

NYC Carbon Challenge for Universities and Hospitals Program Design for the 50% Challenge

Background

In September 2014, citing the existential threat that climate change poses to New York City and the world, New York City Mayor Bill de Blasio committed to reduce citywide greenhouse gas (GHG) emissions 80% below 2005 levels by 2050. The United Nations projects developed countries must reduce their GHG emissions to this level to limit global temperature rise to 2 degrees Celsius and avert the most dangerous impacts of climate change. With Mayor de Blasio's commitment, New York City became the largest city in the world to commit to an "80 by 50" goal and reaffirmed its continued leadership in addressing global climate change.

The GHG emissions from energy used in New York City's one million buildings represents 71% of citywide emissions, and 80% of the buildings that are here today will still be here in 2050. This means that improving the energy efficiency of the city's existing building stock is the greatest opportunity to reduce citywide GHG emissions. To put New York City on a pathway towards the 80 by 50 goal, the City has released a comprehensive, 10-year plan to address the energy used in our buildings. The plan, called *One City: Built to Last—Transforming New York City's Buildings for a Low Carbon Future*, sets interim targets to reduce building-based GHG emissions by 30% from 2005 levels by 2025.

To achieve New York City's ambitious 80 by 50 goal, the City will continue to look to private and institutional sector leaders to help pave the way. Building on the demonstrated success of the NYC Carbon Challenge, the City is expanding the program by inviting current participants to increase their current goals to a 50% reduction in building-based GHG emissions per square foot by 2025.

The City first launched the NYC Carbon Challenge in 2007 to partner with private and institutional sector leaders to achieve significant GHG reductions from buildings. Since then, the City has invited universities, hospitals, commercial offices, multifamily buildings, and hotels to reduce their GHG emissions per square foot by 30% or more in just ten years.

The NYC Carbon Challenge has been a success. Six universities and hospitals have already achieved the 30% goal, and half of the university and hospital participants have achieved reductions of at least 15% with several years left in the program. These leaders have demonstrated that deep reductions in GHG emissions is achievable, while also realizing other benefits in the form of energy cost savings, energy reliability, and organizational resiliency. For more information about the NYC Carbon Challenge, please visit www.nyc.gov/carbonchallenges.

This document details the NYC Carbon Challenge program design for universities and hospitals committing to the 50% Challenge goal.

Overview

The 50% Challenge

The NYC Mayor's Office of Sustainability ("NYC Mayor's Office") invites universities and hospitals currently participating in the NYC Carbon Challenge to increase their current carbon reduction goals and voluntarily reduce the emissions intensity of their buildings, measured as carbon dioxide equivalent per gross square foot (CO₂e/sq. ft.), by 50% from their existing base years by 2025.

Benefits of the Challenge

Undertaking the 50% Challenge offers participants the opportunity to take a leadership role within the NYC Carbon Challenge and be recognized for their efforts as part of broader citywide goals. Participating universities and hospitals have access to a diverse forum of peers, industry experts, and ancillary organizations that will provide contacts, best practices, technical assistance, and simple tools to help them realize continued reductions in energy use, costs, and GHG emissions.

Structure of the Program

The 50% Challenge consists of the following (described in detail later in the document):

1. **Accept the 50% Carbon Reduction Goal:** To accept the 50% goal, each university or hospital must submit a participation letter to the NYC Mayor's Office confirming their commitment to the 50% Challenge.
2. **Track Carbon Emissions.** The program requires annual submissions of a Carbon Emissions Inventory to track energy use and associated carbon emissions. To accurately measure energy consumption, participants must collect and submit data for electricity, district steam, and natural gas use, as well as heating fuel oil and diesel fuel oil purchases for all buildings. Tracking carbon emissions from solid waste and vehicle fleets is optional, but not required, to be counted toward the 50% Challenge goal.
3. **Emissions Reduction Strategy.** All participants will be required to develop a Climate Action Plan that maps out a strategy to reduce emissions to meet the 50% Challenge goal and update this strategy bi-annually.
4. **Regular Partner Meetings.** The NYC Mayor's Office will organize quarterly meetings with all university and hospital participants to provide updates on the NYC Carbon Challenge and encourage the exchange of ideas. At least one representative from each participating university or hospital will be required to attend.
5. **Individual Meetings and Working Groups.** The NYC Mayor's Office will convene individual meetings with participants and voluntary working groups as needed to review progress, develop new initiatives, and/or resolve issues as they arise.

6. **Promotion and Recognition.** The NYC Mayor’s Office will provide promotion and recognition of the Challenge participants including press conferences, news releases, and information posted on the NYC Carbon Challenge website.

Completing the 50% Challenge

To complete the 50% Challenge, participants must reduce their carbon emissions intensity from the selected base year by 2025. Carbon emissions must be reported using the methodology and coefficients provided by the NYC Mayor’s Office, and may be subject to verification by the NYC Mayor’s Office.

Details of the Program

1. Accept the 50% Challenge

To accept the 50% Challenge, each participating university and hospital must submit a participation letter to the NYC Mayor's Office confirming their commitment to reduce the emissions intensity of their buildings, measured as carbon dioxide equivalent per gross square foot (CO₂e/sq. ft.), by 50% from the selected base year by 2025. The letter must be signed by the university or hospital President, CEO, or other member of the administration with the authority to commit the institution to this carbon reduction goal.

2. Tracking Carbon Emissions

Each Challenge participant must measure building-based energy use and associated emissions in all owned, operated, and leased properties that are covered by the NYC Carbon Challenge. All Challenge participants agree to track their emissions intensity in the Carbon Emissions Inventory calculator provided by the NYC Mayor's Office according to the methodology of the NYC Carbon Challenge. All participants in the 50% Challenge agree to track and report their emissions intensity annually through 2025.

- **Carbon Emissions Inventory.** Participants will submit a Carbon Emissions Inventory to track their emissions by June 1 of each year of the Challenge, unless otherwise specified. The NYC Mayor's will provide each participant with a Carbon Emissions Inventory calculator that will automatically calculate the Challenge participant's emissions intensity.
- **Carbon Emissions per Square Foot.** The metric used for the 50% Challenge will be carbon dioxide equivalent per gross square foot (CO₂e/sq. ft.) from the energy used in all owned and/or operated space, including all non-owned leased space over 10,000 square feet in floor area. Measuring emissions per square foot standardizes emissions levels for facilities of different sizes. Measuring emissions intensity will translate to real emissions reductions even as universities and hospitals continue to grow.
 - **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.
 - **Gross Square Feet.** The total number of square feet measured between the exterior surfaces of the enclosing fixed walls of all owned, occupied, and/or leased space covered by the NYC Carbon Challenge, including spaces such as vent shafts, stairs, basements, etc. All properties that are owned and/or operated by the participating university or hospital, including non-owned leased spaces over 10,000 square feet in floor area, must be counted toward the participant's gross square footage. Leased spaces less than 10,000 square feet in area are optional in the Challenge.

- **Owned Leased Space.** All space greater than 10,000 square feet owned by the Challenge participant and leased to a third party. Participants should account for the GHG emissions attributable to these spaces based on current metering and billing configurations:
 - If electrically submetered and heating energy consumption is prorated for tenant, do not report leased square footage and tenant energy consumption.
 - If electrically submetered and heating energy consumption is not prorated for tenant, report 50% of leased square footage and all fuel consumption.
 - If not electrically submetered and heating energy consumption is prorated for tenant, report 50% of leased square footage and all electricity consumption.
 - If not electrically submetered and heating energy consumption is not prorated for tenant, prorate energy consumption based on square footage and do not report leased square footage and tenant energy consumption.

- **Non-Owned Leased Space.** All space greater than 10,000 square feet leased by the Challenge participant from a third party that is occupied at least 50% of the time and where the participant has direct operational control. Participants should account for the GHG emissions attributable to these spaces based on current metering and billing configurations:
 - If electrically submetered and heating consumption is disclosed, report leased square footage and tenant energy consumption.
 - If electrically submetered and heating energy consumption is not disclosed, report 50% of leased square footage and all electricity consumption.
 - If not electrically submetered and heating energy consumption is disclosed, report 50% of leased square footage and all fuel consumption.
 - If utilities are rent-included and consumption data is not disclosed, leased square footage should not be reported.

- **Data and Disclosure.** All building-based energy use and associated emissions data will be received and kept confidentially by the NYC Mayor's Office. Participants are encouraged to request data for comparison against other participants, but any disclosed information will be anonymized and/or aggregated, unless the Challenge participant provides explicit approval to share individual data.

Methodology for the Carbon Emissions Inventory

Challenge participants aggregate their annual energy use by fuel type and amount for all owned, operated and leased properties that are covered by the NYC Carbon Challenge and input these amounts into the Carbon Emissions Inventory calculator for each calendar year. It is optional, but recommended, that Challenge participants report on fuel usage of their vehicle fleet and solid waste generation from all owned, operated, and leased properties that are covered by the NYC Carbon Challenge. The Carbon Emissions Inventory calculator automatically applies New York City's carbon coefficients, held constant at 2005 levels, to each fuel type to calculate the participant's total emissions. The calculator then divides this value by the gross square footage to calculate each participant's emissions intensity (CO₂e/sq. ft.).

- **Base Year.** Each 50% Challenge participant may keep the base year initially set for the 30% Challenge.
- **End Year.** The end year for both university and hospital participants is 2025. To meet the Challenge goal, Challenge participants must reduce their emissions intensity by 50% by December 31, 2025. The Challenge participants will be required to report 2025 energy use on June 1, 2026.
- **Calendar Year.** Energy use information for all Carbon Emissions Inventories must be aggregated on a calendar year basis (January 1 – December 31).
- **Fuel Types.** Challenge participants measure their energy use by fuel type and amount. Energy use is reported using the following metrics:
 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. On-site/locally-based off-site renewable electricity: Kilowatt-Hours (kWh)
- **Carbon Coefficients:** A carbon coefficient determines the level of carbon dioxide equivalent (CO₂e) associated with a given amount of fuel or energy use. All carbon coefficients for the NYC Carbon Challenge were developed by OLTPS and are in compliance with the 2012 United States Community protocol for Accounting and Reporting Greenhouse Gas Emissions (USCP).
 - **Electricity and District Steam.** The NYC Carbon Challenge uses the New York City specific carbon coefficients for electricity and district steam, held constant at 2005 levels. The coefficients for electricity and district steam can vary significantly across years. Holding the coefficients constant at 2005

levels ensures Challenge participants receive credit for their direct efforts, and not for exogenous changes to the energy supply.

- **Natural Gas, Biodiesel, Diesel, and Heating Oils No. 2, 4, and 6.** The NYC Carbon Challenge uses the nation-wide carbon coefficient for natural gas, biodiesel, diesel, and heating oils No. 2, 4, and 6, which were developed by the U.S. Environmental Protection Agency (EPA).
- **Onsite and Locally-Based Offsite Renewable Electricity.** The electricity generated by onsite and locally-based offsite renewable sources (wind, solar, or geothermal) will have a carbon coefficient of 0.00.
- **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.
- **Fleets.** The NYC Carbon Challenge uses fleet coefficients that are calculated by The Climate Registry's General Report Protocol—Version 2.0 for gasoline, diesel fuel, and gasoline with biodiesel blends.
- **Renewable Energy Certificates (RECs).** A REC represents the property rights to the environmental, social, and other non-power qualities of renewable electricity generation. If a Challenge participant purchases RECs, they may apply these carbon reductions to account for up to 4.5% of their total emissions intensity reduction. REC purchases are allowed, but *not recommended*, to count towards 50% Challenge.
- **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.

3. Emissions Reduction Strategy

Each Challenge participant is required to develop an emissions reduction strategy in the form of a Climate Action Plan and update it bi-annually. If the Challenge participant has previously submitted a Climate Action Plan, they will be required to update the plan to report their strategy to achieve the 50% Challenge goal. The NYC Mayor's Office will provide Challenge participants with a template to complete the Climate Action Plan. All Climate

Action Plans will be received and kept confidentially by the Mayor's Office. Participants are encouraged to publically disclose the Climate Action Plan.

- ***The Climate Action Plan includes:***
 - Background information about the Challenge participant's owned buildings and facilities, rental properties, and tenant spaces
 - An overview of results from the Challenge participant's most recent Carbon Emissions Inventory, Local Law 84, Local Law 87
 - Information about the Climate Action Plan development and update
 - An explanation of operations and maintenance plans and procedures
 - A description of the strategy and projects completed to date
 - A description of the proposed strategy to achieve the remaining reductions needed to meet the 50% Challenge goal

- ***The Climate Action Plan Template and Toolkit.*** The NYC Mayor's Office will provide a Climate Action Plan Template and Toolkit that includes the minimum information that a participant must submit for the Climate Action Plan. Challenge participants are encouraged to submit additional information, but must complete their plan within the format provided by the NYC Mayor's Office.

4. Regular Partner Meetings

Regular partner meetings will be organized quarterly by the NYC Mayor's Office and held on the premises of a university or hospital participant or an ancillary organization. Meetings may include, but are not limited to:

- An update from the NYC Mayor's Office staff
- Presentations by technical speakers and guest speakers of interest
- Open discussion
- Networking

5. Individual Meetings and Working Groups

The NYC Mayor's Office will organize individual meetings with Challenge participants and volunteer working groups of participants and other stakeholders to discuss and develop solutions to additional issues as they arise. These working groups will be convened on an as-needed basis. For example, the NYC Mayor's Office may convene a working group to review GHG accounting methodologies that take into account the electric grid-level benefits of combined heat and power plants.

6. Promotion and Recognition

The NYC Mayor's Office will recognize the efforts and achievements of participants in the 50% Challenge. Promotion and recognition may include, but are not limited to:

- A mayoral press announcement in announcing the universities and hospitals that have committed to the 50% Challenge goal
- Official participant listing on the NYC Carbon Challenge website and participant highlights, if desired

- Inclusion of university or hospital name or logo and highlights of successful projects in official NYC Mayor's Office reports, if approved by Challenge participant
- The ability to self-promote participation in the Challenge, including the use of the NYC logo on vetted documents, collateral, web pages, social media, or other informative media