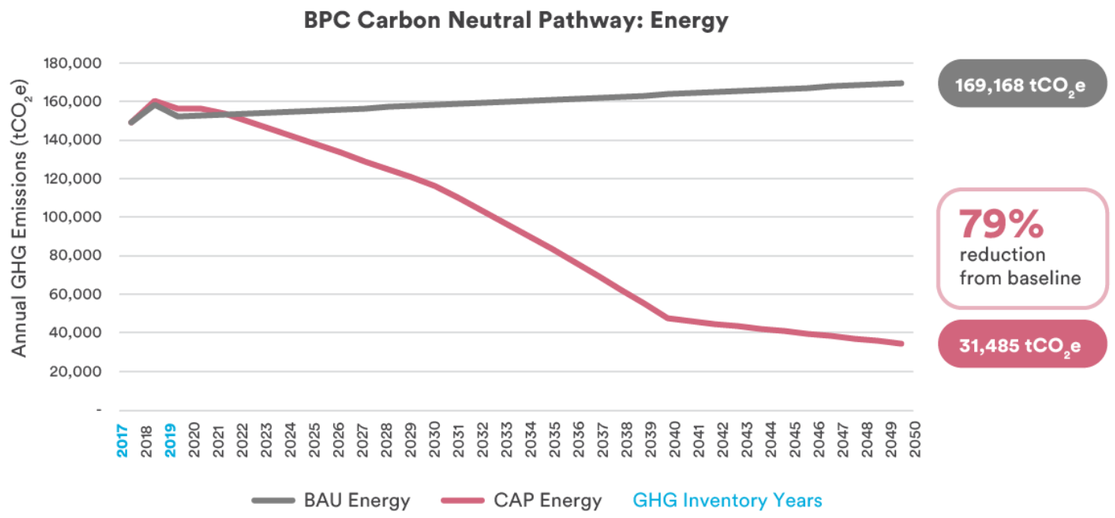
Key takeaways from this exercise show us that decarbonizing the grid and supporting renewable energy sources will have the largest impact on BPC emissions, heightened by building retrofits and electrification. For transportation, expanding EV infrastructure and supporting EV adoption will have the largest impact on transportation emissions. For waste, diverting more waste from landfills will bring the deepest reductions.





Energy

For Battery Park City, as with the rest of New York City, GHG reductions will rely heavily on building-scale deep energy retrofits, the phasing out of fossil fuel use, and the successful decarbonization of the power grid. These three primary energy strategies will put BPC on the path toward significant reduction in energy-related emissions. Adoption of these strategies and achievement of the interim targets will result in a significant reduction of energy sector emissions by 79% by 2050, relative to 2017 emissions.



Deep Energy Retrofits [E-1] and Building Electrification [E-2]

Strategies E-1 and E-2 from the BPC Sustainability Plan encapsulate building-scale efforts to decarbonize through the reduction of fossil fuel use and increased energy efficiency from retrofits. Deep energy retrofits were modeled to achieve 2030 Local Law 97 emission limits by 2029 and an average emissions intensity of 0.0014 $tCO_2e/sf/yr$ by 2050, in accordance with the legislation's goal of achieving an 80% reduction in building emissions citywide by 2050.[5]

Strategy		2030 Target	2050 Target
E-1	Deep energy retrofits	All buildings' operational emissions will be below Local Law 97 2030 target by 2029	Achieve building emissions intensity of less than **0.0014 tCO2e/sf/yr by 2050**
E-2	Building electrification	On site combustion from fossil fuels capped at 831 million kBtu of energy by 2030	

In order for BPC to achieve the 2050 emissions intensity target, electrification of building systems plays a significant role. The CAP model tells us that BPC buildings will need to reduce fossil fuel use by 47% by 2050 for BPCA to reach its goals.[6] Building electrification is a new solution for NYC, and buildings will require specialized planning and deep energy retrofits in order to effectively convert to fully electric systems.[7] Due to modeled building retrofits and the decarbonization of the grid (described below), residual energy emissions in 2050 will result from remaining fossil fuel use in buildings, including diesel use for back-up power.[8]

Renewable Energy Supply and Storage [E-4]

Expanding the availability and use of renewable energy in BPC will be supported strongly by New York State efforts to clean the grid. New York State's Climate Leadership and Community Protection Act (CLCPA) aims to achieve a decarbonized grid by 2040. This means that all electricity use in BPC after 2040 will contribute zero GHG emissions, and so accelerated electrification can greatly magnify the impact of this work.

Strategy		2030 Target	2050 Target
E-4	Renewable energy supply and storage	70% of electricity to come from renewable energy sources by 2030	**100%** of electricity to come from renewable energy sources **by 2040**

The CAP assumes that New York State will be successful in achieving a decarbonized grid according to its targets.[9] As buildings electrify, BPC building electricity consumption will increase from nearly 316,000,000 kWh in 2017, contributing 88,880 tCO_2e, to more than 416,000,000 kWh in 2050, a 32% increase, and contributing zero emissions, per the CAP model. As electrification and a cleaner grid are adopted, electricity consumption will go up but emissions will go down.

Energy in 2050

100%
of electricity to come from renewable energy sources by 2040

47%
reduction of fossil fuel use by 2050

79%
reduction from baseline energy emissions in BPC by 2050

[5] The model projects emissions intensity at a neighborhood scale, not by individual building. As a result, a neighborhood wide emissions intensity of 0.0014 $tCO_2e/sf/yr$ is achieved in the CAP model by 2050 but reductions are not applied uniformly across all buildings. Some buildings will likely achieve more reductions than others in order to acheive this neighborhood wide target.

[6] Reductions in fossil fuel use were adjusted to achieve LL97 targets in milestone years.

[7] In the CAP model, systems that are electrified are assumed to have a 40% efficiency gain.

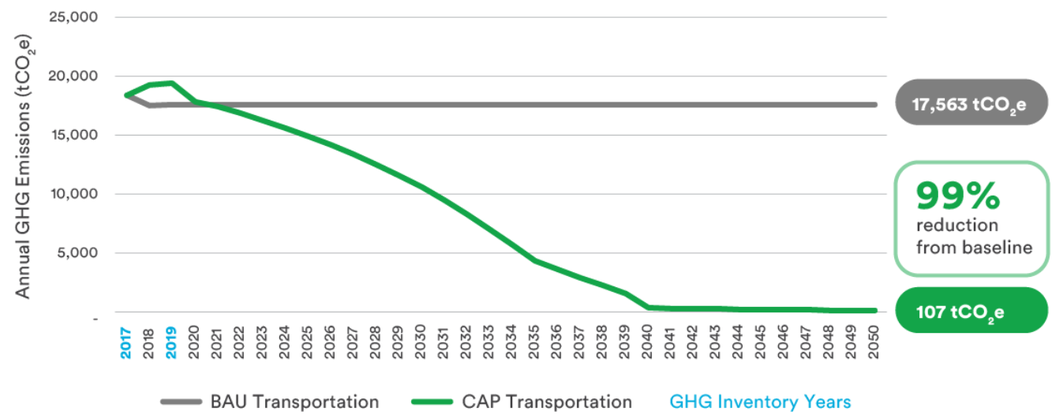
[8] Diesel use is mostly used in BPC for back-up power and was assumed in the model to remain constant for resilience purposes.

[9] In the case that NYS grid decarbonization takes longer than anticipated, BPCA will consider additional measures to integrate renewable generation on-site or procure renewable energy credits to offset electricity emissions.

Transportation

Transportation choices, such as taking public transit or biking, are critical to the reduction of GHG emissions in BPC. Already in BPC, most people choose sustainable modes, such as transit or active transportation, with nearly 22% of people walking or biking in BPC in 2017 . However, two primary transportation strategies, active transportation and EV adoption, will help further to reduce transportation emissions and enhance site sustainability. With the implementation of these strategies, BPC can achieve a 99.4% reduction in transportation sector emissions by 2050 relative to 2017.

BPC Carbon Neutral Pathway: Transportation



Active Transportation [S-4]

The highest contributor to transportation emissions in BPC is passenger vehicles, representing nearly 51% of transportation emissions in 2017.[10] While transportation modes such as bus and subway use are other primary contributors to emissions, they are nevertheless more sustainable options as they are publicly-shared and accessible to all, with much lower GHG emissions per person. Encouraging and incentivizing the use of more sustainable modes can help to reduce the reliance on passenger vehicles and mitigate transportation emissions.

Strategy		2030 Target	2050 Target
S-4	Active transportation	All streets redesigned for pedestrian safety by 2030	Increase sustainable mode share to **80% by 2050**

The BPC transportation strategies are expected to be effective at significantly reducing transportation emissions. The small amount of remaining emissions in 2050 will be generated by the few remaining gasoline-based passenger vehicles in BPC (see Electric Vehicle Infrastructure and Adoption, below).

Electric Vehicle Infrastructure and Adoption [S-5]

Similar to building electrification, the adoption of EVs will reduce transportation emissions in BPC and be magnified by a zero-emission grid after 2040. BPCA has committed to expanding EV charging infrastructure, which will support and incentivize adoption of electric passenger vehicles. BPCA will lead by example by fully electrifying its own fleet by 2030. New York State will require 100% of vehicle sales to be electric vehicles across the state by 2035 according to S2758, a law signed in 2021. In addition to these efforts, NYC's MTA has a goal for a fully electric bus fleet by 2040, which will result in zero emission bus and subway travel once the grid is decarbonized.

The CAP model projects that the percent of EVs in BPC will increase from less than 1% in 2017 to almost 100% by 2050.[11] After this shift, EVs in BPC will require nearly 7 million kWh in electricity each year.[12] Fortunately, after 2040 this additional electricity consumption will be zero emissions due to grid decarbonization.

Strategy		2030 Target	2050 Target
S-5	Electric vehicle infrastructure	35% of public realm (curbside) parking spaces for EV charging by 2030	Achieve **75%** EV stock in BPC **by 2050**

Transportation in 2050

99%
reduction from baseline transportation emissions in BPC by 2050

99%
of private vehicles will be EVs by 2050

80%
of trips using sustainable modes by 2050

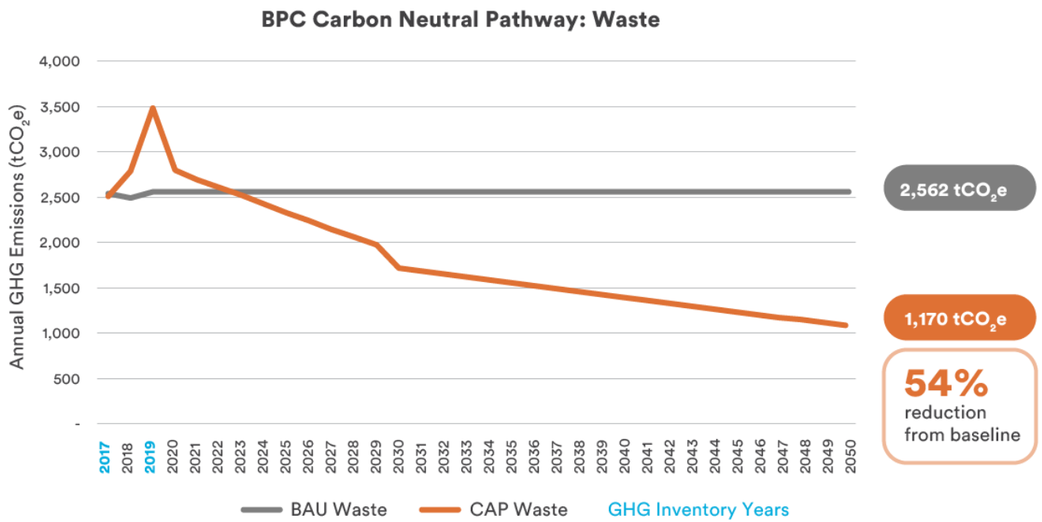
[10] Transportation emissions in BPC are estimated using a transportation demand model based on NYC trends and patterns.

[11] The CAP model assumes that private vehicles have a 10% turnover rate each year where between 2030 and 2035, all retired vehicles are gasoline vehicles.

[12] Electric vehicles are assumed to achieve an efficiency increase of 25% by 2050.

Waste

When measuring GHG emissions associated with waste, refuse sent to landfill, composted material, and wastewater from sources like toilets, showers, or sinks are all included. The key to reductions in waste emissions is behavioral change and proper waste disposal. As BPC residents, workers, and visitors become more conscious and sustainable consumers, the amount of waste that ends up in landfills will decrease. These changes will also influence the amount of organic waste that is properly disposed of for on-site composting, where BPCA Park Operations can utilize compost on its own grounds. Relatedly, reductions in potable water use will reduce the amount of wastewater that is disposed of in buildings and public spaces, and the amount of emissions from treatment. In meeting all of the outlined waste targets, BPC can achieve a 57% reduction of waste sector emissions by 2050, relative to 2017.[13]



Sustainable Consumption [M&W-1] and Waste Diversion [M&W-3]

Consumption patterns have a direct correlation with our waste – utilizing reusable products means less materials end up in our landfills. Conversely, the continued reliance on single-use plastics creates a dire situation for waste management and global emissions. Advancements in reusable materials and products and sharing economies, waste generation volumes will decrease as we move toward 2050. BPC can do its part to reduce the waste it generates and ensure it is properly disposed of, or reused where possible. BPCA aims to lead by example in waste diversion by achieving zero waste[14] sent to landfills from parks by 2023.[15]

The combination of sustainable consumption and proper waste diversion is expected to reduce the amount of waste that ends up in landfills.[16] As a result of more sustainable consumption, it is assumed that waste generation within BPC will decrease by 15% by 2050. In terms of diversion from landfills, to achieve a 75% reduction in waste sent to landfills from the baseline, BPC will need to send at most 25% of its waste to landfills by 2050 where all other waste is recycled, reused, or composted.

Strategy		2030 Target	2050 Target
M&W-1	Sustainable consumption	Achieve behavior change that supports waste reduction, recycling, and reuse in BPC by 2030	**75% reduction** in landfill waste sent to compactors **by 2050**
M&W-3	Waste diversion	50% reduction in landfill waste sent to compactors by 2030	

Organics Collection and Composting [M&W-4]

Methane emissions from landfilled waste, primarily from food and other organic material, is a major contributor to global GHG emissions. Properly separating and disposing of organic waste can significantly reduce emissions. BPCA operates a successful composting program that utilizes organic waste from the BPC community and its own parks operations in order to generate compost for use in the parks. BPC has a great opportunity to expand the on-site program to push GHG reductions further.

The CAP model projects that the amount of BPC waste composted could increase to 29% of all waste generated. Relatedly, BPCA on-site composting capacity could quadruple to allow for treatment of roughly 260,000 lbs of organic waste each year. The scaling up of on-site waste treatment will slightly increase BPC emissions as related emissions will be accounted for within BPC rather than at off-site treatment facilities. However, the increased capacity for composting has additional sustainability value for BPC and will help New York City to achieve its goals to send zero waste to landfills.

Strategy		2030 Target	2050 Target
M&W-4	Organics collection and composting	80% of Battery Park City organic waste to be diverted from landfills in 2030	**90%** of Battery Park City organic waste to be diverted from landfills **in 2050**

[13] Waste generation and disposal in BPC is estimated using a waste generation model and is not currently measured at BPC.

[14] Zero waste defined by TRUE as achieving at least a 95% diversion rate from landfills.

[15] In the CAP model, the total amount of waste generated in parks is assumed to remain the same through 2050.

[16] The CAP model assumes all BPC areas will be able to reduce the amount of waste sent to landfills, whether it moves through compacting stations or not, going beyond the M&W-3 target.

Water Conservation [W-1]

Water efficiency and reuse can reduce the amount of potable water needed at a site and the resulting wastewater that needs to be treated off-site at wastewater treatment plants. Simple measures can be instituted to reduce water consumption in buildings, such as low flow faucets and toilets or water reuse for irrigation. These measures help to reduce a building's water use intensity, or water consumption per square foot area, and therefore wastewater treatment emissions.

By achieving W-1 targets to reduce building water consumption, BPC wastewater generation will decrease by 20% by 2050, compared to the 2017 baseline. Wastewater emissions are projected to increase by 54%, however, due to an increase in the emissions intensity of wastewater treatment in New York City in recent years.[17] Between 2017 and 2019, the emissions required to treat a gallon of wastewater increased by 52% translating to increased emissions for BPC wastewater.

Strategy		2030 Target	2050 Target
W-1	Water conservation	Reduce the water use intensity for residential and commercial buildings 10% by 2030	Reduce the water use intensity for residential and commercial buildings **20% by 2050**

Waste in 2050

71%
overall reduction in waste sent to landfill by 2050

90%
of organic waste to be diverted from landfills in 2050

15%
overall reduction in waste generated in BPC by 2050

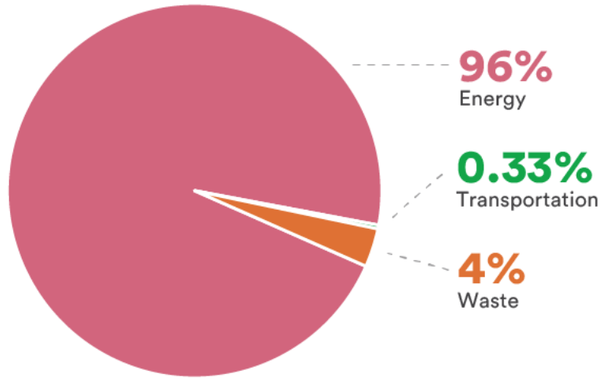
[17] The CAP model uses NYC wastewater emissions factors for inventory years where data is available and assumes constant wastewater treatment emissions factors into the future.

Residual Emissions and Carbon Offsets

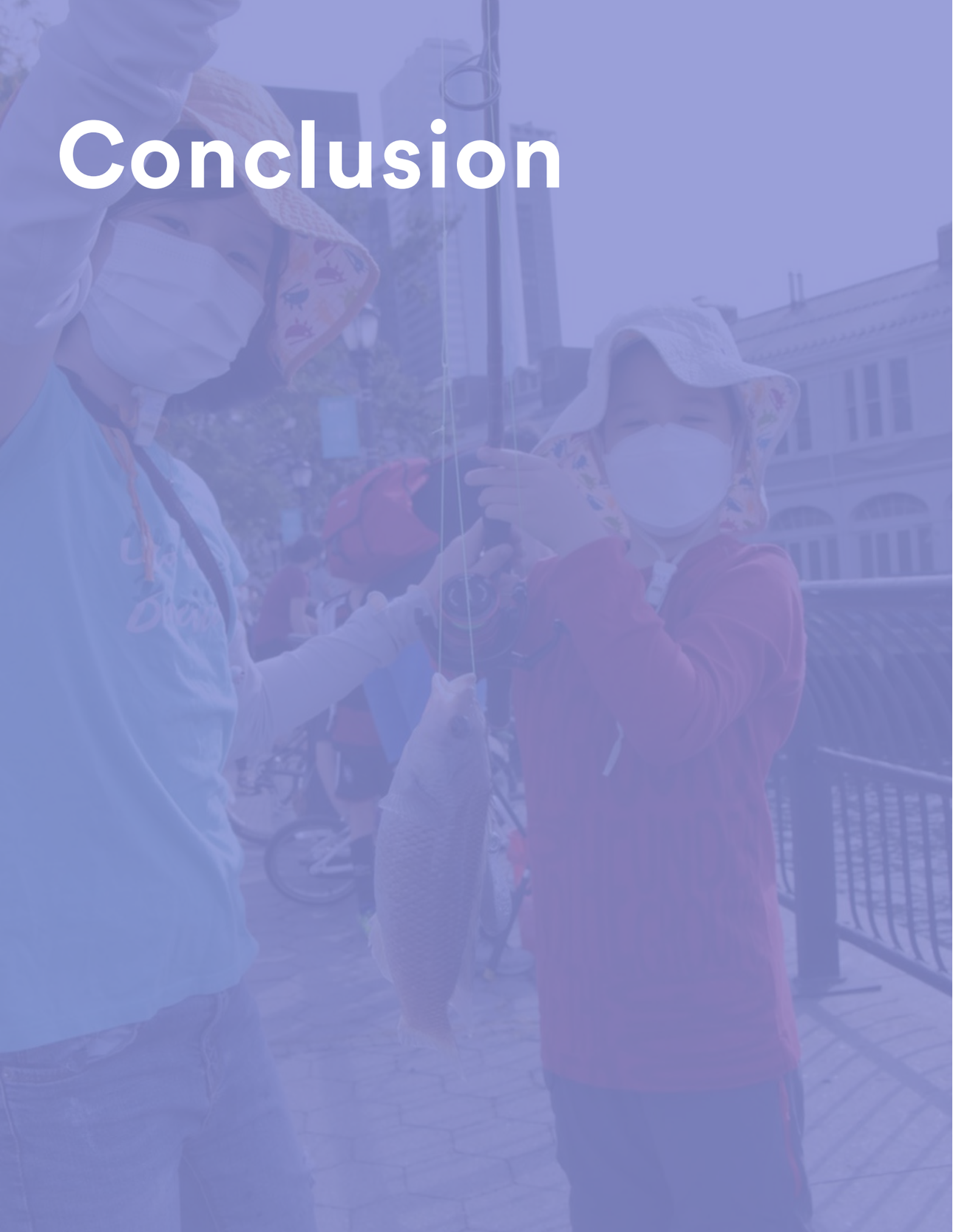
Achieving carbon neutrality directly through mitigation actions is an extremely difficult task. Even with the adoption of all the strategies discussed in the CAP, it is anticipated that there will be some residual emissions in BPC by 2050. Per the Carbon Neutral Pathway, just over 32,700 tCO_2e remain in 2050, or roughly 19% of BPC emissions relative to the 2017 baseline. These residual emissions are expected to come primarily from building energy consumption and some waste disposal.

To achieve full carbon neutrality, BPC will need to consider the use of carbon offsets to nullify any residual emissions in 2050 and in each following year thereafter. It is also possible that BPC will identify new actions to reduce GHG emissions or act aggressively to deepen GHG reductions of already identified actions.

Residual Emissions in 2050



BPC stakeholders may consider carbon offsets across a range of types, shapes, and sized. Carbon offsets may be forestry-based, through reforestation and conservation efforts; renewable energy-based, by supporting community renewable energy projects; or carbon capture-based, where GHG emissions are removed from the atmosphere and stored. Not all carbon offsets are equal - co-benefits can bring significant value to these projects and positive impacts to communities.



Conclusion

4

Conclusion

Battery Park City is a dedicated and decades-long leader in sustainability, committed to reducing its own GHG emissions while working alongside local partners with the same mission. This Climate Action Plan summarizes the analysis to estimate GHG emissions and actions that BPC will take to reduce GHG emissions and realize a more sustainable neighborhood. These actions will deliver significant reductions in emissions by 2050 and deliver BPC closer to carbon neutrality. However, there is more work to be done to achieve this goal. BPCA will continue to evaluate and share progress over time to ensure the entire community is involved and actively participating as BPCA cannot achieve this goal on its own. Implementing and accomplishing a carbon neutral neighborhood will require collaboration and action from a broad range of similarly committed stakeholders – from residents to building owners, from park visitors to business owners, and everyone in between. Alongside BPCA, it will be critical that all other stakeholders in BPC, particularly building owners, be conscious of and manage their own GHG emissions to accomplish the neighborhood-wide targets. BPCA looks forward to helping drive the next thirty years of sustainable climate action in Battery Park City.

To follow along with BPC sustainability action updates and highlights, refer to BPCA's sustainability website at https://bpca.ny.gov/nature-and-sustainability/sustainability.

Appendix

5

Emissions Summary

Battery Park City and BPCA emissions are presented below based on sector and sub-sectors as well as relevant scopes per the Global Protocol for community-scale GHG Emission Inventories (GPC) framework. This protocol is used for calculating and reporting emissions from community activities and sources from seven greenhouse gases: Carbon dioxide (CO_2), Methane (CH_4), Nitrous oxide (N_2O), Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), Sulfur hexafluoride (SF_6) and Nitrous trifluoride (NF_3). GHG emissions from these activities are reported by sector (energy, transportation, and waste) and by scope (scope 1, 2, or 3).

Scope 1: Scope 1 emissions are direct emissions produced from activities and sources within the neighborhood boundary such as fossil fuel combustion or internal combustion vehicles.
Scope 2: Scope 2 emissions are generated from the use of grid-supplied electricity, heat, steam, and/or cooling within the neighborhood boundary such as building electricity use or EV charging.
Scope 3: Scope 3 emissions occur outside of the neighborhood boundary due to activities that take place within the neighborhood boundary such as wastewater treatment or public transit.

The 2019 BPC inventory showed a 5.5% increase from 2017 emissions. The increase in emissions is predominately due to: (a) an increase in fossil fuel consumption, (b) an increase in the electricity grid's emissions factor, or the amount of emissions associated with each kilowatt-hour used, impacting building electricity emissions as well as transit emissions, and (c) an increase in NYC's wastewater treatment emissions factor, or the amount of emissions associated with each gallon of treated wastewater from NYC. Emissions across transportation remained somewhat level as did solid waste treatment and district energy consumption.

BPC Emissions

Sector	Sub-Sector	Scope	2017 Emissions	2019 Emissions
Energy	Grid electricity use	2	88,880 tCO_2e	92,753 tCO_2e
	Fossil fuel combustion	1	26,865 tCO_2e	31,175 tCO_2e
	District energy use (steam and chilled water)	2	32,211 tCO_2e	31,462 tCO_2e
Transportation	Passenger vehicles	2,3	9,335 tCO_2e	9,638 tCO_2e
	Public transit	3	9,020 tCO_2e	9,709 tCO_2e
	BPCA vehicle fleet	1,2	25.6 tCO_2e	24.8 tCO_2e
Waste	Landfilled waste	3	2,138 tCO_2e	2,540 tCO_2e
	Biologically treated waste	1	6.8 tCO_2e	10 tCO_2e
	Wastewater treatment	3	397 tCO_2e	932 tCO_2e
Total			**168,879 tCO_2e**	**178,243 tCO_2e**

The 2019 BPCA inventory faced these trends as well where emissions from electricity use, fossil fuel use, and wastewater use increased. Additionally, BPCA increased the volume of waste biologically treated (composted) on-site leading to higher biologically treated waste emissions. BPCA also observed an increase in landfilled waste emissions due to a large increase in waste generated across parks and open spaces. Overall, BPCA saw a 3% increase in emissions from 2017 to 2019.

BPCA Emissions

Sector	Sub-Sector	Scope	2017 Emissions	2019 Emissions
Energy	Grid electricity use	2	1,450 tCO_2e	1,489 tCO_2e
	Fossil fuel combustion	1	316 tCO_2e	323 tCO_2e
	District energy use (steam and chilled water)	2	62 tCO_2e	63 tCO_2e
Transportation	BPCA vehicle fleet	1,2	25.6 tCO_2e	25.1 tCO_2e
Waste	Landfilled waste	3	6.1 tCO_2e	15 tCO_2e
	Biologically treated waste	1	5.5 tCO_2e	7.8 tCO_2e
	Wastewater treatment	3	1.8 tCO_2e	2.1 tCO_2e
Total			**1,867 tCO_2e**	**1,925 tCO_2e**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