

NYC Carbon Challenge for Commercial Owners and Tenants Program Design

Background

In September 2014, recognizing the existential threat that climate change poses to New York City and the world, Mayor Bill de Blasio set the ambitious goal to reduce citywide greenhouse gas (GHG) emissions 80% below 2005 levels by 2050 (80 x 50) and send zero waste to landfills by 2030. Because the energy used in New York City's one million buildings represents 73% of citywide GHG emissions, and more than 90% of the buildings that exist today will still be here in 2050, improving the energy efficiency of the city's existing building stock represents the greatest opportunity to reduce citywide GHG emissions.

New York City cannot achieve this ambitious goal without the help of the private sector. Since 2007, the City of New York has launched and expanded the NYC Carbon Challenge program, a ground-breaking public-private partnership to accelerate reductions in GHG emissions. To date, New York City's 17 leading universities, the 11 largest hospital organizations, 12 global companies, 19 residential management firms, and 19 hotels have pledged to voluntarily reduce their building-based emissions by 30% or more over the course of ten years.

Commercial buildings account for roughly 30% of New York City's GHG emissions, and the energy used in interior offices and leased spaces accounts for between 40-60% of end use in a typical commercial office building. Therefore, reducing energy consumption in both common areas and leased spaces of commercial buildings presents a significant opportunity to reduce GHG emissions. However, owners and tenants face a range of coordination issues and other barriers when it comes to implementing energy efficiency projects. Split incentives—in which the building owner pays for energy efficiency improvements but the tenants reap the cost-savings—can prevent collaboration between owners and tenants. Many commercial tenants are also experiencing increasing energy use from space densification, plug loads, and information technology equipment, which lead to increased demands on the base building systems. Additionally, a lack of coordination between base building and supplemental heating and cooling systems often leads to inefficient operations of both.

To help provide the industry with solutions to these coordination barriers, the NYC Mayor's Office of Sustainability, in collaboration with the Real Estate Board of New York (REBNY), invites the city's leading commercial owners and tenants to demonstrate their commitment to finding creative solutions to reduce GHG emissions by joining the NYC Carbon Challenge. Participants will join a well-established program that includes 12 major commercial tenants and owner-occupiers that have committed to reductions in GHG emissions and have begun to implement innovative energy reduction measures.

For more information about the program, please visit: www.nyc.gov/carbonchallenge and nyc.gov/mcc-commercialoffices.

The Challenge

The NYC Mayor's Office of Sustainability ("Mayor's Office") and the Real Estate Board of New York ("REBNY") invites New York City's leading commercial owners and tenants to jointly commit to reduce the GHG emissions intensity of a commercial office building by 30%, 40%, or 50% from a selected base year by 2026. To join the Challenge, participating owners will commit to a specific reduction from their base building systems and common areas, and participating tenants will commit to a specific reduction in their commercial leased spaces. Tenants and owners also have the option to participate in the program independently.

Benefits of the Challenge

The NYC Carbon Challenge ("Challenge") offers commercial owners and tenants the opportunity to demonstrate leadership in energy efficiency and sustainability and be recognized by the Mayor's Office for these efforts. The program will provide participating owners and commercial tenants a platform for the exchange of best practices and tailored resources to help identify strategies to improve coordination on the implementation of energy efficiency projects, with a long-term focus on replicable and scalable solutions. Participants will join a diverse forum of peers, technical experts, and organizations to help implement these strategies and realize lasting reductions in energy use, costs, and GHG emissions.

Summary of the Program

Participation in the NYC Carbon Challenge for Commercial Owners and Tenants consists of the following (described in detail later in the document):

- 1. *Selecting the Challenge Goals.*** Participating owners and commercial tenants will select Challenge goals for the whole building (the "Whole Building Goal"), the base building systems and common areas (the "Owner Goal"), and leased spaces (the "Tenant Goal"). Participating owners and commercial tenants must jointly select the Whole Building Goal, while owners and commercial tenants may individually select a Owner or Tenant Goal. Tenants and owners participating independently are not required to select a Whole Building Goal.
- 2. *Accepting the NYC Carbon Challenge.*** To accept the Challenge, the participating owner and commercial tenants in an individual building must submit a joint acceptance letter pledging to achieve the Whole Building Goal, Owner Goal, and Tenant Goal, or a letter pledging to achieve the owner or tenant goal if participating independently. The letter must be signed by an employee from each entity with the authority to commit to the Challenge.
- 3. *Tracking GHG Emissions.*** Challenge participants agree to track and report GHG emissions annually for the whole building, base building systems and common areas, and leased spaces according to the methodology of the NYC Carbon Challenge. Participants must also select and report a normalization factor to track GHG emissions.

Tracking GHG emissions from solid waste is optional, but not required, to be counted toward the Challenge goals.

- 4. *Regular Partner Meetings.*** The Mayor's Office will organize quarterly meetings with participating owners, tenants, and property management firms to provide updates, feature guest experts and other speakers of interest, and encourage the exchange of ideas and best practices. At least one representative for each Challenge participant should attend each meeting.
- 5. *Annual One-on-One Meetings.*** The Mayor's Office staff and representatives from each participating building will meet once a year to review progress, consider any obstacles to achieving reductions, and discuss strategies to reach the Challenge goal. The Mayor's Office staff and individual Challenge participants will also meet on an as-needed basis.
- 6. *Working Groups.*** The Mayor's Office will convene voluntary working groups as needed to help develop new initiatives and/or to resolve issues as they arise.
- 7. *Access to Resources and Technical Expertise.*** The Mayor's Office will provide direct access to staff and information to connect participants with financial incentive programs, industry experts, other peers, and City agencies.
- 8. *Promotion and Recognition.*** The Mayor's Office will promote the Challenge and recognize participants for their achievements, including through press conferences, events, news releases, social media outreach, and information posted on the NYC Mayor's Office of Sustainability website.

Completing the Challenge

To complete the NYC Carbon Challenge for Commercial Owners and Tenants, each Challenge participant must document achievement of the Whole Building Goal, Owner Goal, and Tenant Goal, or the Owner or Tenant Goal if participating independently, subject to verification by the Mayor's Office. There are no negative consequences or punitive repercussions for not meeting the Challenge goal.

Details of the Program

The NYC Carbon Challenge for Commercial Owners and Tenants (the “Challenge”) is a voluntary program for commercial owners and tenants to jointly commit to reduce the GHG emissions intensity of a commercial office building by 30%, 40%, or 50% from a selected base year by 2026. Participating buildings are encouraged to have the majority of leased square footage participating in the program. Tenants and owners also have the option of participating in the program independently.

1. Select the Challenge Goals

Each participating commercial owner and tenant will identify the properties in their portfolio to include in the Challenge. Each property will be held to a separate greenhouse gas reduction goal. Participating owners and commercial tenants will select separate greenhouse gas (GHG) emissions intensity reduction goals as follows:

- ***The Whole Building Goal:*** Participating owners and commercial tenants jointly select a Challenge goal to reduce whole building GHG emissions intensity, a base year from which to measure the reductions, and a normalization factor for GHG emissions.
- ***The Owner Goal:*** Participating owners select a Challenge goal to reduce GHG emissions intensity from base building systems, common areas and a base year from which to measure the reductions. The energy consumption from tenants that are not sub-metered will count towards the owner’s GHG emissions intensity. For tenants that are included in the owner’s base year energy consumption and install a sub-meter during the course of the Challenge, their first full year of sub-metered energy information can be retroactively subtracted out of the Owner Goal’s base year energy consumption. The Owner Goal should use the same normalization factor as the Whole Building Goal.
- ***The Tenant Goal:*** Participating tenants select a Challenge goal to reduce GHG emissions intensity from their commercial leased spaces and a base year from which to measure the reductions. The Tenant Goal should use the same normalization factor as the Whole Building Goal.

Selecting a Normalization Factor. Challenge participants will measure their GHG emissions intensity based on one of three normalization factors: (1) carbon dioxide equivalent per gross square foot (CO₂e/sq. ft.), (2) carbon dioxide equivalent per full-time equivalent employee (CO₂e/FTE), or (3) carbon dioxide equivalent per occupant hour (CO₂e/OH). Where applicable, owner and tenant participants should track their GHG emissions on the same normalization factor for the Whole Building Goal, Owner Goal, and Tenant Goal.

- **Carbon Dioxide Equivalent.** The level of carbon dioxide (CO₂) that would have the same climate impact as a given concentration and type of greenhouse gas. GHG emissions are calculated for the Challenge using a carbon coefficient that determines the level of carbon dioxide equivalent (CO₂e) associated with a given amount of on-site fuel, steam or electricity use.
- **Square Feet.** This is defined differently for each goal.
 - **Square Feet for the Owner Goal:** Measured as gross square feet, or the total number of square feet measured between the exterior surfaces of the enclosing fixed walls, including spaces such as vent shafts, stairwells, and basements.
 - **Square Feet for the Tenant Goal:** Measured as usable square feet, or the specific area a participant will occupy as part of the lease. For partial-floor leases, this includes office space as well as any storage or private restrooms. For full-floor leases, this counts for everything inside the exterior walls minus stairwells and elevator shafts.
 - **Square Feet for the Whole Building Goal:** Measured as gross square feet minus vacant space for the whole building. Vacant square feet is defined as non-leased usable square footage available for lease or sublease. This ensures that new or vacating tenants do not contribute to material fluctuations in GHG emissions intensity.
- **Full-Time Equivalent (FTE) Employees.** The average number of employees employed by the Challenge participant located within office space covered by the NYC Carbon Challenge. To calculate the annual FTE, count the total number of employees, including consultants and contractors, who work in the covered office space on a given day of each month and take the average over the twelve months of the year. Count as a full-time employee each person that works at least 80% of a “full-time” work week (35 hours) onsite, and count as a half-time employee each person that works less than 80% of a “full-time” work week onsite.
- **Occupant Hours (OH).** The cumulative number of hours each occupant spent inside the covered office space throughout the year. For example, an employee with an 8 hour work day with a one hour lunch outside of the building counts for 7 occupant hours. Choosing this normalization requires the Challenge participant to have a system by which to measure occupant hours, for example with time clocks, occupancy detection sensors or security system measurements such as turnstile rotations. Inclusion of OH in retail spaces is optional.

Selecting a Base Year and Percentage Reduction Goal. Challenge participants will select a GHG emissions reduction goal of 30%, 40%, or 50% from an individually selected base year for the Whole Building Goal, Owner Goal, and Tenant Goal. Participants can select a base year prior to the current year to receive credit for energy efficiency work that has already been completed, but an earlier base year will require participants to select a deeper GHG reduction goal.

- **Start Year.** The start year of the Challenge is the first calendar year after which the Challenge participant accepts the Challenge.
- **End Year.** For owners, the end year is ten years after the start year of the Challenge. If the participating building is sold to a new owner over the course of the Challenge, the new owner will have the option to continue the building's commitment. For tenants, the end year is either ten years from the start year or the lease expiration date, whichever is sooner. To meet the Challenge goal, Challenge participants must achieve their Challenge goal by December 31st of their end year. For example, participants that have a start year of 2016 have until December 31, 2026 to complete the Challenge.
- **Calendar Year.** GHG emissions information reported for the Challenge must be aggregated on a calendar year basis (January 1st – December 31st).
- **Owner Base Year and Percentage Reduction Goal.** Participating owners may select a base year and percentage reduction goal as follows:
 - **2012 or later:** 30% Reduction Goal
 - **2009 or later:** 40% Reduction Goal
 - **2005 or later:** 50% Reduction Goal
- **Tenant Base Year and Percentage Reduction Goal.** Participating tenants may select a base year between 2005 and 2015. The percentage reduction goal will be based upon the length of the commitment to account for leases that expire before the end of the Whole Building Goal and Owner Goal in 2026. If a tenant decides to renew their lease, they can continue to participate in the Challenge. Participating tenants may select their percentage reduction goals as follows:
 - **10 - 15 years:** 30% Reduction Goal
 - **16 - 18 years:** 40% Reduction Goal
 - **19 - 22 years:** 50% Reduction Goal
- **Whole Building Base Year and Percentage Reduction Goal.** Participating owners and tenants will jointly agree upon the base year and percentage reduction goal for the whole building after submitting data in the first year of the Challenge. Participants are encouraged to select a whole building base year that is aligned with the Owner Goal.

- **Calculating Base Year GHG Emissions.** If a participating tenant selects a base year before or after the owner's selected base year, base year GHG emissions for the whole building are calculated by replacing the tenant's GHG emissions for the owner's selected base year with the tenant's GHG emissions in their selected base year (*example included below*).
- **Calculating End Year GHG Emissions.** If a participating tenant's selected end year is before the Whole Building Goal end year, the GHG emissions in the tenant's end year will be held constant for the remaining years of the Challenge (*example included below*). If a tenant leaves before the end of a calendar year, GHG emissions will be prorated based on time.
- **Accounting for Tenant Turnover.** When turnover occurs with sub-metered tenants that are not participating in the Challenge, participants have the option to either hold the previous tenant's GHG emissions constant for the rest of the Challenge or include the new tenant's GHG emissions toward the Whole Building Goal.
- **Example:** In the example below, Challenge participants are designated in green and non-participants are designated in red. The owner has selected a base year of 2009, Tenant 1 has selected a base year of 2011, and Tenant 4 has selected a base year of 2007. The base year for the Whole Building Goal has been aligned with the Owner base year of 2009. Tenant 1's lease expires in 2022.
- **Base Year Calculation:** To calculate GHG emissions intensity for the 2009 base year, the GHG emissions intensity associated with energy consumption of Tenants 1 and 4 in 2009 is replaced with Tenant 1's GHG emissions in 2011 and Tenant 4's GHG emissions in 2007.
- **End Year Calculation:** To calculate the GHG emissions for the 2026 end year, Tenant 1's GHG emissions intensity are held constant from 2022 through 2026.

	Whole Building Base Year										Start Year										End Year					
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026				
Tenant 1 - Participating					←																					
Tenant 2 - Not Participating																										
Tenant 3 - Vacant																										
Tenant 4 - Participating							→																			
Tenant 5-8 - Not Participating																										
Landlord - Participating																										
Whole Building																										

- **High-Energy Non-Office Space.** A Challenge participant can choose to include high-energy non-office space uses, such as data centers, broadcast studios, and industrial space when calculating its GHG emissions, or calculate these spaces under a separate metric. For example, participants can select to measure their data centers by power usage effectiveness (PUE), a metric used for measuring the ratio of total power used by a data center facility to the power used by the information technology (IT) equipment. Participants who opt to measure their high energy non-office use space under a separate metric must choose a specific GHG emissions reduction goal, to be determined jointly with the Mayor's Office.

2. Accepting the NYC Carbon Challenge

To accept the Challenge, each building must submit a joint coordination letter for the Whole Building Goal, Owner Goal, and Tenant Goal using a template provided by the Mayor's Office. The coordination letter confirms the owner and participating tenant's agreement to work together to achieve the Whole Building Goal. The letter also confirms the owners and tenants' acceptance of their percentage reduction goals, selected base years, and normalization factor(s).

These letters must be co-signed by representatives from the participating owner and tenants who have the authority to commit to the Challenge. If participating independently, owners and tenants will submit an individual participating letter. If the building is managed by a property manager other than the owner, it is optional, but encouraged, for a representative from the property management firm to sign the coordination letter as well.

3. Tracking GHG Emissions

Challenge participants will be responsible for aggregating their annual energy use by fuel type amount and normalization factor data for all covered space in the NYC Carbon Challenge. For the Whole Building Goal, the owner will be responsible for reporting aggregated energy consumption and normalization factor data for the entire building.

For the owner and tenant specific goals, tenants will be responsible for reporting sub-metered energy information for space they have direct operational control over, and owners will be responsible for reporting all non-sub-metered tenant energy consumption as well as energy consumption not included in tenant spaces such as the base building HVAC systems, common area lighting and plug loads, and elevators.

- **GHG Emissions Inventory.** The Mayor's Office will provide each participant with a GHG Emissions Inventory Calculator that will automatically calculate the Challenge participant's GHG emissions intensity and progress to date. Building owners that are required to comply with the Local Law 84: Benchmarking requirement, are encouraged to submit their energy information through Portfolio Manager. The Mayor's Office will extract information from Portfolio Manager and input it into the

Excel-based GHG Emissions Inventory. Tenant participants will submit their energy consumption and normalization factor data in the GHG Emissions Inventory by May 1st of the year following each year of the Challenge. Participants will input total energy information for each calendar year, from the base year until the current year. It is optional, but recommended, that Challenge participants report on their solid waste generation.

The calculator will apply carbon coefficients, fixed at 2005 levels, to each fuel type and solid waste category to calculate the participant's total GHG emissions. The calculator will automatically calculate normalized GHG emissions based upon the selected normalization factor.

- **Data and Disclosure.** Anonymized information on progress will be shared between tenants and the owner to foster collaboration and provide transparency on each participant's contribution to achieving the Whole Building Goal. Disclosed information about program progress between the tenants and owner will be anonymized and displayed as GHG emissions intensity instead of energy and normalization factor data. All building-based energy use and associated GHG emissions data will be kept confidential by the Mayor's Office. When a Challenge participant reaches the Challenge goal, the Mayor's Office will work with the participant to promote this significant accomplishment.
- **Whole Building Energy Use:** Includes the on-site energy consumption of the building aggregated across all fuel sources.
- **Base Building Energy Use:** Includes all energy consumed by base building HVAC systems, common area lighting and plug loads, non-sub-metered tenants, and elevators. For tenants that are included in the owner's base year energy consumption and install a sub-meter during the course of the Challenge, their first full year of sub-metered energy information can be retroactively subtracted out of the Owner Goal's base year energy consumption.
- **Tenant Energy Use:** Includes all sub-metered energy use in space the tenant leases and has direct operational control over.
- **Energy Sources.** All Challenge participants measure whole-building energy use by energy source and amount. On-site energy use is reported using the following units:
 1. Electricity: Kilowatt-Hours (kWh)
 2. Natural gas: Thermal Units (Therms)
 3. Heating oil distillates No. 2, No. 4, and No. 6: US Gallons (US Gal)
 4. Heating oil distillates No. 2, No. 4, and No. 6 with biodiesel blend: US Gallons (US Gal)

5. District Steam: Thousand Pounds (Mlbs)
 6. Diesel or other fuels used for backup generation: US Gallons (US Gal)
 7. On-site/locally-based off-site renewable electricity: Kilowatt-Hours (kWh)
- **Waste Sources.** Challenge participants are given the option to report on their waste output for both tenant and owner operated spaces. Participants that decide to report their waste will have the option to measure their output through self-reported weigh-ins, or hauler-reported tonnage. If physical waste audit has been completed in the past three years, participants are encouraged characterize waste percentages, for the Mixed Municipal Solid Waste category into Mixed Recyclables, Mixed Organics, and Sorted MSW (see below). Breaking down your waste stream will provide more accurate emission levels. Solid waste output is reporting using the following streams:
 1. Mixed Municipal Solid Waste (going to landfill/incineration)
 2. Recycling (Metal, Plastic, Glass, Paper, Cardboard going to recycling/processing center)
 3. Composted (food waste composted or sent to anaerobic digestion)
 - **Carbon Coefficients:** A carbon coefficient determines the level of carbon dioxide equivalent (CO₂e) associated with a given amount of fuel or energy use. The NYC Carbon Challenge carbon coefficients for electricity and steam were developed by the Mayor's Office and are compliant with the Compact of Mayors and the Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (GPC) BASIC level.
 - **Electricity and Steam.** The NYC Carbon Challenge uses the New York City carbon coefficients for electricity and steam, fixed at 2005 levels. The coefficients for electricity and steam can vary significantly across years. Fixing the coefficients at 2005 levels standardizes GHG emissions across different base years and ensures Challenge participants receive credit for their efforts, undistorted by exogenous changes to the composition of the energy supply.
 - **Natural Gas, Propane, and Heating Oils #2, #4, and #6.** The NYC Carbon Challenge uses the carbon coefficients for natural gas, propane, and heating oils #2, #4, and #6, which were developed by Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (GPC).
 - **On-site and Locally-Based Off-site Renewable Electricity.** The electricity generated by onsite and locally-based offsite renewable sources (wind, solar, or geothermal) will have a carbon coefficient of zero.

- **Waste.** The NYC Carbon Challenge uses waste coefficients that are calculated by the EPA Waste Reduction Model (WARM) Version 12 for mixed solid waste, recycled, and composted waste.
- **Locally-Based Offsite Renewable Energy.** Offsite renewable energy purchased by a Challenge participant, such as through a power-purchase agreement, can count towards reductions in emissions intensity if 100% of the electricity generated feeds directly into New York City's electric grid (New York Independent System Operator Zone J). The offsite renewable energy project must be a newly constructed source. Challenge participants must have direct ownership of the offsite renewable energy or must directly purchase the offsite renewable energy from the energy provider, as per a contract or other form of agreement such as a power-purchase agreement, and may not sell any RECs or environmental attributes generated by the renewable energy on the open market.

4. Regular Partner Meetings

The Mayor's Office will organize regular partner meetings, typically held on a quarterly basis. At least one representative from each participating owner and tenant should plan to attend each meeting. Meetings agendas will include, but are not limited to:

- An update from the Mayor's Office staff
- Presentations by Challenge participants
- Presentations by technical experts and other guest speakers of interest
- Open discussion

5. Annual One-on-One Meetings

The Mayor's Office staff and representatives from each participating building will meet once a year to review participant progress, consider any obstacles to achieving reductions, and discuss strategies to reach the Challenge goal. To improve energy efficiency collaboration, participants will be encouraged to include all partners involved in energy efficiency, such as the leasing brokers, property managers, and facilities staff. The Mayor's Office staff and individual Challenge participants will also meet on an as-needed basis. Meetings will cover:

- Background information about the Challenge partner and any material changes to building ownership, management and operations
- Current progress toward the Challenge goal
- Solutions to address owner and tenant coordination issues and barriers
- Status of deliverables to Mayor's Office, including the Climate Action Plan and annual updates to the GHG Emissions Inventory
- Strategy moving forward, any issues in achieving the Challenge goal, and potential solutions to help achieve success

6. Working Groups

The Mayor's Office will organize volunteer working groups of Challenge participants to discuss and develop solutions to any additional issues as they arise. These working groups will be convened on an as-needed basis.

7. Access to Resources and Technical Expertise

The Mayor's Office will provide direct access to staff and information to connect participants with financial incentive programs, industry experts, other peers and city agencies.

8. Promotion and Recognition

The Mayor's Office and REBNY will recognize the efforts and achievements of participating entities and their buildings. Promotion and recognition will include, but is not limited to:

- Press announcements from the Mayor's Office
- Placement of news articles and other media highlighting the success of Challenge participants
- Promotion of participant involvement at Mayor's Office and industry events
- Individually tailored Mayor's Office of Sustainability promotional materials
- Inclusion of firm name, logo, and profiles on official NYC documents, website, and social media outlets
- The ability to self-promote participation in the Challenge, including the use of the NYC Carbon Challenge logo on vetted documents, web pages, social media, or other media