

A. INTRODUCTION

This chapter evaluates the greenhouse gas (GHG) emissions that would be generated by the construction and operation of the proposed Lambert Houses project and its consistency with the citywide GHG reduction goals.

As discussed in the *City Environmental Quality Review (CEQR) Technical Manual*, climate change is projected to have 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. Through PlaNYC, the City has established sustainability initiatives and goals for greatly reducing GHG emissions and for adapting to climate change in the City.

The proposed project will include sustainable design measures, including but not limited to improvements to the buildings' energy performance, which will contribute to limiting GHG emissions, implemented through the Enterprise Green Communities requirements.

Per the *CEQR Technical Manual*, the citywide 2030 GHG reduction goal is currently the most appropriate standard by which to analyze a project under CEQR. The *CEQR Technical Manual* recommends that a GHG consistency assessment be conducted for any project resulting in 350,000 square feet or more of development and other energy-intense projects. The proposed project would result in a total of 1.9 million gross square feet of developed floor area, including an increment of more than 350,000 gross square feet of floor area; accordingly, a GHG consistency assessment is provided.

As detailed in this chapter, based on the commitment to energy efficiency and by virtue of location and nature, the proposed project would be consistent with the City's emissions reduction goals, as defined in the *CEQR Technical Manual*.

B. 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 phenomenon causes the general warming of the Earth's atmosphere, or the "greenhouse effect." Water vapor, carbon dioxide (CO₂), nitrous oxide, methane, and ozone are the primary ~~greenhouse gases~~ GHGs in the Earth's atmosphere.

There are also a number of entirely anthropogenic ~~greenhouse gases~~ GHGs in the atmosphere, such as halocarbons and other chlorine- and bromine-containing substances, which also damage the stratospheric ozone layer (and contribute to the "ozone hole"). Since these compounds are being replaced and phased out due to the 1987 Montreal Protocol, there is no need to address them in GHG assessments for most projects. Although ozone itself is also a major ~~greenhouse~~

gasGHG, it does not need to be assessed as such at the project level since it is a rapidly reacting chemical and efforts are ongoing to reduce ozone concentrations as a criteria pollutant (see Chapter 11, “Air Quality”). Similarly, water vapor is of great importance to global climate change, but is not directly of concern as an emitted pollutant since the negligible quantities emitted from anthropogenic sources are inconsequential.

CO₂ is the primary pollutant of concern from anthropogenic sources. Although not the GHG with the strongest effect per molecule, CO₂ is by far the most abundant and, therefore, the most influential GHG. CO₂ is emitted from any combustion process (both natural and anthropogenic), from some industrial processes such as the manufacture of cement, mineral production, metal production, and the use of petroleum-based products, from volcanic eruptions, and from the decay of organic matter. CO₂ is removed (“sequestered”) from the lower atmosphere by natural processes such as photosynthesis and uptake by the oceans. CO₂ is included in any analysis of GHG emissions.

Methane and nitrous oxide also play an important role since the removal processes for these compounds are limited and because they have a relatively high impact on global climate change as compared with an equal quantity of CO₂. Emissions of these compounds, therefore, are included in GHG emissions analyses when the potential for substantial emission of these gases exists.

The *CEQR Technical Manual* lists six GHGs that could potentially be included in the scope of an EIS: CO₂, nitrous oxide (N₂O), methane, hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆). This analysis focuses mostly on CO₂, N₂O, and methane. There are no significant direct or indirect sources of HFCs, PFCs, or SF₆ associated with the proposed development.

To present a complete inventory of all GHGs, component emissions are added together and presented as carbon dioxide equivalent (CO₂e) emissions—a unit representing the quantity of each GHG weighted by its effectiveness using CO₂ as a reference. This is achieved by multiplying the quantity of each GHG emitted by a factor called global warming potential (GWP). GWPs account for the lifetime and the radiative forcing of each chemical over a period of 100 years (e.g., CO₂ has a much shorter atmospheric lifetime than SF₆, and therefore has a much lower GWP). The GWPs for the main GHGs discussed here are presented in **Table 14-1**.

Table 14-1
Global Warming Potential (GWP) for Major GHGs

Greenhouse Gas	100-year Horizon GWP
Carbon Dioxide (CO ₂)	1
Methane (CH ₄)	21
Nitrous Oxide (N ₂ O)	310
Hydrofluorocarbons (HFCs)	140 to 11,700
Perfluorocarbons (PFCs)	6,500 to 9,200
Sulfur Hexafluoride (SF ₆)	23,900
Source: 2014 <i>CEQR Technical Manual</i>	
Note: The GWPs presented above are based on the Intergovernmental Panel on Climate Change’s (IPCC) Second Assessment Report (SAR) to maintain consistency in GHG reporting. The IPCC has since published updated GWP values that reflect new information on atmospheric lifetimes of GHGs and an improved calculation of the radiative forcing of CO ₂ . In some instances, if combined emission factors were used from updated modeling tools, some slightly different GWP may have been used for this study. Since the emissions of GHGs other than CO ₂ represent a very minor component of the emissions, these differences are negligible.	

C. POLICY, REGULATIONS, STANDARDS, AND BENCHMARKS FOR REDUCING GHG EMISSIONS

As a result of the growing consensus that human activity resulting in GHG emissions has the potential to profoundly impact the ~~earth's~~ Earth's climate, countries around the world have undertaken efforts to reduce emissions by implementing both global and local measures addressing energy consumption and production, land use, and other sectors. Although the U.S. has not ratified the international agreements which set emissions targets for GHGs, in December 2015, the U.S. signed the international Paris agreement¹ that pledges deep cuts in emissions, with a stated goal of reducing emissions to between 26 and 28 percent lower than 2005 levels by 2025² to be implemented via existing laws and regulations with executive authority of the President.

~~in a step toward the development of national climate change regulation, in 2010, the U.S. agreed that deep cuts are necessary and agreed to take action to meet this objective, with a stated goal of reducing emissions to 17 percent lower than 2005 levels by 2020 and to 83 percent lower than 2005 levels by 2050 (pending legislation) via the Copenhagen Accord.^{3,4} In 2014, President Obama announced a new target to cut net GHG emissions to 26 to 28 percent below 2005 levels by 2025.⁵ Without legislation focused on these goals, the U.S. Environmental Protection Agency (EPA) is required to regulate ~~greenhouse gases~~ GHGs under the Clean Air Act (CAA), and has begun preparing and implementing regulations. In coordination with the National Highway Traffic Safety Administration (NHTSA), EPA currently regulates GHG emissions from newly manufactured on-road vehicles. In addition, EPA regulates transportation fuels via the Renewable Fuel Standard program, which will phase in a requirement for the inclusion of renewable fuels increasing annually up to 36.0 billion gallons in 2022. In ~~2014~~2015, EPA also ~~proposed~~ finalized rules to address GHG emissions from both new and existing power plants that would, for the first time, set national limits on the amount of carbon pollution that power plants can emit. On February 9, 2016, the Supreme Court stayed implementation of the Clean Power Plan pending judicial review. EPA expects to expand this program in the future to limit emissions from additional stationary sources.~~

There are also regional and local efforts to reduce GHG emissions. In 2009, Governor Paterson issued Executive Order No. 24, establishing a goal of reducing GHG emissions in New York State by 80 percent, compared with 1990 levels, by 2050, and creating a Climate Action Council tasked with preparing a climate action plan outlining the policies required to attain the GHG reduction goal and an interim draft plan has been published.⁶ The State is now seeking to achieve some of the emission reduction goals via local and regional planning and projects through its

¹ Conference of the Parties, 21st Session. *Adoption of The Paris Agreement, decision -/CP.21*. Paris, December 12, 2015.

² United States of America. *Intended Nationally Determined Contributions (INDCs)* as submitted. March 31, 2015.

³ UNFCCC Conference of the Parties, Copenhagen Accord, March 30, 2010.

⁴ Todd Stern, U.S. Special Envoy for Climate Change. Letter to Mr. Yvo de Boer, UNFCCC. January 28, 2010.

⁵ The White House. Fact Sheet: U.S. China Joint Announcement on Climate Change and Clean Energy Cooperation. November 11, 2014.

⁶ New York State Climate Action Council. New York State Climate Action Plan Interim Report. November 2010.

Cleaner Greener Communities and Climate Smart Communities programs. The State has also adopted California's GHG vehicle standards (which are at least as strict as the Federal standards).

The ~~2009~~-New York State Energy Plan outlines the State's energy goals and provides strategies and recommendations for meeting those goals. ~~A new plan~~The latest version of the plan was published in June 2015. The new draft plan outlines a vision for transforming the State's energy sector which would result in increased energy efficiency (both demand and supply), increased carbon-free power production and cleaner transportation, in addition to achieving other goals not related to GHG emissions. . The 2015 plan also establishes a new target of reducing GHG emissions in New York State by 40 percent, compared with 1990 levels, by 2030. The plan also establishes a new target of providing 50 percent of electricity generation in the state from renewable sources by 2030, and increasing building energy efficiency gains by 600 trillion British thermal units (Btu) by 2030.

New York State has also developed regulations to cap and reduce CO₂ emissions from power plants to meet its commitment to the Regional Greenhouse Gas Initiative (RGGI). Under the RGGI agreement, the governors of nine northeastern and Mid-Atlantic States have committed to regulate the amount of CO₂ that power plants are allowed to emit, gradually reducing annual emissions to half the 2009 levels by 2020. The RGGI states and Pennsylvania have also announced plans to reduce GHG emissions from transportation, through the use of biofuel, alternative fuel, and efficient vehicles.

Many local governments worldwide, including New York City, are participating in the Cities for Climate ProtectionTM (CCP) campaign and have committed to adopting policies and implementing quantifiable measures to reduce local GHG emissions, improve air quality, and enhance urban livability and sustainability. New York City's long-term sustainability program, PlaNYC 2030, includes GHG emissions reduction goals, specific initiatives that can result in emission reductions, and initiatives aimed at adapting to future climate change impacts. The goal to reduce citywide GHG emissions to 30 percent below 2005 levels by 2030 was codified by Local Law 22 of 2008, known as the New York City Climate Protection Act (the "GHG reduction goal").⁷ The City has also announced a longer-term goal of reducing emissions to 80 percent below 2005 levels by 2050, and has published a study evaluating the potential for achieving that goal. More recently, the City has announced a more aggressive goal for reducing emissions from building energy down to 30 percent below 2005 levels by 2025.

For certain projects subject to CEQR (e.g., projects with 350,000 gsf or more of development or other energy intense projects), an analysis of the projects' contributions to GHG emissions is required to determine their consistency with the City's reduction goal, which is currently the most appropriate standard by which to analyze a project under CEQR, and is therefore applied in this chapter.

In December 2009, the New York City Council enacted four laws addressing energy efficiency in new and existing buildings, in accordance with PlaNYC. The laws require owners of existing buildings larger than 50,000 square feet to conduct energy efficiency audits every 10 years, to optimize building energy efficiency, and to "benchmark" the building energy and water consumption annually, using an EPA online tool. By 2025, commercial buildings over 50,000 square feet will also require lighting upgrades, including the installation of sensors and controls, more efficient light fixtures, and the installation of submeters, so that tenants can be provided with information on their electricity consumption. The legislation also creates a local New York

⁷ Administrative Code of the City of New York, §24-803.

City Energy Code, which along with the New York State Energy Conservation Code (as updated in 2010), requires equipment installed during a renovation to meet current efficiency standards.

To achieve the 80 by 50 goal, the City is convening Technical Working Groups to analyze the GHG reduction pathways from the building sector, power, transportation, and solid waste sectors to develop action plans for these sectors. The members of the Technical Working Groups will develop and recommend the data analysis, interim metrics and indicators, voluntary actions, and potential mandates to effectively achieve the City's emissions reduction goal. In 2016, the City published the building sector Technical Working Group report, which included commitments by the City to change to building energy code and take other measures aimed at substantially reducing GHG emissions.

A number of benchmarks for energy efficiency and green building design have also been developed. For example, 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. The applicant would meet or exceed the minimum requirements of the Enterprise Green Communities Criteria (EGCC), which uses EPA's Energy Star system for evaluating building energy use, and will evaluate the specific energy efficiency measures and design elements which would be implemented as planning progresses.

D. METHODOLOGY

Although the contribution of any single project's emissions to climate change is infinitesimal, the combined GHG emissions from all human activity have been found to be significantly impacting global climate. While the increments of criteria pollutants and toxic air emissions are assessed in the context of health-based standards and local impacts, there are no established thresholds for assessing the significance of a project's contribution to climate change. Nonetheless, prudent planning dictates that all sectors address GHG emissions by identifying GHG sources and practicable means to reduce them. Therefore, this chapter presents the total GHG emissions potentially associated with the proposed project and identifies measures that would be implemented and measures that are still under consideration to limit emissions.

The analysis of GHG emissions that would be associated with the proposed project is based on the methodology presented in the *CEQR Technical Manual*. Estimates of emissions of GHGs from the development have been quantified, including off-site emissions associated with use of electricity and steam, on-site emissions from heat and hot water systems, and emissions from vehicle use associated with the proposed development. GHG emissions that would result from construction are discussed as well. As per the guidance, analysis of building energy accounts for current carbon intensity of electricity, which will likely be lower in the 2021 build year and lower still in future years. Emissions from transportation apply the emission factors for the final build year of 2029; although the weighted average on-road emission intensity will diminish by approximately 20 percent from current conditions to 2029, the increase in project-generated trips out to the target year outweighs that decrease. Since the methodology does not account for future year electricity intensity as described above, it also does not explicitly address potential changes in future consumption associated with climate change, such as increased electricity for cooling, or decreased on-site fuel for heating. Overall, this analysis results in conservatively high potential GHG emissions.

CO₂ is the primary pollutant of concern from anthropogenic emission sources and is accounted for in the analysis of emissions from all development projects. GHG emissions for gases other than CO₂ are included where practicable or in cases where they comprise a substantial portion of

overall emissions. The various GHG emissions are added together and presented as metric tons of carbon dioxide equivalent (CO₂e) emissions per year (see “Pollutants of Concern,” above).

BUILDING OPERATIONAL EMISSIONS

Since detailed fuel consumption and electricity use are not available at this early planning stage, estimates of emissions due to electricity and fuel use were prepared using the emission intensity factors from the *CEQR Technical Manual* based on the anticipated developed space measured in gross square feet (gsf), presented along with the results. Since the *CEQR Technical Manual* does not provide a carbon intensity for schools, a factor following the same approach used to develop the factors in the *CEQR Technical Manual* was developed. Specifically, using specific energy and emission estimates collected and developed by the City,⁸ an average energy intensity for schools of 5.4 kilograms of CO₂e per square foot (kg CO₂e/sf) was calculated.⁹

Note that the intensity factors in the *CEQR Technical Manual* are representative of existing buildings in 2012 and not of new buildings or future construction. Future emissions are expected to be lower as efficiency and renewable energy use continue to increase with the objective of meeting State and City future GHG reduction goals. Furthermore, the proposed project will be implementing energy efficiency measures so as to meet or exceed the minimum requirements of EGCC, which will result in lower emissions than the estimates presented here.

MOBILE SOURCE EMISSIONS

The number of annual weekday and Saturday vehicle trips by mode (cars, taxis, and trucks) that would be generated by the proposed project was calculated using the transportation planning assumptions developed for the analysis and presented in Chapter 12, “Transportation.” The assumptions used in the calculation include average daily weekday and Saturday person trips and delivery trips by proposed use, the percentage of vehicle trips by mode, and the average vehicle occupancy. To calculate annual totals, the number of trips on Sundays was assumed to be the same as on Saturday. Travel distances shown in Table 18-6 and 18-7 and associated text of the *CEQR Technical Manual* were used in the calculations of annual vehicle miles traveled by cars, taxis, and trucks. Table 18-8 of the *CEQR Technical Manual* was used to determine the percentage of vehicle miles traveled by road type and the mobile GHG emissions calculator was used to obtain an estimate of car, taxi, and truck GHG emissions attributable to the proposed project.

EPA estimates that the well-to-pump GHG emissions of gasoline and diesel are more than 20 percent of the tailpipe emissions.¹⁰ Although upstream emissions (emissions associated with production, processing, and transportation) of all fuels can be substantial and are important to consider when comparing the emissions associated with the consumption of different fuels, fuel alternatives are not being considered for the proposed development, and as per the *CEQR Technical Manual* guidance, the well-to-pump emissions are not considered in the analysis. The assessment of tailpipe emissions only is in accordance with the *CEQR Technical Manual* guidance on assessing GHG emissions and the methodology used in developing the New York City GHG inventory, which is the basis of the GHG reduction goal.

⁸ NYC. *Local Law 84 Benchmarking Data Disclosure* (for 2014 disclosure, 2013 data). www.nyc.gov/html/gbee/html/plan/ll84_scores.shtml. April 2015.

⁹ The average and median values were the same.

¹⁰ EPA. *MOVES2004 Energy and Emission Inputs*. Draft Report, EPA420-P-05-003. March 2005.

The projected annual vehicle miles traveled, forming the basis for the GHG emissions calculations from mobile sources, are summarized in **Table 14-2**.

**Table 14-2
Vehicle Miles Traveled per Year**

Roadway Type	Passenger	Taxi	Truck
Local	3,673,501	227,506	1,097,102
Arterial	1,258,574	467,185	151,809
Interstate/Expressway	141,636	4,395	143,070
Total	5,073,711	699,086	1,391,981

CONSTRUCTION EMISSIONS

A description of construction activities is provided in Chapter 18, “Construction Impacts.” Consistent with CEQR practice, emissions associated with construction have not been estimated explicitly for the proposed project, but analyses of similar projects have shown that construction emissions (both direct and emissions embedded in the production of materials, including on-site construction equipment, delivery trucks, and upstream emissions from the production of steel, rebar, aluminum, and cement used for construction) are equivalent to the total operational emissions over approximately 5 to 10 years.

EMISSIONS FROM SOLID WASTE MANAGEMENT

The proposed project would not fundamentally change the City’s solid waste management system. Therefore, as per the *CEQR Technical Manual*, the GHG emissions from solid waste generation, transportation, treatment, and disposal are not quantified.

E. PROJECTED GHG EMISSIONS

BUILDING OPERATIONAL EMISSIONS

The floor area, carbon intensity emission factors, and resulting GHG emissions from each of the uses are presented in detail in **Table 14-3**.

**Table 14-3
Annual Building Operational Emissions**

Source Use	Building Area (gsf)	GHG Intensity ¹ (kg CO ₂ e / gsf / year)	Annual GHG Emissions (metric tons CO ₂ e)
Residential	1,776,539	6.59	11,707
Retail	43,231	9.43	408
School	84,010	5.40 ⁽²⁾	454
TOTAL:			12,569

Notes:

Totals may not sum due to rounding.
 Per *CEQR Technical Manual* guidance, electricity emissions are representative of existing conditions in 2012 and not the future target year (2029). Future emissions are expected to be lower.
 Representative emission intensity for existing buildings are higher than new and future construction, and do not include the expected energy efficiency measures.

Sources:

- CEQR Technical Manual*
- AKRF, 2015, based on *Local Law 84 Benchmarking Data Disclosure* (for 2014 disclosure, 2013 data)

MOBILE SOURCE EMISSIONS

The mobile-source-related GHG emissions from the proposed project are presented in detail in **Table 14-4**.

**Table 14-4
Annual Mobile Source Emissions (metric tons CO₂e)**

Roadway Type	Passenger Vehicle	Taxi	Truck	Total
Residential	1,239	68	1,612	2,919
Retail	424	140	223	788
School	48	1	210	259
Total	1,711	209	2,045	3,966

SUMMARY

A summary of GHG emissions by source type is presented in **Table 14-5**. Note that if new buildings were to be constructed elsewhere to accommodate the same number of units and space for other uses, the emissions from the use of electricity, energy for heating and hot water, and vehicle use could equal or exceed those estimated for the proposed project, depending on their location, access to transit, building type, and energy efficiency measures. As described in the “Methodology” section, above, construction emissions were not modeled explicitly, but are estimated to be equivalent to approximately 5 to 10 years of operational emissions, including both direct energy and emissions embedded in materials (extraction, production, and transport). The proposed project is not expected to fundamentally change the City’s solid waste management system, and therefore emissions associated with solid waste are not presented.

**Table 14-5
Summary of Annual GHG Emissions, 2021 (metric tons CO₂e)**

Use	Building Operations	Mobile	Total
Residential	11,707	2,919	14,627
Retail	408	788	1,195
School	454	259	713
Total	12,569	3,966	16,535

The operational emissions from building energy use include on-site emissions from fuel consumption as well as emissions associated with the production and delivery of the electricity to be used on-site. The applicant will evaluate specific energy efficiency measures and design elements that would be implemented (see Section F, below), and will be required to achieve energy efficiency so as to meet or exceed the minimum requirements of EGCC, which will result in lower emissions than the estimates presented here. The project would be required to exceed the energy requirements of ASHRAE 90.1-2007 by 15 percent, which is expected to also exceed the New York City building code (currently the same as ASHRAE 90.1-2010).

F. ELEMENTS OF THE PROPOSED DEVELOPMENT THAT WOULD REDUCE GHG EMISSIONS

The proposed project would include a number of sustainable design features which would, among other benefits, result in lower GHG emissions. In general, mandated EGCC require that the proposed development use less energy than it would if built only to meet the building code. In general, dense, mixed-use development with access to transit and existing roadways is

consistent with sustainable land use planning and smart growth strategies to reduce the carbon footprint of new development. These features and other measures currently under consideration are discussed in this section, addressing the PlaNYC goals as outlined in the *CEQR Technical Manual*. The implementation of the various design measures and features described would result in development that is consistent with the City's emissions reduction goal, as defined in the *CEQR Technical Manual*.

BUILD EFFICIENT BUILDINGS

The proposed project's buildings would incorporate insulation exceeding building code requirements; use thermally broken, double glazed windows with low-E coating; install high-efficiency heating, ventilation, and cooling systems; use high-albedo roofing materials; incorporate motion sensor lighting control and dual-level lighting in stairs and likely in corridors (minimal required lighting meeting code requirements, and additional lighting as necessary actuated by motion sensors); use efficient, directed exterior lighting; use efficient lighting and elevators (exceeding requirements) and Energy Star appliances; provide electricity submetering for apartments; provide for storage and collection of recyclables (including paper, corrugated cardboard, glass, plastic and metals) in building design; install water conserving fixtures exceeding building code requirements (lavatory and sink faucets, showerheads); and design water efficient landscaping.

The project would also likely conduct third party building commissioning to ensure energy performance, provide sustainable construction and design guidelines for build-out by retail tenants, and use some building materials with recycled content.

In addition, the applicant may consider incorporating window glazing which would optimize daylighting, heat loss, and solar heat gain; installing more energy efficient light emitting diode (LED) lighting for some uses; re-using gray water and/or collecting and re-using rainwater; re-using building materials and products (from ~~demolition~~ demolition or renovations); using building materials that are extracted and/or manufactured within the region; and using wood that is locally produced and/or certified in accordance with the Sustainable Forestry Initiative or the Forestry Stewardship Council's Principles and Criteria.

USE CLEAN POWER

As described in Chapter 13, "Air Quality," the project would be required to use natural gas, a lower carbon fuel, for the normal operation of the heat and hot water systems. The applicant may also consider incorporating solar photovoltaic systems for generating some on-site power.

TRANSIT-ORIENTED DEVELOPMENT AND SUSTAINABLE TRANSPORTATION

The proposed project will extend new private streets through the site, supporting multi-use paths and providing for pedestrian circulation on the new streets. The proposed project is located in an area supported by existing bus and subway services adjacent to the project. In addition, the proposed project is near the Southern Boulevard bike route, connecting to all major bike routes in the area, and will provide one bike storage space per two dwelling units.

The proposed project is seeking elimination of residential parking requirements, and all parking will be shared parking, encouraging the use of alternative transportation modes. The owner's employees would also be provided pre-tax dollars for transit.

REDUCE CONSTRUCTION OPERATION EMISSIONS

Construction specifications would include an extensive diesel emissions reduction program, as described in detail in Chapter 18, “Construction Impacts,” including diesel particle filters for large construction engines and other measures. These measures would reduce particulate matter emissions; while particulate matter is not included in the list of standard GHGs (“Kyoto gases”), recent studies have shown that black carbon—a constituent of particulate matter—may play an important role in climate change.

USE BUILDING MATERIALS WITH LOW CARBON INTENSITY

Construction requirements would specify a 75 percent target for the use of recycled steel (which is likely to be exceeded since 97 percent of all steel is from recycled sources) and a target of 75 percent of construction waste to be diverted from landfill for reuse or recycling. Some cement replacements such as fly ash and/or slag may also be used.

G. CONCLUSION

The building energy use and vehicle use associated with the proposed project would result in up to approximately 16,500 metric tons of carbon dioxide equivalent (CO₂e) emissions per year.

The *CEQR Technical Manual* defines five goals through which a project’s consistency with the City’s emission reduction goal is evaluated: (1) efficient buildings; (2) clean power; (3) sustainable transportation; (4) construction operation emissions; and (5) building materials carbon intensity.

The applicant is currently evaluating the specific energy efficiency measures and design elements that may be implemented, and is committed to meeting the requirements for certification under the Enterprise Green Communities program. All new construction and substantial rehabilitation projects receiving funding from HPD must comply with a 2011 version of the Enterprise Green Communities Criteria (EGCC), a green building framework for affordable housing tailored to New York City. The applicant is committed at a minimum to achieve the mandatory EGCC energy efficiency requirements. The project would be required to exceed the energy requirements of ASHRAE 90.1-2007 by 15 percent, which is expected to also exceed the New York City building code (currently the same as ASHRAE 90.1-2010). The project’s commitment to building energy efficiency, exceeding the building code energy requirements, ensures consistency with the efficient buildings goal defined in the *CEQR Technical Manual* as part of the City’s GHG reduction goal (see Section F), and would be specified and required under.

The proposed project would also support the other GHG goals by virtue of its nature and location: its proximity to public transportation, its reliance on natural gas (rather than heating oil), commitment to construction air quality controls, and the fact that as a matter of course, construction in New York City uses recycled steel and includes cement replacements. All of these factors demonstrate that the proposed development supports the GHG reduction goal.

Therefore, based on the commitment to energy efficiency and by virtue of location and nature, the proposed project would be consistent with the City’s emissions reduction goals, as defined in the *CEQR Technical Manual*. *