16

Greenhouse Gas Emissions and Climate Change

This chapter describes the potential impact of the Proposed Project on greenhouse gas (GHG) emissions and considers whether the Proposed Project is consistent with the Citywide GHG emissions reduction goals.

Introduction

The *2021 CEQR Technical Manua*l recommends that a GHG consistency assessment be conducted for any project involving 350,000 square feet (sf) or more of development and other energy-intense projects. The Proposed Project is anticipated to comprise up to approximately 3.7 million gross square feet (gsf) of new construction, with destination entertainment that includes a music hall, hotel, a gaming facility,[1] convention and meeting space, restaurant and retail space, and office and community facility space. In addition, the Proposed Project would also include approximately 20 acres of public park space, improved connections to the Mets-Willets Point No. 7 Train NYCT Subway Station and other public realm improvements as well as structured parking facilities to accommodate up to 13,750 spaces. See **Table 16-1** and **Figure 16-1** for the reasonable worst case development scenario With-Action condition. Accordingly, a GHG consistency assessment was performed for the Proposed Project.

As discussed in the *CEQR Technical Manual*, increased concentrations of greenhouse gases change the global climate and result in wide-ranging effects on the environment, including rising sea levels, increases in temperature, and changes in precipitation levels. Although this is occurring on a global scale, the environmental effects of climate change are also likely to be felt at the local level. New York City's sustainable development policy, starting with PlaNYC and continued and enhanced in OneNYC, established sustainability initiatives and goals for greatly reducing GHG emissions and for adapting to climate change in the City.

[1] The inclusion of a gaming facility is contingent upon receiving a gaming license from the New York State Gaming Commission.

In 2014, the City Council passed a bill to reduce citywide greenhouse gas emissions by 80 percent by 2050 (Local Law 66 of 2014). Local Law 97 of 2019, Climate Mobilization Act, and Local Law 154 of 2021, All-Electric New Buildings Law, are the most recent and the most aggressive climate legislation to date. The GHG emission reduction goal for NYC buildings is 40 percent by 2030 and 80 percent by 2050, compared to 2005.

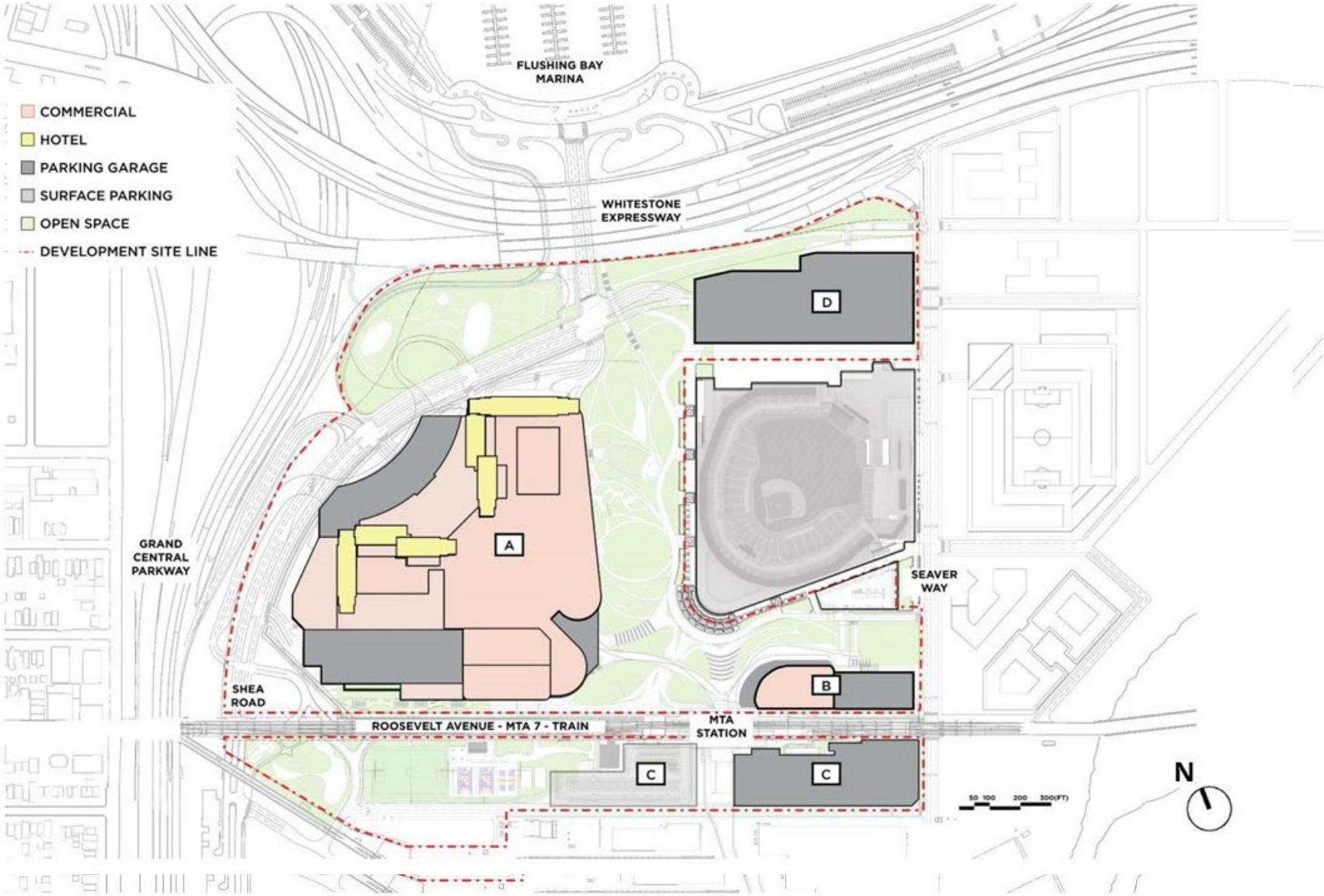
The contribution of a proposed project's GHG emissions to global GHG emissions is likely to be considered insignificant when measured against the scale and magnitude of global climate change. However, certain projects' contribution of GHG emissions still should be analyzed to determine their consistency with the City's GHG reduction goal, which is currently the most appropriate standard by which to analyze a project under CEQR. The GHG consistency assessment focuses on those projects that have the greatest potential to produce GHG emissions and evaluates their potential to result in significant discrepancies with the GHG reduction goal.

Table 16-1 With-Action Condition

Area of Development	Use	Maximum (up to) GSF	Notes
Area of Development A	Hotel[1]	2,118,000	Up to 2,300 hotel rooms
	Convention and Meeting Space[1]	150,000	
	Gaming Facility[2]	352,000	
	Gaming Facility Back of House	93,000	
	Music Hall[1]	290,610	5,655 seats
	Retail	102,330	
	Restaurants	198,790	
	Amenities	149,270	including spa, gym, pool, and entertainment spaces
	Area A Total	**3,454,000**	
Area of Development B	Restaurants	118,000	
	Retail	32,000	
	Office	37,000	
	Community Facility	25,000	
	Area B Total	**212,000**	
Commercial Total		**3,641,000**	
Community Facility Total		**25,000**	
Mixed-Use Total		**3,666,000**	
Parking/Loading/Mechanical		**6,726,785**	Up to 13,750 parking spaces[3] and central utility facility
Public Park		**20 acres**	

[1] Includes associated back of house space
[2] The potential gaming use would require a license from the New York State Gaming Commission
[3] There are currently 7,423 parking spaces on the existing Development Site parking lots and therefore there would be an incremental increase of 6,252 parking spaces.

Figure 16-1 Proposed Project Site Plan



Source: SHoP Architects and Field Operations
Note: Development Footprints for Illustrative Purposes Only

Principal Conclusions

The Proposed Project would be consistent with the City and State GHG emission reduction goals. There would not be any significant adverse GHG emission or climate change impacts as a result of the Proposed Project.

GHG emission analysis followed the *CEQR Technical Manual* guidance to estimate emissions resulting from the proposed development. The Proposed Project would result in 14,379 metric tons (MT) of carbon dioxide equivalent (CO_2e) a year from the project's operations (direct and indirect) and 48,952 MT of CO_2e annually from the mobile sources.

The Proposed Project would comply with the City's climate initiatives, including Local Law 97 and Local Law 154, the State's Climate Leadership and Community Protection Act, and the 2020 Energy Conservation Codes by State and City, and therefore contributes towards the NYC GHG reduction goals. The Proposed Project would apply a roster of energy-saving and GHG-reduction measures. The heating, ventilation, and air conditioning (HVAC) and hot water systems in all Proposed Project buildings would be electric. The Proposed Project plans to install photovoltaic batteries on the roofs of its garage structures and use other GHG reduction measures.

Since the Development Site is located within the 1% annual chance flood hazard area, the potential effects of global climate change have been considered and are presented in **Appendix B, Waterfront Revitalization Program Consistency Assessment**. The assessment considers the effects of climate change on rising sea levels, storm surge, and coastal flooding resulting from the Proposed Actions. As detailed in the Appendix, it was determined that the Proposed Project would be supportive of Policy 6.2 of the New York City Waterfront Revitalization Program (WRP). Therefore, adverse impacts to climate change are not anticipated as a result of the Proposed Actions.

Pollutants of Concern

GHGs are those gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and emit radiation at specific wavelengths within the spectrum of infrared radiation emitted by the Earth's surface, the atmosphere, and clouds. This property causes the general warming of the Earth's atmosphere, or the "greenhouse effect." Some GHGs, such as carbon dioxide (CO_2), occur both naturally and are emitted into the atmosphere through human activities. The *CEQR Technical Manual* lists six GHGs that could potentially be included in the scope of an environmental impact assessment: Carbon Dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4), Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), and Sulfur Hexafluoride (SF_6).

- Carbon Dioxide (CO_2). CO_2 enters the atmosphere via the combustion of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, and also as a result of other chemical reactions (e.g., manufacture of cement). CO_2 is also removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle. Although not the GHG with the strongest effect per molecule, CO_2 is by far the most abundant and, therefore, the most influential GHG.
- Methane (CH_4). CH_4 is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices, as well as by the decay of organic waste in municipal solid waste landfills. Methane, in addition to nitrous oxide

(noted below), plays an important role in GHG emissions since the removal processes for these compounds are limited and they have a relatively high impact on global climate change as compared to an equal quantity of CO_2 as reflected in their high global warming potential.

- Nitrous Oxide (N_2O). N_2O is emitted during agricultural and industrial activities, as well as during the combustion of fossil fuels and solid waste.
- Fluorinated Gases. Hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride are powerful synthetic greenhouse gases that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for ozone-depleting substances (e.g., chlorofluorocarbons [CFCs], hydrochlorofluorocarbons [HCFCs], and halons). These gases are typically emitted in smaller quantities. However, because they are potent greenhouse gases, they are sometimes referred to as High Global Warming Potential gases (High GWP gases). GWP is explained below.

GHGs differ in their ability to trap heat. To compare emissions of GHGs, compilers use a weighting factor called a Global Warming Potential, where the heat-trapping ability of 1 metric ton (1,000 kilograms) of CO_2 is taken as the standard, and emissions are expressed in terms of CO_2 equivalents (CO_2e) but can also be expressed in terms of carbon equivalents. The GHGs which are emitted as a result of human activities and their GWPs are presented in **Table 16-2** based on the *CEQR Technical Manual* which is based on a 100-year horizon and on the Second Assessment Report by the International Panel for Climate Change (IPCC), the highest authority for the climate change in the world. However, more recent values have been reported by the IPCC since the GHG chapter of the *CEQR Technical Manual* was last updated. EPA used GWP over a 100-year period consistent with the IPCC current requirements in its 2022 Inventory of U.S. Greenhouse Gas Emissions and Sinks for 1990-2020. GWP for a 20-year horizon were adopted by the New York State Department of Environmental Conservation for the 2022 Statewide GHG Emissions Report under the requirements of the CLCPA. This analysis will use the CEQR-provided GWP.

Table 16-2 Global Warming Potential for Primary Greenhouse Gases

Greenhouse Gas	Common Sources	Global Warming Potential
CO_2 - Carbon Dioxide	Fossil fuel combustion, forest clearing, cement production	1
CH_4 - Methane	Landfills, production and distribution of natural gas and petroleum, anaerobic digestion, rice cultivation, fossil fuel combustion	21
N_2O - Nitrous Oxide	Fossil fuel combustion, fertilizers, nylon production, manure	310
HFCs - Hydrofluorocarbons	Refrigeration gases, aluminum smelting, semiconductor manufacturing	140–11,700
PFCs - Perfluorocarbons	Aluminum production, semiconductor manufacturing	6,500–9,200
SF_6 - Sulfur Hexafluoride	Electrical transmissions and distribution systems, circuit breakers, magnesium production	23,900

This analysis focuses on CO_2, N_2O, and CH_4 (collectively as CO_2e) as there are no significant direct or indirect sources of HFCs, PFCs, or SF_6 associated with the Proposed Project.

Because of the growing consensus that GHG emissions resulting from human activity have the potential to profoundly impact the Earth's climate, countries around the world have undertaken efforts to reduce emissions by implementing both global and local measures that address energy consumption and production, land use, and other areas. Below are the summary of the recent New York State and City legislation and plans that aimed at GHG emission reduction.

Applicable Policies, Regulations and Benchmarks for Reducing GHG Emissions

To reach its aggressive sustainability goals, the State and City have launched initiatives and implemented various local laws aimed at energy efficiency measures and reduction of GHG emissions. The following policies and regulations provide guidance for current buildings and future growth in New York City and are applicable to the Proposed Project.

New York State Climate Leadership and Community Protection Act

In 2019, New York State enacted the Climate Leadership and Community Protection Act (CLCPA), which became effective January 1, 2020. CLCPA has a goal to "adopt measures to put the state on a path to reduce statewide greenhouse gas emissions by eighty-five percent by [2050] and net zero emissions in all sectors of the economy."[2] Among other requirements, the CLCPA Section 7(2) directs state agencies to determine if the decisions they make are consistent with the Statewide GHG emission limits established by the CLCPA. Further, the CLCPA requires that the energy generation sector be zero-emissions by 2040. The legislation also charges the New York State Climate Action Council (CAC) with making recommendations such as establishing agency regulations to reduce emissions and increase investments in renewable energy sources. The State must also ensure that significant portions of such investments are made in disadvantaged communities. To address Section 7(3) of CLCPA, the State is required to prioritize the reduction of GHG emissions and co-pollutants in disadvantaged communities.

On December 19, 2022, the CAC approved a Scoping Plan[3]. The State's fiscal year 2024 budget plans to invest in energy affordability, sustainable buildings and clean, renewable energy. The budget is in line with the CLCPA cap-and-invest program to accelerate climate action and support State's renewable targets.

On December 20, 2023, the NYSDEC released the "New York Cap-and-Invest Pre-Proposal Outline," which provides stakeholders with a summary of the NYSDEC's current leanings with respect to the design and implementation of the New York Cap-and-Invest (NYCI) program. The NYCI program will establish a gradually declining cap on statewide GHG emissions and require certain obligated entities to purchase allowances to gain the right to emit GHGs in New York State. The number of allowances available will decrease over time as the cap decreases, incentivizing the reduction of GHG emissions. Allowances will be auctioned according to procedures to be outlined in the forthcoming Auction Rule.

[2] The New York State Senate. *Senate Bill S6599.* Available at: https://www.nysenate.gov/legislation/bills/2019/s6599.

[3] New York Climate Act Scoping Plan https://climate.ny.gov/resources/scoping-plan/

The outline indicates that the program will not allow offsets (e.g., investing in projects that reduce or sequester GHG emissions not conducted by the facility) of any kind to be used for compliance. The cap will be set each year with a goal of approaching the statewide GHG emissions reduction goals established by the CLCPA for the years 2030 and 2050. Sources that are determined to be part of emissions-intensive and trade-exposed (EITE) industries may receive allocations of allowances from the NYSDEC to reduce the risk of leakage and to affect EITE facilities' financial burden. The program is preliminary and subject to public comments before finalizing. Both the NY GHG reporting program and the NYCI program are planned to begin in 2025.

New York City Local Law 66

In 2014, the City Council passed Local Law 66, a bill that committed the City to reduce citywide greenhouse gas emissions by 80 percent below 2005 levels by 2050. It is known as "80 x 50." The law also set forth an interim target to reduce GHG emissions 40 percent by 2030 (known as "40 x 30").

New York City Local Law 97

In 2019, the New York City Council enacted a legislative package targeting GHG emissions associated with building energy consumption—the Climate Mobilization Act (Local Law 97). For most buildings that exceed 25,000 gsf (excluding electricity/steam generation facilities, rent-regulated accommodations, places of public worship, and City-owned properties), the City has established annual building emission limits beginning in 2024 and would require the owner of a covered building to submit annual reports demonstrating the building is in compliance with the current GHG emission limits. For buildings not covered under the GHG emissions limits, owners may either demonstrate compliance with the current limits or implement specified energy conservation measures where applicable.

New York City Energy Conservation Code

In March 2020, the City enacted Local Law 48 of 2020, to bring the New York City Energy Conservation Code up to date with the 2020 Energy Conservation Construction Code of New York State (2020 ECCCNYS), which is based on the 2018 edition of the International Energy Conversation Code and ASHRAE Standard 90.1-2016 and also aligns with the New York State Energy Research and Development Authority (NYSERDA) NYStretch Energy Code-2020. This new version of the Energy Conservation Code adopts the provisions of the 2020 ECCCNYS, aligns it with administrative provisions of the NYC Construction Codes, and adopts additional requirements. It is intended to ensure that the construction of new buildings, additions and alterations will meet the target 80 percent greenhouse gas reduction by 2050.

New York City Local Law 154

In December 2021, the New York City Council enacted Local Law 154, intended to reduce GHG emissions through limiting use of fossil fuels in future building construction. This law requires expansion of electric alternatives over those of natural gas and fuel oil. The law takes effect in phases; the first phase is for smaller buildings (under 7 stories and with less than 50 percent affordable housing units in the buildings) with HVAC (not including hot water use), which takes into effect on January 1, 2024. Each year after 2024, there are additional types of buildings for which the law becomes effective, with all buildings included by January 1, 2028.

Other Benchmarks

A number of benchmarks for energy efficiency and green building design have also been developed. Green building design considerations include factors such as material selection, which affects GHG emissions associated with materials extraction, production, delivery, and disposal. For example, the LEED system is a benchmark for the design, construction, and operation of high-performance green buildings that includes energy-efficiency components. Similarly, ENVISION is a voluntary system for benchmarking performance and resiliency of physical infrastructure projects. EPA's Energy Star is a voluntary labeling program designed to identify and promote the construction of new energy efficient buildings, facilities, and homes and the purchase of energy efficient appliances, heating and cooling systems, office equipment, lighting, home electronics, and building envelopes.

Climate Change Initiatives

There are also several City initiatives related to assessing the potential local impacts to global climate change and development strategies to make existing and proposed infrastructure and development more resilient to the effects of climate change.

The City convened the New York City Panel on Climate Change (NPCC) composed of academic, policy advisors, and agencies to develop climate change projections of New York City. The 2009 Climate Risk Information report was prepared by the NPCC as part of PlaNYC to advise the Mayor and the Task Force on issues related to potential impacts on infrastructure due to climate change, including temperature, precipitation, rising sea levels, and extreme weather events. The NPCC developed projections using the Intergovernmental Panel on Climate Change (IPCC)-based methods to generate model-based probabilities for temperature, precipitation, sea level rise, and extreme events including coastal flooding in the 1 percent annual chance floodplain for the 2020s to the 2080s. These projections were developed using 16 global climate model (GCM) simulations and three GHGH emission scenarios. The NPCC released "Climate Change Adaptation in New York City: Building a Risk Management Response" in 2010 to serve as a basis for climate change adaptation in the City. In June 2013, the NPCC published "Climate Risk Information 2013: Observations, Climate Change Projections, and Maps," which outlines the most recent NPCC future climate projections. The NPCC regularly assesses climate change projections and updates their projections regularly. The resulting reports serve as a guide in the City's policymaking process. The most recent NPCC assessment is the 4th assessment issued in April 2024.

The City established an interagency group to work with the Federal Emergency Management Agency (FEMA) to revise the Flood Insurance Rate Maps (FIRMs) for the City, which set the base flood elevations for development on the floodplain and triggers the City's building code flood protection requirements. Currently, the FIRMs are undergoing revision to reflect changes in coastal shorelines and elevation, but the City's Building Code requirements will continue to reflect the 2015 Preliminary FIRMs.

There are also several plans to prepare the City for extreme climate events—the Natural Hazard Mitigation Plan, Coastal Storm Plan, Heat Emergency Plan, Debris Management Plan, Power Disruption Plan, Winter Weather Emergency Plan, and Flash Flood Emergency Plan. The Natural Hazard Mitigation Plan will be integrated with climate projections and include climate change as a hazard.

The New York City Department of Environmental Protection (DEP) also issued several plans aimed at evaluating and implementing adaptive strategies for infrastructure. These include the New York City Green Infrastructure Plan and Sustainable Stormwater Management Plan. In 2013, DEP released the

NYC Wastewater Resiliency Plan that identifies wastewater treatment plants and pumping stations vulnerable to flooding, estimates potential costs of future damage, and recommends protective measures such as waterproofing or elevation critical equipment out of flood elevations to reduce the risk of damage and loss of services.

The Department of City Planning (DCP) developed the WRP which serves as the City's principal coastal management tool and established the City's policies for development and use on the waterfront. It requires that proposed developments in the 1 percent annual change floodplain meet the goals set forth in the policies outlined in WRP, including Policy 6, where a development would need to assess current and future sea-level rise and flooding scenarios and implement flood resiliency measures.

DCP also published the Zoning for Coastal Flood Resiliency (ZCFR), a series of zoning changes for developments on the floodplain. ZCFR expands the geography where optional zoning rules apply to include the 0.2 percent annual chance floodplain, allows optional flexibility to adjust the building envelope from a reference plane, allows certain exemptions in floor area, introduces flexibility for existing non-compliant and/or non-conforming buildings to be retrofitted or reconstructed to meet or exceed flood-resistant construction standards, and permitted obstruction rules for buildings to elevate mechanical, electrical and plumbing equipment, among other modifications and provisions.

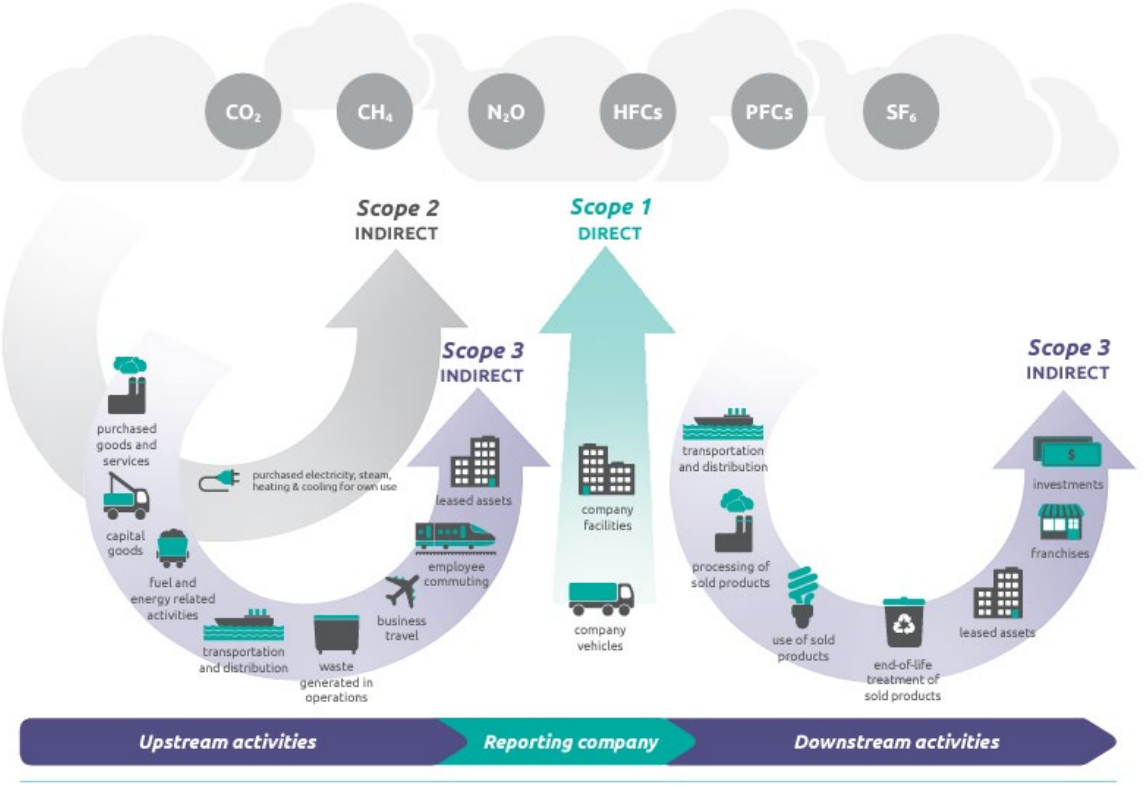
Methodology

GHG Emissions Assessment

According to the *CEQR Technical Manual*, a GHG emissions assessment is typically conducted for larger projects undergoing an environmental impact statement, especially projects that would result in development of 350,000 sf or greater. The Proposed Project would result in the total development of approximately 3.7 million gsf of commercial and community facility uses in Areas of Development A and B and 6.7 million gsf of mechanical space, parking and garages. Therefore, it qualifies for the GHG emission assessment.

GHG emissions are generally divided into three types, three scopes, as illustrated in **Figure 16-2**.

Figure 16-2 Three Scopes of GHG Emissions



Source: WRI, WBSD, through EPA: https://www.epa.gov/climateleadership/scope-3-inventory-guidance

Scope 1, or direct emissions, are emissions resulting from fossil fuel combustion by the proposed buildings or by vehicles owned or operated by the proposed building management. Emissions from heating, ventilation, and air conditioning (HVAC) and water heating systems are the most typical source of GHG emissions for new building projects in New York City. Scope 2, or indirect emissions, are emissions from the generation of purchased electricity used by the buildings. Scope 3 are all other GHG emissions, including emissions from the vehicular trips generated by the proposed building, like employees' commute.

A project's GHG emissions under CEQR are assessed in two steps: first, GHG emissions of the proposed action are estimated, and second, the proposed action is assessed in comparison with the City and State goals for reducing GHG emissions. The *CEQR Technical Manual* recommends that the project's emissions be estimated with respect to the following main emissions sources: on-site operational emissions (direct and indirect); mobile source emissions (direct and indirect); and, when applicable, construction emissions and emissions from solid waste management. Pursuant to *CEQR Technical Manual* methodology, emissions from solid waste management should be quantified only for projects that would fundamentally change the City's solid waste management system. Construction emissions should be described qualitatively.

Consistent with these guidelines, operational and mobile source emissions were quantified for this analysis. Emissions associated with construction are described qualitatively. The Proposed Project is not expected to fundamentally change the City's solid waste management system, therefore, no estimate of emissions from solid waste management is warranted.

Climate Change Assessment

According to the *CEQR Technical Manual*, an analysis of consistency with Policy 6.2 of the WRP may provide sufficient information to assess the potential effects of sea-level rise, storm surge, and coastal flooding.

GHG Assessment

Direct GHG Emissions

The Proposed Project's HVAC systems would be electrical. The only fossil fuel combustion on the Development Site would be for cooking purposes within the kitchens of the proposed restaurants. At this time, the restaurant kitchens that would be located within Area of Development A are assumed to use natural gas, although the restaurants could eventually switch to induction cooking/electricity. This assessment conservatively assumes restaurants within Area of Development A would use natural gas for cooking. The restaurant kitchens that would be located within Area of Development B are proposed to use electricity for cooking, which will be accounted for in the indirect GHG emission calculations.

Direct GHG emissions from the Proposed Project would only be generated from natural gas combustion from the kitchens for the restaurants within Area of Development A and Area of Development B. Direct emissions from the kitchens for the restaurants within Area of Development A would result in a total of 2,874 metric tons of CO_2e annually, as shown in **Table 16-3**.

Table 16-3 GHG Emissions from Area of Development A and Area of Development B Natural Gas-Fired Cooking

		Unit
Natural Gas Energy Use	54,019	MMBtu/year
***CEQR Technical Manual* CO2e Carbon Conversion Factor**	53.196	kg CO2e/MMBtu
Area of Development A CO2e	2,873,595	kg CO2e
	2,874	MT CO2e

Indirect GHG Emissions

Indirect GHG emissions would be generated to produce electricity for the Proposed Project. Electricity consumption was estimated for all Areas of Development for the Proposed Project and includes all the proposed commercial uses as well as lighting and mechanical ventilation in the parking garages. Although electric vehicle (EV) charging stations are planned to be installed in the proposed parking facilities, the operating assumptions for the EV charging stations are not known at this time and therefore are not accounted for in the analysis. Estimates of the GHG emissions from the Proposed Project's electricity demand are presented in **Table 16-4**. A total of 11,506 metric tons of CO_2e per year would be generated to satisfy the Proposed Project's annual electricity consumption.

Table 16-4 GHG Emissions from Electricity Generation

		Unit
Total Electricity Use[1]	93,921,896	kWh/year
***CEQR Technical Manual* CO2e Carbon Conversion Factor**	35.902	kg CO2e/MMBtu
Electricity CO2e	11,505,681	kg CO2e
	11,506	MT CO2e

Notes:
[1] See **Table 13-1** in **Chapter 13, Energy**

Mobile Source Emissions

The number of annual vehicle trips by mode (cars, taxis, and trucks) that would be generated by the Proposed Project was calculated using assumptions for trucks and taxis from Mobile Source Emissions in section 311 of Chapter 18 of the *CEQR Technical Manual*. The analysis uses the *CEQR Technical Manual* recommendation of 38 miles per one-way truck trip and the assumptions in Table 18-6 of the *CEQR Technical Manual* to determine the one-way trip distance for taxi trips in Queens. The auto daily one-way trip lengths were estimated using the origin zip codes of the expected visitors to the Proposed Project. Annual Vehicle Miles Traveled (VMT) was calculated based on the weekday and weekend trips for the Game Days and No Game Days developed for the analyses in **Chapter 14, Transportation**. Distribution of daily VMT by the roadway type (freeway, arterial, and local) was determined from Table 18-7 in the *CEQR Technical Manual*. The mobile GHG emissions calculator provided in the *CEQR Technical Manual* was used to obtain an estimate of auto, taxi, and truck CO_2e emissions attributable to the Proposed Project. The resultant GHG emissions are presented in **Table 16-5**. The total CO_2e emissions from the mobile sources attributable to the Proposed Project would be 48,952 metric tons annually.

Table 16-5 GHG Emissions from Mobile Sources

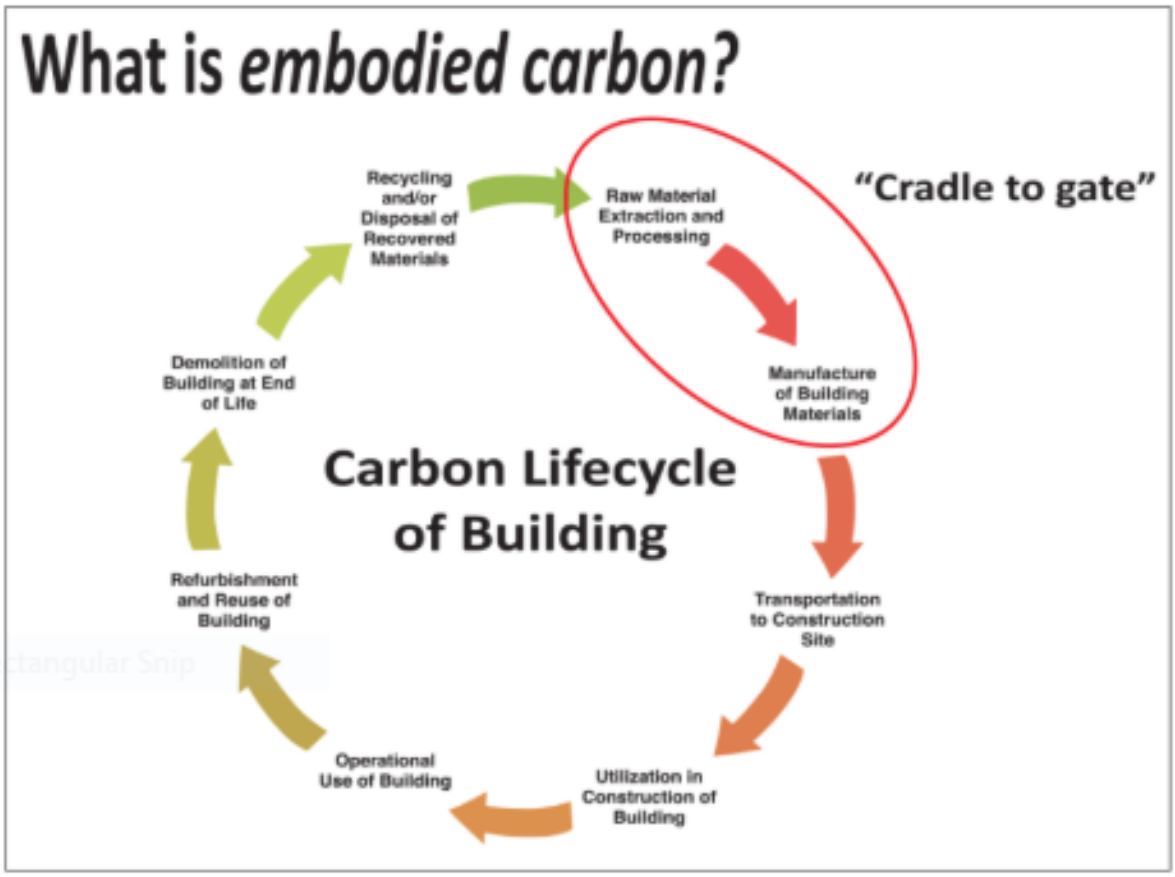
Vehicle Type	Annual VMT generated	Annual CO_2e [MT]
Auto	52,826,417	18,369
Taxi	43,858,536	13,590
Truck	11,464,296	16,993
Total	108,149,249	48,952

Construction Emissions

Construction of the Proposed Project would comply with the New York City Air Pollution Control Code, the latest version of which was adopted on August 16, 2023. As per *CEQR Technical Manual* guidance, emissions associated with construction of the Proposed Project have been assessed qualitatively. Typical construction emissions and emissions of embodied carbon (see **Figure 16-3**) can account for about 5 to 10 years of building operational GHG emissions, i.e., approximately from 72,593 to 145,187 MT of CO_2e. The actual amount of CO_2e could change depending on the efficiency of building operations and efficiency and use of sustainable practices during construction.

Construction of the Proposed Project would follow New York City regulations and codes for construction that require the use of recycled materials, reduced diesel emissions, limited idle time for vehicles and equipment on-site, and other measures to reduce carbon emissions. In addition, following these practices would contribute to the overall goal of reducing GHG emissions from construction.

Figure 16-3 Embodied Carbon of a Building



Source: NE Sustainable Energy Association

Thus, construction of the Proposed Project would adhere to the City goals to reduce GHG.

Consistency with GHG Reduction Goals

According to the *CEQR Technical Manual*, the assessment of consistency with the City's GHG reduction goals should answer the following question: Is the project consistent with the goal of reducing GHG emissions, specifically the attainment of the City's established goal of reducing Citywide GHG emissions by 80 percent compared to 2005 levels by 2050. The other more immediate goals relate to meeting the requirements of Local Law 97 and Local Law 154.

The HVAC and hot water systems in all Proposed Project buildings would be electrical. The only fossil fuel combustion on-site would be the use of natural gas for cooking in the kitchens in the restaurants. Therefore, the Proposed Project is consistent with Local Law 154 requirements and contributes to the reduction of GHG emissions in the City.

Local Law 97 requires that all newly constructed buildings larger than 25,000 sf become more efficient and reduce their GHG to a certain level depending on the building size. **Table 16-6** presents the Local Law 97 carbon intensity rates by the future years once the project is built and the Operational CO_2e Emission Limits for the two future periods for which NYC has intensities.

Table 16-6 LL97 GHG Limits for the Proposed Development

	2030-2034		2035-2039	
Land Use	Carbon Intensity Rate tCO_2e/sq ft	Total Operational CO_2e Emission Limit in MT	Carbon Intensity Rate tCO_2e/sq ft	Total Operational CO2e Emission Limit in MT
Hotel	0.003850668	8,156	0.002640017	5,592
Entertainment	0.002956738	2,619	0.002250122	1,993
Retail	0.002104490	283	0.001216050	163
Restaurant	0.004038374	1,279	0.003028780	959
Amenities	0.003946728	589	0.002960046	442
Office	0.002690852	100	0.001652340	61
Community facility	0.003833108	96	0.002874831	72
Parking	0.000214421	1,442	0.000104943	706
Total in tCO2e		**14,563**		**9,988**
Total in MT		**13,211**		**9,061**

Carbon intensities were obtained from the 1 RCNY 103-14, Requirements for Reporting Annual GHG Emissions for Covered Buildings from the NYC DOB. //www.nyc.gov/assets/buildings/rules/1_RCNY_103-14.pdf

As noted in the analyses above, the total direct (2,874 MT) and indirect (11,506 MT) operational emissions estimated using the *CEQR Technical Manual* CO_2e conversion factors for the Proposed Project amount to 14,379 MT from the structures. This is above the Local Law 97 limit of 13,211 MT for the years 2030-2034, immediately after the opening year, by 1,168 MT. The *CEQR Technical Manual* CO_2e emission factor for electricity generation is outdated and therefore very conservative. In addition, New York State is planning to use much more renewable energy in its portfolio in the future years. As a result, it is expected that the actual GHG emissions generated by the Proposed Project electricity consumption would be smaller than estimated and even smaller in the years after.

The project considers purchasing renewable energy credits (RECs) as one of the LL97 compliance options. Other GHG reduction measures are described below.

In addition, the *CEQR Technical Manual* outlines four major goals towards the GHG reduction:

- Construct new resource- and energy-efficient buildings (including the use of sustainable construction materials and practices) and improve the efficiency of existing buildings;
- Use clean power by incorporating elements that would reduce purchased electricity from non-renewable sources, replace inefficient and more GHG-intensive HVAC and hot-water systems with more efficient and less GHG-intensive systems, incorporate other sustainability and efficiency measures that would reduce project's carbon intensity;
- Encourage transit-oriented development and sustainable transportation through building in areas accessible to public transit and designed to take advantage of this access; improve public transit, the efficiency of private vehicles, and decrease the carbon intensity of fuels; and

- Reduce construction operation emissions: use low emission construction vehicles and equipment, incorporate modern technology and other measures to reduce GHG emissions.

The Proposed Project is consistent with these goals, as follows:

- The Proposed Project is located near public transit, subway and bus and have easy access to the subway and bus stops.
- The Proposed Project includes transit improvements to the Mets-Willets Point No. 7 Subway Station as well as a number of active transportation improvements for pedestrians and bikes, which are discussed in further detail in **Chapter 1, Project Description** and **Chapter 14, Transportation**. These improvements would provide sustainable transportation, promote public transit, active transportation, and multi-modal uses—therefore decreasing the carbon intensity of fuels.
- The Proposed Project would use electricity for its HVAC and hot water systems in all constructed buildings and garages.
- The only fossil fuel use on-site would be combustion of natural gas for cooking in the kitchens of the restaurants in the Areas of Development A and B.
- A sitewide photovoltaic solar panel installation is planned on the garage roofs in Areas of Development A, B, C and D.
- Electric vehicle charging stations are planned to be installed in each parking facility.
- Building glazing and introducing opaque areas inside the buildings would further reduce energy consumption. These improvements are better than required by the building code.
- The Proposed Project would be built in accordance with the latest NYS and NYC codes, including the 2020 Energy Conservation Construction Codes of New York State (ECCNYS) and 2020 New York City Energy Conservation Code (NYCECC)—both of which govern building efficiency in the choice of HVAC systems and the exterior building envelope.
- The Proposed Project plans to purchase at least 10 percent of renewable energy power purchase agreements (PPA) and/or RECs.

Accordingly, the Proposed Project would contribute towards the goal of reducing citywide GHG emissions from large buildings by 40 percent by 2030 and 80 percent by 2050, compared to 2005.

Resilience to Climate Change

As discussed in **Appendix B, Waterfront Revitalization Program Consistency Assessment**, the Development Site is located within the City's Coastal Zone, specifically within the 1 percent annual chance flood hazard area, Zone AE (an area of high flood risk subject to inundation by the 1 percent annual chance flood event).

Because the Development Site would be constructed in the 1 percent annual floodplain, the potential effects of climate change as it relates to current and future sea-level rise scenarios are considered in this assessment. According to the *CEQR Technical Manual*, an analysis of consistency with Policy 6.2 of the WRP may provide sufficient information to assess the potential effects of sea-level rise, storm surge, and coastal flooding. Policy 6.2 identifies three basic steps to determine the consistency of a project with this policy: (1) identify vulnerabilities and consequences; (2) identify adaptive strategies; and (3) assess policy consistency.

Building features are defined in one of four categories—(1) vulnerable: project features that have the potential to incur significant damage if flooded; (2) critical: project features that if damaged would have severe impacts on the project and its ability to function as designed; (3) potentially hazardous: project features that if damaged or made unsecure by flooding could potentially adversely affect the health and safety of the public and the environment; and (4) other: project features that are entirely open and unenclosed spaces (except the open storage of potentially hazardous materials), which may be damaged by flooding, but are not likely to present significant consequences and are more easily repaired. These features are assessed against sea level rise and Mean Higher High Water (MHHW) projections ranging from low to high estimates produced by the NPCC. Adaptive strategies to mitigate the impacts of sea-level rise and flooding on vulnerable and critical features, and additional measures taken to protect the project from additional coastal hazards such as waves, high winds, or debris are discussed.

As detailed in **Appendix B**, a majority of the Development Site has a base flood elevation (BFE) of 12 feet NAVD88. The northeastern portion of the Development Site has a BFE of up to 13 feet NAVD88. The first occupiable floor for the Areas of Development buildings would be designed to an elevation of 20 feet NAVD88, which is 12 feet above site elevation, to incorporate possible future revisions to the base flood elevation by FEMA or the City. The majority of the uses located in the Areas of Development that are located at or below the design flood elevation would be restricted to parking and associated uses such as bus parking, bus lounge and restrooms, storage, elevators and lobbies, and water storage tanks. The primary resiliency strategies include (1) dry floodproofing and wet floodproofing, (2) elevating critical mechanical equipment, and (3) introducing approximately 20 acres of public park space which would contain substantial permeable surfaces. The Proposed Project would also be constructed in accordance with Building Code Appendix G "Flood Resistant Construction." With these measures in place, the Proposed Project would promote this policy.