

The City of New York  
Executive Budget  
Fiscal Year 2025

Eric Adams, Mayor

Mayor's Office of Management and Budget  
Jacques Jiha, Ph.D., Director

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# New York City Climate Budgeting

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**LETTER FROM THE BUDGET DIRECTOR**

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To my fellow New Yorkers:

Big problems require big solutions, and few problems are as massive as climate change. It affects nearly every aspect of our lives, from where we live, to what we eat, to how we stay safe and healthy in our homes and on our streets in the face of extreme weather. And we know that climate change disproportionately impacts vulnerable communities.

We do not have time to waste, which is why New York City is now the first big city in the country to launch a Climate Budgeting initiative. From this day on, decision-makers will have the tools to evaluate the impact of city projects and programs on achieving the city's climate-related goals. By weighing these impacts—both positive and negative—in the critical early stages of the budgeting process, we will know how each dollar the city spends affects citywide sustainability and resiliency.

This initiative provides data that guide us towards investments that will improve the health and quality of life of New Yorkers by reducing emissions, enhancing air quality, and increasing heat and flood resiliency while, at the same time, elevating environmental justice for communities of color.

Climate Budgeting is part of New York City's long history as a leader in climate action. Every day we are building more infrastructure that will help us withstand increasingly common extreme weather events. And, one year ago, we published an updated strategic action plan, PlaNYC: Getting Sustainability Done, that serves as a guide to protecting New Yorkers, improving our quality of life, and building a green economy.

Also, as a proud member of the C40 global network of mayors, I am excited to join an elite group of cities, including London, Oslo, and Mumbai, that have implemented Climate Budgeting. I urge other cities to join us in this critical effort, achieve their climate goals, and help reduce greenhouse gas emissions worldwide.

I always say we have two mothers: the mother who gave birth to us and the Mother Earth that we all share, that sustains us all. Climate Budgeting represents the next step in our long legacy of leadership in championing our environment and improving the health and wellbeing of New Yorkers for generations to come.

A handwritten signature in black ink that reads "Eric Adams". The signature is fluid and cursive, with a prominent "E" and "A".

Eric Adams  
Mayor



Climate change impacts every aspect of city life. It threatens our personal health, safety, and livelihoods. On top of these serious concerns, if we do not address this crisis the city's fiscal stability will be threatened in upcoming years by growing infrastructure maintenance costs and increasingly frequent extreme weather events that cause damage and injury, and disrupt critical city services. We must proactively adapt to new threats and systematically address our contributions to the global climate problem in order to protect the resources we need to keep New York City a healthy and safe place to work, live, and raise a family.

With these concerns in mind, we are acting right now. Climate Budgeting is a novel and transformative decision-making process that we have embedded within the budget process to evaluate the impact of the city's investments on its ambitious climate goals. Simply put, we will evaluate every budget decision through the lens of climate impact. At the same time, because climate change disproportionately impacts vulnerable New Yorkers, we will be accelerating the fight against environmental injustice.

The scale of the climate crisis demands an all-of-government approach. OMB, as the office responsible for overseeing the city's \$111.6 billion expense budget and \$97.7 billion capital plan, is uniquely positioned to monitor actions across city agencies that affect our progress on climate goals. We now have an Environmental Sustainability and Resiliency Task Force that brings climate expertise in house and will centrally coordinate citywide climate investments. While Climate Budgeting is centered within the city's budget process, we are collaborating with the Mayor's Office of Climate and Environmental Justice and are working closely with city agencies.

We are in the initial stages of implementing this ambitious initiative and laying the foundation for a process that will grow and evolve over time. This first report is, by no means, exhaustive. Climate Budgeting is an ongoing, dynamic, and evolving process, incorporating new analysis with each iteration. OMB and its partners are developing analysis and process improvements to further incorporate resiliency and environmental justice into the budget process.

Further, we know that city resources are limited, and that this initiative was launched at a time when the city is facing distinct financial challenges that create additional constraints. However, climate change threatens our wellbeing and fiscal strength whether times are good or bad, so the Climate Budgeting process must always be part of our planning and decision-making. Taking this path ensures the city will meet its ambitious goals and is some of the most important work we can do on behalf of New Yorkers.

A handwritten signature in blue ink, appearing to read 'Jacques Jiha'. The signature is stylized and somewhat abstract, with loops and flourishes.

Jacques Jiha, Ph.D.  
Budget Director







# Executive Summary

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Climate Budgeting establishes a new process that considers climate in all future city investments and aligns resources with sustainability and resiliency goals. This is the first annual Climate Budgeting publication, a new feature of the city's Executive Budget.

The Executive Summary provides an overview of this process, climate investments in the Executive Plan, new analytical findings, and a roadmap to navigate the publication.

**New York City has made significant commitments to aggressively reduce emissions and protect New Yorkers from climate change. To realize these ambitious and challenging objectives, a structured process is needed to inform strategic climate investments.**

In the last 15 years, New York City has experienced the most damaging storm in its history, periods of lethal high temperatures, severe flooding from rainfall, and harmful air quality caused by smoke plumes from Canadian wildfires. The world's scientists are clear: if deliberate and urgent actions are not taken worldwide, similar events will only become more intense, frequent, and impactful.

Climate solutions can be complex and costly, requiring transformative changes to the ways infrastructure is built, buildings and vehicles are powered, and businesses and governments operate and provide services. To manage these challenges successfully and cost-effectively, the city is instituting a strategic method of assessing and prioritizing investments in climate solutions.

**New York City's Office of Management and Budget is implementing Climate Budgeting, a governance system to integrate climate targets and considerations into the city's budget process.**

This new initiative will help the city to better understand the sustainability and resiliency implications of its investment decisions and prioritize the most impactful and cost-effective climate investments. The initial focus areas for the city's Climate Budgeting process include achieving net-zero greenhouse gas (GHG) emissions citywide by 2050 while aligning with interim science-based emissions targets provided by the Intergovernmental Panel on Climate Change (IPCC), and bolstering citywide resilience to coastal and inland flooding and extreme heat. In managing toward these goals, Climate Budgeting will seek to prioritize equity considerations, reflect the best available science, and integrate local expertise, knowledge, and best practice through collaboration across city agencies.

This is the first annual Climate Budgeting publication, a new feature of the city's Executive Budget. The document outlines steps the city has taken to implement this new process and analytical findings that will inform upcoming budget cycles. The Climate Budgeting process will evolve and grow with each year.

# NEW YORK CITY'S CLIMATE BUDGETING PROCESS

The Mayor's Office of Management and Budget (OMB) Environmental Sustainability and Resiliency Task Force is implementing Climate Budgeting for New York City in collaboration with the Mayor's Office of Climate and Environmental Justice (MOCEJ) and agency partners. The Climate Budgeting process is ongoing and integrated with the city's regular budget process. Over the past year, OMB has incorporated the following Climate Budgeting steps into the city's budget process:

**Assessing progress toward climate goals and needs,** including by collecting new information from agencies on the emissions impacts of planned capital projects, developing the first annual forecasts of citywide and city government operations GHG emissions through 2050, assessing each project in the city's capital commitment plan for alignment with emissions and resiliency goals, and laying the groundwork for the development of methods to understand how current investments and policies will affect future resilience to growing climate threats and environmental justice (EJ) outcomes.

**Communicating findings and working with agencies,** including by participating in interagency meetings and issuing the inaugural Climate Budgeting Memo and Intake Form to agencies in November. Going forward, the annual Memo will draw on budget analysis and forward-looking projections, and provide instructions for how to submit budget requests associated with identified climate needs and climate-aligned approaches to everyday capital work.

**Developing climate-friendly initiatives,** including by coordinating with agencies and MOCEJ on identified climate needs, and collaborating with key agencies to develop approaches to ensure climate is considered from the earliest stages of capital project planning.

**Evaluating and prioritizing actions and investments,** including by centrally and consistently assessing agency funding requests for climate impact and alignment with long-term climate goals in partnership with traditional OMB teams focused on agency-by-agency review, leveraging

newly required standardized climate information provided by agencies to prioritize the most impactful and efficient climate investments for consideration, seeking to match city funding needs with state and federal funding opportunities where possible, and ensuring that sustainability and resiliency are key considerations in all relevant investment decisions.

**Implementing actions and reporting on progress,** including by supporting city investments as outlined in the Climate Budgeting update. The annual update with the Executive Budget will highlight new and ongoing sustainability and resiliency spending across the entire budget and provide analytical findings, including where additional action is needed to meet emissions targets and protect New Yorkers from climate threats. Annual reporting will provide transparency for New Yorkers and models for other cities around the world working to incorporate Climate Budgeting into their own budget processes.

Climate Budgeting enables the city to make strategic and informed decisions on climate investments and align resources with climate goals. Integrating climate into the budget process is necessary; achieving an emissions-free and resilient city requires substantial capital investment and the city is faced with many competing demands in a context of limited resources and constraints, including New York State-imposed debt limits, the legal requirement to maintain a balanced expense budget, the lingering impacts of COVID-19, and the ongoing asylum-seeker crisis<sup>1,2</sup>.

Even in the most prosperous times, resources are not limitless, and addressing climate needs cannot assume unlimited city spending. Climate Budgeting is not a one-time examination of climate progress and needs. It is an ongoing process permanently embedded into the budget cycle, bringing climate considerations to the forefront of planning and decision-making, regardless of financial circumstances. See Section 2 for more information on New York City's Climate Budgeting process, and Appendix 1 for detail about how this process was developed.

GUIDING QUESTION

# What is the city investing to reduce emissions and increase resiliency to flooding and extreme heat?

The city manages an expense budget of \$111.6 billion in Fiscal Year (FY) 2025 and a FY 2024-2028 Capital Commitment Plan of \$97.7 billion. The FY 2025 Executive Budget and FY 2024-2028 Capital Commitment Plan include substantial funding for sustainability and resiliency initiatives. The city is investing in infrastructure and programs to promote energy efficiency and building electrification, sustainable transportation, waste reduction, protection of infrastructure and buildings from coastal and inland flooding, and relief from warming temperatures. Major categories of climate investments are summarized in Figure 0.1, and Figure 0.2 highlights new investments in the FY 2025 Executive Budget and FY 2024-2028 Capital Commitment Plan.

The capital summary in Figure 0.1 does not include partial funding amounts for projects where climate components are a part of a larger total; those projects are analyzed in the Climate Alignment Assessment described next. Additional details are available in Section 3. To learn more about the process of tracking climate investments, see Appendix 4.

## FY 2025 EXECUTIVE PLAN HIGHLIGHTS

Categories	Highlights	Expense FY 2025 (in Millions)	Capital FY 2024-2028 (in Millions)
<b>Flood Resiliency</b>	Coastal protection projects and improvements to stormwater management infrastructure.	\$44.4	\$9,349.4
<b>Buildings &amp; Energy</b>	Energy efficiency and electrification in buildings, renewable energy projects, and supporting programs.	\$50.5	\$6,005.4
<b>Transportation &amp; Waste</b>	Fleet electrification, electric vehicle charging infrastructure, and projects reducing emissions from waste.	\$65.8	\$727.8
<b>Heat Resiliency</b>	Expansion and preservation of citywide tree canopy, enhancement of pools, and roof coatings to reduce indoor temperatures.	\$0.2	\$179.5

FIGURE 0.1 | SOURCE: NYC OMB

**NEW CLIMATE INVESTMENTS AND REALLOCATIONS IN THE FY 2025 EXECUTIVE PLAN**

Program	Detail	Funding (in Millions)
<b>CAPITAL</b>		<b>FY 2024-2028</b>
<b>Energy Efficiency Retrofit Funding Acceleration</b>	Acceleration of funds for energy efficiency and electrification work in city facilities, including the electrification of public schools.	\$1,057.9
<b>South Brooklyn Marine Terminal Offshore Wind Infrastructure</b>	Additional support for the development of an offshore wind hub at the South Brooklyn Marine Terminal.	up to \$85*
<b>Flood Protection Enhancements</b>	Upgrades to catch basins and pump stations to alleviate flooding.	\$70.5
<b>Ferry Emissions Reduction Equipment and Infrastructure</b>	Funding to reduce emissions from ferries.	\$15.3
<b>Climate Innovation Hub</b>	Funding to begin work on a Climate Innovation Hub at the Brooklyn Army Terminal.	\$10.0
<b>EXPENSE</b>		<b>FY 2025</b>
<b>Renewable Diesel</b>	Adjustment to the city's fuel budget to enable the purchase of renewable diesel for the city's medium- and heavy-duty vehicles and the Staten Island Ferry.	\$22.6
<b>Flood Protection Enhancements</b>	A smart sensor network to track how water moves through sewer infrastructure, upgrades to catch basins, citywide sewer inspection and cleaning, and software to model New York City's complex hydraulic and hydrologic network.	\$12.1
<b>Department of Buildings Local Law 97 of 2019 (LL97) Personnel</b>	Additional staff to oversee compliance with LL97 building decarbonization targets.	\$4.0
<b>Property Assessed Clean Energy (PACE) Financing Program</b>	Funding to continue operation of the PACE program, which provides financing for energy efficiency and renewable energy projects for property owners.	\$1.3
<b>Environmental Justice NYC (EJNYC) Plan</b>	Funding to develop an interagency strategy and plan to address equity and environmental justice findings from the EJNYC Report.	\$0.8
<b>Building Electrification Study</b>	Funding to develop a medium- and long-term strategy for city-owned and -operated building electrification through 2050.	\$0.5
<b>Rikers Grid Connection Study</b>	Study to explore next steps for building renewable energy infrastructure and storage at Rikers Island.	<\$0.1

FIGURE 0.2 | SOURCE: NYC OMB<sup>3</sup>

\*amount to be finalized based on contribution from the state

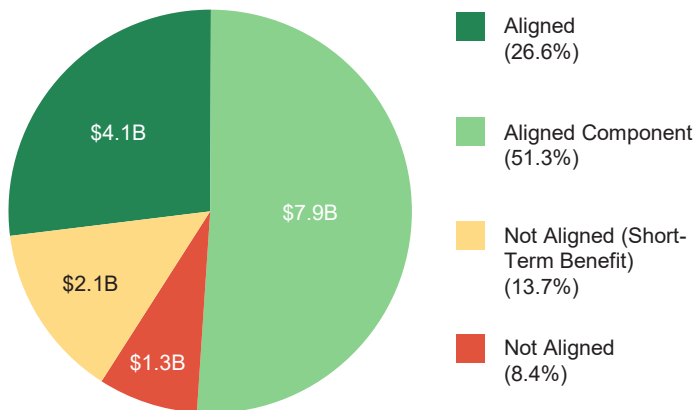
GUIDING QUESTION

# Do investments align with long-term climate needs?

OMB conducted a Climate Alignment Assessment of the FY 2024-2028 Capital Commitment Plan to understand how the city’s anticipated capital spending aligns with commitments to achieve net-zero GHG emissions, prepare for increasing heat and flooding threats, and provide additional benefits that promote a more sustainable city. This assessment provides a new perspective on the city’s spending to address climate change and helps identify opportunities to explore alternative project approaches in the future.

For additional detail on the assessment of the capital plan, see Section 3. For more on the underlying methodology, see Appendix 5.

## ALIGNMENT OF RATED PROJECTS: NET-ZERO EMISSIONS



### RATED PROJECTS WITH IMPACT ON NET-ZERO EMISSIONS \$15.5 billion

More than \$12 billion in the FY 2024-2028 Capital Commitment Plan is aligned with the city’s goal of achieving net-zero emissions.

FIGURE 0.3 | SOURCE: NYC OMB

## Net-Zero Emissions

Almost \$12.1 billion in the FY 2024-2028 Capital Commitment Plan supports projects that reduce emissions and are aligned with the city’s goal of achieving net-zero emissions by 2050. \$2.1 billion funds projects that provide short-term benefits but do not align with achieving net-zero emissions in the long run, and \$1.3 billion funds projects that are not in alignment with the city’s net-zero goal. Additional projects in the plan are pending rating or treated as special cases.

Examples of aligned projects include electric heating systems and vehicles. Projects that are not aligned with the city’s net-zero emissions goal include funding for fossil-fuel-powered equipment and building systems where compatible technology is not yet widely available, not yet cost effective, or especially complex to implement. This includes purchases of emergency backup generators that rely on diesel or gasoline, medium- and heavy-duty and specialized vehicles, and fossil-fuel-powered heating and hot water systems in buildings and facilities. These present important opportunities to assess where net-zero compatible alternatives, such as electrification, battery storage, and electric medium-and heavy-duty vehicles, are feasible. Through Climate Budgeting, the city will continuously evaluate options to align projects with the city’s net-zero emissions goal.

**Climate Resiliency**

\$18.5 billion in the Capital Commitment Plan supports projects that further resiliency to flooding and over \$9.3 billion supports projects that further resiliency to extreme heat. Of this funding, \$7.5 billion is for projects that tackle both flooding and heat, such as tree planting and green spaces. These projects are designed to address future risk and support the city’s resiliency goals as stated in PlaNYC: Getting Sustainability Done and other plans<sup>4</sup>. Additional projects are pending rating or special cases.

Projects that are not aligned provide insufficient protection or detract from resiliency, such as replacing green space with impermeable surfaces. Few projects are currently identified that increase vulnerability to climate threats or highlight missed opportunities for increased resilience. Resiliency is challenging to assess for alignment because it may depend on what is missing from the project scope rather than what is included, or a risk that is not being addressed. Expanding methods to better identify additional opportunities for resilience will be a priority area of future focus. Process improvements, including new requirements for agencies to provide a completed Climate Budgeting Intake Form to OMB when requesting relevant funding, will provide the detail needed to determine alignment for future projects and capture additional opportunities for consideration.

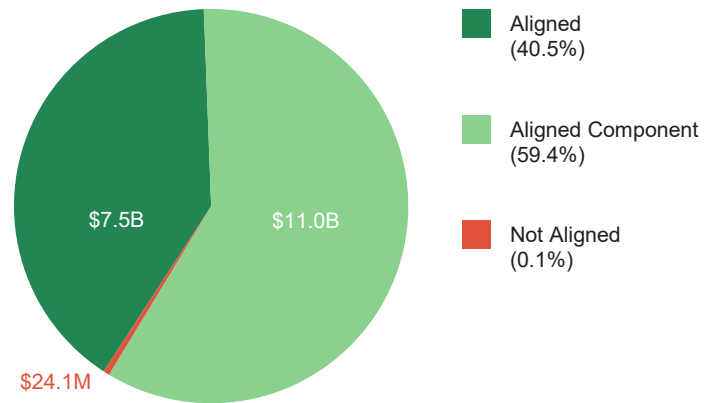
OMB also assessed how each capital project contributes to additional benefits, including improving air quality, promoting a circular economy, furthering ecological health, and supporting sustainable lifestyles. Tracking these benefits provides a more holistic view of environmental benefits associated with capital projects.

**CLIMATE ALIGNMENT ASSESSMENT: ADDITIONAL BENEFITS**

Benefit	FY 2024-2028 (in Millions)	Examples
Air Quality	\$9,750.8	Electrification, trees
Circular Economy	\$864.2	Organics collection, gas-to-grid infrastructure
Ecology	\$18,279.6	Parks, sewers
Sustainable Living	\$5,105.2	Bus and bike lanes

FIGURE 0.6 | SOURCE: NYC OMB

**ALIGNMENT OF RATED PROJECTS: FLOOD RESILIENCY**

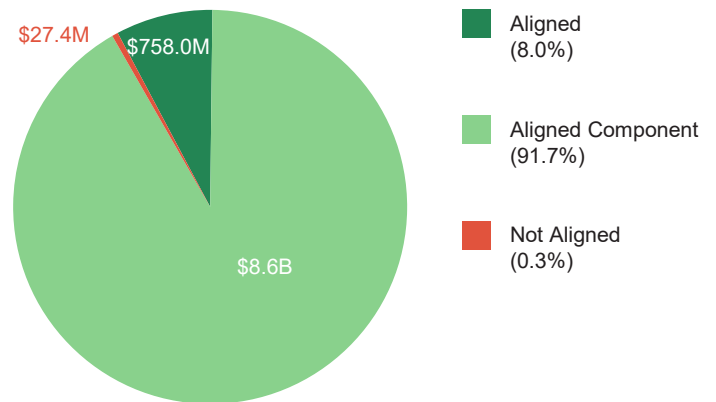


**RATED PROJECTS WITH IMPACT ON FLOOD RESILIENCY \$18.6 billion**

More than \$18.5 billion in the FY 2024-2028 Capital Commitment Plan is aligned with flood resiliency goals.

FIGURE 0.4 | SOURCE: NYC OMB

**ALIGNMENT OF RATED PROJECTS: EXTREME HEAT RESILIENCY**



**RATED PROJECTS WITH IMPACT ON EXTREME HEAT RESILIENCY \$9.4 billion**

More than \$9.3 billion in the FY 2024-2028 Capital Commitment Plan is aligned with extreme heat resiliency goals.

FIGURE 0.5 | SOURCE: NYC OMB



GUIDING QUESTION

# What is the collective impact of planned climate actions, and where is further action needed?

In recent years, the city, state, and federal governments have made significant commitments to act on climate. It is important for the city to understand the potential impact of these commitments toward its net-zero emissions goal and resiliency needs and to assess any remaining gaps.

To understand the impact of planned climate actions on the city’s future GHG emissions, OMB partnered with the U.S. Environmental Protection Agency (U.S. EPA), local academic researchers, building science professionals, sister agencies across New York City and State government, and municipal government partners in London, Montréal, and Oslo to develop a detailed forecast of GHG emissions for New York City. Data and metrics are still being developed to measure outcomes related to resiliency and environmental justice (see Section 4).

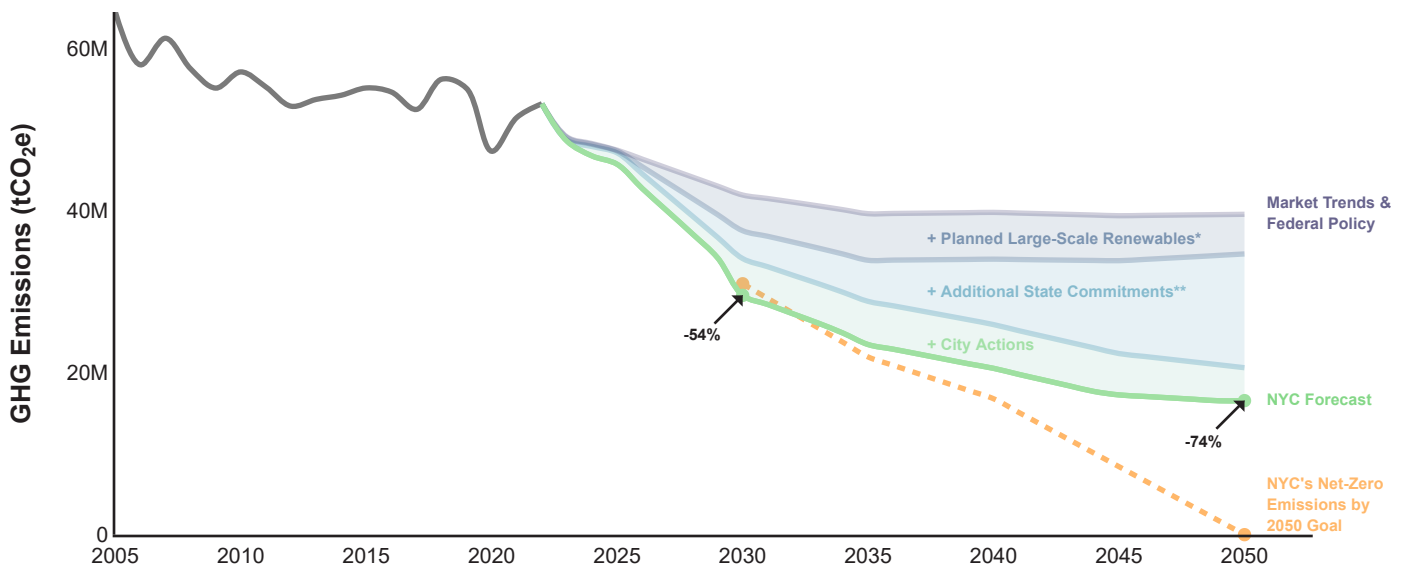
The citywide GHG emissions forecast reveals that the city is on track to align with the emissions reduction trajectory prescribed by the IPCC in 2030, and that the city’s current commitments to climate action, along with the successful

realization of the state’s renewable energy goals and the economy-wide transition away from gas-powered vehicles, are critical to achieving these near-term emissions targets. However, additional action will be necessary to achieve the city’s goal of net-zero emissions by 2050.

The most impactful planned city actions driving emissions reductions include Local Law 97 of 2019 (LL97) – the city’s emissions reduction mandate for large private buildings – for-hire-vehicle electrification, the New York City Housing Authority’s (NYCHA) Clean Heat for All Challenge program, building energy codes including enforcement of Local Law 154 of 2021 (LL154) requiring all-electric new buildings, and the mandated phase-out of heavy fuel oils in buildings<sup>5-7</sup>.

Successfully implementing current policies and commitments has the potential to drive citywide emissions down 54 percent by 2030, 68 percent by 2040, and 74 percent by 2050, compared to a 2005 baseline (see Figure 0.7). Detail is available in Section 3. To understand the forecasting modeling methods, see Appendix 6.

## FORECAST OF CITYWIDE EMISSIONS



\*Includes Champlain Hudson Power Express & Clean Path New York transmission lines and 9 gigawatts of offshore wind.

\*\*Includes New York Clean Energy Standard, all electric passenger vehicle sales by 2035, congestion pricing, and Metropolitan Transportation Authority bus electrification.

The orange line shows interim science-based emissions targets aligned with 1.5°C trajectory.

FIGURE 0.7 | SOURCE: NYC OMB, with U.S. EPA

The emissions projected to remain in 2050 result primarily from buildings, which are expected to continue to burn natural gas for heat and hot water absent additional policy or market interventions. Many of these buildings are not required to meet LL97 emissions targets, including a significant portion of the city's affordable housing stock and more than one million small and mid-sized buildings.

OMB also examined the expected trajectory of emissions from city-owned assets and government operations. Following challenges presented by COVID-19 and the closure of the Indian Point nuclear power plant, which resulted in a more emissions-intensive electricity supply, city government is expected to meet its FY 2025 emissions target required by LL97 by FY 2027, and to meet and exceed its FY 2030 target through planned investments in energy efficiency, building and fleet electrification, and a commitment to procure 100 percent renewable electricity for government operations<sup>8,9</sup>.

Climate Budgeting is being implemented through a multi-phased approach, and additional analyses and tools will continue to be developed. One area of ongoing development is resiliency. Quantifying and forecasting future resiliency citywide based on ongoing and planned actions presents complexities compared to GHG emissions. OMB is working with MOCEJ and agency partners on frameworks to use Climate Budgeting to support heat and flood resiliency, including using key indicators that may be predictive of future outcomes. Future iterations of Climate Budgeting will include the results of this ongoing analysis.

Additionally, OMB will work with MOCEJ to assess findings from the recently released EJNYC Report and the forthcoming EJ Plan to support the further integration of environmental justice considerations into Climate Budgeting. OMB will also explore methods to include consumption-based and embodied emissions into analysis and decision-making.

### FORECASTED CITY GOVERNMENT OPERATIONS GHG EMISSIONS

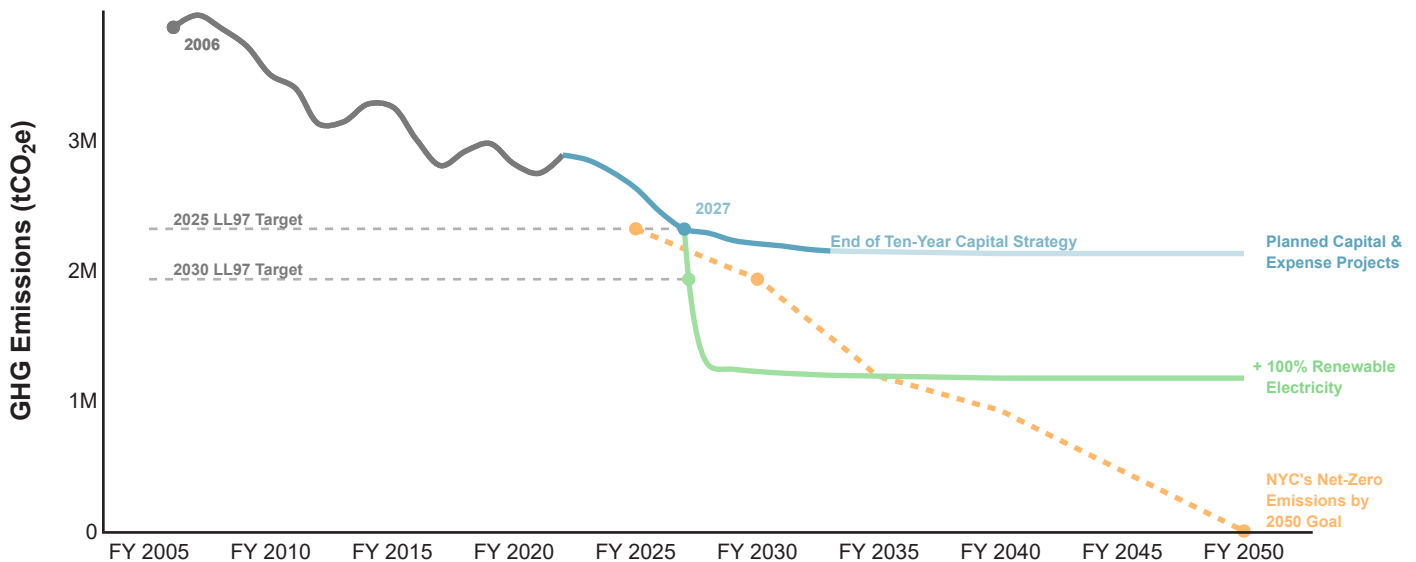


FIGURE 0.8 | SOURCE: NYC OMB, with NYC DCAS

# CONTINUING NEW YORK CITY LEADERSHIP

Impactful policies like LL97 and for-hire-vehicle electrification put New York City on track to achieve interim science-based targets. The FY 2025 Executive Budget supports achieving LL97, the most impactful action the city is taking to reduce emissions, by funding additional staff at the Department of Buildings to oversee implementation and enforcement of the law, and through operational funding for the Property Assessed Clean Energy financing program, to support building owners with compliance<sup>10</sup>. The city is also investing to reduce emissions from its own assets and operations. In the FY 2024-2028 Capital Commitment Plan the city is implementing nearly \$6 billion in capital energy efficiency and decarbonization projects at its facilities, through funding managed by the Department of Citywide Administrative Services, Division of Energy Management (DCAS DEM) plus agency-led initiatives. This now includes an additional \$1.1 billion for energy efficiency and building electrification work that was previously delayed to later years of the Ten-Year Capital Strategy, allowing the city to prioritize decarbonization across schools and city facilities in the near-term.

Decarbonizing the city's electricity supply is also critical to achieving near- and long-term emissions targets. The city is supporting these efforts by committing to reallocate up to an additional \$85 million of existing capital towards the development of an offshore wind hub at the South Brooklyn Marine Terminal and is committed to purchasing 100 percent renewable power for city operations. Looking ahead

to 2050, the city is allocating funding to develop a strategic electrification plan for city assets and facilities to further the PlaNYC commitment to phase out capital spending on fossil fuel infrastructure.

While the city is taking significant action, continued support from the state and federal governments, as well as private sector action, will be critical.

This document outlines the new processes, investments, and analytical findings from the first year of implementing Climate Budgeting; it is a work in progress that will evolve and grow in an iterative process over time. Work is underway with partners at MOCEJ and agencies to expand Climate Budgeting analysis for both resiliency and environmental justice, and funding in the FY 2025 Executive Budget supports work that will inform future iterations of Climate Budgeting. Smart sewer sensors and a citywide model of how water moves through sewer infrastructure will inform project planning and targeted future flood resiliency investments, and an EJ Plan will provide tangible strategies to address historical injustices.

Climate Budgeting will continuously support strategic climate action implementation, including by identifying key areas of opportunity and encouraging decision-makers to think about all the city's investments differently to ensure climate is a key consideration of everyday capital and budget planning.

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# 1. Context and Background

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The Office of Management and Budget's role in New York City's climate initiatives, as well as the financial, climate science, local health, and environmental justice context that informs Climate Budgeting.

# THE OFFICE OF MANAGEMENT AND BUDGET'S ROLE IN NEW YORK CITY'S CLIMATE CHALLENGE

As the agency responsible for the city's budget and financial planning, the New York City Mayor's Office of Management and Budget (OMB) plays a vital role in the city's efforts to address the climate crisis. Decarbonizing and adapting to climate change require substantial resources, but historically the city has not had a process to inform strategic climate investment decisions. To address this gap, Budget Director Jacques Jiha created a new Environmental Sustainability and Resiliency Task Force within OMB to lead the development and implementation of Climate Budgeting.

Climate Budgeting is a system to integrate climate targets and considerations into the city's budget process. It is not a list of investments in the budget; it is a tool to support strategic decision-making and align city resources with sustainability and resiliency objectives. It represents a paradigm shift from the traditional budget process to a holistic approach that examines how every dollar the city spends impacts climate goals and needs, encourages collaboration across city government, draws on the best available science, and aims to prioritize equity.

Integrating climate into the budget process is necessary because achieving an emissions-free and resilient city requires substantial investment amidst many competing demands and limited resources.

The New York State constitution limits the city's ability to borrow for capital projects to an amount equal to 10 percent of the five-year average of city property values<sup>1</sup>. The COVID-19 pandemic, coupled with remote work, caused city property values to drop sharply in FY 2022 and constrained the growth of commercial property values, limiting the city's borrowing capacity. At the same time, the city faces major capital needs, including expanding affordable housing, adding school capacity, building borough-based jails, and upgrading the aging Brooklyn-Queens Expressway. These constraints have forced the city to deprioritize projects in recent capital plans to reallocate limited capital dollars for mandated needs.

## OMB's Mission

OMB is New York City's chief financial agency. Staff are responsible for ensuring the administration's priorities are funded and implemented efficiently and effectively within the constraint of a balanced budget and the city's resources are managed responsibly<sup>11</sup>.

OMB fulfills this mission by:

- Serving as the mayor's chief financial advisor.
- Developing and executing the city's expense and capital budgets.
- Overseeing the budgets of nearly 90 city agencies and related entities.
- Enhancing operations management citywide and evaluating the efficiency and cost effectiveness of city services and proposals and the fiscal impact of local, state, and national legislation.
- Providing vital information to government officials on the local, national, and global economies.
- Implementing city government's borrowing and bond programs and conducting legal reviews of capital projects for financing with bond proceeds.
- Integrating environmental sustainability and resiliency into the city's financial planning to address current and future climate risks.

Climate change is a cross-cutting issue that impacts all city agencies and operations, and OMB is uniquely positioned to centralize climate considerations into decision-making through the budget process. The OMB Environmental Sustainability and Resiliency Task Force embeds climate expertise at OMB, takes a bird's-eye view of climate impacts across the city budget, and works with partners across OMB and city agencies to break down silos and ensure that sustainability and resiliency are key considerations in all relevant investment decisions.

## CITIES PARTICIPATING IN C40 CITIES' CLIMATE BUDGETING PROGRAM



FIGURE 1.1 | SOURCE: C40

Additionally, OMB has initiated Climate Budgeting during a period of significant financial challenges that have limited hiring and spending through the city's expense budget. The city is required by state law to maintain a balanced expense budget; sunseting COVID-19 stimulus funding, slowing expectations for future tax-revenue growth, labor contracts, and lack of adequate state or federal resources to fund the ongoing asylum-seeker crisis have made this challenging in recent years. These new expenses have required the city to make difficult decisions, including funding cuts. Strong and proactive action to reduce spending helped stabilize the city's fiscal condition, but the city must remain cautious.

Together, these circumstances have limited new investments in the FY 2025 budget cycle, and these constraints are likely to persist in coming years. The targeted investments that will be made will be guided by the principles embedded in the Climate Budgeting process.

Climate Budgeting is not a one-time examination of climate progress and needs. It is an ongoing process permanently embedded into the budget cycle, bringing climate considerations to the forefront of planning and decision-making regardless of financial circumstances, and strategically deploying limited city resources. This document outlines the new processes and analytical findings from the first year of Climate Budgeting.

## Climate Budgeting: History and Global Context

In 2017, Oslo became the first city in the world to integrate climate change into its annual budget process<sup>12</sup>. In Oslo, Climate Budgeting is the responsibility of the finance department and is a fully integrated part of the regular budgeting process. Oslo's innovative Climate Budgeting approach is working: the city's emissions are declining, despite Oslo being one of the fastest growing cities in Europe. As former Mayor of Oslo Raymond Johansen noted, the integration of climate change targets into the annual budgeting process allows for emissions reductions to be counted in the same way as money, enabling better planning, prioritization, and tracking of climate-related investments and actions.

Since 2021, C40 Cities, a global network of the world's leading cities united to confront the climate crisis, has led a Climate Budgeting working group to replicate this approach worldwide<sup>13</sup>. Leveraging Oslo's process, New York City and other participating cities are exploring ways to adapt Climate Budgeting for their own unique budget processes, sharing best practices through peer-to-peer knowledge exchange, and developing examples of processes that can be replicated across the globe.

## WHAT CLIMATE BUDGETING IS AND IS NOT

Climate Budgeting is...



A governance system that **integrates** climate considerations into the decision-making process



A way to ensure the City's spending **aligns** with its stated climate goals



A framework for understanding where **additional climate action** is needed

Climate Budgeting is not...



A **blanket commitment** to increase spending



A **set amount of funding** for climate-related projects



A de-prioritization of **other important needs**

FIGURE 1.2 | SOURCE: NYC OMB



# PlaNYC: Getting Sustainability Done

In 2023, the Adams administration released its first long-term strategic plan, PlaNYC: Getting Sustainability Done (PlaNYC). This plan, the fifth in a series of climate action plans released by New York City since 2007, reaffirms the city’s climate commitments and outlines actions the city is taking to protect New Yorkers from the impacts of extreme heat and flooding, reduce GHG emissions, promote environmental justice, improve air quality, and support the green economy. One of PlaNYC’s guiding principles is to align city resources with sustainability and resiliency goals through Climate Budgeting<sup>4</sup>. Climate Budgeting will play a crucial role in supporting the advancement and implementation of PlaNYC and related sustainability and resiliency initiatives by regularly highlighting city investments in climate action, identifying where further action is needed, and prioritizing the most cost-effective and impactful investments that advance climate goals.

## PLANYC: INITIATIVES

OBJECTIVE	GOAL	INITIATIVE
Protecting Us From Climate Threats	EXTREME HEAT	1 Maximize access to indoor cooling
		2 Cool our built environment
		3 Achieve a 30% tree canopy cover
	FLOODING	4 Create a new leadership structure for coastal flood resilience in 2023, headed by DEP
		5 Implement a multilayered strategy for flood resilience
		6 Launch a voluntary housing mobility and land acquisition program to provide housing counseling and facilitate future land acquisition with Federal and State funds
	BUILDINGS	7 Support building owners in complying with Local Law 97 emissions reduction goals by 2030
		8 Decarbonize affordable housing
		9 Pursue fossil fuel free City operations
		10 Reduce localized air pollution in NYC
		11 Reduce the carbon footprint of the construction industry by 2033
	CLEAN & RELIABLE ENERGY	12 Maximize climate infrastructure on City-owned property
		13 Connect NYC to clean electricity resources
		14 Assist building and homeowners with clean energy projects and solar installation
Improving Our Quality of Life	GREEN SPACE	15 Create an accessible and connected network of open spaces
		16 Improve the health of our forested areas
	WATERWAYS	17 Reduce combined sewer overflows by more than 4 billion gallons per year by 2045 to improve water quality
		18 Develop a strategy to end the discharge of untreated sewage into the New York Harbor by 2060
		19 Improve the health and ecological function of wetlands
	TRANSPORTATION	20 Get polluting trucks off NYC streets
		21 Prioritize public transit, walking, and biking first
		22 Ensure every New Yorker can access a bike or scooter
		23 Help New Yorkers who must drive to drive electric
	FOOD	24 Reduce emissions of City agency food purchases 33% by 2030
		25 Promote reduction in institutional food-related emissions 25% by 2030
		26 Reduce emissions from commercial cooking
		27 Support NYC’s watershed farmers in expanding sustainability practices and food production
Building the Green Economic Engine		GREEN ECONOMY
	29 Grow NYC’s green workforce	
	30 Support entrepreneurship and industry innovation	
	WASTE & CIRCULAR ECONOMY	31 Collect organic materials and turn into energy and reusable assets
		32 Develop new markets and expand recycling and reuse

FIGURE 1.3 | SOURCE: NYC MOCEJ<sup>4</sup>

# CLIMATE SCIENCE, HEALTH, AND ENVIRONMENTAL JUSTICE CONTEXT FOR CLIMATE BUDGETING

New York City Climate Budgeting focuses on the following climate goals:

**Achieving net-zero greenhouse gas (GHG) emissions** from buildings, energy, transportation, and waste by 2050, and aligning with interim science-based emissions targets; emissions measured in the city's Consumption-Based GHG Inventory, which addresses sectors such as food and construction materials, will be integrated in future years;

**Bolstering climate resiliency**, with a focus on the three primary climate threats: hotter overall temperature and more extreme heat events, higher precipitation and more intense rain events, and more coastal flooding from rising tides and storm surges; and,

Pursuing sustainability and resiliency in a way that is **equitable and aligned with the city's environmental justice (EJ) priorities**.

To ensure decisions are informed by the leading science and expertise available on a global and local level, Climate Budgeting draws on the latest guidance from the Intergovernmental Panel on Climate Change (IPCC), the Mayor's Office of Climate and Environmental Justice (MOCEJ), New York City Panel on Climate Change (NPCC), and the New York City Health Department.

## TODAY'S CHOICES DETERMINE HOW CURRENT AND FUTURE GENERATIONS WILL EXPERIENCE A HOTTER WORLD

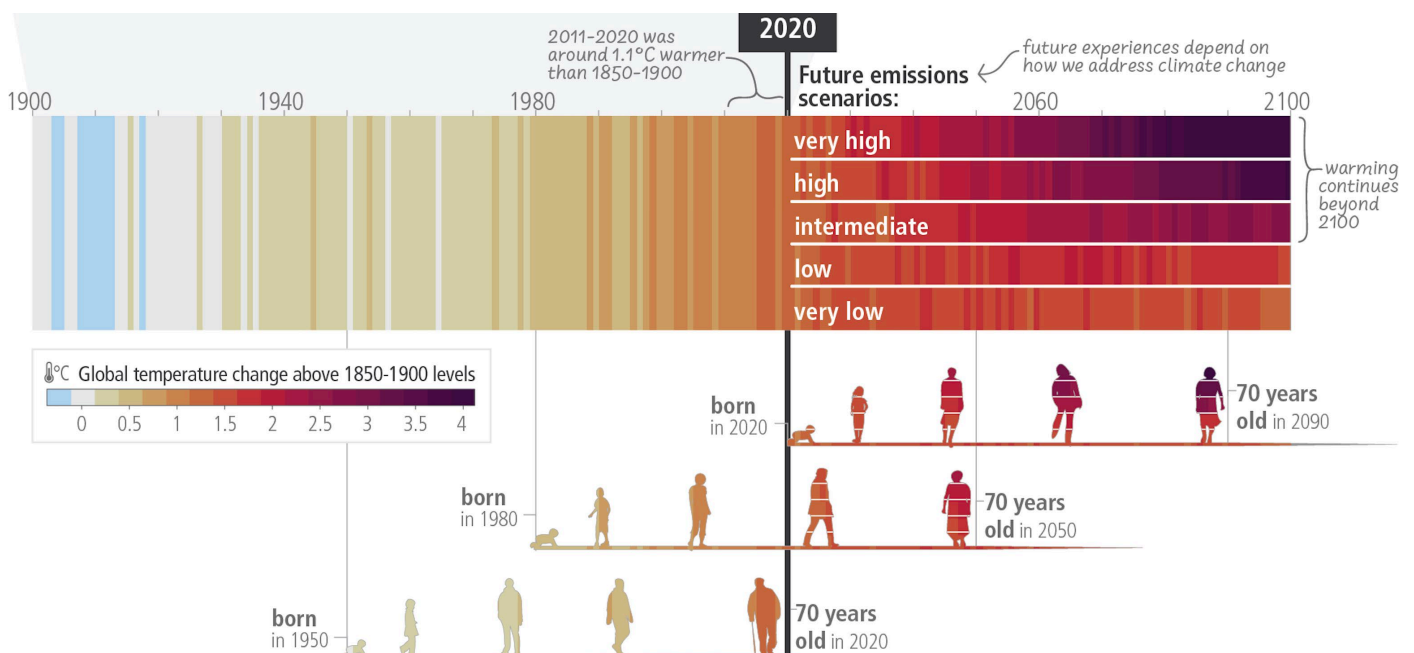


FIGURE 1.4 | SOURCE: IPCC AR6<sup>15</sup>

## The Intergovernmental Panel on Climate Change provides science-based guidance on needed emissions reductions.

Climate Budgeting draws on leading climate science from the IPCC, the United Nations body responsible for assessing the science related to climate change. The IPCC’s Sixth Assessment Report (AR6), released between 2021 and 2023, concludes that GHG emissions generated from human activity have undoubtedly led to the warming of the globe, causing substantial damage and increasingly irreversible losses across various ecosystems<sup>15</sup>. As emissions continue to increase, the window to limit global temperature rise is rapidly closing. The extent to which current and future generations will experience a hotter and different world depends on the choices made today.

If emissions continue their current trajectory, in the not-too-distant future climate impacts will be too great to overcome or reverse. The Paris Agreement asks signatories to pursue efforts to limit global temperature increases to 1.5°C above pre-industrial levels. Global temperatures have already risen by 1.1°C above preindustrial averages and are on track to reach 1.5°C in the first half of the 2030s<sup>16</sup>. The IPCC underscores that the global community is not reducing emissions fast enough. Even if all current national climate commitments are fully realized, global temperatures are projected to increase 2.8°C by 2100 and to continue to increase thereafter. The IPCC advises that to limit global

warming to 1.5°C, global GHG emissions must peak by 2025, and decline by at least 43 percent by 2030, 60 percent by 2035, and 69 percent by 2040, compared to 2019<sup>16</sup>. Using New York City’s 2005 baseline, this global trajectory roughly translates to a need for New York City to reduce emissions by 52 percent by 2030, 66 percent by 2035, and 74 percent by 2040<sup>14</sup>. The IPCC also stresses the need to achieve net-zero emissions around 2050, in alignment with New York City’s commitment. The IPCC 1.5°C emissions reduction trajectory is included as a reference in Climate Budgeting’s emissions forecasts to track how New York City is anticipated to perform relative to global science-based emissions targets.

### INTERIM SCIENCE-BASED GHG EMISSIONS REDUCTIONS TARGETS ALIGNED WITH 1.5°C TRAJECTORY

Year	2030	2035	2040
Reduction Target Against New York City 2005 Baseline	52%	66%	74%

FIGURE 1.5 | SOURCE: IPCC<sup>16</sup>, MOCEJ<sup>14</sup>

## Why 1.5°C?

In recent years, the IPCC has communicated that crossing the 1.5°C threshold risks unleashing severe climate change impacts, including more frequent and severe drought, heatwaves, and rainfall. Limiting global warming to 1.5°C would likely avoid the compounding losses and irreversible negative impacts of a world beyond that threshold.

### GLOBAL IMPACTS OF 1.5°C OF WARMING AND BEYOND

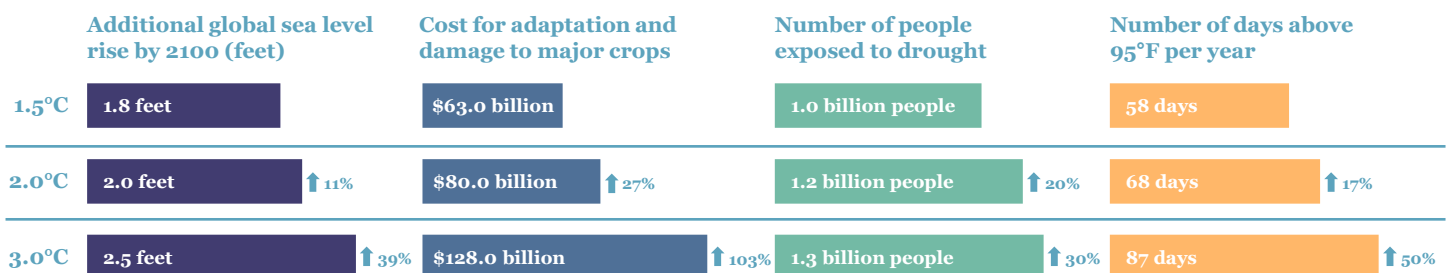


FIGURE 1.6 | SOURCE: IPCC AR6 WGII<sup>16</sup>

# History of New York City's GHG Commitments

In 2014, New York City committed to reducing citywide emissions 80 percent by 2050 relative to 2005 levels<sup>17</sup>. Then in 2017, New York City released the first city-scale climate action plan explicitly intended to comply with the Paris Agreement's 1.5°C goal<sup>18</sup>. The plan expanded on the city's commitment to reduce GHG emissions and established the target of achieving net-zero emissions citywide by 2050. Achieving net-zero means directly reducing emissions to as close to zero as technically feasible—and by 80 percent at minimum—and finding meaningful ways to compensate for residual emissions.

In 2019, the city joined the United Nations' Race to Zero, which calls on members to achieve net-zero emissions by the 2040s or mid-century at latest, and interim targets that reflect a fair share of the roughly 50 percent global emissions reduction needed by 2030<sup>19</sup>.

## RECENT CLIMATE EVENTS IN NEW YORK CITY

### 2012

Hurricane Sandy damages thousands of buildings, leaves millions without power, and costs New York City billions of dollars in damages

### 2021

Hurricane Ida breaks rain total records in New York City, with precipitation totaling 7.19 inches during a 48-hour period

### 2023

Air pollution from wildfires turns the city skylines yellow and causes a spike in asthma

### 2023

The National Aeronautics and Space Administration announces 2023 is the warmest summer on record globally

### 2023

Severe rainfall event in September deposits 8.5 inches of rain at John F. Kennedy Airport in less than 24 hours, the highest single-day total on record

FIGURE 1.7 | SOURCE: VARIOUS<sup>21-25</sup>

## The New York City Panel on Climate Change provides future forecasts of local climate hazards.

To secure a safe and prosperous future, the IPCC stresses the urgency of both aggressively reducing emissions and adapting to increasing climate hazards locked in by historical emissions and made worse by continued emissions.

New York City residents have been directly affected by the consequences of climate change, including extreme heatwaves, increasing rainfall, more intense and frequent coastal storm surges, and tidal flooding.

The NPCC provides climate-related data and future scenarios to help the city understand the local impacts of climate change and how threats may worsen with time. The NPCC's most recent report is NPCC4, released in 2024.

## The New York City Panel on Climate Change

The NPCC was established in 2009 to provide the city with scientific information on climate change and its impacts. The independent advisory group, inspired by the IPCC, synthesizes climate change research and advises the city on strategies to protect against climate hazards<sup>20</sup>. NPCC members come from a range of institutions and disciplines, including climate science, demography, economics, vulnerability analysis, architecture, and urban planning. Members have also contributed to IPCC Assessment Reports. The NPCC's research puts the city at the forefront of science-informed policy and sets it apart in the ability to use bespoke climate modeling to make New York-specific decisions.



### FUTURE COASTAL FLOODING SCENARIOS



FIGURE 1.8 | SOURCE: NPCC<sup>27</sup>

#### Coastal Flooding

Recent evaluation of historical sea level rise along New York City coastlines shows that not only have sea levels been rising over time, but the rate of change is accelerating<sup>27</sup>. NPCC mid-range projections show sea levels rising by up to an additional foot by the 2030s and over three feet by the 2080s. Storm surges are also expected to increase in severity and frequency, due to more frequent and intense storm events and sea level rise.

#### PROJECTED SEA LEVEL RISE, RELATIVE TO 1995-2014 BASELINE

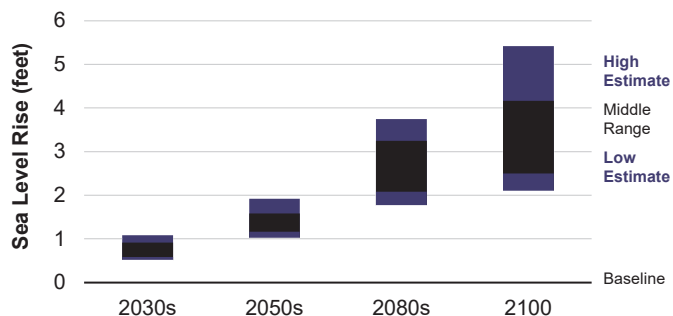


FIGURE 1.9 | SOURCE: NPCC<sup>427</sup>

#### Inland Flooding

New York City is expected to experience an increase in the number of extreme rain events and the volume of rain falling during storms. According to the NPCC’s mid-range projections, it is likely that the number of days with precipitation exceeding four inches will double by the 2030s and triple by the 2080s. Average annual precipitation could increase by 7 percent and 17 percent, respectively, relative to a 1981-2010 baseline<sup>27</sup>.

#### PROJECTED ANNUAL AVERAGE PRECIPITATION, RELATIVE TO 1981-2010 BASELINE

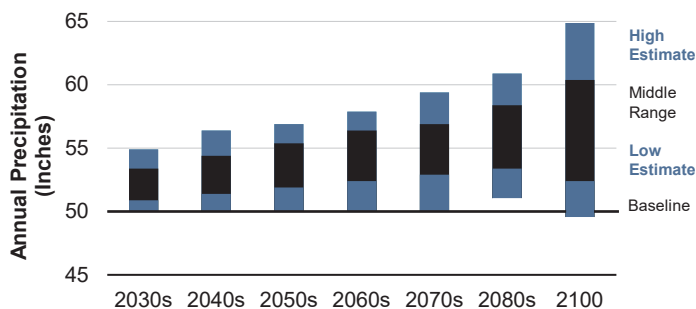


FIGURE 1.10 | SOURCE: NPCC<sup>427</sup>

## Extreme Heat

In the coming decades, New York City will face more frequent and longer heatwaves, presenting challenges to residents and infrastructure. Based on the NPCC's mid-range projections, the average annual temperature in New York City has the potential to increase by up to 4°F by the 2030s, 6°F by the 2050s, and 10°F by the 2080s, relative to a 1981-2010 baseline<sup>27</sup>. Within the next decade, New York City's average temperature could feel similar to Richmond, Virginia, and by 2050, as hot as Raleigh, North Carolina<sup>26</sup>.

### PROJECTED ANNUAL AVERAGE TEMPERATURE, RELATIVE TO 1981-2010 BASELINE

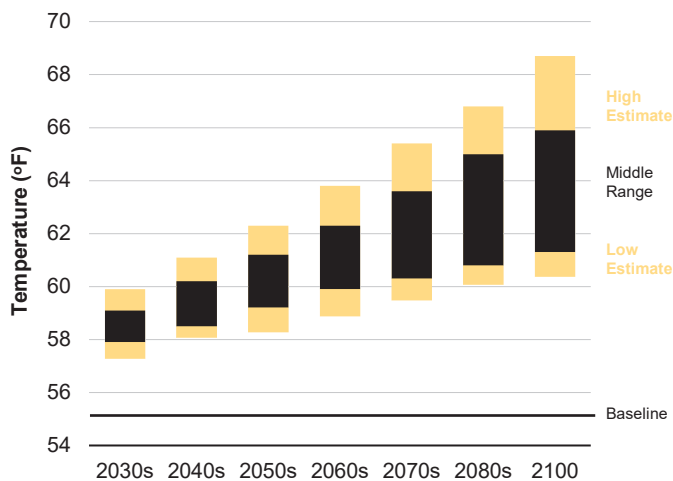


FIGURE 1.11 | SOURCE: NPCC4<sup>27</sup>

An increase in the number of very hot days is also expected. The NPCC forecasts a surge from the current baseline of 17 days per year at or above 90°F to 38-62 days by the 2050s, according to mid-range estimates. This translates to several months per year of very hot days, increasing the risks associated with heat-related illnesses, particularly among more vulnerable communities<sup>27</sup>.

### PROJECTED ANNUAL DAYS AT OR ABOVE 90°F, RELATIVE TO 1981-2010 BASELINE

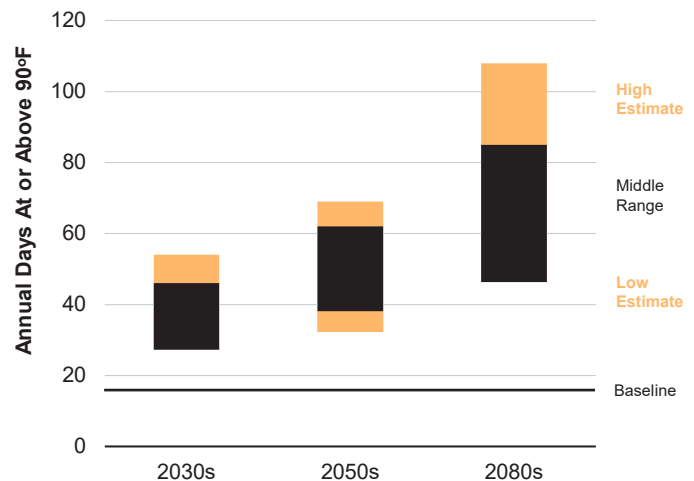


FIGURE 1.12 | SOURCE: NPCC4<sup>27</sup>

## The New York City Mayor's Office of Climate and Environmental Justice's EJNYC Report provides insights into local environmental justice priorities.

The city is committed to the pursuit of environmental justice, the fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, policies and activities and with respect to the distribution of environmental benefits. The city codified its responsibility to address these disparities in 2017 with Local Laws 60 and 64<sup>28,29</sup>. Local Law 60 mandates that an interagency working group produce a publicly available report assessing environmental equity issues in the city. Local Law 64 establishes the Environmental Justice Advisory

Board, a group of environmental justice experts to guide the city through this process. In response to these laws, in April 2024, the city released the EJNYC Report. The report identifies disparities in cumulative environmental burdens affecting neighborhoods designated as EJ Areas by criteria set by New York State, provides mapping tools to visualize these disparities, and outlines environmental burdens experienced citywide across six areas: access to resources, exposure to polluted air, exposure to hazardous materials, access to safe and healthy housing, exposure to polluted water, and exposure to climate change<sup>3,30</sup>.

## EJNYC Key Insights

EJNYC evaluates and provides insights on environmental burdens and benefits across the city in the following focus areas<sup>3</sup>:

### 1. Access to resources

Proximity to services such as public transit, parks and green spaces, affordable food, and health care options affects health outcomes and overall quality of life. Though the city is working to improve equitable access to these services, communities of color and low-income communities still experience disparities in the availability of public resources. For example, residents in EJ Areas have 19 percent less park space within walking distance than residents not living in EJ Areas.

### 2. Exposure to polluted air

Air quality in the city is impacted by fossil-fuel-burning power plants, industrial activity, diesel trucks and heavy equipment, and external factors—such as the effects from Canadian wildfires in the summer of 2023. The concentration and health impacts of air pollutants are not distributed equally across the city. The location of arterial highways, commercial waste routes, delivery routes, and parking facilities burdens communities of color and low-income communities, exacerbating already higher rates of health conditions and vulnerability in these communities.

### 3. Exposure to hazardous materials

Hazardous materials are a legacy of the city's industrial past and a byproduct of certain modern small businesses such as auto repair shops and dry cleaners. Industrial facilities and small businesses that process and use toxic materials are concentrated in EJ Areas. Past industrial sites can experience long-lasting contamination.

### 4. Access to safe and healthy housing

Housing quality is integral to health and wellbeing. Medical conditions such as asthma can be caused or exacerbated by maintenance issues such as mold, peeling paint, or poor heating during winter. Black and Latino residents, as well as public housing residents, report high levels of maintenance issues. Areas with the lowest rates of air conditioning at home are in EJ Areas, which increases the vulnerability of these communities to the impacts of heat waves.

### 5. Exposure to polluted water

Residents are exposed to water pollution through coastal or stormwater flooding. Combined sewer systems combine stormwater runoff with domestic sewage and industrial wastewater to be treated together. When the system is overwhelmed with excessive stormwater, however, this combined flow is discharged into waterways. The largest combined sewer outfalls handling 50 percent of the city's overflow are in the Bronx, Brooklyn, and Queens. When rainfall is excessive, or sewer grates are blocked by debris, local streets and buildings may flood. Seven of the top 10 neighborhoods with confirmed sewer backup 311 complaints are EJ Areas.

### 6. Exposure to climate change

Climate change will not impact all New Yorkers evenly. For example, the majority of the most heat-vulnerable areas in the city are also EJ Areas. With sea level rise, coastal and low-lying communities will experience more frequent and severe storm-driven flooding; 57 percent of the residents in the 2020s 100-year coastal floodplain live in EJ Areas.

## The New York City Health Department provides expertise on the health impacts of air pollution and extreme heat.

The New York City Department of Health and Mental Hygiene (NYC Health Department) has developed analyses to better understand the overall dangers of climate hazards in the city, as well as the ways certain populations are more susceptible than others. Climate change can present both chronic and acute health hazards, and individuals with preexisting conditions or diminished health and those who are older or younger may experience exacerbated effects<sup>31</sup>. New York City data also demonstrate that the city's poorest communities and communities of color carry a disproportionate burden of climate-related health impacts<sup>32</sup>.

Fossil fuel combustion influences air quality through the release of pollutants, which impact individuals' health through respiratory conditions, such as asthma. The Department

tracks and models the sources of air pollutants, including particulate matter and ozone, and their health effects, including asthma-related emergency department visits and hospitalizations, across New York City neighborhoods<sup>33</sup>. Between 2017 and 2019 fine particle pollution contributed to at least 2,200 deaths annually, alongside approximately 900 hospital and 4,800 emergency department visits for lung, heart, and asthma-related conditions<sup>34</sup>.

The Department also develops extensive information on heat-related illness, which can be worsened by warming temperatures as well as heat waves, and releases a Heat-Related Mortality Report on an annual basis, helping inform agencies and the public about the effects of extreme heat on mortality across the city. The Department tracks direct heat deaths using hospital information, such as death certificate data, and conducts epidemiological modeling to estimate how many individuals die indirectly from heat-exacerbated conditions. The Department also publishes information on factors that reduce risk, such as air conditioning prevalence, as well as a map of heat vulnerability for each city neighborhood<sup>35</sup>.

### Impact of Extreme Heat on Mortality

Extreme heat is the deadliest weather New York City faces. An estimated 350 individuals die prematurely due to heat each year. A small subset of these die from direct heat-related illness, called "heat-stress deaths<sup>35</sup>." Others die from cardiac, respiratory, or other conditions exacerbated by high heat. Black New Yorkers are twice as likely to die from heat stress as white New Yorkers, and neighborhoods with more individuals living below the federal poverty line experience higher death rates than others<sup>33</sup>. Older individuals, particularly those over 60 years old, are more likely than younger New Yorkers to die of heat stress.

The NYC Health Department developed the city's Heat Vulnerability Index, which depicts neighborhoods by risk of residents dying during and immediately following extreme heat.

Access to air conditioning is the most important risk factor in heat-related health. While 90 percent of households have air conditioning citywide, as few as 76 percent of households in certain neighborhoods have air conditioning<sup>35</sup>. Black and low-income New Yorkers are less likely to have an air conditioner in their home or use that air conditioner because of electricity costs<sup>33</sup>. Most individuals who die of heat stress in the city die indoors at home without an air conditioner running<sup>35</sup>.

### HEAT VULNERABILITY INDEX

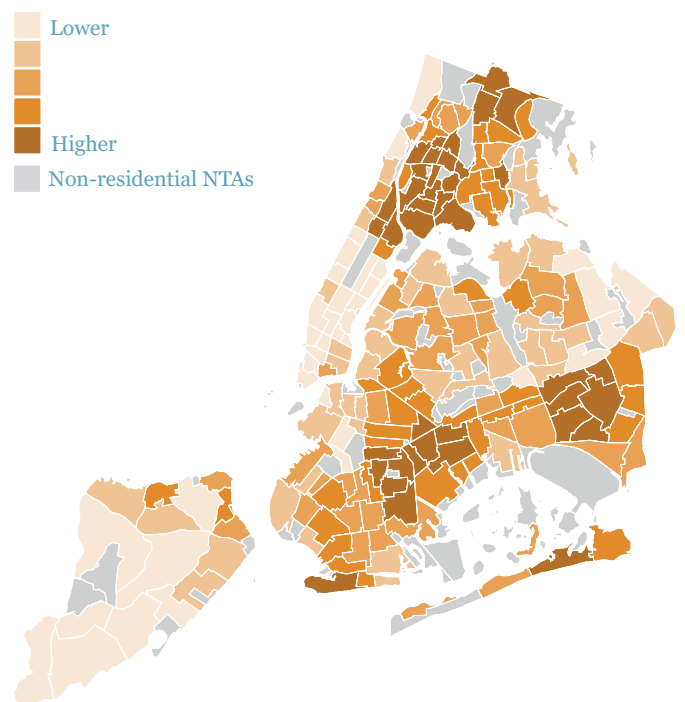


FIGURE 1.13 | SOURCE: DOHMH<sup>35</sup>



SOURCE: NYC DOT





# 2. New York City's Climate Budgeting Process

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An overview of how Climate Budgeting has been integrated into the city's budget process to achieve climate goals while using limited resources wisely.

New York City has a unique budget cycle. While most public entities propose and adopt a single annual budget, New York City releases multiple expense and capital plans each year (see Figure 2.1). The Preliminary Budget in January and the Executive Budget in April propose operating and capital expenditures for the current and upcoming fiscal years, plus three subsequent years. In odd-numbered years, a Ten-Year Capital Strategy is published along with the Executive Budget, detailing long-range capital investment priorities. City Council votes to adopt the budget in June. The Adopted Capital Commitment Plan is published in the fall, and in November the mayor submits revisions to the current-year expense budget.

Climate Budgeting is not a separate, stand-alone process; rather, it is a fully integrated system managed by OMB that happens within the regular budget process (see Figure 2.4). This keeps climate at the forefront of decision-making, providing opportunities to continually evaluate progress and find solutions. New Climate Budgeting steps have been added to the annual budget cycle, and OMB is changing the way agency funding requests are reviewed. Over the past year, OMB has begun integrating the following steps into the New York City budget process:

**Assessing Progress Toward Climate Goals and Needs**

The city reports annually on historical GHG emissions from city government operations and citywide sources but historically has not regularly forecasted anticipated future emissions. Climate Budgeting provides a new process to regularly forecast future emissions trajectories based on current policies, planned actions, and economic trends. Understanding these trajectories helps inform priorities during the budget cycle by showing where additional action will be needed and demonstrating how budget needs may impact emissions outcomes.

**NEW YORK CITY CLIMATE BUDGETING PROCESS**

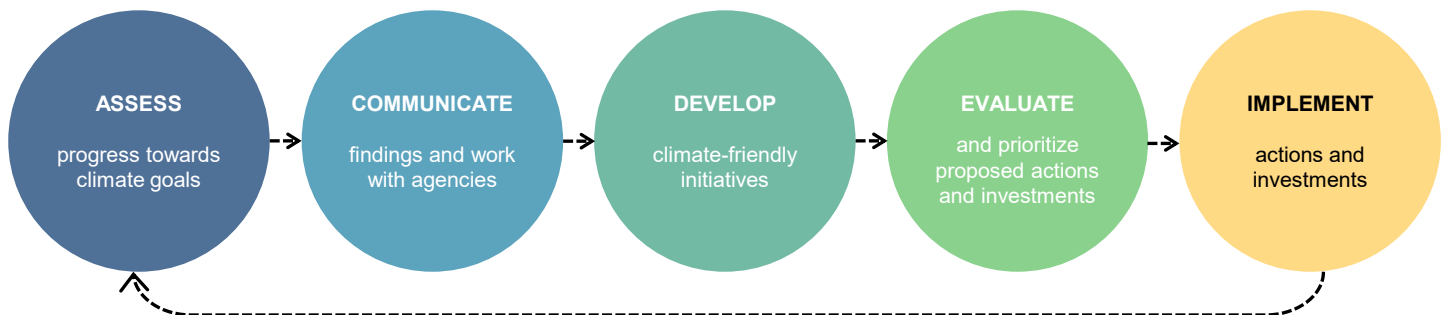


FIGURE 2.2 | SOURCE: NYC OMB

**NEW YORK CITY BUDGET PROCESS**

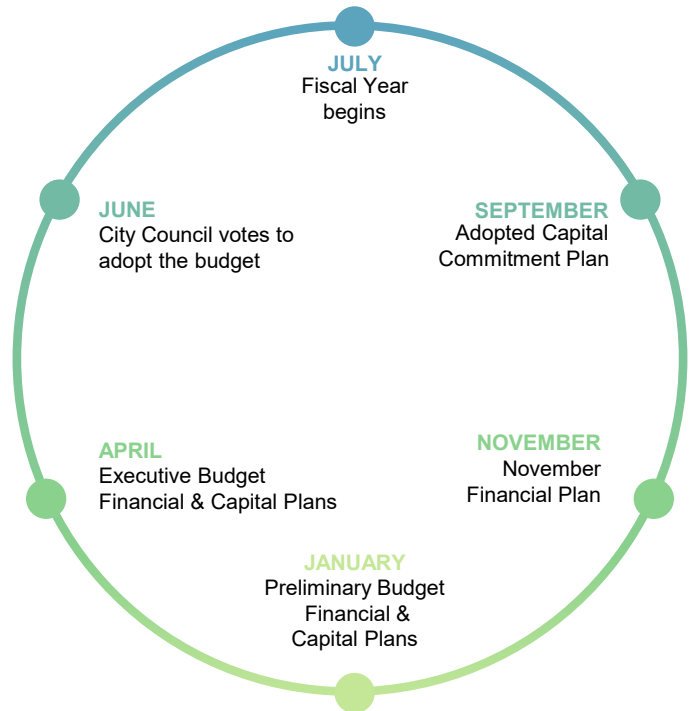


FIGURE 2.1 | SOURCE: NYC OMB

To support the development of emissions forecasts, OMB has begun collecting new information from agencies during the budget process. As mandated by Executive Order 89 of 2021, OMB now collects information on the emissions impacts of planned capital projects as part of the Adopted Capital Commitment Plan process in September<sup>36</sup>. To complete this exercise, agencies use energy performance data to predict expected future impacts of planned projects. OMB aggregates the data for projects across all capital agencies and collaborates with Department of Citywide Administrative Services Division of Energy Management (DCAS DEM) to forecast how upcoming capital projects and

## Climate Smart Capital Planning

Many agencies are advancing reforms to embed strategic climate design throughout their capital portfolios. Examples include:

- **Chief Decarbonization Officers and Energy Personnel:** DCAS works with partner agencies to provide essential staff to lead efforts to reduce GHG emissions at their agencies. The City Chief Decarbonization Officer sits within DCAS DEM and oversees compliance with decarbonization mandates for city government operations. Agency Energy Personnel develop, implement, and track agency energy and emissions reduction efforts. Agency Chief Decarbonization Officers (ACDOs) serve as executive-level strategists, partnering with leadership and staff to fully embed energy efficiency and emissions reductions throughout agency policy, operations, and capital planning<sup>38</sup>.
- **DDC Advanced Capital Planning:** As outlined in the Department of Design and Construction's (DDC) 2024 Strategic Blueprint, DDC is working with OMB and the Mayor's Office of Operations to enhance the information gathered on the city's public buildings, bringing existing information like state-of-good-repair surveys together with new data points into a single, easy-to-use portal<sup>39</sup>. DDC will aim to comprehensively support sponsor agencies in assessing capital assets, holistically planning their budget and construction needs, and meeting citywide climate goals.
- **DEP Bureau of Coastal Resilience:** The Department of Environmental Protection's (DEP) new Bureau of Coastal Resilience was established in 2023 to fulfill a PlaNYC commitment. The Bureau will provide citywide leadership to advance a holistic vision for coastal resilience that includes community resilience and climate-ready infrastructure. DEP will lead collaboration on planning and design for coastal resiliency projects and is the operating agency for new coastal resiliency assets.
- **DOT Cool Corridors Study:** The New York City Department of Transportation (DOT) is undergoing a study to prepare a toolkit of strategies that can be employed on city streets to help address rising temperatures<sup>40</sup>. The study includes a cost-benefit analysis of the various interventions to understand which options are cost-effective.
- **NYCEDC Clean and Circular Design and Construction Guidelines:** The New York City Economic Development Corporation (NYCEDC) has released guidelines to reduce waste and embodied carbon in capital projects. Documentation of approaches selected for each project and progress tracking will provide new insights into the costs and benefits of these approaches. MOCEJ is also working with partner agencies to implement Executive Order 23, which requires the city's capital project agencies to commit to actions that will lower embodied carbon from municipal construction projects<sup>41</sup>.

other improvements collectively impact future emissions from government operations. Concurrently, OMB now works with select agency partners to forecast the impact of key local laws, regulations, and commitments that are expected to reduce emissions citywide, and pairs this analysis with data from the NYC Health Department to understand the air quality and health implications of these actions. The outcomes of this analysis are outlined in Section 3.

With input from MOCEJ and capital agencies, OMB also developed a methodology to assess whether capital projects are aligned with achieving net-zero emissions and resiliency goals, called the Climate Alignment Assessment. Applying this standardized color-coding methodology across all capital project types provides a snapshot of how the Capital Commitment Plan aligns with climate goals and a framework for reviewing new project proposals. The outcomes of this analysis are outlined in Section 3.

Climate Budgeting is an iterative process, and these analyses will be updated annually to reflect new information. Work is

underway to develop approaches to understand how current investments and policies affect future resilience to growing climate threats and environmental justice outcomes, which will inform future iterations of Climate Budgeting. These ongoing efforts are described in Section 4.

### Communicating Findings and Working with Agencies

OMB regularly issues instruction memos to agencies during the budget cycle. These memos provide overall guidance to agencies about prevailing financial conditions, requirements for agency budget submissions, and technical instructions. Climate Budgeting adds a new annual communication prior to the Preliminary Budget process.

The inaugural Climate Budgeting Memo was issued in November 2023. Acknowledging the acute financial challenges experienced during the FY 2025 budget cycle and the resulting limits to new funding, agencies were encouraged to maximize state and federal funding opportunities, incorporate climate considerations as early

as possible when designing already-funded projects, seek opportunities to maximize cost effectiveness and impact, and use existing resources such as DCAS' Accelerated Conservation and Efficiency Program and the city's Climate Resiliency Design Guidelines (CRDG)<sup>37</sup>. Agencies were also instructed to begin using a new Climate Budgeting Intake Form developed by OMB to identify climate-related funding needs, as further described later in this section.

Going forward, the annual Memo will draw on analysis and forward-looking projections and provide instructions for how to submit budget requests associated with identified climate needs and climate-aligned approaches to everyday work.

### Developing Climate-Friendly Initiatives

Agencies will work with partners at MOCEJ and across city government throughout the year to develop strategic climate initiatives and identify opportunities to incorporate climate benefits into projects and programs. MOCEJ plays a critical role in this step of the process by working with partner agencies on implementing PlaNYC commitments and providing technical and programmatic support as agencies identify new climate-related needs. In the first year of implementing Climate Budgeting, MOCEJ provided additional outreach support to ensure that agency partners

## WAYS THE CITY CAN INFLUENCE SUSTAINABILITY AND RESILIENCY

Approach	Examples
<b>Direct Operational Control</b>	<ul style="list-style-type: none"> <li>Capital funding for improvements to city facilities and infrastructure</li> <li>Clean Fleet Executive Order</li> <li>Climate Resiliency Design Guidelines (CRDG)</li> </ul>
<b>Legal Authority</b>	<ul style="list-style-type: none"> <li>For-Hire-Vehicle Electrification Rule</li> <li>Local Law 97 of 2019 (LL97)</li> <li>Unified Stormwater Rule</li> <li>Zoning for Coastal Resiliency</li> </ul>
<b>Incentives, Support, &amp; Enabling Actions</b>	<ul style="list-style-type: none"> <li>CoolRoofs Workforce Training Program</li> <li>Green Infrastructure Grant Program</li> <li>Installations of publicly accessible electric vehicle chargers</li> <li>NYC Accelerator</li> </ul>
<b>Regulatory Advocacy</b>	<ul style="list-style-type: none"> <li>Advocacy on state and federal legislation</li> <li>Public Service Commission filings</li> <li>Advocacy on U.S. Army Corps of Engineers-led projects</li> </ul>

FIGURE 2.3 | SOURCE: NYC OMB<sup>42-45</sup>

were able to learn about and contribute to the process. MOCEJ is leading a collaboration between OMB, DCAS, the Department of Design and Construction (DDC), the Department of City Planning (DCP), and other agency partners on approaches to ensure climate is considered from the early stages of capital project planning.

Agency expertise is also key to this step of the process. To support agencies in decarbonizing their operations, the city is hiring Agency Chief Decarbonization Officers (ACDOs) at the agencies with the largest operational emissions impacts. ACDOs are responsible for directing efforts to reach agency decarbonization mandates, including performing project identification and delivery, and conducting workforce development and change management<sup>38</sup>.

Achieving net-zero emissions and climate resiliency citywide cannot be achieved with city construction projects alone. Agencies are encouraged to explore all possible levers for climate action, including supporting and enabling action by other levels of government and the private sector and utilizing the city's legal and regulatory authority. Through Climate Budgeting, OMB will track progress on a citywide scale and consider actions that extend beyond the reach of the city's budget but remain in the realm of city influence, such as policy decisions, investments, and mandates that influence private sector activities.

### Evaluating and Prioritizing Actions and Investments

Agencies will submit funding requests associated with proposed climate actions through the typical city budget process. In addition to traditional budget review, OMB will evaluate proposals for climate impact, alignment with long-term climate goals, opportunities to incorporate climate-friendly elements, and equity implications, with the aim of prioritizing the highest-impact and most cost-effective actions for consideration. Climate-related funding requests will be reviewed by the Environmental Sustainability and Resiliency Task Force in partnership with traditional OMB teams focused on agency-by-agency review.

To understand how proposed initiatives will contribute to or detract from climate priorities, OMB now requires standardized climate impact information to be provided with all relevant funding proposals using a Climate Budgeting Intake Form. The form enables agencies to provide OMB with information that has not traditionally been included as standard information in budget requests, including

## NEW YORK CITY BUDGETING PROCESS WITH CLIMATE BUDGETING

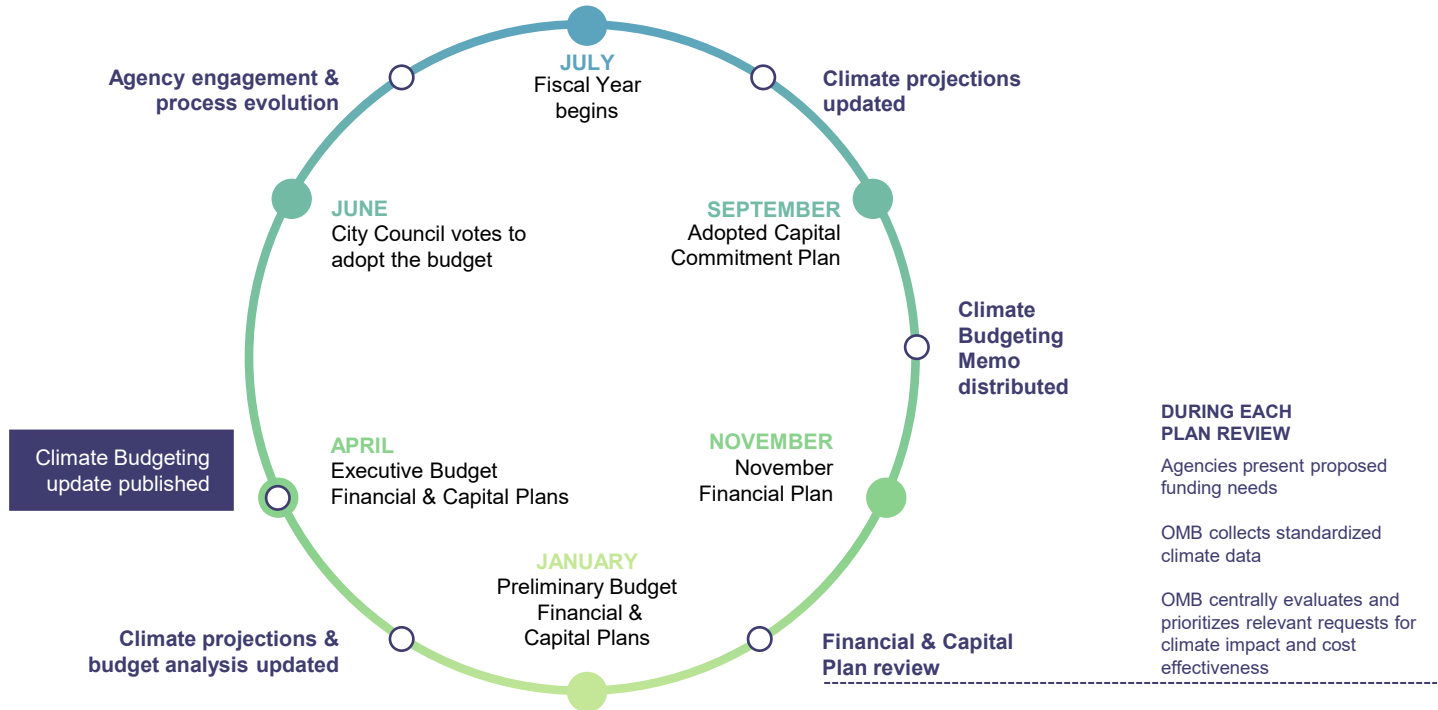


FIGURE 2.4 | SOURCE: NYC OMB

how proposed projects and programs quantitatively or qualitatively impact GHG emissions, climate resiliency, and environmental justice. Additional detail is available in Appendix 2.

Moving forward, OMB will also use the Climate Alignment Assessment framework to organize proposed projects being considered for funding. A project rated as “not aligned” with climate goals might prompt a review of potential alternatives before making a funding decision. Additionally, OMB is now collecting standardized information on climate impacts throughout projects’ lifecycles to apply ratings to additional projects. This allows for a more transparent look at the city’s investments and will contribute to the development of more projects aligned with climate goals. In future iterations of the assessment, OMB will develop ways to incorporate expense-funded programs, improve methods for assessing resiliency, and expand the analysis to consider embodied emissions and environmental justice impacts.

The scale of climate change, coupled with the city’s financial constraints, means every funding decision must be made carefully to ensure the city is achieving the highest impact possible in the most cost-effective way. As city agencies develop new proposals, OMB will continue to build and implement methods for prioritizing which actions to pursue with limited resources. Wherever possible, OMB will seek

to match city funding needs with state and federal funding opportunities. The city is aggressively pursuing these opportunities, including those resulting from the federal Bipartisan Infrastructure Law, Inflation Reduction Act, and state Clean Water, Clean Air, and Green Jobs Bond Act.

### Implementing Actions and Reporting on Progress

As the city pursues new climate actions to advance its sustainability and resiliency goals, they will be incorporated into annual Climate Budgeting reporting. The city publishes a variety of documents with each of its financial and capital plans providing summary and detailed information about the city’s spending. Beginning with this publication, the Executive Budget will also include an annual Climate Budgeting update. While many budget publications report on agency-by-agency plans, this document highlights new and ongoing sustainability and resiliency spending across the entire budget. New actions such as legislation and regulations that impact citywide sustainability and resiliency forecasts will also be highlighted, even if they do not have a direct city budget impact. Each year, as new actions are implemented, including state and federal policies and projects that affect the city’s sustainability and resiliency, the city will continue to assess and communicate progress and the Climate Budgeting cycle will continue within the regular budget process.

# Maximizing Grant Funding for Climate Action

The Infrastructure Investment and Jobs Act of 2021, also known as the Bipartisan Infrastructure Law (BIL), makes \$1.2 trillion available to support public transit, electric vehicle charging, electricity transmission, and more<sup>46</sup>. The Inflation Reduction Act of 2022 (IRA) includes nearly \$370 billion to support investments in clean energy<sup>47</sup>. In 2022, New York State voters approved the \$4.2 billion Clean Water, Clean Air, and Green Jobs Bond Act, which includes \$1.5 billion for climate change mitigation, \$1.1 billion for flood risk reduction, and \$650 million for water quality improvements and resilient infrastructure<sup>48</sup>.

To take full advantage of these opportunities the city created a Federal Infrastructure Funding Task Force, an interagency group led by the deputy mayor for operations, to share best practices, advocate for the city's funding needs, and provide technical support to agencies pursuing grant opportunities. Since the start of the Adams administration, New York City has secured over \$1.6 billion in federal infrastructure funds and nearly \$700 million in competitive infrastructure grants from BIL and IRA programs, including<sup>49</sup>:

- \$110 million from the U.S. Department of Transportation Infrastructure for Rebuilding America grant for the Hunts Point Terminal Produce Market redevelopment, which will reduce emissions by eliminating 1,000 diesel-powered refrigerated trailer units, plus \$15 million through the Charging and Fueling Infrastructure Program to install an electric vehicle charging hub<sup>50</sup>.
- \$79.4 million from the U.S. EPA Clean School Bus Rebate Program to purchase electric school buses.
- \$15 million from the U.S. Department of Agriculture Urban and Community Forestry Program to establish a forest restoration job training and employment program and enhance urban forest tree cover in central Queens.
- \$50 million from the Federal Emergency Management Agency (FEMA) Building Resilient Infrastructure in Communities program to increase community resilience and reduce flood risk in the Historic South Street Seaport.

While Climate Budgeting is led by OMB, its success depends on the participation of all of city government. Through the collaboration of partners across city agencies and offices, this process will continue to evolve over time to ensure the city is applying its limited resources efficiently and effectively to achieve a sustainable and resilient future.

This process has been developed for New York City's unique budget cycle and organizational structure and was informed by the models set by Oslo and other cities doing similar work on Climate Budgeting<sup>13</sup>. For cities looking to adapt Climate Budgeting to their own processes, the Appendices includes additional guidance, technical details, and resources.

## CITY ROLES IN CLIMATE BUDGETING

Agency	Contribution
<b>Mayor's Office of Management and Budget (OMB)</b>	<ul style="list-style-type: none"> <li>• Works with agencies to review climate-related funding needs</li> <li>• Tracks investments across climate priorities</li> <li>• Collects data and conducts technical analysis</li> <li>• Coordinates strategic decision-making across agencies</li> </ul>
<b>Mayor's Office of Climate and Environmental Justice (MOCEJ)</b>	<ul style="list-style-type: none"> <li>• Sets the city's climate policy</li> <li>• Leads agency and stakeholder engagement</li> <li>• Provides technical support and subject matter expertise</li> <li>• Publishes annual Citywide GHG Inventory</li> </ul>
<b>Department of Citywide Administrative Services (DCAS)</b>	<ul style="list-style-type: none"> <li>• Oversees and implements projects and programs for municipal emissions reductions</li> <li>• Publishes annual City Government GHG Inventory and supports emissions forecasting</li> </ul>
<b>Department of Health and Mental Hygiene (DOHMH)</b>	<ul style="list-style-type: none"> <li>• Provides expertise on the health impacts of local air quality and pollution</li> <li>• Provides expertise on the health impacts of extreme heat</li> <li>• Manages Environment and Health Data Portal</li> </ul>
<b>City Agencies</b>	<ul style="list-style-type: none"> <li>• Implement projects and programs</li> <li>• Consider climate impacts early and in all decision-making</li> <li>• Communicate impact and cost information about climate-related funding needs</li> <li>• Contribute expertise in relevant program areas</li> </ul>
<b>Chief Decarbonization Officers (CDOs)</b>	<ul style="list-style-type: none"> <li>• The City Chief Decarbonization Officer oversees compliance with government operations decarbonization mandates</li> <li>• Agency Chief Decarbonization Officers direct efforts to reach agency decarbonization goals, partnering with leadership and staff to fully embed energy efficiency and decarbonization into agency policy, operations, and capital planning</li> <li>• Support responses to OMB requests for climate data</li> </ul>

FIGURE 2.5 | SOURCE: NYC OMB

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# 3. Investments and Findings

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An overview of city investments and initial findings that support the city's understanding of progress and management towards climate goals through the Climate Budgeting process.



# CLIMATE INVESTMENTS IN THE EXECUTIVE BUDGET

## GUIDING QUESTION

## What is the city investing to reduce emissions and increase resiliency to flooding and extreme heat?

New York City is making substantial investments in climate action. This can be hard to discern in the city's traditional budget documents, as climate action is not limited to any single agency or part of the budget. The city's efforts to reduce emissions and build a resilient city span the expense and capital budgets of all agencies. Tracking funding in new ways across agency budgets and city budget structures poses various challenges as described in further detail in Appendix 4. The amounts reported here should not be construed to represent every dollar the city is spending on sustainability and resiliency, but rather, as highlights of major projects and programs.

### SUSTAINABILITY INVESTMENT HIGHLIGHTS

The FY 2025 Executive Budget and FY 2024-2028 Capital Commitment Plan continue the city's efforts to reduce GHG emissions from buildings, energy, transportation, and waste.

#### **Buildings: Energy Efficiency and Electrification**

The city's financial and capital plans support projects that reduce emissions across city government operations, including energy efficiency upgrades at municipal facilities, electrification of building systems currently powered by fossil fuels, and solar photovoltaic installations on city assets. The city also funds programs to provide resources and guidance for private building owners to implement efficiency projects on their property through the New York City Accelerator and the Bureau of Sustainability at the DOB<sup>51</sup>.

#### **Renewable Energy**

To fulfill the commitment to power New York City government with 100 percent clean and renewable electricity, the city has contracted to purchase renewable energy certificates (RECs) generated by wind, solar, and hydropower facilities in upstate New York and Canada that send power directly to New York City over two new transmission lines, helping the city meet its growing energy needs. A REC is a financial instrument that represents the environmental benefits of generating a megawatt hour (MWh) of electricity from renewable resources like wind, solar, and hydro power<sup>52</sup>. This commitment is partially reflected in future years of the city's expense budget. The city will also transform the South Brooklyn Marine Terminal into a world-class offshore wind port, further leveraging the city's land and budget to advance the implementation of large-scale renewables<sup>53</sup>.

#### **Transportation**

The city boasts the largest electric fleet in New York State, with over 4,900 vehicles. The city has made additional efforts to transition toward cleaner medium- and heavy-duty vehicles and convert to electric vehicles where feasible to further reduce transportation emissions. To support the growing electric fleet, DCAS manages the state's largest charging infrastructure network<sup>54</sup>. The city encourages sustainable transportation and freight movement through the installation of bus and bike lanes and publicly accessible electric vehicle chargers.

## Waste

In 2023, the city announced that all boroughs would receive curbside organics services in a phased rollout. The curbside organics program will divert organic waste from traditional landfills toward beneficial reuses at composting and anaerobic digestion facilities and help reduce the city's waste sector emissions<sup>55</sup>. The program will be available citywide in October 2024.

The values provided in Figures 3.1 and 3.2 include funding for projects that are specifically associated with emissions

reductions identified by OMB and agency partners. Sub-components of larger capital projects or agency programs that also support emissions reductions are not reflected.

Figure 3.2 highlights some of the city's key emissions reduction investments in the expense budget and should not be interpreted as a comprehensive view of all emissions reduction funding. Appendix 4 provides more details on budget tracking methodology.

### FY 2024-2028 CAPITAL COMMITMENT PLAN: EMISSIONS REDUCTION HIGHLIGHTS

Emissions Source	Investments in the FY 2024-2028 Capital Commitment Plan	FY 2024-2028 (in Millions)
<b>Buildings &amp; Facilities</b>	Energy efficiency and electrification projects in buildings and facilities that reduce GHG emissions. Includes boiler conversions, lighting upgrades, heating and cooling system upgrades, building envelope insulation (roof repair and facade work), and heat and hot water electrification.	\$5,758.1
<b>Energy</b>	Projects that support the development of renewable energy such as solar, hydro, and offshore wind.	\$247.3
<b>Transportation</b>	Purchasing hybrid or electric vehicles for city use, including buses, vans, trucks, and ferries.	\$291.8
	Infrastructure projects that support emissions reductions from the transportation sector, including bus and bike lane construction and electric vehicle charging infrastructure.	\$423.5
<b>Waste</b>	Projects that reduce emissions from organic material and solid waste.	\$12.5

FIGURE 3.1 | SOURCE: NYC OMB

### FY 2025 EXPENSE BUDGET: EMISSIONS REDUCTION HIGHLIGHTS

Emissions Source	Investments in the FY 2025 Executive Budget - Expense	FY 2025 (in Millions)
<b>Buildings &amp; Facilities</b>	Energy efficiency, electrification, and building management improvement programs at city-owned facilities and assistance programs for private building owners.	\$50.5
<b>Transportation</b>	Purchases of hybrid or electric vehicles for city use and funding for renewable diesel.	\$32.6
	Projects that support the installation, maintenance, and operation of electric vehicle charging infrastructure for city fleet and public use.	\$6.8
<b>Waste</b>	Projects and programs that reduce emissions from waste such as organic material collections.	\$26.4

FIGURE 3.2 | SOURCE: NYC OMB



## RESILIENCY INVESTMENT HIGHLIGHTS

The FY 2025 Executive Budget and FY 2024-2028 Capital Commitment Plan continue the city's efforts to address coastal and inland flooding and extreme heat.

### Coastal Resiliency

The city is undertaking several large-scale coastal flood protection projects, supported by federal resources from FEMA, the Department of Housing and Urban Development, and the U.S. Army Corps of Engineers, as well as city funds<sup>56,57</sup>. Projects in the capital plan address vulnerabilities in Staten Island, the Rockaways, Lower Manhattan, Red Hook, Hunts Point, and other neighborhoods.

## Stormwater Resiliency

The city is making substantial investments in stormwater management infrastructure, including upgrading sewer systems and ensuring wastewater resource recovery facilities maximize capacity to treat stormwater and sewage during storm events<sup>58</sup>. The city is also utilizing natural systems to manage water by building and maintaining green infrastructure, including rain gardens, natural drainage corridors (bluebelts), wetland restoration, cloudburst management projects, and the restoration or "daylighting" of natural waterways<sup>59-63</sup>.

## FY 2024-2028 CAPITAL COMMITMENT PLAN: RESILIENCY HIGHLIGHTS

Resiliency Category	Investments in the FY 2025 Executive Budget - Capital	FY 2024-2028 (in Millions)
Coastal Flooding	Large-scale projects to protect neighborhoods including east and lower Manhattan, Red Hook, Hunts Point, Tottenville, Coney Island Creek, Mott Basin, Old Howard Beach, Staten Island South Shore, and the Rockaways.	\$1,647.4
	Other coastal resiliency projects including the Governors Island Seawall Rehabilitation, Coney Island Boardwalk Reconstruction, Brooklyn Navy Yard Waterfront, and tide gate projects.	\$1,206.9
Inland Flooding	Sewer projects including the Southeast Queens sewer buildout and citywide work to limit combined sewer overflows.	\$3,506.9
	Stormwater protection for city facilities.	\$1,583.3
	Rain gardens, porous pavement, and other green infrastructure to retain stormwater from streets, sidewalks, and other hard surfaces before it can enter the sewer system or cause local flooding.	\$922.6
	Bluebelts built to preserve and enhance natural drainage corridors including streams, ponds, and wetlands, to convey, store, and filter runoff precipitation or stormwater.	\$270.3
	Cloudburst management projects, which use a combination of methods that absorb, store, and transfer stormwater to minimize flooding from sudden, heavy downpours.	\$139.4
	Projects to preserve and enhance the city's wetlands.	\$63.8
	Other inland flood projects.	\$8.8
Heat	Tree canopy preservation and expansion.	\$139.0
	Pools to help New Yorkers stay cool during hot weather.	\$40.5
Planning and Preparedness	The installation of emergency generators and other measures to ensure the continuation of operations during extreme weather.	\$169.2

FIGURE 3.3 | SOURCE: NYC OMB

## Heat Resiliency

The city is increasing outdoor shade and cooling through reforestation and the planting of street and park trees<sup>64</sup>. To further address extreme heat, the city launched NYC CoolRoofs, a workforce development program that coats rooftops with reflective material, and the DOT Cool Corridors study, which aims to develop a toolkit of shade structures, reflective materials, and enhanced green spaces for New York City streets<sup>4,65</sup>. The city is also investing in ensuring pools are accessible to New Yorkers as a way to stay cool during extreme heat.

The values provided in Figures 3.3 and 3.4 include funding for projects that are specifically associated with resiliency identified by OMB and agency partners. Sub-components of larger capital projects or agency programs that also support resiliency are not reflected.

Figure 3.4 highlights some of the city's key resiliency investments in the expense budget but should not be interpreted as a comprehensive view of all resiliency funding. Appendix 4 provides more details on budget tracking methodology.

Funding in the FY 2024-2028 Capital Commitment Plan that supports additional benefits, including access to public green space and healthy natural areas, conservation and beneficial reuse of resources, support for healthy and sustainable lifestyles, and improved local air quality, is outlined in Figure 3.25.

Further, in response to needs identified through the first cycle of the Climate Budgeting process, the administration is advancing numerous new investments and reallocations in the FY 2025 Executive Budget, outlined in Figure 3.5.

## FY 2025 EXPENSE BUDGET: RESILIENCY HIGHLIGHTS

Resiliency Category	Investments in the FY 2025 Executive Budget - Expense	FY 2025 (in Millions)
<b>Inland Flooding</b>	Funds added since Hurricane Ida to enhance the city's resilience to inland flooding by increasing green infrastructure and bluebelt maintenance, undertaking studies to monitor flooding, increasing catch basin cleaning, and more.	\$42.9
<b>Coastal Flooding</b>	Standardizing shoreline construction practices to ensure a unified level of protection across the New York City coastline.	\$1.5
<b>Planning and Preparedness</b>	A program that protects vulnerable New Yorkers during extreme weather events.	\$0.6
<b>Heat</b>	Roof coatings to reduce internal building temperatures.	\$0.2

FIGURE 3.4 | SOURCE: NYC OMB

## NEW CLIMATE INVESTMENTS AND REALLOCATIONS IN THE FY 2025 EXECUTIVE PLAN

Program	Detail	Funding (in Millions)
<b>CAPITAL</b>		<b>FY 2024-2028</b>
<b>Energy Efficiency Retrofit Funding Acceleration</b>	Acceleration of funds for energy efficiency and electrification work in city facilities, including the electrification of public schools.	\$1,057.9
<b>South Brooklyn Marine Terminal Offshore Wind Infrastructure</b>	Additional support for the development of an offshore wind at the South Brooklyn Marine Terminal.	up to \$85*
<b>Flood Protection Enhancements</b>	Upgrades to catch basins and pump stations to alleviate flooding.	\$70.5
<b>Ferry Emissions Reduction Equipment and Infrastructure</b>	Funding to reduce emissions from ferries.	\$15.3
<b>Climate Innovation Hub</b>	Funding to begin work on a Climate Innovation Hub at the Brooklyn Army Terminal.	\$10.0
<b>EXPENSE</b>		<b>FY 2025</b>
<b>Renewable Diesel</b>	Adjustment to the city's fuel budget to enable the purchase of renewable diesel for the city's medium- and heavy-duty vehicles and the Staten Island Ferry.	\$22.6
<b>Flood Protection Enhancements</b>	A smart sensor network to track how water moves through sewer infrastructure, upgrades to catch basins, citywide sewer inspection and cleaning, and software to model New York City's complex hydraulic and hydrologic network.	\$12.1
<b>Department of Buildings Local Law 97 (LL97) Personnel</b>	Additional staff to oversee compliance with LL97 building decarbonization targets.	\$4.0
<b>Property Assessed Clean Energy (PACE) Financing Program</b>	Funding to continue operation of the PACE program, which provides financing for energy efficiency and renewable energy projects for property owners.	\$1.3
<b>Environmental Justice NYC (EJNYC) Plan</b>	Funding to develop an interagency strategy and plan to address equity and environmental justice findings from the EJNYC Report.	\$0.8
<b>Building Electrification Study</b>	Funding to develop a medium- and long-term strategy for city-owned and -operated building electrification through 2050.	\$0.5
<b>Rikers Grid Connection Study</b>	Study to explore next steps for building renewable energy infrastructure and storage at Rikers Island.	<\$0.1

\*amount to be finalized based on contribution from the state

FIGURE 3.5 | SOURCE: NYC OMB

# CLIMATE ALIGNMENT OF CITY CAPITAL INVESTMENTS

## GUIDING QUESTION

## Do investments align with long-term climate needs?

New York City government oversees a \$97.7 billion capital portfolio (FY 2024-2028) that shapes the city's buildings, transportation systems, recreational spaces, and infrastructure. Investments made today will continue to define the city's built environment for decades to come.

While climate investments in the Executive Budget (see previous section) reflect projects and programs intended to reduce GHG emissions and increase resilience to climate hazards, city government also oversees many programs that indirectly impact these goals. For example, funding for affordable housing, maintaining infrastructure in good repair, and investments along the waterfront may indirectly support—or run counter to—the city's efforts to achieve net-zero emissions and bolster resiliency.

OMB conducted a Climate Alignment Assessment of the FY 2024-2028 Capital Commitment Plan to understand how the city's overall anticipated capital spending aligns with climate commitments. In some cases, the city may need to allocate resources toward projects that are not aligned with climate goals to achieve other objectives, such as public safety or continuity of operations. This may include projects aligned with one climate priority but not aligned with another (each project is rated separately for each climate priority). The assessment provides a new perspective on the city's spending and a framework to enable the city to seek out and prioritize climate-friendly alternatives where feasible.

## Developing the Climate Alignment Assessment: Learning from Paris

Paris, one of the participating cities in C40's Climate Budgeting Working Group, developed a Budget Climate Assessment that served as a springboard for New York City's approach to assessing the climate alignment of its capital plan. Paris's methodology was developed by several French municipalities with assistance from the Institute for Climate Economics to rate municipal government budgets<sup>66</sup>. Its objective is to categorize expenditures according to their GHG emissions and climate adaptation impacts.

Paris has distinct methodologies for rating climate mitigation and adaptation costs. The city plans to incorporate further methodologies to assess impacts related to biodiversity, air quality, and social measures.



### DETERMINING A CAPITAL PROJECT'S CLIMATE ALIGNMENT

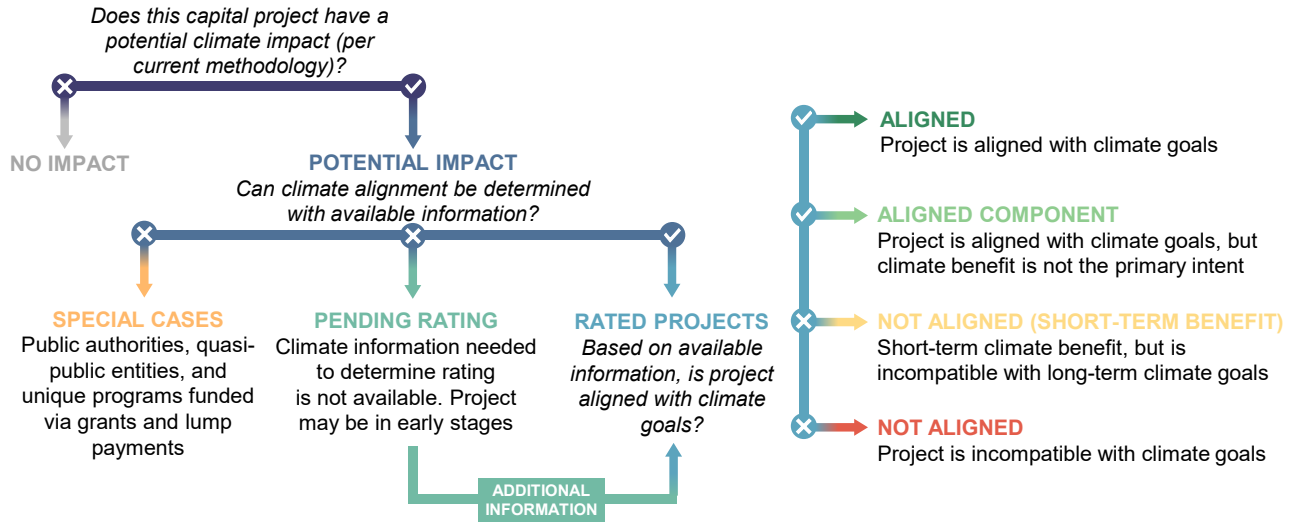


FIGURE 3.6 | SOURCE: NYC OMB

### METHODOLOGY FOR ASSESSING CLIMATE ALIGNMENT

Each project with over \$50,000 in the FY 2024-2028 Capital Commitment Plan—over 9,000 individual projects—was analyzed. Each project was assigned an asset type, which helps to identify trends across the capital plan and pinpoint which project types offer the greatest challenges and opportunities for improvement.

Capital projects were evaluated using the methodology described in Appendix 5. Some projects were determined to have no climate impact per the current methodology. In other cases, projects that have a potential impact could not be rated with the available information because specific climate details are not yet available.

Projects were evaluated to understand their impacts across three climate priorities: achieving net-zero GHG emissions, improving resiliency to flooding, and improving resiliency to extreme heat. In some instances, the same project may be rated differently under each climate priority. For example, the purchase of a diesel-powered emergency generator is considered to be not aligned with achieving net-zero emissions, but aligned with heat resiliency, as emergency generators are critical to maintaining continuity of operations during blackouts.

The following sections detail the results of the alignment assessment for each climate priority.

### EXAMPLE PROJECT ALIGNMENT WITH CLIMATE GOALS

Example Project	Net-Zero Emissions	Flood Resiliency	Extreme Heat Resiliency
<b>Heat Electrification in City Facility</b>	<b>Rating: Aligned</b> The project's main intent is switching to all-electric heating to reduce greenhouse gas emissions	<b>Rating: Aligned Component</b> A component of the project elevates critical infrastructure above the future flood level	<b>No Impact</b> If the facility already has cooling, the project does not impact extreme heat resiliency
<b>Purchase of Emergency Generator</b>	<b>Rating: Not Aligned</b> The generator will burn diesel for fuel	<b>Pending Rating</b> With current information, unable to determine whether equipment will be elevated above the future flood level	<b>Rating: Aligned</b> The project provides continuity of operations during extreme weather events, including extreme heat
<b>City Contribution to the Metropolitan Transportation Authority (MTA) Capital Plan</b>	<b>Rating: Aligned Component</b> All projects within the MTA capital plan contribute to mass transit services citywide	<b>Special Case</b> Further analysis is needed to determine how flood resiliency is considered in the MTA capital plan	<b>Special Case</b> Further analysis is needed to determine how extreme heat resiliency is considered in the MTA capital plan

FIGURE 3.7 | SOURCE: NYC OMB

**FY 2024-2028 CAPITAL COMMITMENT PLAN  
ALIGNMENT WITH NET-ZERO EMISSIONS**

Projects are assessed for their alignment with the city’s commitment to achieve net-zero emissions by 2050 if they impact emissions from buildings, energy, transportation, or waste as outlined in the city’s Citywide GHG Inventory. The analysis does not yet consider embodied or consumption-based emissions, which occur outside of New York City as a result of mining, harvesting, processing, manufacturing, transportation, and installation of goods, services, and materials consumed within New York City.

Of the \$97.7 billion in the FY 2024-2028 Capital Commitment Plan, the analysis determined that \$65.7 billion (67 percent) has the potential to impact the goal of achieving net-zero emissions, while \$31.9 billion (33 percent) does not relate to or impact emissions per the current methodology. Examples of projects without impact include information technology upgrades and maintenance to sewers and water mains.

The \$65.7 billion identified as having a potential impact was further analyzed and split into the following categories: \$15.5 billion (24 percent) has been rated based on its alignment with net-zero emissions, \$27.0 billion (41 percent) is pending a rating, and \$23.3 billion (36 percent) covers special cases.

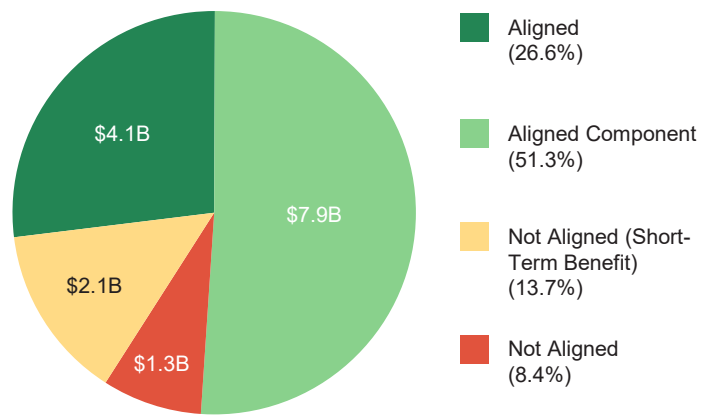
- \$4.1 billion supports projects that are aligned with the city’s net-zero goal. Examples include investments in energy efficiency and electrification in city buildings, renewable energy projects, and electric vehicles and charger purchases.
- \$7.9 billion supports projects with an aligned component that contribute to the city’s net-zero goal. Emissions reduction may not be their primary intent, or they may include unrelated scope. Examples include state-of-good repair work in city buildings that also improves energy efficiency, investments in mass transit, and bike lane construction.
- \$2.1 billion supports projects not aligned with the city’s net-zero goal, but that offer a short-term benefit that reduces GHG emissions. Examples include fuel-switching from oil- to gas-powered equipment and purchasing hybrid vehicles.
- \$1.3 billion supports projects not aligned with the city’s net-zero goal. Examples include gas-powered equipment; diesel-powered, heavy-duty vehicles; and emergency backup generators.

**CLIMATE ALIGNMENT ASSESSMENT  
CRITERIA: NET-ZERO EMISSIONS**

Assessment Rating	Project Criteria
Aligned	The project’s primary intent is to reduce GHG emissions, and it is compatible with the city’s net-zero goal. Scope that reduces emissions constitutes most or all of the project cost.
Aligned Component	The project reduces GHG emissions, and it is compatible with the city’s net-zero goal, but its primary intent is not emissions reduction. Reducing emissions may be a co-benefit of the project, or the project may be a mix of emissions-reducing scope and unrelated scope.
Not Aligned (Short-Term Benefit)	The project offers short-term GHG emissions reduction benefits but is incompatible with the city’s net-zero goal.
Not Aligned	The project is incompatible with the city’s net-zero goal.

FIGURE 3.8 | SOURCE: NYC OMB

**ALIGNMENT OF RATED PROJECTS:  
NET-ZERO EMISSIONS**



**RATED PROJECTS WITH IMPACT ON NET-ZERO EMISSIONS  
\$15.5 billion**

More than \$12 billion in the FY 2024-2028 Capital Commitment Plan is aligned with the city’s goal of achieving net-zero emissions.

FIGURE 3.9 | SOURCE: NYC OMB

Projects are also analyzed by asset type to provide additional insight into the types of projects that tend to be aligned with net-zero emissions and help identify specific challenges and opportunities for further decarbonization. Projects most consistently aligned with emissions reduction goals are those where net-zero compatible technology is readily available: renewable energy, energy efficiency in buildings, and electric vehicles. Projects that are not aligned tend to include those for which compatible technology is not yet widely available, such as emergency power generation and heavy-duty or specialized vehicles. The analysis also found many projects not aligned with net-zero emissions involve the installation of fossil-fuel-powered heating and heating, ventilation, and air conditioning (HVAC) systems in buildings and facilities. These projects highlight an important opportunity for the city to invest in cost-effective, net-zero-aligned alternatives where feasible.

*Buildings and Facilities*

Among building and facility projects that were rated, 74 percent of funding is aligned with net-zero emissions. These projects include heat and hot water electrification in the city’s buildings, facilities, and schools, as well as energy efficiency and electrification-readiness projects like façade and insulation improvements. The remaining 26 percent of funding is earmarked for projects that are not aligned

with net-zero emissions. Eighteen percent of funding will provide near-term emissions reductions by installing higher efficiency alternatives, however, these projects lock in use of fossil-fuel powered equipment in the long-term, making them incompatible with net-zero emissions goals. As electrification technology advances and becomes more cost effective, the city will continue to prioritize net-zero-aligned alternatives where feasible.

*Energy and Utilities*

The city funds a variety of energy- and utility-related projects, from installing solar panels on schools to maintaining a network of emergency backup power to keep critical facilities running. Among rated energy- and utility-related projects, 65 percent of funding is aligned with net-zero emissions. This includes projects such as solar panels, hydroelectric energy generation, offshore wind infrastructure, and battery storage. Projects not compatible with net-zero emissions are primarily emergency backup generator purchases. This critical infrastructure typically relies on diesel, gasoline, or a biofuel blend and represents an enduring challenge for decarbonization because of its emergency applications. Emergency backup generation represents another opportunity for the city to determine where net-zero-compatible technology is appropriate and can be incorporated.

**BUILDINGS & FACILITIES:  
ALIGNMENT WITH NET-ZERO EMISSIONS**

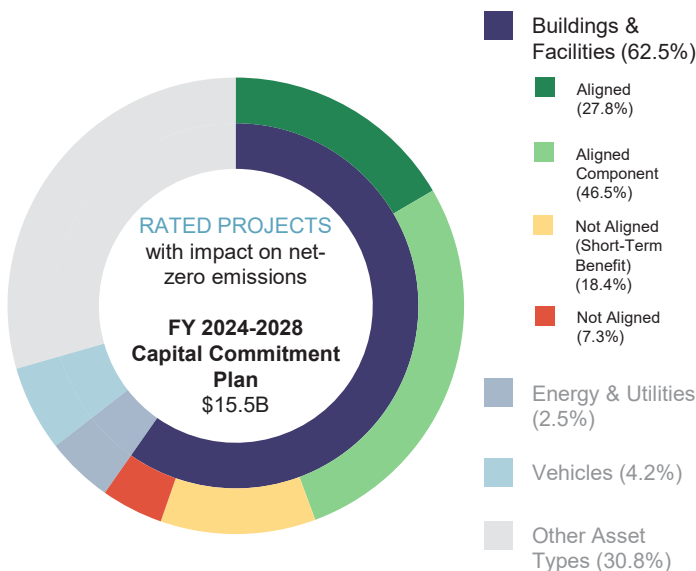


FIGURE 3.10 | SOURCE: NYC OMB

**ENERGY AND UTILITIES:  
ALIGNMENT WITH NET-ZERO EMISSIONS**

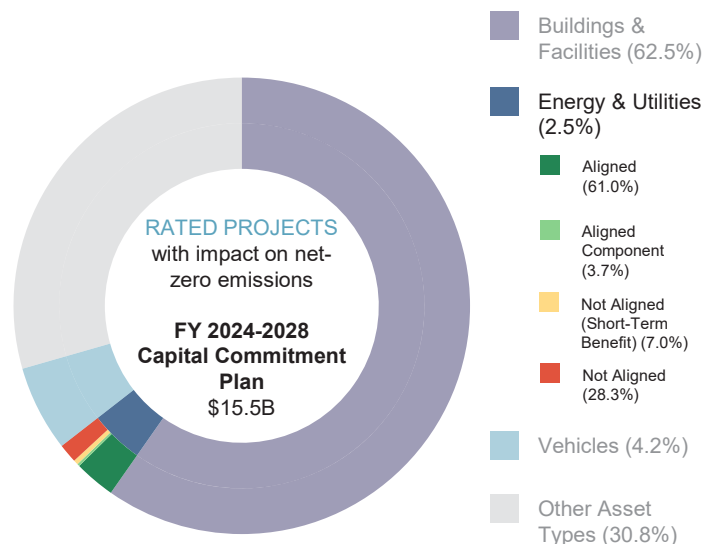


FIGURE 3.11 | SOURCE: NYC OMB

## Vehicles

The city purchases medium- and heavy-duty vehicles, as well as specialized transportation such as ferries, aircraft, and off-road vehicles, via the capital budget. Many of these vehicles are powered by fossil fuels and there are few hybrid or electric alternatives currently available on the market. Among rated projects, 55 percent is for internal combustion engine vehicles, while 3 percent is for projects with short-term emissions benefits such as hybrid alternatives. An additional 42 percent of rated funding is for all-electric vehicles, which align with net-zero emissions. It is important to note that much of the city's light-duty fleet is purchased through its expense budget, rather than its capital plan, and therefore is not represented in the analyzed portion of funding. Electric models of light-duty vehicles are currently much more readily available than heavy-duty or specialized vehicles. However, as technology continues to develop and applications of specialized electric vehicles are proven, the city has the opportunity to further its leadership in electric vehicle adoption. In the interim, the city has committed to transitioning the entire city fleet from fossil diesel, which will allow for fewer emissions from medium- and heavy-duty vehicles.

### Special Cases and Projects Pending Rating

Some projects in the capital plan were assessed but have not yet been assigned a rating. These projects can be split into two categories:

**Special cases** cover funding provided by the city to some public authorities, quasi-public entities, and other unique programs that are funded through grants, loans, and lump payments. For example, the Department of Housing Preservation and Development (HPD) provides loans and grants to housing developers, who are required to follow sustainability design guidelines that vary by building type<sup>67</sup>. Many, but not all, of the resulting projects will be net-zero compatible, and outcomes will depend on each developer's unique set of needs. As a result, rating these projects will require a more bespoke methodology that can be implemented in later versions of the Climate Alignment Assessment. It is especially important to incorporate these projects in the analysis because HPD's portfolio is a significant contributor to citywide emissions. The impact of HPD's portfolio-wide sustainability design guidelines is further analyzed as part of the citywide emissions forecast in the following section.

## VEHICLES: ALIGNMENT WITH NET-ZERO EMISSIONS

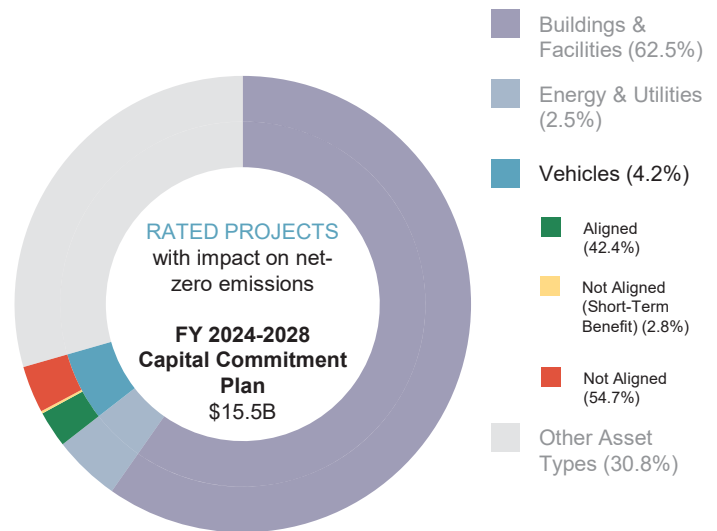


FIGURE 3.12 | SOURCE: NYC OMB

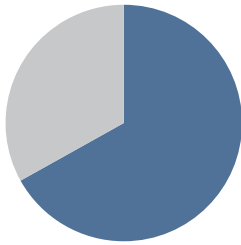
Although the current methodology was able to capture some payments to the School Construction Authority (SCA), such as the Leading the Charge initiative to electrify schools, other parts of SCA's budget support broader, more general work at schools citywide and are also classified as special cases. Other examples include loans provided through the NYCEDC<sup>68</sup>. OMB will continue to monitor these special cases and, where appropriate, tailor approaches to capture the impacts of these projects in future iterations of the Climate Alignment Assessment.

**Projects are pending rating** if the specific climate information needed to determine their alignment with net-zero emissions is not yet available. Many of these projects are planned for future years, meaning design decisions have not yet been made that will influence whether a project will be net-zero compatible. For example, an agency may plan to replace an outdated piece of equipment in its facility but not yet have detailed plans for the replacement model that will be purchased—including whether the replacement will run on fossil fuels or be all electric. In this case, OMB would not have sufficient information to determine if the project aligns with net-zero emissions until the project progresses. OMB is working closely with agencies as they scope projects to collect these types of details and ensure that alignment with net-zero emissions is considered where appropriate.



## DETERMINING RATED PROJECTS: NET-ZERO EMISSIONS

Out of \$97.7 billion in the FY 2024-2028 Capital Commitment Plan, the Climate Alignment Assessment determines that 67.3% may impact the goal of achieving a net-zero emissions future.



### POTENTIAL IMPACT

67.3% | \$65.7B

These projects have the potential to impact the city's goal of achieving net-zero emissions from buildings, energy, transportation, and waste by 2050.

### NO IMPACT

32.7% | \$31.9B

Per current methodology, these projects do not relate to or impact the city's goal of achieving net-zero emissions from buildings, energy, transportation, and waste by 2050.

Of the \$65.7 billion with potential impact, funding is split across the following categories.

### RATED PROJECTS

23.7% | \$15.5B

Projects are rated for alignment with the city's net-zero emissions goal (see Figure 3.9).

### PENDING RATING

41.3% | \$27.0B

Climate information is not immediately available when the project is still in the early stages of design or when specific details needed to apply the Climate Alignment Assessment rating have not historically been collected by OMB. These details will be collected through the Climate Budgeting process.

#### Buildings & Facilities

32.4%

#### Vehicles

2.1%

#### Other

6.8%

### SPECIAL CASES

35.6% | \$23.3B

The city funds some public authorities, quasi-public entities, and unique programs through grants, loans, and lump payments. Examples include HPD's loan, preservation, and financial assistance programs, some transfers to SCA, and funding under NYCEDC and others.

#### SCA

19.3%

#### HPD

15.6%

#### Other

0.7%

FIGURE 3.13 | SOURCE: NYC OMB

**FY 2024-2028 CAPITAL COMMITMENT PLAN  
ALIGNMENT WITH CLIMATE RESILIENCY**

**Flood Resiliency**

Projects are assessed for flood resiliency implications if they positively or negatively impact New York City's ability to withstand coastal or inland flooding from storm surges, high tides, sea level rise, or extreme precipitation events. This is currently determined based on whether projects are aligned with flood resiliency standards and priorities published in the city's resiliency plans, including the CRDG and PlaNYC.

Projects that affect the continuity of essential services and operations during weather-related power outages, floods, storms, or other natural disasters may also be considered to have a resiliency impact.

Of the \$97.7 billion in the FY 2024-2028 Capital Commitment Plan, the analysis determined that \$81.8 billion (84 percent) has the potential to impact flood resiliency, while \$15.8 billion (16 percent) does not relate to or impact flood resiliency, per the current methodology. Examples of projects without impact include information technology upgrades and vehicle purchases.

The \$81.8 billion identified as having a potential impact was further analyzed and split into the following categories: \$18.6 billion (23 percent) has been rated based on its alignment with flood resiliency goals, \$34.2 billion (42 percent) is pending a rating, and \$29.0 billion (36 percent) covers special cases (see "Special Cases and Projects Pending Rating" on page 43).

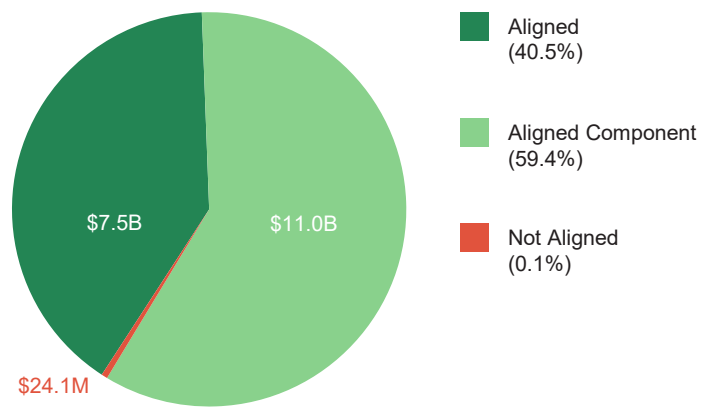
- \$7.5 billion of funding in the FY 2024-2028 Capital Commitment Plan supports projects aligned with the city's flood resiliency goals. These projects further resiliency to inland or coastal flooding, adequately account for future risk, and support the city's resiliency goals as stated in PlaNYC or other resiliency plans. Examples include green infrastructure, cloudburst management, and large-scale coastal resiliency projects.
- \$11.9 billion supports projects with an aligned component that contribute to the city's flood resiliency goals, though flood resiliency may not be their primary intents, or they may include unrelated scope. Examples include the expansion of green space and facility renovation that has been designed to CRDG standards.

**CLIMATE ALIGNMENT ASSESSMENT  
CRITERIA: FLOOD RESILIENCY**

Assessment Rating	Project Criteria
<b>Aligned</b>	The project's primary intent is to increase resiliency to flooding. The project type furthers one of the resiliency goals in PlaNYC or other New York City resiliency plans. If applicable, it will be designed to withstand flood risk through the end of its useful life by following the CRDG or other equivalent resiliency standards. Resiliency-related scope constitutes most or all of the project cost.
<b>Aligned Component</b>	The project provides flood resiliency benefits, but the primary intent is not flood resiliency. The project type furthers one of the resiliency goals in PlaNYC or other New York City resiliency plans. If applicable, it will be designed to withstand flood risk through the end of its useful life by following the CRDG or other equivalent resiliency standards. The project cost could be a mix of resiliency scope and unrelated scope.
<b>Not Aligned (Short-Term Benefit)</b>	The project provides flood resiliency benefits but does not consider flood risk through the end of its useful life by using CRDG or other equivalent resiliency standards.
<b>Not Aligned</b>	The project increases vulnerability to flooding.

FIGURE 3.14 | SOURCE: NYC OMB

**ALIGNMENT OF RATED PROJECTS:  
FLOOD RESILIENCY**



**RATED PROJECTS WITH IMPACT ON FLOOD RESILIENCY  
\$18.6 billion**

More than \$18.5 billion in the FY 2024-2028 Capital Commitment Plan is aligned with flood resiliency goals.

FIGURE 3.15 | SOURCE: NYC OMB

- In the current assessment, no projects are rated as not aligned with the city's flood resiliency goals that offer a short-term benefit that furthers resiliency to flooding.
- \$24.1 million supports projects that are not aligned with the city's flood resiliency goals. These projects increase the city's vulnerability to the impacts of inland or coastal flooding. Examples include constructing a new facility in the floodplain without incorporating resiliency design standards.

Projects are also analyzed by asset type to provide additional insight into the types of projects that tend to be aligned with flood resiliency goals and standards and to help identify specific challenges and opportunities for incorporating resilient design. The projects most consistently aligned with flood resiliency include major public works like sewers, waterfront protection projects, parks, natural spaces, and green infrastructure. Very few projects were identified and

rated as not aligned with flood resiliency (see *Projects Not Aligned with Flood Resiliency* below). By expanding current evaluation methods and continuing to track how capital projects apply the city's flood resiliency plans and standards, future evolutions of the Climate Alignment Assessment will further identify where the city can do more to protect assets from flood risk.

### *Buildings and Facilities*

The city operates thousands of municipal buildings and facilities, including hospitals, emergency services, and wastewater resource recovery facilities, many of which are in current or future floodplains or are vulnerable to flooding during extreme rain events. Of the buildings-related projects that could be rated, nearly all were found to be using the CRDG or an equivalent design standard. As agencies use the CRDG more consistently to design facilities to withstand future flood levels, there will be more insight into which facilities are already aligned with flood resiliency goals and which still need to be protected.

## Projects Not Aligned with Flood Resiliency

Assessing a project's alignment with the city's flood resiliency goals relies on determining if the asset has been designed to withstand flood risk through the end of its useful life. The CRDG provide a standard for designing buildings and facilities based on future climate projections. Through Climate Budgeting, OMB is gathering information on capital project planning to further understand how these guidelines are being applied to assets across the city, and where alternative flood resiliency standards may be used for different types of assets.

Currently, few projects are rated as not aligned with flood resiliency. In the future, some projects may be rated as not aligned or considered to have only short-term flood resiliency benefits if they do not follow the CRDG or a similar standard to ensure flood-resilient design. The Climate Alignment Assessment will continue to evolve over time to reflect new methods and standards, such as the minimum flood resilience standards for shoreline assets outlined in PlaNYC, in to better capture potential missed opportunities to strengthen climate resiliency.

### BUILDINGS AND FACILITIES: ALIGNMENT WITH FLOOD RESILIENCY

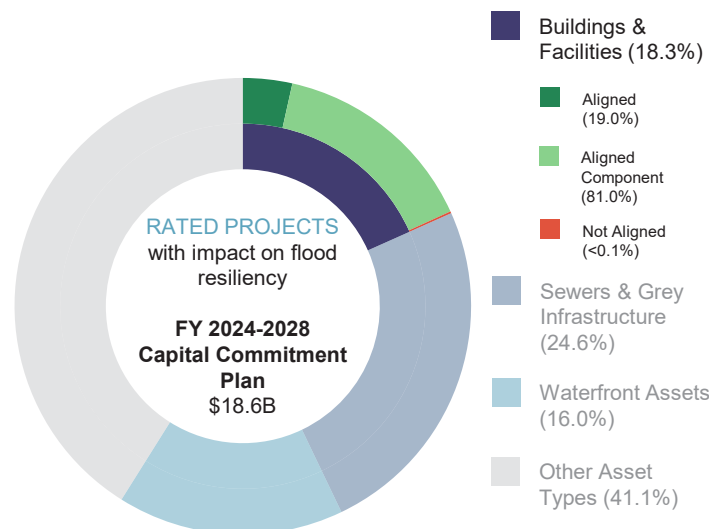


FIGURE 3.16 | SOURCE: NYC OMB

*Sewers and Grey Infrastructure*

Sewers and grey infrastructure are the backbone of the city’s stormwater management system and are fundamental to citywide resilience to inland flooding. Sixty-five percent of rated funding for sewers and grey infrastructure is aimed at projects that will directly reduce flood risk, including sewer buildout projects in neighborhoods that experience chronic stormwater flooding. Another 35 percent is for projects that indirectly contribute to flood resiliency, including citywide construction and maintenance of sewers.

*Waterfront Assets*

While assets situated along the city’s more than 500 miles of coastline are uniquely vulnerable to the impacts of sea level rise and coastal flooding, they also provide opportunities to incorporate resilient design and reduce flood risk along the city’s waterfronts. Sixty-six percent of rated waterfront funding is for projects being undertaken specifically to mitigate coastal flooding risk, including the East Side Coastal Resiliency project, projects led by the U.S. Army Corps of Engineers, and coastal infrastructure such as raised shorelines, seawalls, and tide gates<sup>69</sup>.

**SEWERS AND GREY INFRASTRUCTURE: ALIGNMENT WITH FLOOD RESILIENCY**

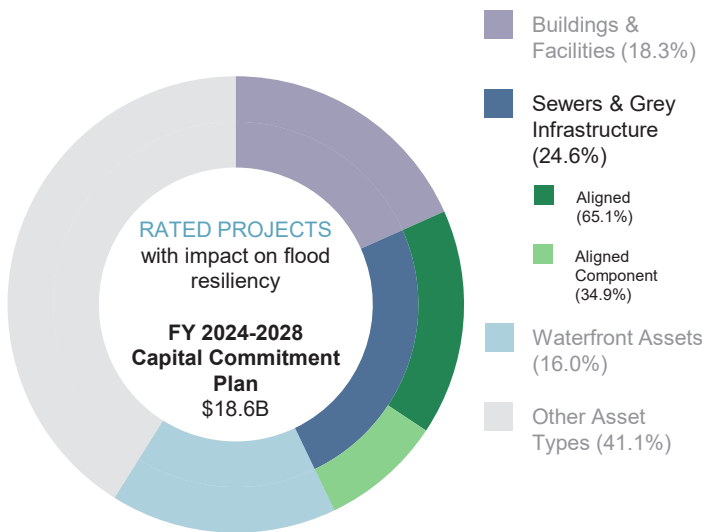


FIGURE 3.17 | SOURCE: NYC OMB

**WATERFRONT ASSETS: ALIGNMENT WITH FLOOD RESILIENCY**

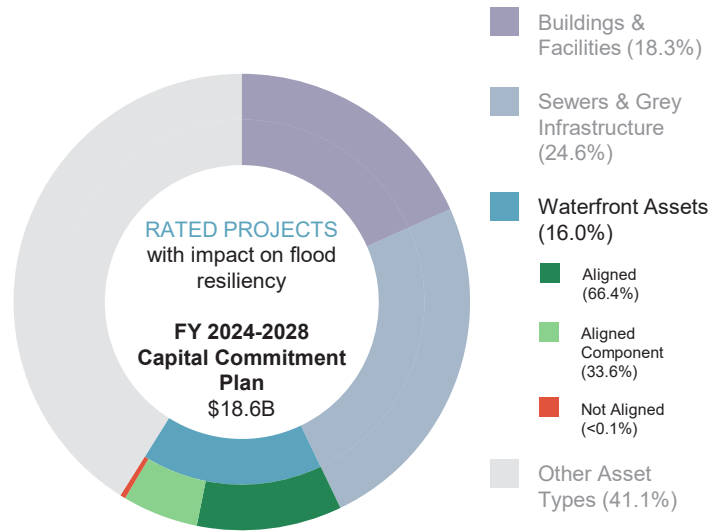
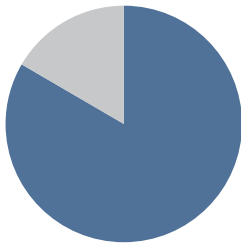


FIGURE 3.18 | SOURCE: NYC OMB



## DETERMINING RATED PROJECTS: FLOOD RESILIENCY

Out of \$97.7 billion in the FY 2024-2028 Capital Commitment Plan, the Climate Alignment Assessment determines that 83.8% may impact the city's resiliency to flooding.



### POTENTIAL IMPACT

83.8% | \$81.8B

These projects have the potential to impact the city's resiliency to flooding.

### NO IMPACT

16.2% | \$15.8B

Per current methodology, these projects do not relate to or impact the city's resiliency to flooding.

Of the \$81.8 billion with potential impact, funding is split across the following categories.

### RATED PROJECTS

22.8% | \$18.6B

Projects are rated for alignment with long-term flood resiliency goals (see Figure 3.15).

### PENDING RATING

42.0% | \$34.2B

Climate information is not immediately available when the project is still in the early stages of design or when specific details needed to apply the Climate Alignment Assessment rating have not historically been collected by OMB. These details will be collected through the Climate Budgeting process.

#### Buildings & Facilities

27.4%

#### Street & Road Projects

8.9%

#### Other

5.8%

### SPECIAL CASES

35.7% | \$29.0B

The city funds some public authorities, quasi-public entities, and unique programs through grants, loans, and lump payments. Examples include HPD's loan, preservation, and financial assistance programs, some transfers to SCA, and funding under the NYCEDC and others.

#### SCA

20.2%

#### HPD

12.5%

#### Other

3.0%

FIGURE 3.19 | SOURCE: NYC OMB

**Extreme Heat Resiliency**

Projects are assessed for heat resiliency implications if they positively or negatively impact New York City's ability to withstand increased or extreme heat events, including impacts to indoor and outdoor heat tolerance. Projects that affect the continuity of essential services and operations during weather-related power outages, heatwaves, or other natural disasters may also be considered to have a resiliency impact. This is currently determined based on whether projects are aligned with extreme heat resiliency standards and priorities published in the city's resiliency plans, including the CRDG and PlaNYC.

Of the \$97.7 billion in the FY 2024-2028 Capital Commitment Plan, the analysis determined that \$68.0 billion (70 percent) has the potential to impact the city's resiliency to extreme heat, while \$29.6 billion (30 percent) does not relate to or impact heat resiliency, per the current methodology. Examples of projects without impact include vehicle purchases and upgrades to sewers and water mains.

The \$68.0 billion identified as having a potential impact was further analyzed and split into the following categories: \$9.4 billion (14 percent) has been rated based on its alignment with heat resiliency goals, \$29.7 billion (44 percent) is pending a rating, and \$28.9 billion (43 percent) covers special cases (see "Special Cases and Projects Pending Rating" on page 43).

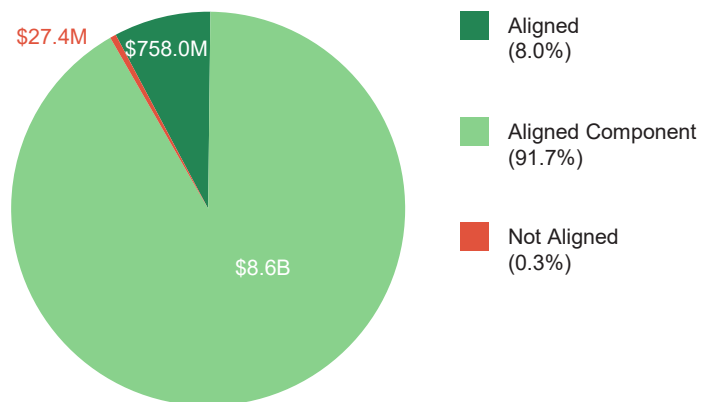
- \$758.0 million in the FY 2024-2028 Capital Commitment Plan supports projects aligned with the city's extreme heat resiliency goals. They further resiliency to extreme heat, adequately account for future risk, and support the city's resiliency goals as stated in PlaNYC or other resiliency plans. Examples include installation of air conditioning, improvements to public pools, and expansion of tree canopy.
- \$8.6 billion supports projects with an aligned component that contribute to the city's extreme heat resiliency goals, though heat resiliency may not be their primary intent, or they may include unrelated scope. Examples include the preservation of green space and facility renovations that include improvements to cooling systems.
- \$27.4 million supports projects not aligned with the city's extreme heat resiliency goals. They increase the city's vulnerability to the impacts of extreme heat. Examples include the removal of cooling systems or green space.

**CLIMATE ALIGNMENT ASSESSMENT CRITERIA: EXTREME HEAT RESILIENCY**

Assessment Rating	Project Criteria
<b>Aligned</b>	The project's primary intent is to increase resiliency to extreme heat. The project type furthers one of the resiliency goals in PlaNYC or other New York City resiliency plans. If applicable, it will be designed to withstand heat risk through the end of its useful life by following the CRDG or other equivalent resiliency standards. Resiliency-related scope constitutes most or all of the project cost.
<b>Aligned Component</b>	The project provides extreme heat resiliency benefits, but the primary intent is not heat resiliency. The project type furthers one of the resiliency goals in PlaNYC or other New York City resiliency plans. If applicable, it will be designed to withstand heat risk through the end of its useful life by following the CRDG or other equivalent resiliency standards. The project cost could be a mix of resiliency scope and unrelated scope.
<b>Not Aligned (Short-Term Benefit)</b>	The project provides extreme heat resiliency benefits but does not consider heat risk through the end of its useful life by using the CRDG or other equivalent resiliency standards.
<b>Not Aligned</b>	The project increases vulnerability to extreme heat.

FIGURE 3.20 | SOURCE: NYC OMB

**ALIGNMENT OF RATED PROJECTS: EXTREME HEAT RESILIENCY**



**RATED PROJECTS WITH IMPACT ON HEAT RESILIENCY \$9.4 billion**

More than \$9.3 billion in the FY 2024-2028 Capital Commitment Plan is aligned with extreme heat resiliency goals.

FIGURE 3.21 | SOURCE: NYC OMB

Projects are also analyzed by asset type to provide additional insight into the types of projects that tend to be aligned with extreme heat resiliency goals and standards and to help identify specific challenges and opportunities for incorporating resilient design. Projects aligned with heat resiliency are concentrated in buildings and recreational spaces, including public pools and green spaces. These projects, which include strategies to reduce the urban heat island effect, design heat-resilient facilities, and ensure occupant thermal safety, will be further explored to gather best practices for ensuring the city’s capital projects adequately protect New Yorkers from extreme heat.

*Buildings and Facilities*

Access to air conditioning in buildings is an important strategy for mitigating indoor heat risk. To comply with the CRDG heat resilient facility standards, municipal buildings must include adequate cooling and HVAC systems.

Almost all rated funding for building and facility work includes a cooling component such as the installation or replacement of air conditioning systems. While only a small proportion of this funding is directed to projects that explicitly address extreme heat, much more funding supports projects that include heat mitigation components, such as building renovations that include air conditioning upgrades.

*Green and Natural Space*

Increasing the city’s tree canopy cover and green spaces helps reduce the impacts of the outdoor urban heat island effect. PlaNYC identifies this as a key strategy to bolster the city’s resilience to extreme heat. Sixteen percent of rated funding is for projects that reflect PlaNYC heat resiliency goals, including tree plantings and reforestation efforts. Another 83 percent of funding has components that, as a whole, help to protect against extreme heat, including parks, community gardens, and wetlands work.

**BUILDINGS AND FACILITIES:  
ALIGNMENT WITH HEAT RESILIENCY**

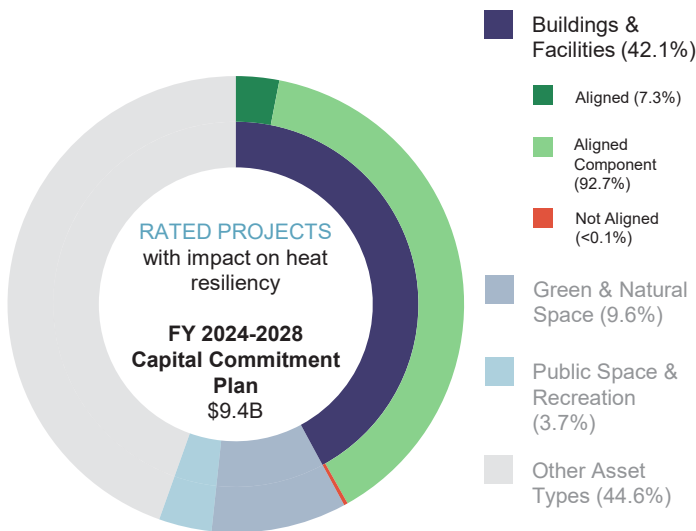


FIGURE 3.22 | SOURCE: NYC OMB

**GREEN AND NATURAL SPACE:  
ALIGNMENT WITH HEAT RESILIENCY**

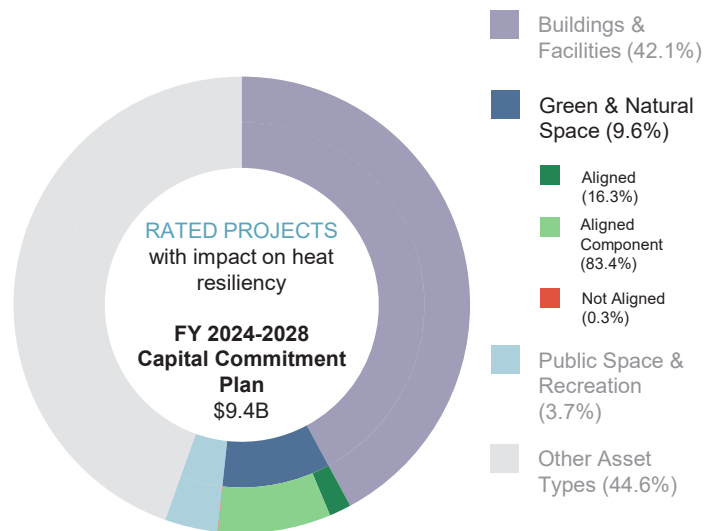


FIGURE 3.23 | SOURCE: NYC OMB

### PUBLIC SPACE AND RECREATION: ALIGNMENT WITH HEAT RESILIENCY

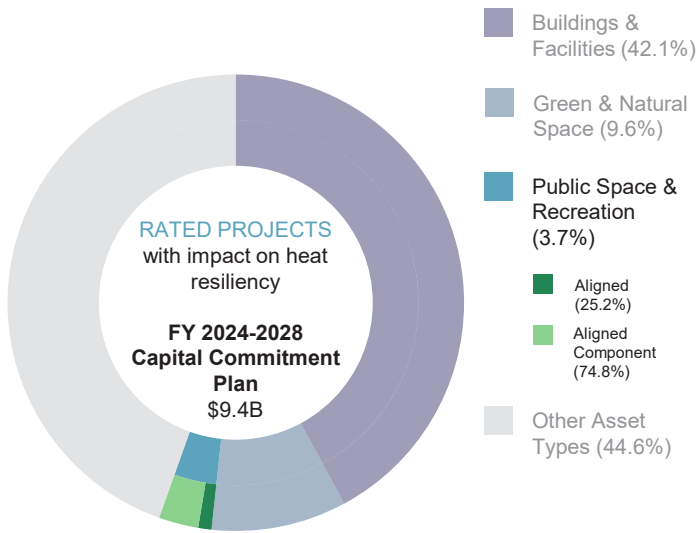


FIGURE 3.24 | SOURCE: NYC OMB

#### Public Space and Recreation

The city's public and recreation spaces serve as a respite for New Yorkers during the summer. Twenty-five percent of rated funding is for projects in public and recreational spaces intended to alleviate the impacts of extreme heat. This includes pools, which PlaNYC identifies as a key strategy to mitigate the impacts of extreme heat. Another 75 percent of funding for public and recreation spaces improve heat resiliency even if that is not the primary intent of these projects, including open spaces, fields, plazas, and other public spaces with plantings that collectively help reduce the urban heat island effect.

#### ADDITIONAL BENEFITS: AIR QUALITY, CIRCULAR ECONOMY, ECOLOGY, AND SUSTAINABLE LIVING

The FY 2024-2028 Capital Commitment Plan supports programs with additional benefits, including improving air quality, promoting a circular economy, furthering ecological health, and supporting sustainable lifestyles. OMB reviewed each capital project to determine how it contributes to these benefits. Tracking spending in these areas provides a more holistic view of the environmental benefits associated with the city's capital projects and establishes a foundation for future, deeper analysis of environmental justice impacts.

#### Air Quality

Projects improve local air quality by reducing concentrations of particulate matter (PM), nitrogen dioxide, nitric oxide, sulfur dioxide, and ground-level ozone.

#### Circular Economy

Projects support the conservation of resources, beneficial reuse, recycling efforts, or reduction of waste from the city's waste stream.

#### Ecology

Projects support green spaces in the public realm (parks, plazas, community gardens, playgrounds) and access to these areas; natural areas (wetland restoration, bluebelts, conservation, daylighting, and soil maintenance); and the health and ecological functioning of New York City's ecosystems, waterways, and wildlife habitats.

#### Sustainable Living

Projects support a more sustainable lifestyle for New Yorkers by encouraging renewable energy production, electric or alternative forms of transportation, maintaining public pedestrian spaces, or investing in urban agricultural efforts.

### CLIMATE ALIGNMENT ASSESSMENT: ADDITIONAL BENEFITS

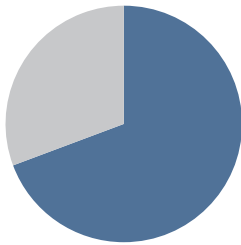
Benefit	FY 2024-2028 (in Millions)	Examples
Air Quality	\$9,750.8	Electrification, trees
Circular Economy	\$864.2	Organics collection, gas-to-grid infrastructure
Ecology	\$18,279.6	Parks, sewers
Sustainable Living	\$5,105.2	Bus and bike lanes

FIGURE 3.25 | SOURCE: NYC OMB



## DETERMINING RATED PROJECTS: HEAT RESILIENCY

Out of \$97.7 billion in the FY 2024-2028 Capital Commitment Plan, the Climate Alignment Assessment determines that 69.6% may impact the city's resiliency to extreme heat.



### POTENTIAL IMPACT

69.6% | \$68.0B

These projects have the potential to impact the city's resiliency to extreme heat.

### NO IMPACT

30.4% | \$29.6B

Per current methodology, these projects do not relate to or impact the city's resiliency to extreme heat.

Of the \$68.0 billion with potential impact, funding is split across the following categories.

### RATED PROJECTS

13.9% | \$9.4B

Projects are rated for alignment with long-term heat resiliency goals (see Figure 3.21).

### PENDING RATING

43.8% | \$29.7B

Climate information is not immediately available when the project is still in the early stages of design or when specific details needed to apply the Climate Alignment Assessment rating have not historically been collected by OMB. These details will be collected through the Climate Budgeting process.

#### Buildings & Facilities

32.1%

#### Street & Road Projects

5.1%

#### Other

6.7%

### SPECIAL CASES

42.8% | \$28.9B

The city funds some public authorities, quasi-public entities, and unique programs through grants, loans, and lump payments. Examples of projects in this category include HPD's loan, preservation, and financial assistance programs, some transfers to SCA, and funding for loans and third-party transfers under NYCEDC and others.

#### SCA

24.3%

#### HPD

15.0%

#### Other

3.5%

FIGURE 3.26 | SOURCE: NYC OMB

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# NEW YORK CITY'S ANTICIPATED PROGRESS

## GUIDING QUESTION

**What is the collective impact of planned climate actions, and where is further action needed?**

In recent years, the city, state, and federal governments have made significant commitments to act on climate and environmental justice. It is important for the city to understand the potential impact of these commitments toward its net-zero emissions, resiliency, and environmental justice goals, and assess any remaining gaps. To do this, OMB has

forecasted citywide emissions and air quality impacts from planned policies in addition to expected fuel and technology pricing. OMB also forecasted emissions reductions from assets owned and operated by city government. Data and metrics are still being developed to assess progress on resiliency and environmental justice (see Section 4).

## FORECAST OF CITYWIDE EMISSIONS

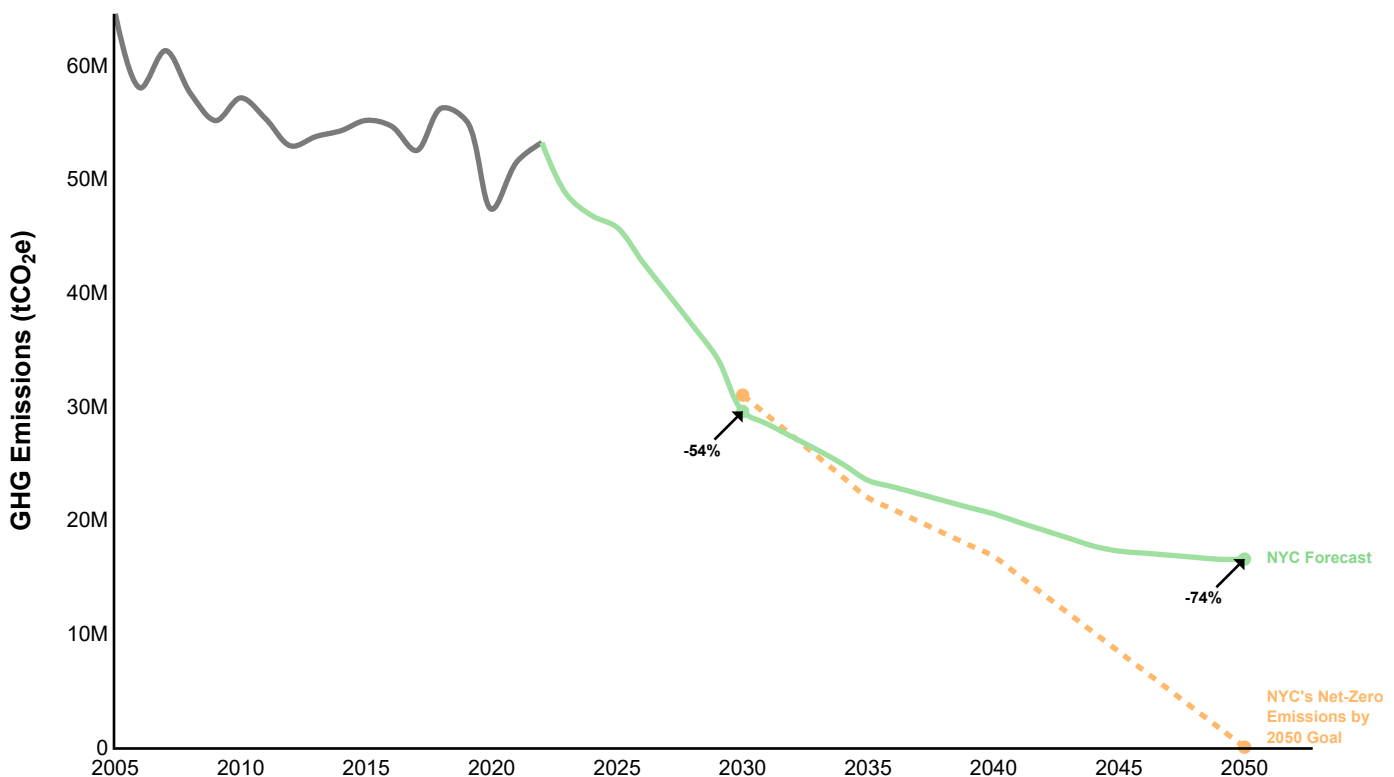


FIGURE 3.27 | SOURCE: NYC OMB, with U.S. EPA

Current climate commitments put the city on track to achieving science-based emissions reduction targets in 2030. Relative to its 2005 baseline, OMB projects an emissions gap of 26% to achieve the city's net-zero commitment in 2050.

## CITYWIDE GREENHOUSE GAS EMISSIONS

OMB's forecast of citywide emissions through 2050 includes planned federal, state, and city actions. This forecast reveals that, along with the state's successful realization of its renewable energy goals, the city's current commitments to climate action are critical to putting New York City on the path to achieving science-based emissions targets in 2030. The forecast also demonstrates that the transition away from gas-powered vehicles and toward sustainable transportation and electric vehicles will play an important role in the longer term. Additional planning and commitments will be needed to meet the goal of achieving net-zero emissions citywide by 2050, particularly to address continued use of natural gas for heat and hot water in affordable housing and small and mid-sized buildings across the city.

Relative to its 2005 baseline, OMB projects an emissions gap of 26 percent to achieve the city's net-zero commitment in 2050. Within this gap, the buildings sector makes up 71 percent, the transportation sector 17 percent, and the waste sector 12 percent of remaining emissions.

OMB's analysis of historical and projected emissions are described in greater detail in this section.

## New York City's GHG Inventories

New York City's GHG Inventories are foundational to the city's climate action planning. Each year, MOCEJ publishes inventories for two sets of emissions boundaries<sup>14</sup>:

1. GHG emissions citywide since 2005.
2. GHG emissions from city government operations since FY 2006.

The Inventories are also integral to the Climate Budgeting process, providing a definition of emissions boundaries, data, and accounting methods.

The Citywide GHG Inventory provides insights into direct and indirect GHG emissions of three overarching categories:

1. Stationary energy: used by buildings and other stationary sources.
2. Transportation: on-road, railways, marine navigation, and aviation within city limits.
3. Waste: solid waste generation and wastewater treatment within city limits.

The City Government GHG Inventory accounts for the direct and indirect GHG emissions from city-owned and -operated assets, including from buildings, wastewater treatment, streetlights and traffic signals, transportation, water supply, solid waste facilities, and fugitive and process emissions. This Inventory is developed by DCAS DEM and MOCEJ.

The Inventories measure GHG emissions in metric tons of carbon dioxide equivalent (tCO<sub>2</sub>e). Citywide GHG emissions were 53.7 million tCO<sub>2</sub>e in 2022. City government GHG emissions were 2.9 million tCO<sub>2</sub>e in FY 2022 (July 1, 2021 – June 30, 2022), amounting to roughly 5 percent of citywide emissions<sup>14</sup>.

The city's GHG Inventories apply nationally and internationally recognized standards for GHG accounting as well as methods established by New York State's Climate Leadership and Community Protection Act (CLCPA)<sup>70</sup>. While the historical Citywide GHG Inventory accounts for the emissions generated from buildings, transportation, and waste, it does not provide a complete picture. To remedy this, the city expanded its accounting of GHG emissions in 2023 to include emissions from the consumption of goods. This new Consumption-Based Inventory accounts for the emissions generated from food, housing, transportation, goods, and services. The city will seek to integrate consumption-based emissions into the Climate Budgeting process in future phases.



**History of Citywide GHG Emissions**

From 2005 to 2022, New York City reduced its emissions by 17 percent<sup>14</sup>. In 2022, 66 percent of citywide GHG emissions came from buildings, 30 percent from transportation, and 4 percent from waste. Broken down by energy type, 34 percent of emissions came from on-site combustion of natural gas, 30 percent from transportation, 27 percent from electricity, 4 percent from on-site combustion of fuel oil, 4 percent from waste, and 1 percent from steam.

**HISTORICAL CITYWIDE EMISSIONS**

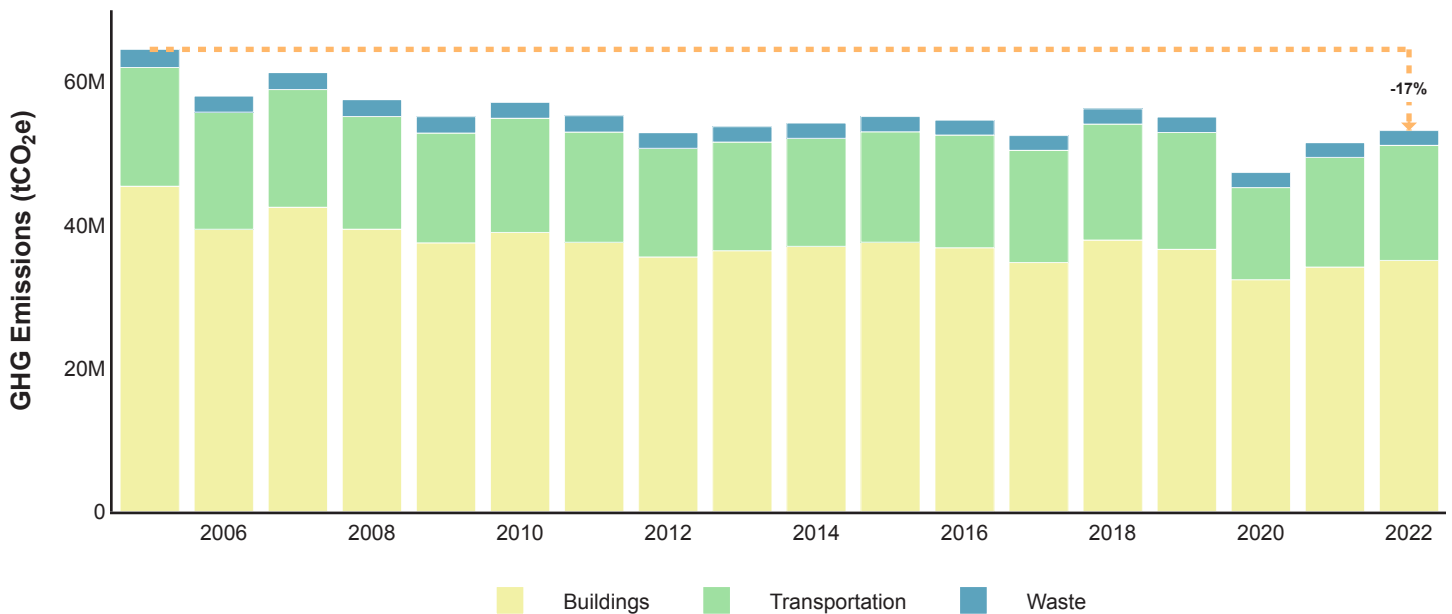


FIGURE: 3.28 | SOURCE: NYC MOCEJ

**CITYWIDE GHG EMISSIONS BY SECTOR IN 2022**

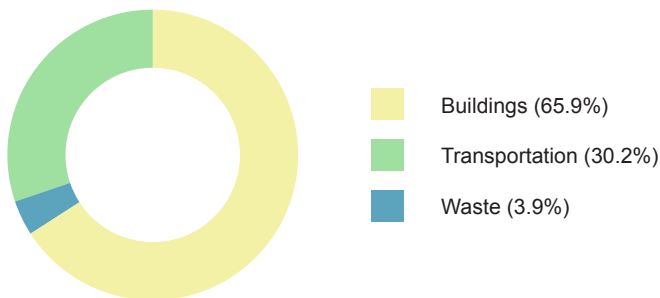


FIGURE 3.29 | SOURCE: NYC MOCEJ

**CITYWIDE GHG EMISSIONS BY SOURCE IN 2022**

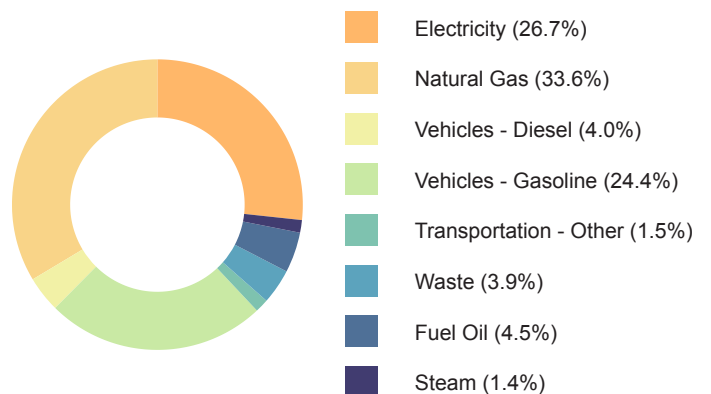


FIGURE 3.30 | SOURCE: NYC MOCEJ

### Current Emissions Driver #1: Fossil Fuels in Buildings (38 percent of citywide emissions)

While the city's policies launched a shift away from the most polluting heating oils, they resulted in increased dependence on natural gas systems, which are incompatible with net-zero emissions. LL97 and LL154 are expected to drive a large reduction in emissions from certain large buildings, which is explored in greater detail in this section<sup>5,7</sup>.

### Current Emissions Driver #2: Fossil Fuels in Transportation (30 percent of citywide emissions)

Passenger vehicles contribute 24 percent of citywide emissions<sup>14</sup>. Emissions from this sector are nearly the same as they were in 2005 despite a brief decline due to COVID-19. While new vehicles on average emit fewer emissions, vehicle registrations in the city grew 12 percent between 2012 and 2021<sup>71,72</sup>.

## EMISSIONS INTENSITY OF ELECTRICITY SUPPLY

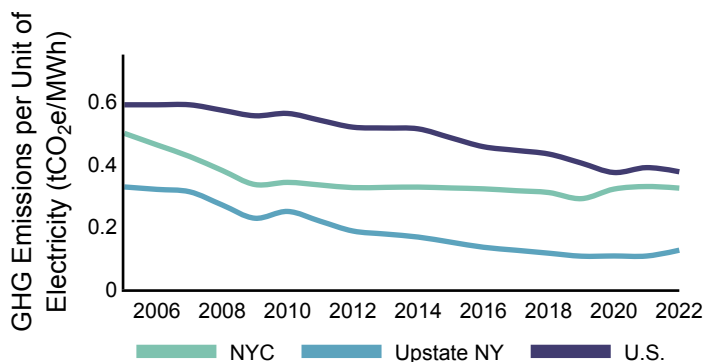


FIGURE 3.31 | SOURCE: NYC MOCEJ, U.S. EPA

## FOSSIL FUEL CONTRIBUTION TO ELECTRICITY SUPPLY

Year	2005	2014	2022
New York City	68%	62%	73%
Upstate New York	45%	32%	30%
United States	72%	67%	61%

FIGURE 3.32 | SOURCE: NYC MOCEJ, U.S. EPA

### Current Emissions Driver #3: Electricity Supply (27 percent of citywide emissions)

Most of New York City's emissions reductions to date stem from a shift to cleaner electricity generators between 2005 and 2015. Coal-fired power plants and inefficient natural-gas-fired plants were replaced with newer natural gas plants, as well as some renewable energy. However, some of these improvements have been offset by the leakage of natural gas (methane) throughout the supply chain.

While progress has been made, New York City's electric grid has decarbonized at a much slower pace than upstate New York's grid. This is largely due to high levels of congestion on the electricity transmission lines supplying power to the city and a lack of available space to site large-scale renewable energy within city limits. Despite significant progress in developing renewable power upstate, the New York City region has been forced to rely on older, natural-gas-fired power plants.

Compounding this challenge, the closure of the Indian Point nuclear power plant in 2021 and 2022 removed a large source of zero-emissions power and increased New York City's dependency on natural gas power plants, eroding some of the progress realized since 2005<sup>8</sup>. New York City's electricity is now nearly as carbon intensive as the national average. By comparison, upstate New York has benefited from significant investments in renewable energy and now has some of the cleanest electricity in the country<sup>73</sup>. These investments in renewable energy have been funded by utility ratepayers statewide, including ratepayers in New York City<sup>74</sup>.

### Current Emissions Driver #4: Waste (4 percent of citywide emissions)

Waste sector emissions are primarily from landfilled solid waste and wastewater treatment, and account for a relatively small portion of citywide emissions. This sector has realized an 18 percent reduction in emissions since 2005 with wastewater treatment emissions down 43 percent since 2005. To date there have been few reductions in landfilled solid waste, but Local Law 85 of 2023 requires curbside residential organics diversion citywide by 2024, which will reduce methane emissions from landfills<sup>75</sup>.

## Citywide Emissions Forecasting

The Citywide GHG Inventory provides the history of New York City's emissions but does not project future emissions. OMB often develops forecasts to inform its decision-making across many areas of the city's budget. Here, OMB worked with partners across the public and private sectors to forecast the impacts that federal, state, and local policies are likely to have on the city's future emissions through 2050.

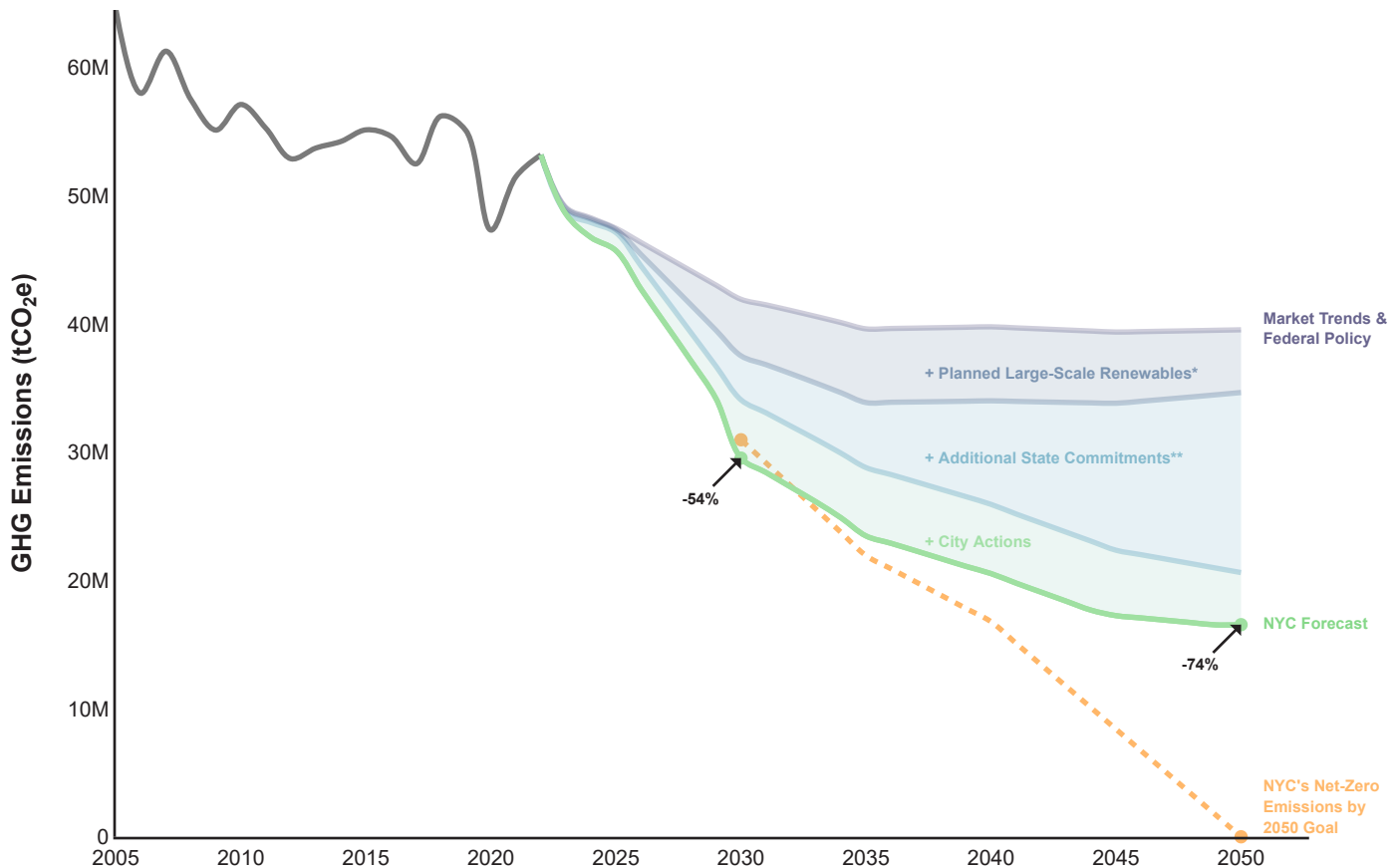
This forecasting was developed in two parts. OMB worked closely with the U.S. EPA to produce a set of baseline emissions scenarios to forecast the impacts of markets and federal and state policies. Concurrently, OMB forecasted the impact of investments to decarbonize city government operations and a host of city actions that are expected to reduce emissions citywide (see Figure 3.36).

The baseline scenarios and city action forecasts were combined for a complete view of the impact of markets and policies on citywide emissions. Full documentation on the methods for this analysis is available in Appendix 6.

The forecast shows a reduction in citywide emissions of 54 percent by 2030, 68 percent by 2040, and 74 percent by 2050, relative to the city's 2005 baseline. This results in the city achieving science-based emissions targets in 2030 and leaves a gap of 17 million tCO<sub>2</sub>e remaining to achieve net-zero by 2050. The largest drivers of forecasted reductions are:

- City actions.
- State commitment to decarbonize the electric grid.
- State commitment to require that new passenger vehicle sales be electric.

## FORECAST OF CITYWIDE EMISSIONS



\*Includes Champlain Hudson Power Express & Clean Path New York transmission lines and 9 gigawatts of offshore wind.

\*\*Includes New York Clean Energy Standard, all electric passenger vehicle sales by 2035, congestion pricing, and Metropolitan Transportation Authority bus electrification.

The orange line shows interim science-based emissions targets aligned with 1.5°C trajectory.

FIGURE 3.33 | SOURCE: NYC OMB, with U.S. EPA

OMB's forecast shows the emissions reductions expected from established city actions, state commitments, and federal support, and includes:

- Fourteen city actions committed to through mayoral or legislative action, including investments in the decarbonization of city government operations.
- Planned renewable energy projects, including the Champlain Hudson Power Express (CHPE) and Clean Path New York (CPNY) power transmission projects, and state commitments to develop 9 gigawatts of offshore wind projects<sup>76,77</sup>.
- The IRA's incentives<sup>47</sup> for clean energy, energy efficiency, heat pump, and electric vehicle adoption.
- Additional state commitments, including further electric grid decarbonization to meet the Clean Energy Standard (70 percent renewable grid statewide by 2030 and 100 percent clean grid by 2040), the mandate for all-electric passenger vehicle purchases by 2035, MTA bus electrification commitments, and congestion pricing<sup>78-81</sup>.
- The replacement of building equipment with more efficient options at the end of useful life.
- The adoption of more efficient and electric vehicles as a result of Corporate Average Fuel Economy (CAFE) Standards and reaching price parity for electric vehicles<sup>82</sup>.
- Projected population and weather changes.

## City-based Optimization Model for Energy Technologies

OMB worked closely with developers and modelers from the U.S. EPA's City-based Optimization for Energy Technologies (COMET) team to forecast three baseline scenarios. COMET is an advanced linear optimization model designed to capture the whole energy system at the city level<sup>83</sup>. COMET allows the city to develop energy, environment, and economic forecasts through 2050 and provides long-term prospects for practical and applicable energy policy solutions.

In its forecasting, COMET projects the lowest-cost mix of fuels and energy technologies necessary to meet the demand for energy and transportation. Key data incorporated into COMET for New York City include energy resource characteristics from the Energy Information Administration, population projections from the New York Metropolitan Transportation Council, building statistics from the New York City Primary Land Use Tax Lot Output, and total energy consumption data from the New York City Citywide GHG Inventory report<sup>14,84-85</sup>. Climate projections from the New York State Climate Impacts Assessment were also used to ensure the model's outputs align with anticipated future climatic changes<sup>86</sup>.

The three baseline scenarios modeled using COMET are:

**Scenario 1:** Market Trends & Federal Policy. GHG emissions are affected by population changes and market trends, including the influence of federal policy, such as the IRA, on decreasing the cost of clean energy, energy efficiency, heat pumps, and electric vehicles.

**Scenario 2:** Scenario 1 + Planned Large-Scale Renewables. Includes the effects of planned renewable energy projects, including CHPE and CPNY power transmission projects, and 9 gigawatts of offshore wind projects.

**Scenario 3:** Scenario 2 + Additional State Commitments. Includes the achievement of key state commitments to decarbonize, including additional electric grid decarbonization through the Clean Energy Standard (70 percent renewable grid statewide by 2030 and 100 percent clean grid by 2040), the mandate for all electric vehicle purchases by 2035, Metropolitan Transportation Authority bus electrification, and congestion pricing.

See Appendix 6 for more detail on each baseline scenario.



City Actions

The analysis forecasts how city actions will contribute to expected emissions reductions. City actions included in the forecast are those that are:

1. Expected to meaningfully impact GHG emissions,
2. Committed either through a local law (LL), mayoral commitment, or executive order (EO), and
3. Funded in the budget or capital plan or will be carried out by mayor-appointed leadership.

The three most impactful city actions are Building Emissions Limits, For-Hire-Vehicle Electrification, and the NYCHA Clean Heat for All Challenge. Figure 3.34 shows the cumulative emissions reductions forecasted through 2050, Figure 3.35 illustrates these annual contributions over time through 2050, and Figure 3.36 summarizes the impacts of these city actions.

CUMULATIVE EMISSIONS REDUCTIONS FROM CITY ACTIONS 2023-2050

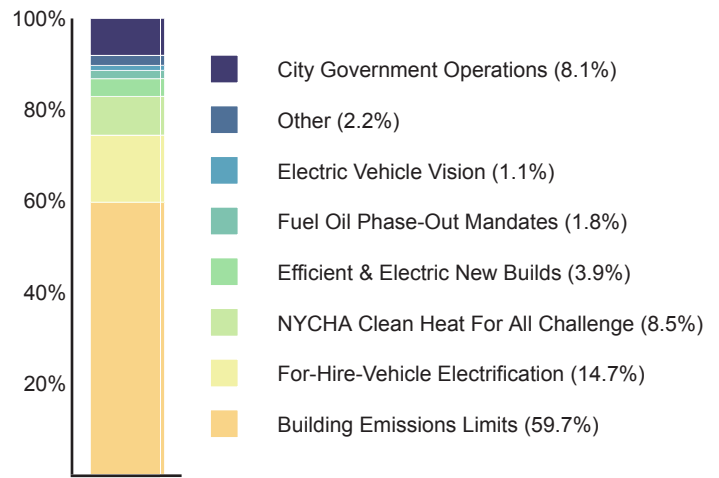


FIGURE 3.34 | SOURCE: NYC OMB

## Technical Advisory Group

OMB assembled a Technical Advisory Group (TAG) to conduct an independent review of its forecasting analyses to ensure its accuracy, relevancy, and reliability. Through their evaluation, TAG members provided insights into the soundness of the assumptions and methodologies, the data's relevance and quality, and the clarity and applicability of formulas. TAG members were provided full access to all the analyses behind city action forecasts. Their review included an assessment of the uncertainty within the analyses, recommending additional analyses where necessary.

TAG member insights led to improvements in OMB's analyses by incorporating a deeper examination of uncertainties and sensitivities, validating the choice and application of data, and ensuring that methodologies were both robust and transparent. This collaborative effort strengthened the analysis and helped ensure that findings were accurate and grounded in a solid analytical framework. Technical Advisory Group members include:

New York City

- New York City Department of Citywide Administrative Services, Division of Energy Management (DCAS DEM)
- New York City Mayor's Office of Climate and Environmental Justice (MOCEJ)
- OMB's Economic Analysis Task Force
- City Agencies

External Partners

- Cadence OneFive
- New York Federal Reserve Bank
- New York State Energy Research and Development Authority (NYSERDA)
- New York University Center for Urban Science and Progress (NYU CUSP)
- U.S. EPA

Global Cities

- City of London
- City of Montreal
- City of Oslo

## FORECAST OF EMISSIONS REDUCTIONS FROM CITY ACTIONS

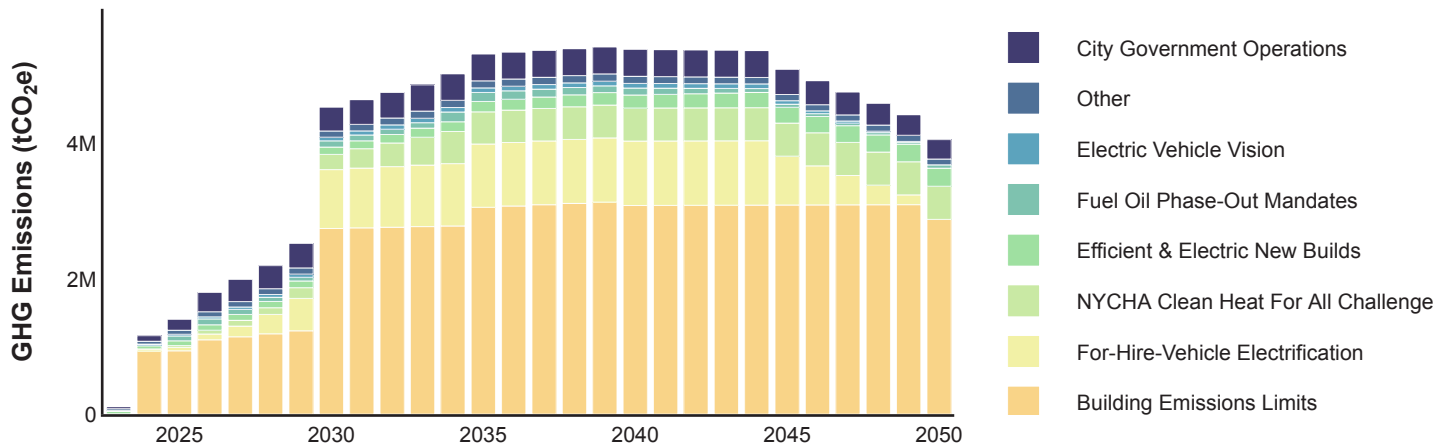


FIGURE 3.35 | SOURCE: NYC OMB

## RELATIVE EMISSIONS REDUCTIONS FROM CITY ACTIONS

#	City Actions	2030	2050	Description
1	Building Emissions Limits (LL97-2019)	59.0%	59.7%	Places emissions caps on buildings over 25,000 square feet beginning in 2024, with caps tightening to net-zero by 2050.
2	For-Hire-Vehicle Electrification	12.5%	14.7%	Requires 100 percent of for-hire-vehicles be electric or wheelchair accessible vehicles by 2030.
3	City Government Operations	12.3%	8.1%	Emissions reductions in city government operations, not including CHPE purchase (factored into NYC emissions intensity).
4	NYCHA Clean Heat for All Challenge	4.2%	8.5%	Targets the installation of window heat pumps in 50,000 NYCHA units over 10 years beginning in 2022.
5	Efficient & Electric New Builds (LL32-2018, LL154-2021)	4.0%	3.9%	Limits the use of natural gas and fuel oil in new buildings beginning in 2024 and sets energy efficiency requirements.
6	Fuel Oil Phase-Out Mandates (LL43-2010, LL107-2013, LL119-2016, LL32-2023)	2.9%	1.8%	Bans the use of fuel oil #4 by 2027 and promotes biofuel mix.
7	Electric Vehicle Vision	1.6%	1.1%	Requires level 2 chargers in 20 percent of municipal parking spaces by 2025 and 40 percent by 2030.
8	Bus Lanes (DOT Streets Plan, LL195-2019)	1.5%	0.4%	Requires 150 miles of protected bus lanes by 2026.
9	HPD Sustainability Design Guidelines	0.8%	0.7%	Establishes design standards for HPD-financed properties to meet New York City's sustainability and resiliency goals.
10	Bike Lanes (DOT Streets Plan, LL195-2019)	0.7%	0.2%	Requires 250 miles of bike lanes by 2026.
11	Mandatory Citywide Curbside Organics Collection (LL85-2023)	0.2%	0.2%	Mandates curbside residential organic waste collection citywide.
12	School Bus Electrification (LL120-2021, EO53)	0.2%	0.6%	Requires 100 percent of the school bus fleet to be electric by 2035.
13	NYCHA Solar Installations	0.1%	<0.1%	Targets the installation of 30 megawatts of solar power on NYCHA campuses by 2026.
14	NYCHA Permanent Affordability Commitment Together (PACT) Program	<0.1%	<0.1%	Modernizes NYCHA developments while reducing energy use and emissions.

FIGURE 3.36 | SOURCE: VARIOUS<sup>5,7,88-99</sup>

### Federal Support

U.S. federal policy, including the IRA, is expected to lower the costs of clean energy, energy efficiency retrofits, electrification of heat in buildings, and electric vehicles. Lower costs are expected to yield greater adoption of these technologies as existing equipment reaches the end of its useful life and is replaced. In this way, federal action contributes significantly to decarbonization in New York City.

### State Commitments

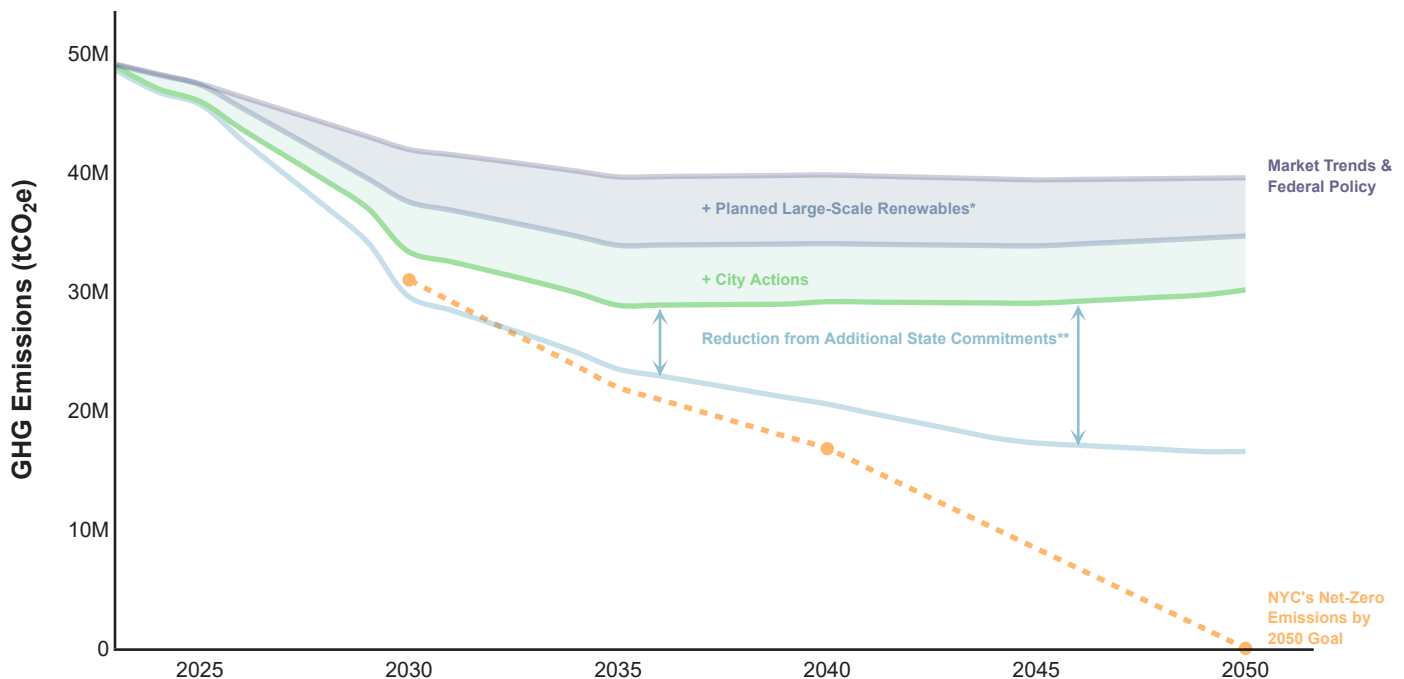
The citywide emissions forecast underscores the importance of decarbonizing New York City's electricity supply. A clean power grid enables emissions reductions through the electrification of vehicles and of heat and hot water in buildings. Deeper levels of grid decarbonization have a magnifying effect for the city actions that drive the emissions benefits of this electrification.

The state's renewable energy goals are critical to decarbonization efforts in New York City. Without fully meeting these goals, currently planned large-scale renewable

projects, including CHPE, CPNY, and 9 gigawatts of offshore wind, paired with federal and city action would lead to citywide emissions reductions of only 48 percent by 2030, 55 percent by 2040, and 53 percent by 2050. This outcome would take the city off track with near-term, science-based targets and widen the gap to achieving net-zero emissions by 2050. Missing these goals would make all efforts to electrify buildings and transportation less effective, and would yield less health benefits associated with reduced air pollution.

Major additional investments in renewable electricity generation and in transmission infrastructure will be required to achieve the state's commitments to fully decarbonize the electric grid and require that all new vehicles are electric. The city has already demonstrated support for this work through its commitment to purchasing 100 percent renewable electricity for its operations and through its commitment to development of an offshore wind hub in Brooklyn. This sort of support and coordination will continue to play an important role in ensuring that the state and city meet their mutual goals.

## EMISSIONS SCENARIOS WITHOUT FULL IMPLEMENTATION OF STATE COMMITMENTS



\*Includes Champlain Hudson Power Express & Clean Path New York transmission lines and 9 gigawatts of offshore wind.

\*\*Includes New York Clean Energy Standard, all electric passenger vehicle sales by 2035, congestion pricing, and Metropolitan Transportation Authority bus electrification.

The orange line shows interim science-based emissions targets aligned with 1.5°C trajectory.

FIGURE 3.37 | SOURCE: NYC OMB, with U.S. EPA

### Gap to Achieve New York City's 2050 Net-Zero Commitment

The forecast identifies a gap of 17 million tCO<sub>2</sub>e between projected emissions and the city's net-zero emissions by 2050 goal. Additional progress will be needed to address this gap, which constitutes roughly one-third of New York City's current emissions. Figure 3.38 shows which activities contribute to emissions forecasted to persist in 2050.

The largest source of remaining emissions in 2050 is expected to come from natural gas used in buildings for heating and hot water. LL97 will incentivize many of the largest buildings to convert away from natural gas by 2050, but there are over one million buildings in New York City not covered by the law. This includes the roughly 1 million buildings that are smaller than the 25,000-square-foot threshold in LL97, and nearly 9,000 of the largest multi-family buildings in the city, which have high numbers of rent-regulated units and are therefore subject to a separate,

less stringent compliance path under LL97. These buildings are not expected to significantly reduce their consumption of on-site fossil fuels without additional policy intervention.

The second- and third-largest sources of emissions remaining in 2050 are expected to be diesel vehicles and waste. Emissions from these sources do not noticeably decline from 2023 to 2050.

Despite the commitment to a zero-emissions electric grid in New York State by 2040, New York City's electricity is not anticipated to be emissions-free in 2050 due to out-of-state electricity imports.

Together, these findings on the city's near- and long-term emissions trajectory equip the city with critical information to make more strategic decisions to achieve its climate goals. See Section 4 for the city's response to initial findings.

### REMAINING EMISSIONS BY SOURCE THROUGH 2050

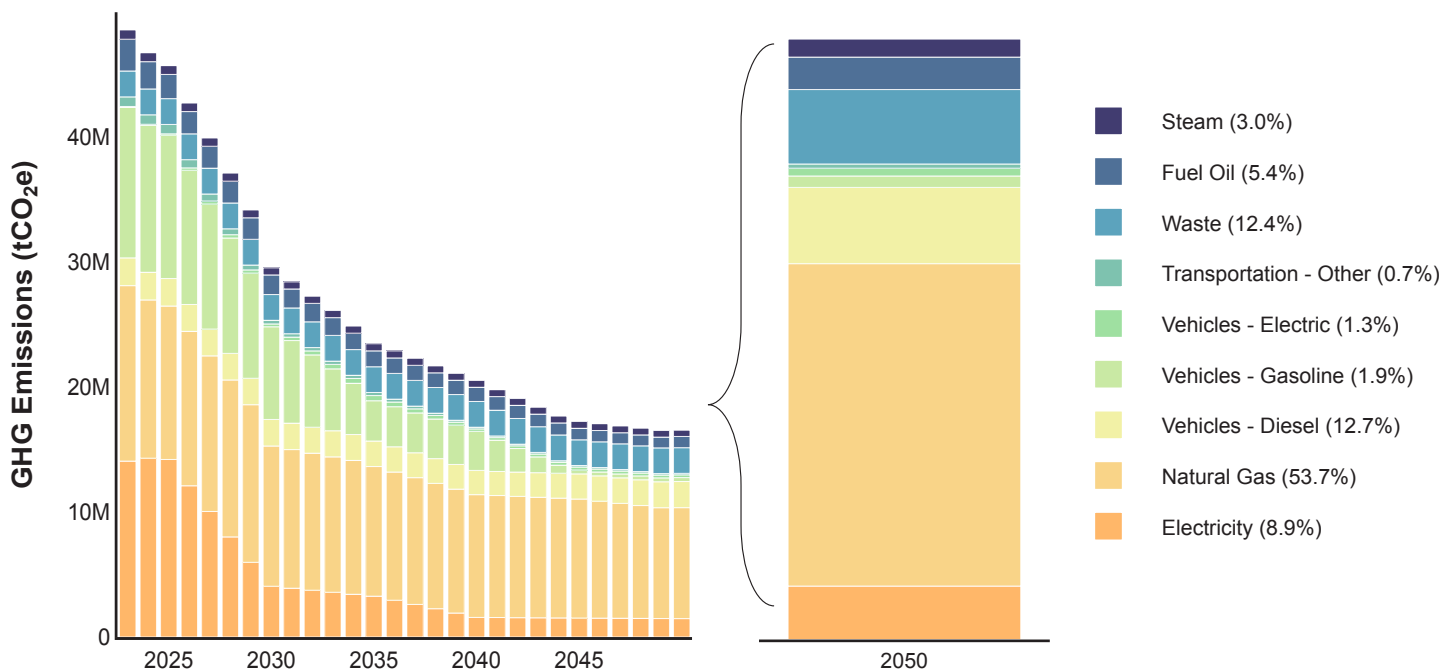


FIGURE 3.38 | SOURCE: NYC OMB, with U.S. EPA



### Impact of Fossil Fuel Use on Air Quality and Health

Actions that reduce GHG emissions from the local combustion of fossil fuels can also improve local air pollution and health outcomes. Further developing and integrating methods to quantify additional costs and benefits of climate actions, such as air quality and health impacts, will support better-informed investment decisions that more efficiently maximize the benefits of climate investments for New Yorkers.

Air pollution from fossil fuel combustion is comprised of six criteria pollutants common in outdoor air and considered harmful to public health: carbon monoxide, particulate matter, nitrogen dioxide, lead, ozone, and sulfur dioxide<sup>100</sup>. Particulate matter (PM) is commonly considered a proxy for overall air pollution. Bigger particles, PM<sub>10</sub>, can irritate eyes, noses, and throats. Smaller particles, PM<sub>2.5</sub>, are more dangerous because they can enter human lungs and bloodstreams<sup>101</sup>. This can aggravate asthma and lead to premature death in people with heart or lung disease.

To further develop an understanding of additional benefits of climate actions, the citywide emissions forecast was

assessed in partnership with the NYC Health Department and the U.S. EPA to forecast associated reductions in PM<sub>2.5</sub>, measured in metric tons of PM<sub>2.5</sub> (tPM<sub>2.5</sub>). Using the Health Department’s peer-reviewed methods, OMB also assessed the potential benefits these air quality improvements would have for the health of New Yorkers (see Appendix 6 for more detail).

Figure 3.39 shows the breakdown of PM<sub>2.5</sub> reductions resulting from city actions. LL97 contributes the greatest PM<sub>2.5</sub> reductions (69 percent), followed by the NYCHA Clean Heat for All Challenge (9 percent) and Fuel Oil Phase-Out Mandates (6 percent). Figure 3.40 illustrates that LL97’s impact on PM<sub>2.5</sub> reductions becomes more significant over time due to the law’s progressively stricter emissions limits and shows the PM<sub>2.5</sub> emissions remaining in 2050. Continued natural gas consumption in buildings will contribute 47 percent, diesel vehicles 23 percent, and electric vehicles, which generate PM<sub>2.5</sub> from tire and brake degradation during use, 20 percent.

### CUMULATIVE PM<sub>2.5</sub> REDUCTIONS FROM CITY ACTIONS 2023-2050

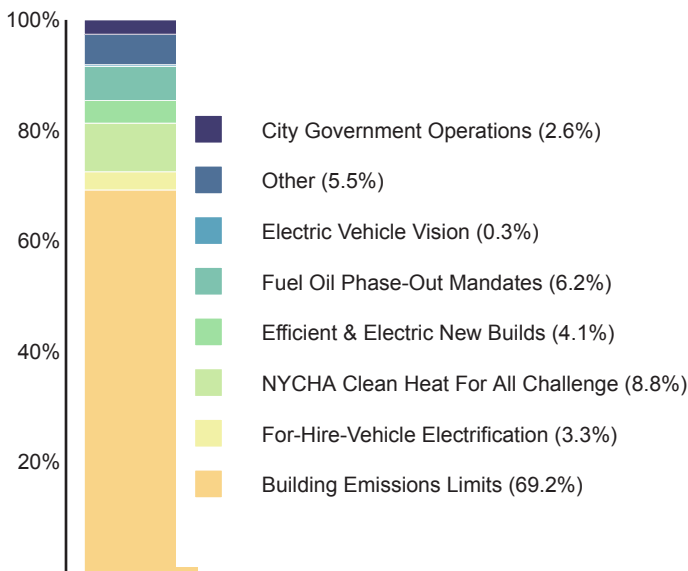


FIGURE 3.39 | SOURCE: NYC OMB, with U.S. EPA and DOHMH

### FORECASTED PM<sub>2.5</sub> EMISSIONS BY SOURCE THROUGH 2050

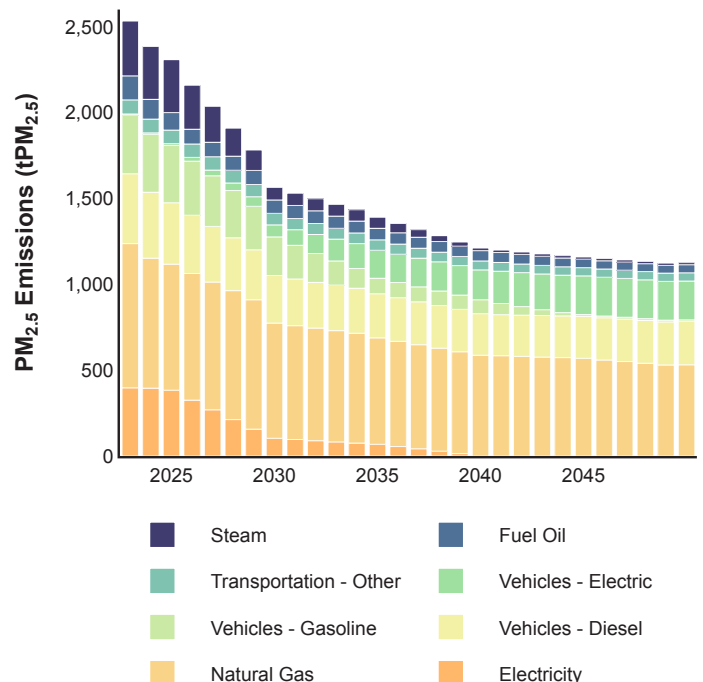


FIGURE 3.40 | SOURCE: NYC OMB, with U.S. EPA and DOHMH

PM<sub>2.5</sub> pollution contributes to asthma and other respiratory and cardiovascular disease, affecting adults and children. Reducing PM<sub>2.5</sub> can prevent asthma attacks, emergency department visits, and premature death for New Yorkers.

Figure 3.41 summarizes the forecasted health benefits from local air quality improvements resulting from climate actions included in the citywide emissions forecast through 2050. Emergency department visits from asthma attacks are projected to be reduced by 2,300 (900 for children and 1,400 for adults), with respiratory and cardiovascular hospitalizations reduced by 600. The total number of premature deaths caused by cardiovascular and respiratory disease in New York City is projected to be reduced by 2,400 through the year 2050.

If the city achieves its net-zero GHG emissions goal by 2050, these benefits are projected to increase by roughly 70 percent.

Air pollution is also an environmental justice issue and New Yorkers living in historically underserved neighborhoods are more vulnerable to the health impacts of air pollution. NYC Health Department data show that PM<sub>2.5</sub> emissions have greater impacts on asthma-related emergency department visits per capita in neighborhood tabulation areas (NTA) with higher rates of poverty (see Figure 3.42). This indicates that health benefits of air quality improvements in these areas would be more pronounced and could reduce health disparities.

By reducing fossil fuel combustion, climate policies outlined in the citywide emissions forecast are anticipated to improve New York City's local air quality by reducing PM<sub>2.5</sub> by 58 percent in 2050, relative to 2005 levels.

**AVOIDED HOSPITALIZATION AND PREMATURE DEATH FROM CLIMATE-ACTION-DRIVEN LOCAL AIR QUALITY IMPROVEMENT THROUGH 2050**

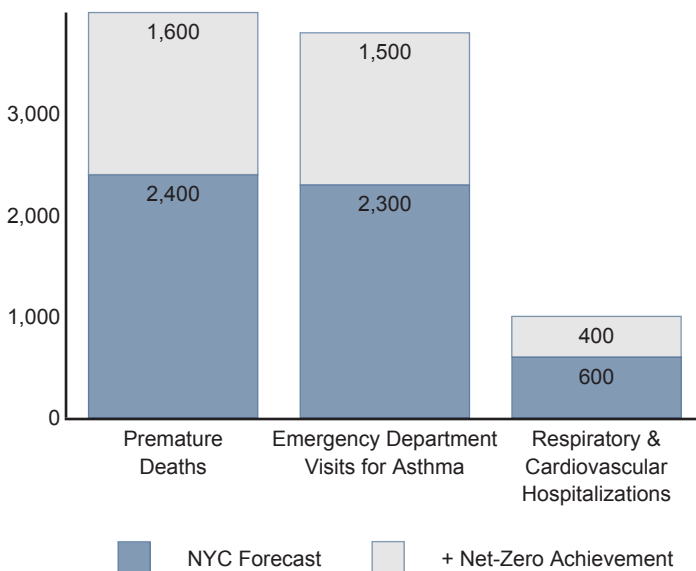


FIGURE 3.41 | SOURCE: NYC OMB, with U.S. EPA and DOHMH

**IMPACT OF PM<sub>2.5</sub> REDUCTIONS ON ASTHMA EMERGENCY DEPARTMENT VISITS, BY NEIGHBORHOOD**

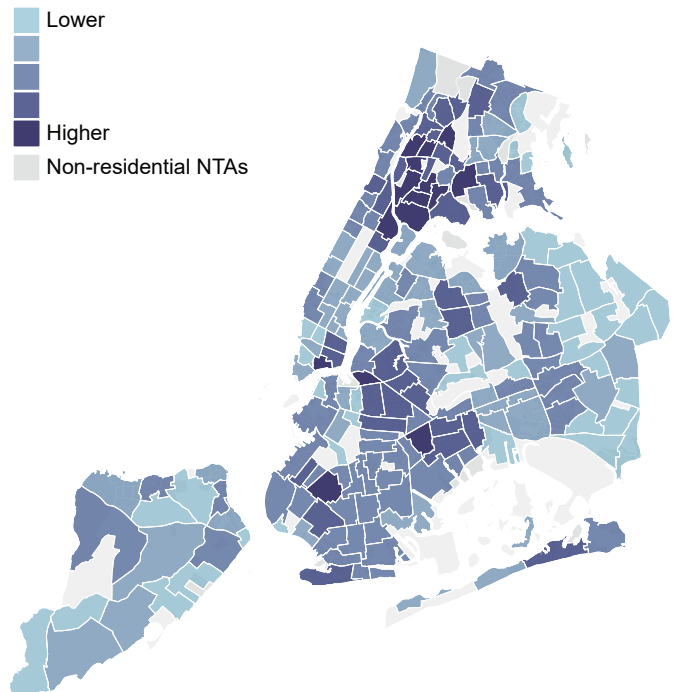


FIGURE 3.42 | SOURCE: NYC OMB, with DOHMH

**CITY GOVERNMENT GREENHOUSE GAS EMISSIONS**

OMB worked with DCAS DEM to forecast GHG emissions from city government operations. This forecast shows that the city is expected to meet its legal mandate of a 50 percent reduction in emissions in FY 2030 through a combination of capital investments to scale energy efficiency, electrification, and on-site solar photovoltaics, and a commitment to source 100 percent renewable energy for all of city government’s electricity use<sup>102</sup>. In 2050, an emissions gap of 30 percent, relative to FY 2006, must be closed to reach net-zero emissions. Within this gap, the buildings sector makes up 75 percent, wastewater treatment 14 percent, the transportation sector 4 percent, and the waste sector 4 percent of remaining emissions.

**History of City Government GHG Emissions**

The City Government GHG Inventory measures emissions from assets owned and operated by city government, as well as emissions from the electricity and district steam it purchases from local utilities. A review of the 2022 Inventory shows that city government has reduced emissions at a faster rate (25 percent reduction since FY 2006) than the city as a whole (17 percent reduction since 2005). Buildings operated by city government have benefited from the same shift in the power sector that has reduced emissions citywide. City government investments also contributed to this downward trend, including projects that improve building efficiency and lower emissions in energy-intensive sectors such as wastewater treatment.

**GHG INVENTORY OF NEW YORK CITY GOVERNMENT OPERATIONS**

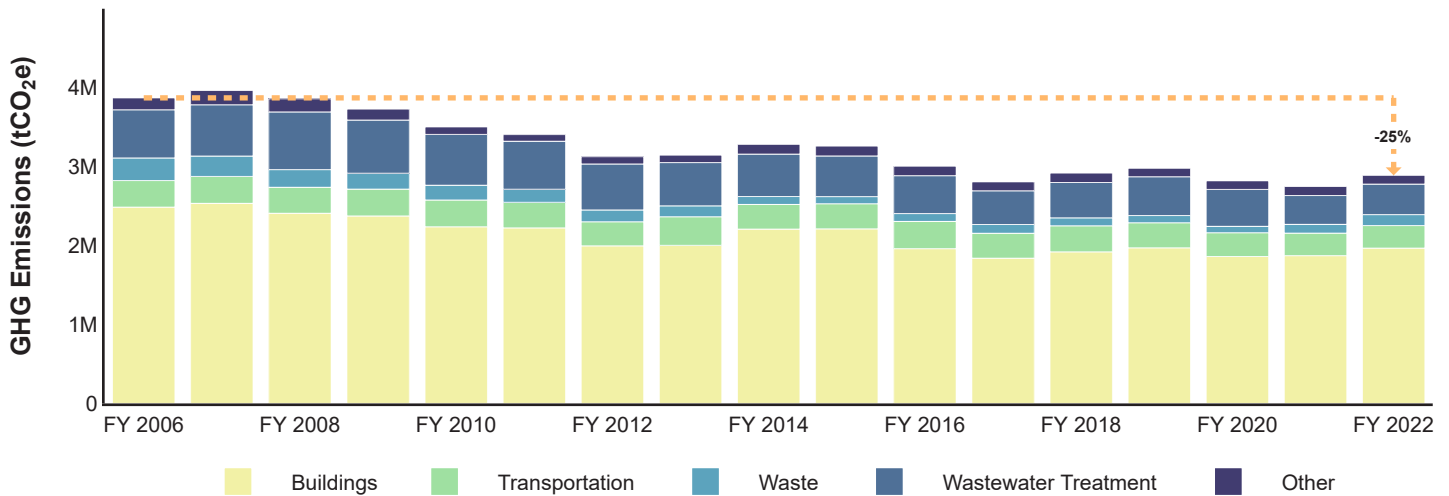


FIGURE 3.43 | SOURCE: NYC DCAS

**CITY GOVERNMENT EMISSIONS BY AGENCY IN FY 2022**

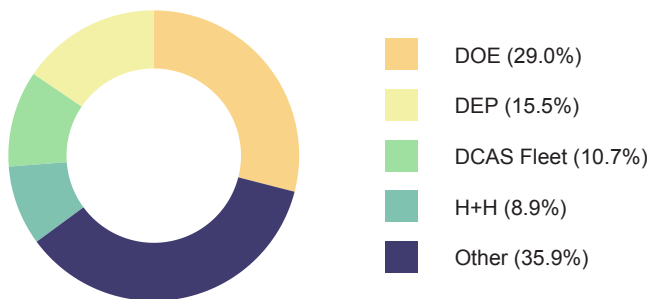


FIGURE 3.44 | SOURCE: NYC DCAS

**CITY GOVERNMENT EMISSIONS BY SOURCE IN FY 2022**

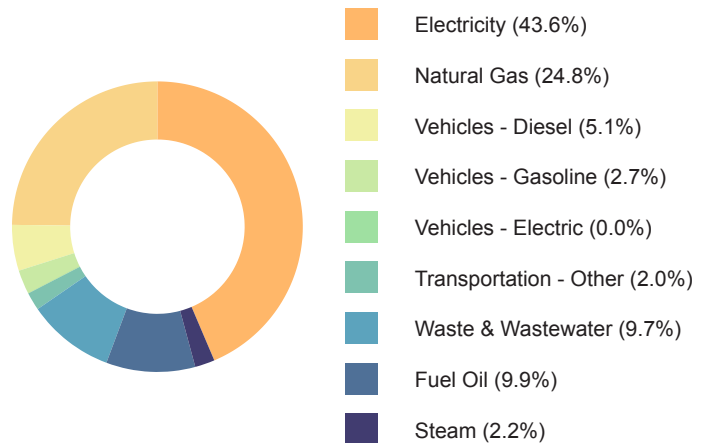


FIGURE 3.45 | SOURCE: NYC DCAS

The City Government GHG Inventory includes emissions from operations, facilities, leased property (e.g., real estate, vehicles, etc.), and sources directly owned by city government or where the city has full authority. Like the Citywide Inventory, buildings are the largest source of emissions, making up 68 percent of emissions from city government. Wastewater treatment contributes 13 percent, transportation 10 percent, and 9 percent come from in-city landfills, streetlights and traffic signals, water supply, and fugitive emissions from refrigerants<sup>14</sup>.

Since 2014, the city has invested over \$900 million in 5,000 energy efficiency projects and 14,000 energy conservation measures across 2,900 facilities, comprising more than 70 percent of city government's building square footage. The city has also installed over 24 megawatts of solar photovoltaic systems on municipal assets and is planning to install an additional 75 megawatts of capacity by 2030. These investments have decreased energy use by about 4.3 trillion British thermal units (Btu), or about as much energy as used by 300,000 city residences, avoided almost \$128 million in annual energy costs, and reduced emissions by approximately 372,000 tCO<sub>2</sub>e, the equivalent of removing over 80,000 cars from the road<sup>103</sup>. The city is continuing this work to reduce energy use, with active and planned projects at facilities citywide.

In 2022, the city launched Leading the Charge, a plan to initiate or complete the conversion of 100 existing schools from polluting fuel oil to all-electric heating by 2030<sup>68</sup>. The construction of all new public schools will be all-electric, creating healthier learning environments and improving air quality in communities disproportionately burdened by pollution.

### City Government Operations Emissions Forecast

DCAS DEM is the primary body responsible for planning and driving emissions reductions from city government operations under the requirements of LL97. The law requires that city government reduce its emissions 40 percent by FY 2025 and 50 percent by FY 2030 from FY 2006 levels. OMB worked with DCAS DEM to develop a projection of GHG emissions through FY 2033 when its capital planning ends. OMB then extended this to understand the remaining emissions gap through 2050. The projection shows the emissions reductions expected from the city's planned capital and expense investments through FY 2033 and the commitment to procure 100 percent renewable electricity for city government operations. This forecast shows that the city will need to develop additional plans to reach its 2050 target. OMB will update this forecast annually and capture additional planning as it is developed.

## Areas of City Operational Influence

City government operations account for roughly 5 percent of citywide emissions; NYCHA accounts for 3.2 percent of citywide emissions; and buildings financed by HPD account for an additional 3.5 percent of citywide emissions. These portfolios represent areas where the city has the greatest direct influence and together contribute around 12 percent of citywide emissions. The city's efforts in these portfolios is impactful. Together, emissions from these portfolios is greater than the entire citywide emissions of Melbourne, Milan, or Paris<sup>105</sup>.

### RELATIVE IMPACT ON CITYWIDE EMISSIONS BY CITY PORTFOLIO

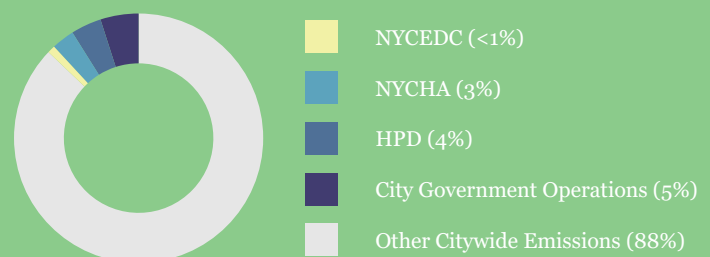


FIGURE 3.46 | SOURCE: MOCEJ, DCAS, HPD, NYCHA, NYCEDC

FORECASTED CITY GOVERNMENT EMISSIONS

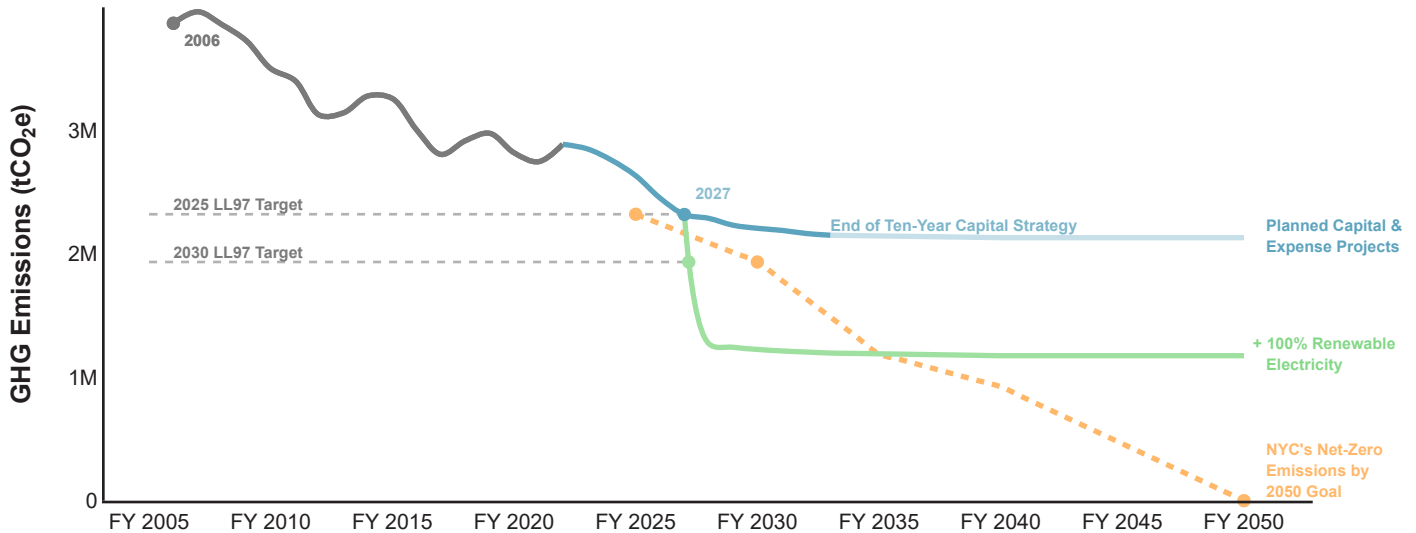


FIGURE 3.47 | SOURCE: NYC OMB, with NYC DCAS

The city expects to meet its FY 2025 goal for municipal emissions under LL97 two years late, in FY 2027. This reduction is expected to be driven by a combination of energy retrofits in buildings and the purchase of zero-emissions electricity from CHPE and CPNY transmission projects. The delay in meeting the FY 2025 target stems from a host of challenges presented by COVID-19 including project cancellations, contract delays, supply chain constraints, and higher costs of material and equipment. Progress toward this goal was also impacted by the closure of the Indian Point nuclear power plant, which resulted in a more emissions-intensive electricity supply. Procurement and contracting challenges have slowed project delivery, although DCAS DEM is now developing faster, more flexible ways to deliver projects. Despite these challenges, the city expects to meet and surpass its FY 2030 LL97 emissions target. This progress prepares the city well to undertake the difficult work of strategically phasing out fossil fuels in its buildings. As decarbonization efforts progress, the city will continue to prioritize high-performance equipment and building envelopes to maximize energy cost savings.

The work to decarbonize and electrify city government operations is augmented and amplified by the commitment to purchase New York State Energy Research and Development Authority (NYSERDA) Tier IV REC from the CHPE and CPNY projects<sup>104</sup>. The city's commitment to CHPE and CPNY served as a catalyst, ensuring these transmission projects will be built and will deliver renewable energy from upstate resources directly into New York City's power zone (NYISO Zone J). As a result, the city's REC

purchases will add necessary capacity that may allow decommissioning of in-city, fossil-fuel-fired power plants.

Figure 3.48 shows the largest emissions reductions in city government operations are expected to come from schools, water infrastructure, fleet purchases, and hospitals. Prior to FY 2027, the city's emissions reductions are largely attributed to the completion of capital projects, which yield a permanent reduction in emissions upon the year of their completion. However, starting in FY 2027 a significant portion of emissions reductions is attributed to the procurement of RECs. Unlike with capital projects, RECs reduce emissions only in the year for which they are purchased and require annual renewal to sustain these reductions year after year.

CUMULATIVE EMISSIONS REDUCTIONS BY AGENCY FY 2023-2033

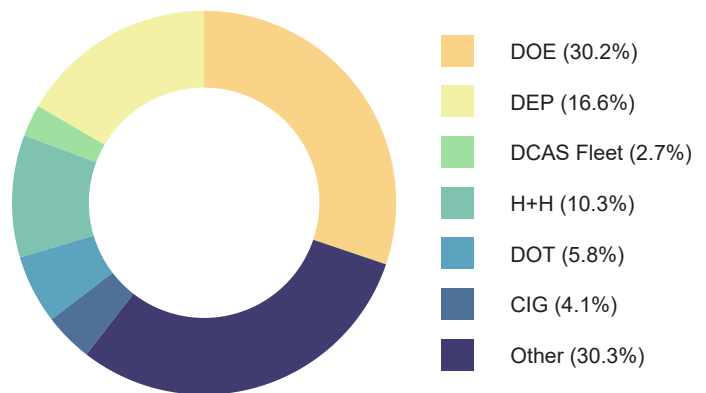


FIGURE 3.48 | SOURCE: NYC OMB, with NYC DCAS



### Gap in City Government Operations Climate Targets

Under current plans, OMB expects 30 percent of emissions from city government operations will remain in 2050 and will need to be eliminated to achieve the city’s commitment of net-zero emissions. Seventy-five percent of those remaining emissions are expected to come from operating the city’s buildings, 14 percent will come from wastewater treatment, 4 percent from transportation, 4 percent from waste, 1 percent from water supply, 1 percent from fugitive and process emissions, and less than 1 percent from streetlights and traffic signals.

By source, remaining emissions from city government operations are expected to be driven primarily by combustion of natural gas (60 percent) and fuel oil (14 percent). Combined with district steam, these fuels generate emissions from the operation of city government buildings. Methane and nitrous oxide from wastewater treatment and landfills are expected to contribute to 15 percent of remaining city government operations emissions. Figure 3.49 provides a detailed breakdown of these sources.

As a result of the city’s commitment to purchase 100 percent renewable electricity for its operations, the city’s electric consumption is expected to be fully renewable after FY 2027. This will leave the combustion of fossil fuels, especially natural gas, for heat and hot water in the city’s buildings as the largest remaining source of emissions after FY 2030.

Planning to advance the PlaNYC initiative to phase out city capital spending on fossil fuel equipment and infrastructure will help address remaining city government operations emissions through 2050. In addition to meeting emissions targets, efficiency improvements and reductions in fossil fuel use are expected to deliver benefits to the city through lower energy costs and improvements to local air quality and community health.

### FORECASTED CITY GOVERNMENT EMISSIONS BY SOURCE THROUGH FY 2033

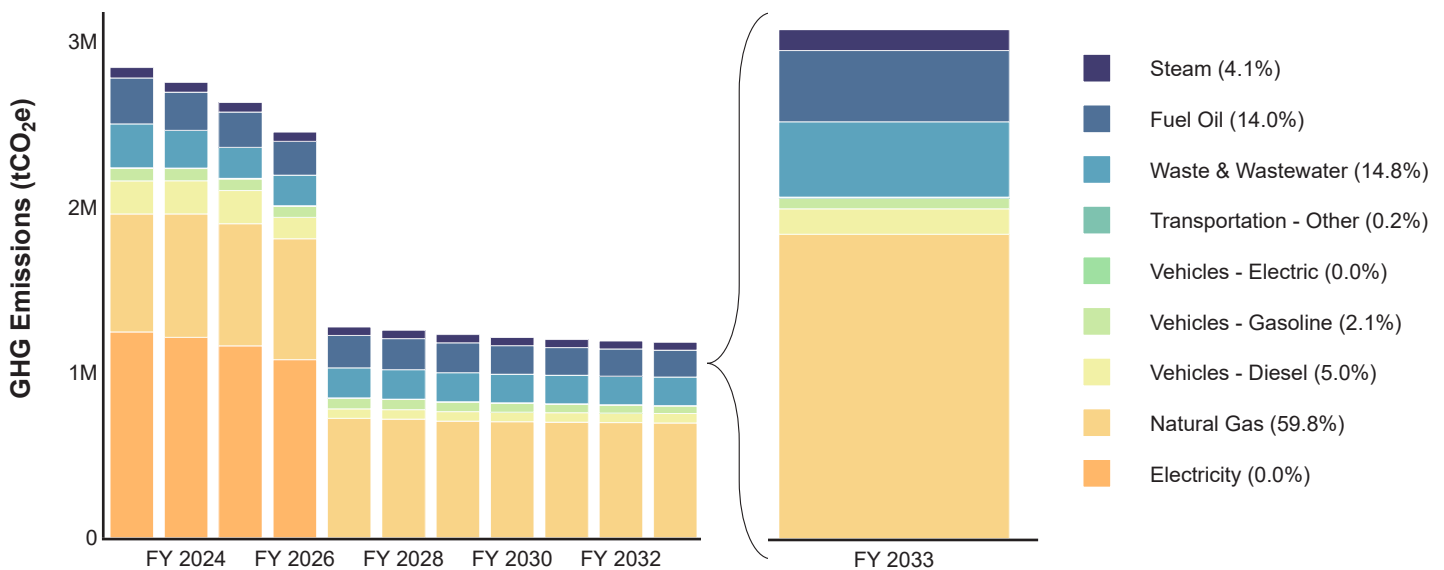


FIGURE 3.49 | SOURCE: NYC OMB, with NYC DCAS



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# 4. Moving Forward

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City commitments in response to FY 2025 Climate Budgeting findings and an overview of how the Climate Budgeting process will evolve and expand in future years.



# GETTING ON TRACK TO 2050

## City Leadership on the Path to Net-Zero

The city can achieve science-based emissions targets over the next decade if key actions, including building emissions limits and the transition toward clean electricity and away from gas-powered vehicles, are successful. To achieve net-zero emissions by 2050, future effort will be needed—particularly to address natural gas used for heat and hot water in affordable housing and small buildings across the city. It is critical that all levels of government, and all of society, maintain momentum and address areas where more is needed to realize these targets.

New York City is doing its part to keep the city on track to meet these goals through the implementation of impactful policies like LL97 and for-hire-vehicle electrification. The Adams administration is proactively working to ensure that LL97, the most impactful planned city action to reduce emissions, is implemented successfully. The administration recently created the Getting 97 Done plan, which identifies financial resources to support compliance and enhance technical assistance, and issued rules that provide an opportunity for building owners to mitigate 2024 compliance penalties if they can demonstrate they are taking concrete steps toward achieving their targets<sup>108</sup>. The FY 2025 Executive Plan includes operational funding for the city's Property Assessed Clean Energy program, which provides a financing option for building owners implementing energy-saving capital improvements, and additional DOB enforcement personnel to ensure that this critical policy is successfully implemented and enforced.

The city is also investing to reduce emissions from its own assets and operations. In the FY 2024-2028 Capital Commitment Plan the city is implementing nearly \$6 billion in capital energy efficiency and decarbonization projects through funding managed by DCAS DEM and agency-led initiatives, and is hiring Chief Decarbonization Officers at 11 key agencies to advance this work. The FY 2024-2028 Capital Commitment Plan includes \$1.1 billion for energy efficiency and building electrification work that was previously delayed, but is now being accelerated to allow the city to prioritize decarbonization across schools and city facilities in the near-term. Looking ahead to 2050, funding is being allocated to develop a strategic electrification plan for city assets and facilities to further the city commitment to phase out capital spending in fossil fuel infrastructure. To ensure that newly electrified facilities and vehicles run on clean electricity, the city will procure 100 percent renewable electricity for city government operations, which supports state-wide clean energy development.

Climate Budgeting creates new tools and processes that have already begun identifying areas of opportunity to further reduce emissions from the city's capital investments. OMB's Climate Alignment Assessment shows that initial opportunity areas for future focus include fossil-fuel-powered building systems, vehicles, and backup power. The Climate Budgeting process will encourage decision-makers to think about all the city's investments differently and ensure climate is a key consideration in everyday capital and budget planning.

## State and Utility Partnership

Despite its ambitious efforts, the city cannot achieve near- or long-term emissions targets on its own. The state must successfully achieve its Clean Energy Standard—which includes supplying 70 percent of statewide electricity via renewable power by 2030, and a 100 percent clean electric grid by 2040—and further enable the transition to electric vehicles. The city is supporting these efforts by committing to reallocate up to an additional \$85 million in existing capital towards the development of the South Brooklyn Marine Terminal to enable the regional development of offshore wind and by expanding the network of electric vehicle chargers available within the city. To further mobilize the transition to net-zero, the state must continue to resource and implement its Climate Leadership and Community Protection Act, while managing growth in electricity demand and reliability needs resulting from the expansion of intermittent renewable resources in the power supply. Just as the city is planning ahead for the phase out of fossil fuel infrastructure at its

facilities, the city's utility partners, Consolidated Edison and National Grid, must plan for the strategic and orderly rightsizing of natural gas distribution systems in alignment with city and state decarbonization objectives and work with the city to provide energy data on small buildings to enable appropriate planning and policymaking. The scale and scope of the need related to climate change exceed the ability of local government to address on its own. Continued and expanded support will be needed from federal and state partners, alongside the contributions of the private sector.

Given the magnitude of transitioning the citywide economy to net-zero emissions by 2050, continued planning and action are needed to set the city on the right path. Through Climate Budgeting, OMB will continue to regularly collect data, monitor progress, and support implementation to manage toward New York City's near- and long-term emissions goals.

# PROMOTING RESILIENCY THROUGH CLIMATE BUDGETING

## City Leadership for a Resilient City

Guided by the NPCC, the city has undertaken significant effort to enhance its climate resiliency, from changes to the built environment to providing tools to New Yorkers to keep themselves safe during extreme weather events.

In the years since Hurricane Sandy, the city has leveraged federal funding to initiate large-scale coastal resiliency projects to protect vulnerable neighborhoods<sup>109</sup>. The city has also amended its zoning regulations and building codes to promote resilient building in the floodplain<sup>110,111</sup>. Infrastructure upgrades in areas with major stormwater flooding issues, such as Southeast Queens, are delivering miles of new and replacement sewers to divert water that could otherwise cause flooding on streets and in homes<sup>112</sup>. Green infrastructure, used by the city for over a decade to reduce local waterway pollution, is now increasingly used for resiliency as well; the city's cloudburst program combines green and grey infrastructure approaches to address areas that repeatedly flood during heavy rainfall<sup>62</sup>. The city is investigating further building-level protections using a FEMA grant to determine where installing backwater valves, equipment installed in pipes that prevent sewers from backing up into homes including during heavy rains, are most effective<sup>113</sup>.

City actions to address rising temperatures and extreme heat target both outdoor temperatures and indoor heat safety, an important factor in preventing heat-related illness and death. Tree planting and maintenance and expanding green space help keep the city cooler, while also contributing to flood resiliency. The CoolRoofs program provides paid training and work experience installing energy-saving reflective rooftops, which help address both the urban heat island effect and indoor temperatures<sup>65</sup>. During heat events, the city's cooling center program makes air-conditioned public spaces, such as libraries and community centers, available for New Yorkers to access cool spaces<sup>114</sup>. The city has also spearheaded efforts to provide school classrooms with air conditioning and distribute air conditioners to older,

low-income residents for use at home<sup>115,116</sup>. HPD's Design Guidelines were recently updated to require cooling in new developments<sup>37</sup>.

Building upon these ongoing efforts, PlaNYC outlines new initiatives to improve resiliency, including pursuing state and federal funding to acquire properties in flood-vulnerable areas, expanding the city's tree canopy cover, advancing nature-based solutions that can mitigate both flooding and heat, and using the city's Housing Maintenance Code requirement for minimum winter temperatures as a blueprint for developing a maximum indoor temperature standard for the summer months. However, as with the city's emissions goals, the city can't achieve resiliency on its own; support from all levels of government is critical.

Through the Climate Strong Communities program, the city is evaluating multi-hazard resilience needs in EJ Areas to position the city to compete for federal and state funding<sup>117</sup>. The IRA and BIL include multiple competitive grant opportunities, and the city expects to continue its past success in receiving awards through such programs. However, resiliency presents ongoing needs that will be top priorities for decades to come as the nation adapts to changing climate conditions. Federal formula funding for resiliency and climate adaptation, structured similarly to existing formula funding for transportation, would ensure cities and states have the resources needed to keep their citizens safe even as climate risks become more severe without having to compete against each other for limited opportunities. Additionally, New York State must ensure that funds such as those made available through the Environmental Bond Act are disbursed based on climate risk, and that there is no per-municipality cap on grants. For example, 44 percent of New York State residents reside in New York City, but the city received only 1 percent of \$479 million recently allocated for local water infrastructure projects<sup>118,119</sup>. Funding caps and similar policies result in city residents not receiving their fair share of these state investments.

The city is partnering with the New York State Department of Environmental Conservation and New Jersey Department of Environmental Protection, which have sponsored the U.S. Army Corps of Engineers New York–New Jersey Harbor and Tributaries Coastal Storm Risk Management Feasibility Study<sup>120</sup>. The study aims to identify solutions to protect multiple neighborhoods with protective barriers, both on land and in water, and will define the next generation of coastal projects. The Army Corps must ensure these projects are responsive in addressing the multiple climate risks facing New York City and use cost-benefit analysis that meaningfully incorporates social and environmental benefits and prioritizes socially vulnerable populations.

### Measuring Progress on Resiliency

As the city continues to build resilient infrastructure and pursue policies to keep New Yorkers safe, the role of Climate Budgeting is to ensure that climate resiliency is considered in early stages of planning and funding decisions and evaluate the collective impact of ongoing and planned actions to further inform strategic decision-making. OMB is collaborating with other agencies that are developing procedures and tools to move this work forward.

The city's CRDG translate future-looking climate change projections into technical design guidance for public facilities and infrastructure. As part of Climate Budgeting, OMB has started asking agencies for information about how these guidelines and other standards are used in capital planning

to inform the Climate Alignment Assessment of the entire capital plan and the review of individual project proposals submitted through the budget process. Under Local Law 41 of 2021, the city is formally piloting the CRDG—which include the development of a cost-benefit analysis tool—and associated resiliency scoring metric for city projects<sup>37</sup>. Under the local law, by the end of 2026, all city projects will have to meet a stringent set of requirements that will certify their preparedness for extreme weather threats. Climate Budgeting will incorporate these tools to inform smart budget decisions.

The CRDG and OMB's Climate Alignment Assessment provide frameworks for evaluating whether individual projects are protected from the climate threats they face. However, Climate Budgeting aims to measure not only resiliency to individual assets and locations, but citywide resilience as well. This is complex and less tangible compared to measuring citywide emissions.

Quantifying the future impact of ongoing and planned resiliency actions is challenging due to complexities stemming from the variety of hazards, multiple potential future scenarios that depend on global climate action, and the diverse array of strategies to mitigate different risks, which are location-specific. OMB is working with MOCEJ, agency partners, and external advisors to identify indicators that can be used to understand the long-term resiliency impact of city actions by demonstrating how those actions result in different outputs and outcomes.

## RESILIENCY INDICATOR FRAMEWORK AND EXAMPLES

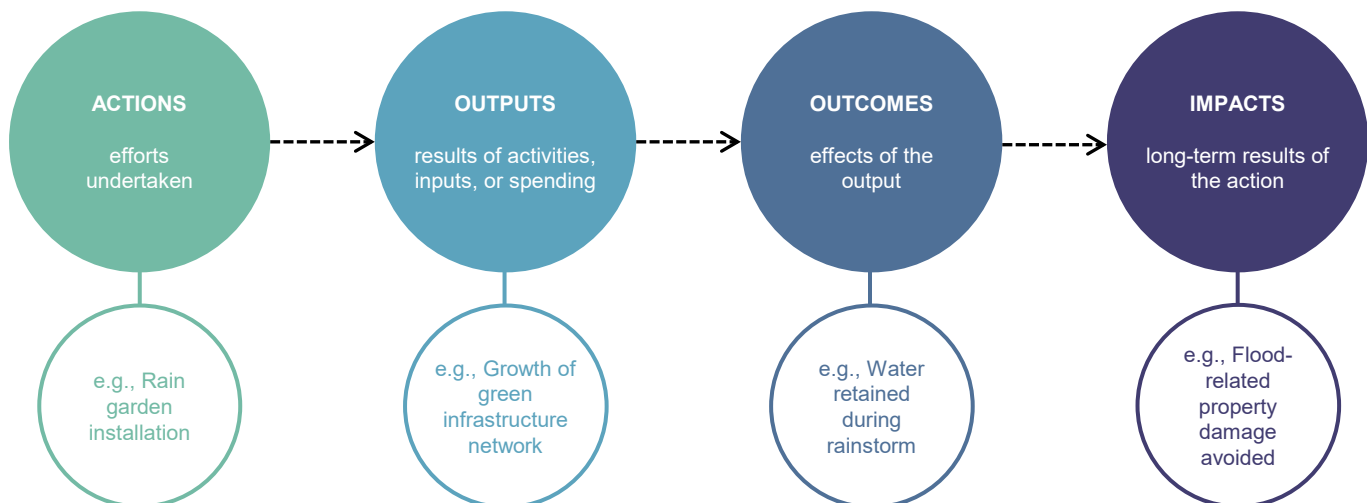


FIGURE 4.1 | SOURCE: NYC OMB





Indicators are organized around the categories of outdoor heat, indoor heat, coastal flooding, and inland flooding, with the recognition that many actions may help the city adapt to more than one threat at a time. For example, expanding tree canopy can help alleviate both heat and flooding. Figure 4.3 provides additional detail on example indicators, including data source availability, relevance to New York City’s resiliency landscape, whether a target for adaptation has been set, the current status, and the use cases for Climate Budgeting.

OMB and its partners are developing processes for how indicators will be used to incorporate resiliency into the budget process and decision-making. These processes will evolve over time and be informed by new developments such as forthcoming city shoreline resiliency standards, which will ensure that waterfronts are rebuilt resiliently over time, and the city’s forthcoming stormwater adaptation plan, which will establish a citywide flood protection target for

stormwater infrastructure. Funding in the FY 2025 Executive Plan will enable DEP to install smart sewer sensors and create a citywide model of how water moves through sewer infrastructure in real time, which will inform project planning and future investments in targeted sewer projects.

Indicators are one part of an overall strategy to measure and manage toward increasing resiliency. OMB is exploring several complementary processes to implement overarching resiliency forecasting and progress tracking to inform decision-making. Through the C40 Cities Climate Budgeting program, New York City is participating in a Climate Budgeting working group focused on mainstreaming climate adaptation into governance, city budgeting, and planning. Leveraging its own experience in Climate Budgeting, New York City will contribute to the development of best practices, and the working group will support the evolution of future iterations of Climate Budgeting.

## RESILIENCY INDICATOR EXAMPLES

Indicator Component	Outdoor Heat: Tree Canopy Cover	Indoor Heat: Residential Air Conditioning Prevalence	Inland Flooding: Permeable Surface Cover	Coastal Flooding: Flood Insurance Prevalence
<b>Data Source</b>	Aerial imagery and remote sensing methods called Light Detection and Ranging (LiDAR); updated at a five-year interval.	The U.S. Census Bureau conducts the New York City Housing and Vacancy Survey every three years with the New York City Department of Housing Preservation and Development (HPD).	LiDAR imagery, city planimetric data, orthographic imagery, and parcel/land use maps.	New York City Department of Emergency Management and the U.S. National Flood Insurance Program (NFIP).
<b>Resiliency Relevance</b>	Trees’ evapotranspiration and shade reduce outdoor temperatures. Urban trees cool city streets and buildings, and provide natural co-benefits.	Critical for mitigating heat-related mortality, as outlined by the NYC Health Department.	Enhances retention of water where it falls, and reduces flooding, complementing sewer infrastructure projects.	Offers financial protection from flood damage, supporting recovery and rebuilding efforts.
<b>City Target</b>	Achieve 30 percent tree canopy cover.	Mandatory cooling for new construction by 2025; Maximum indoor temperature policy by 2030.	Reduce sewer overflows by 1,670 million gallons per year by 2040 and expand green infrastructure to hold water.	Since 2012, the city has actively increased NFIP enrollment.
<b>Citywide Status</b>	22 percent of city is covered by canopy; 53 percent is city-managed, 47 percent on private, state, and federal property.	More than 90 percent of households have air conditioning, but disparities exist for marginalized residents.	A high impervious surface ratio, with Manhattan at 63 percent.	As of 2022, 56,265 policies exist in the city, with over 400,000 people living in high-risk flood zones.
<b>Climate Budget Implications</b>	Understanding how project proposals impact tree density and canopy and how planned funding and policies will impact canopy over time.	Focuses on incorporating cooling solutions into decision-making for human health and wellbeing.	Informs the development of water infrastructure, promoting cost-effective flood and water quality management solutions.	Guides targeted flood-risk reduction and addresses recurring costs in frequently affected neighborhoods.

FIGURE 4.3 | SOURCE: VARIOUS <sup>4,37,121-126</sup>

# INTEGRATING ENVIRONMENTAL JUSTICE

Climate Budgeting in New York City aims to integrate equity and environmental justice considerations throughout the process. Achieving environmental justice will require local, state, and federal coordination and targeted investment that bring environmental benefits to those most at risk and vulnerable to climate change. As outlined in both the federal Justice40 initiative and New York State's CLCPA requirements, 40 percent of benefits from certain federal and state investments should be directed to disadvantaged communities. These programs are specifically aimed at housing, workforce development, pollution reduction, low-income energy assistance, energy, transportation, and economic development.<sup>70,127</sup> New York City contains 59 percent of the state's disadvantaged communities and should receive a sizeable portion of available funding<sup>128</sup>. Historically, caps have led to New York City receiving a smaller share of state funding than its population would suggest is appropriate.

To begin the process of centering equity and environmental justice considerations in the Climate Budgeting process, OMB now asks agencies to provide information on potential impacts related to environmental justice and equity when identifying new climate projects. Initial Climate Budgeting analysis also includes an assessment of projects included in the Capital Commitment Plan that provide additional benefits, including several identified in EJNYC: supporting green space in the public realm, protecting natural areas and waterways from pollutants, expanding access to public transit and alternative forms of transportation, and improving local air quality. With the support of the NYC Health Department, OMB analyzed air quality and health benefits, and their likely distribution across neighborhoods, alongside GHG emissions impacts (see Section 3). OMB will expand on these efforts to more comprehensively incorporate and center environmental justice into Climate

Budgeting analysis and processes going forward. In 2024, New York City will participate in a C40 Cities working group focused on integrating equity into Climate Budgeting. Participating cities will seek to advance the integration of equity consideration into city processes, identify opportunities to bring equity and climate action together through budgeting, and explore how to measure equity impacts to inform budget decision-making.

New York City will leverage findings from the recently published EJNYC Report and explore how associated mapping tools can be used in conjunction with capital project mapping to better understand how the city's planned investments benefit EJ Areas and address local environmental justice concerns. Building upon the EJNYC Report, MOCEJ will develop an EJNYC Plan by integrating community-based approaches and interagency participation to propose strategies and policies that address the environmental justice issues highlighted in the EJNYC Report. The EJNYC Plan will outline a course of action to tackle the historical inequities experienced in EJ Areas to improve quality of life and promote wellbeing for all New Yorkers. The plan will also identify areas for potential citywide action and provide guidance for city agencies to embed environmental justice considerations into decision-making and governance processes. The FY 2025 Executive Plan includes funding to support analysis, community and agency engagement, and preparation of an EJ Plan for New York City.

Through the C40 Cities Climate Budgeting Program equity working group and New York City EJ Plan, MOCEJ and OMB will continue to explore ways that Climate Budgeting can support the city's ongoing efforts to promote equity and environmental justice in decision-making and budgetary processes.

# CONCLUSION

OMB is committed to supporting the city's climate action through the Climate Budgeting process. Transformative change requires a smart and proactive approach, treating every decision the city makes as a climate decision. The budget challenges and constraints the city faces make it all the more imperative to explore all possible avenues of city action, pursue external funding resources, and make smart, informed decisions with the city's limited resources.

While the costs of preparing for and responding to climate change are significant, the cost of inaction is greater. Climate change poses risks to New York City's health, safety, housing, environment, and economy, and has a disproportionate impact on communities that are already vulnerable. Without Climate Budgeting, the city risks investing in projects that are incompatible with long-term goals, locking in technology that may harm communities for decades, missing opportunities to save money by addressing multiple threats at once, and stranding assets that are paid for but must be abandoned in the near future for better alternatives.

Climate Budgeting will play a crucial role in supporting the advancement and implementation of strategies outlined in PlaNYC and related sustainability and resiliency initiatives by regularly highlighting investments in climate action and their impacts, identifying where further action is needed, and prioritizing the most cost-effective and strategic investments that advance climate goals.

New York City's Climate Budgeting initiative bridges the gap between commitments and action and will promote transparency and rigor in assessing the actions the city funds and supports. A budget informed by climate science and equity will ensure resources are used effectively now, protect communities, and save the city money in the long term.

# Technical Appendices

To explore the technical appendices, which include detailed methodologies of analyses presented in this document, follow this [link](#) or scan the QR code below:



**APPENDIX 1:** Guidelines For Implementing Climate Budgeting

**APPENDIX 2:** Climate Budgeting Intake Form

**APPENDIX 3:** Capital Project Emissions Impact Data Gathering

**APPENDIX 4:** Greenhouse Gas Emissions And Resiliency Budget Tracking

**APPENDIX 5:** Climate Alignment Assessment

**APPENDIX 6:** Greenhouse Gas Emissions and Air Quality Forecasting

# Glossary

<b>ACDOs</b>	Agency Chief Decarbonization Officers	<b>LiDAR</b>	Light Detection and Ranging data
<b>AR6</b>	Intergovernmental Panel on Climate Change Sixth Assessment Report	<b>LL</b>	NYC Local Law
<b>BIL</b>	Bipartisan Infrastructure Law (Infrastructure Investment and Jobs Act of 2021)	<b>MOCEJ</b>	NYC Mayor’s Office of Climate and Environmental Justice
<b>CAFE</b>	Corporate Average Fuel Economy standards	<b>MWh</b>	Megawatt hour of electricity
<b>CHPE</b>	Champlain Hudson Power Express	<b>MTA</b>	Metropolitan Transportation Authority
<b>CIG</b>	NYC Cultural Institutions Group (in Department of Cultural Affairs)	<b>NASA</b>	U.S. National Aeronautics and Space Administration
<b>CLCPA</b>	New York State Climate Leadership and Community Protection Act	<b>NFIP</b>	National Flood Insurance Program
<b>COMET</b>	United States Environmental Protection Agency’s City-based Optimization for Energy Technologies model	<b>NOAA</b>	National Oceanic and Atmospheric Administration
<b>CPNY</b>	Clean Path New York	<b>NPCC</b>	New York City Panel on Climate Change
<b>CRDG</b>	Climate Resiliency Design Guidelines	<b>NTA</b>	Neighborhood Tabulation Area
<b>DCAS</b>	NYC Department of Citywide Administrative Services	<b>NYCEDC</b>	NYC Economic Development Corporation
<b>DCP</b>	NYC Department of City Planning	<b>NYCHA</b>	New York City Housing Authority
<b>DDC</b>	NYC Department of Design and Construction	<b>NYISO</b>	New York Independent System Operator
<b>DEM</b>	NYC Department of Citywide Administrative Services, Division of Energy Management	<b>NYSERDA</b>	New York State Energy Research and Development Authority
<b>DEP</b>	NYC Department of Environmental Protection	<b>NYU</b>	New York University Center for Urban Science and Progress
<b>DOE</b>	NYC Department of Education	<b>CUSP</b>	
<b>DOHMH</b>	NYC Department of Health and Mental Hygiene (the NYC Health Department)	<b>OMB</b>	NYC Mayor’s Office of Management and Budget
<b>DOT</b>	NYC Department of Transportation	<b>PACE</b>	Property Assessed Clean Energy
<b>EJ</b>	Environmental Justice	<b>PACT</b>	NYC Housing Authority’s Permanent Affordability Commitment Together
<b>EJNYC</b>	Environmental Justice New York City	<b>PlaNYC</b>	PlaNYC: Getting Sustainability Done report
<b>EO</b>	Executive Order	<b>PM</b>	Particulate Matter
<b>FEMA</b>	Federal Emergency Management Agency	<b>RECs</b>	Renewable Energy Certificates
<b>FY</b>	Fiscal Year	<b>SCA</b>	NYC School Construction Authority
<b>GHG</b>	Greenhouse Gas	<b>SIRR</b>	NYC Special Initiative for Rebuilding and Resiliency
<b>H+H</b>	NYC Health and Hospitals Corporation	<b>TLC</b>	NYC Taxi & Limousine Commission
<b>HPD</b>	NYC Department of Housing Preservation and Development	<b>TAG</b>	Technical Advisory Group
<b>HVAC</b>	Heating, Ventilation, and Air Conditioning	<b>tCO<sub>2e</sub></b>	Metric tons of carbon dioxide equivalent greenhouse gas emissions
<b>I4CE</b>	Institute for Climate Economics	<b>tPM<sub>2.5</sub></b>	Metric tons of particulate matter with diameter up to 2.5 micrometers
<b>IPCC</b>	Intergovernmental Panel on Climate Change	<b>U.S. DOT</b>	United States Department of Transportation
<b>IRA</b>	Inflation Reduction Act of 2022	<b>U.S. EPA</b>	United States Environmental Protection Agency
		<b>WGII</b>	IPCC Sixth Assessment Report Working Group II



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## Climate Leadership

Chief Climate Officer, Rohit T. Aggarwala

Mayor's Office of Climate & Environmental Justice Executive Director, Elijah Hutchinson

Chief Decarbonization Officer, Sana Barakat

## OMB Environmental Sustainability & Resiliency Task Force

Lia Cairone, Catherine DeJesus, Claire Douglas, Samir Farhat, Shawn Inshan, Kara Kirchhoff, Anna Liebowitz, Ross MacWhinney, Peter Mattingly, Anthony Perez, Aymee Armenteros Pinillos, Aurora Robertson, Mallory Rutigliano, Jarrod Sims, Lindsay Spangler, Max Vilgalys, Steven Wagner

## Network Partners

C40 Cities Climate Leadership Group

ICLEI USA

## Technical Advisory Group

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## Individuals

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