Chapter 14: Greenhouse Gas Emissions

A. INTRODUCTION

This chapter evaluates the greenhouse gas (GHG) emissions that would be generated by the construction and operation of the Proposed Project and the Proposed Project's consistency with the citywide GHG reduction goals. As described in greater detail in Chapter 1, "Project Description," the Proposed Project is a commercial center with associated parking, open space, and street and infrastructure improvements.

As discussed in the 2014 *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. 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.

Per the *CEQR Technical Manual,* the citywide 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 for which an Environmental Impact Statement (EIS) will be prepared and which is expected to result in 350,000 square feet or more of development and other energy-intense projects. The Proposed Project would result in 589,619 gross square feet (gsf) of developed floor area. Accordingly, a GHG consistency assessment is provided.

The Proposed Project would be located in the current flood hazard zone, and potential future flood elevations are projected to be higher due to sea level rise resulting from global climate change. The design of the Proposed Project and consistency with City policies in the context of flood and storm resilience is discussed in detail in Chapter 2, "Land Use, Zoning, and Public Policy."

PRINCIPAL CONCLUSIONS

The building energy use and vehicle use associated with the Proposed Project would result in up to approximately 35,000 metric tons of carbon dioxide equivalent (CO_2e) 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 building energy performance of the Proposed Project would meet the requirements for LEED Certification. The Proposed Project goals do not include transit-oriented or infill development since the Project Site is not located within one of the City's multi-modal transit hubs. Therefore, since the Proposed Project is not located in an area directly supported by

transit, it is conservatively assumed for CEQR purposes that a relatively small percentage of employees, patrons, and visitors to the Proposed Project would use transit as a mode of travel. However, there have also been recent transit improvements in the area by the Metropolitan Transportation Authority (MTA) with the completion of the new Arthur Kill Station of the Staten Island Rail Road immediately to the south of the Project Site and also along Arthur Kill Road (see also Chapter 12, "Transportation"). In addition, the Proposed Project would provide only the minimum required number of parking spaces as per zoning thereby limiting reliance on vehicle use and would also provide electric car-charging stations and bicycle storage to encourage these sustainable alternative means of transportation. The Proposed Project would also support other GHG goals by its reliance on natural gas and the fact that, as a matter of course, construction in New York City uses recycled steel and includes cement replacements.

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 (CO_2), nitrous oxide, methane, and ozone are the primary greenhouse gases in the Earth's atmosphere.

There are also a number of entirely anthropogenic greenhouse gases 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 gas, 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.

CO_2 is the primary pollutant of concern from anthropogenic sources. Although not the GHG with the strongest effect per molecule, CO_2 is by far the most abundant and, therefore, the most influential GHG. CO_2 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. CO_2 is removed ("sequestered") from the lower atmosphere by natural processes such as photosynthesis and uptake by the oceans. CO_2 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 CO_2. 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: CO_2, nitrous oxide (N_2O), methane, hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). This analysis focuses on CO_2, N_2O, and methane, as there

are no significant direct or indirect sources of HFCs, PFCs, or SF_6 associated with the Proposed Project.

To present a complete inventory of all GHGs, component emissions are added together and presented as carbon dioxide equivalent (CO_2e) emissions—a unit representing the quantity of each GHG weighted by its effectiveness using CO_2 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., CO_2 has a much shorter atmospheric lifetime than SF_6, 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_2O)	310
Hydrofluorocarbons (HFCs)	140 to 11,700
Perfluorocarbons (PFCs)	6,500 to 9,200
Sulfur Hexafluoride (SF_6)	23,900

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.
Source: 2014 *CEQR Technical Manual.*

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 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 international agreements which set emissions targets for GHGs, in December 2015, the U.S. signed the international Paris agreement[1] that pledges deep cuts in emissions, with a stated goal of reducing emissions to between 26 and 28 percent lower than 2005 levels by 2025[2] to be implemented via existing laws and regulations with executive authority of the President.

The U.S. Environmental Protection Agency (USEPA) is required to regulate greenhouse gases under the Clean Air Act (CAA), and has begun preparing and implementing regulations. In coordination with the National Highway Traffic Safety Administration (NHTSA), USEPA

[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.

currently regulates GHG emissions from newly manufactured on-road vehicles. In addition, USEPA 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, USEPA also proposed 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. The Clean Power Plan sets carbon pollution emission guidelines and performance standards for existing, new, and modified and reconstructed electric utility generating units. USEPA 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.[3] The State is now seeking to achieve some of the emission reduction goals via local and regional planning and projects through its 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 was published in June 2015. The new 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 CO_2 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 CO_2 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 Protection™ (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, OneNYC (previously PlaNYC), 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").[4] The City has also announced a longer-term goal of reducing

[3] New York State Climate Action Council. New York State Climate Action Plan Interim Report. November 2010.

[4] Administrative Code of the City of New York, §24-803.

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 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 USEPA 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 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.

A number of benchmarks for energy efficiency and green building design have also been developed. For example, the LEED system is a benchmark for the design, construction, and operation of high-performance green buildings that includes energy efficiency components. USEPA'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.

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 Proposed Project 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 Project. 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 future years. Since the methodology does not account for future years, 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.

CO_2 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 CO_2 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 (CO_2e) emissions per year (see "Pollutants of Concern," above).

BUILDING OPERATIONAL EMISSIONS

Estimates of emissions due to electricity and fuel use were prepared using projections of emissions based on the emission intensity factors listed in the *CEQR Technical Manual*. These averages do not include the specific energy performance of the Proposed Project, since those details are not available at this time. Per *CEQR Technical Manual* guidance, the emissions represent the latest data (2012) and not the build year or future years. 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.

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 transportation planning assumptions (daily trip rate, transportation mode breakdowns, and vehicle occupancy factors) 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 Tables 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. The detailed calculations of annual vehicle miles traveled, forming the basis for the GHG emissions calculations from mobile sources, are presented in **Table 14-2**.

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 Project, 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. USEPA estimates that the well-to-pump GHG emissions of gasoline and diesel are more than 20 percent of the tailpipe emissions.[5]

[5] USEPA. *MOVES2004 Energy and Emission Inputs*. Draft Report, EPA420-P-05-003. March 2005.

Table 14-2
Detailed Calculation of Vehicle Miles Traveled per Year

Day of the Week	Daily Trip Rate						Mode of Transportation		Vehicle Occupancy	
	Person Trip Rate			Delivery Trip Rate			Auto	Taxi	Auto	Taxi
Weekday	65.17	per	1,000 sq ft	0.35	per	1,000 sq ft	94.00%	1.00%	1.45	1.65
Saturday	76.27	per	1,000 sq ft	0.04	per	1,000 sq ft				
490,398 sq ft x person trips rate x mode of transportation fraction/vehicle occupancy =	**Weekday Daily Trips**			**Weekend Daily Trips**			**Distance (miles/trip)**		**(Weekday Daily Trips * 251 + Weekend Daily Trips * 114) * miles/trip = Annual VMT**	
Auto	20,718			24,247			4		63,716,034	
Taxi	194			227			4		586,734	
Truck	172			20			38		45,318	
									Annual VMT x VMT fraction = VMT by roadway type	
Roadway Type	VMT Fraction			Passenger			Taxi		Truck	
Local	20%			12,743,207			117,347		344,414	
Arterial	41%			26,123,574			240,561		706,049	
Interstate/ Expressway	39%			24,849,253			228,826		671,608	

CONSTRUCTION EMISSIONS

Consistent with CEQR practice, emissions associated with construction have not been estimated explicitly for the Proposed Project, but analyses of other 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 areas, emission intensity factors, and resulting annual GHG emissions from each of the uses are presented in **Table 14-3**. As per the *CEQR Technical Manual*, emissions due to electricity consumption are representative of existing conditions in 2012 and not the future build year, which would be lower. In addition, GHG emission intensity factors are based on data for existing buildings, which are higher than new and future building construction, and do not include the expected energy efficiency measures.

Table 14-3
Annual Building Operational Emissions

Source Use	Building Area (gsf)	GHG Intensity (kg CO_2e / gsf / year)	Annual GHG Emissions (metric tons CO_2e)
Commercial	490,398	9.43 (1)	4,624
Parking, Mechanical	99,221	0.98 (2)	97
		TOTAL	**4,722**

Notes: Totals may not sum due to rounding.
Sources: 1. 2014 *CEQR Technical Manual*
2. Based on electricity rate of 27,400 Btu/sq.ft./year. *2001 CEQR Technical Manual*. This information was not available from later versions.

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 CO_2e, 2018)

Roadway Type	Passenger Vehicle	Taxi	Truck	Total
Local	7,607	63	741	*8,411*
Arterial	11,909	98	1,213	*13,220*
Interstate / Expressway	8,000	65	786	*8,851*
Total	**27,516**	**226**	**2,740**	***30,482***

SUMMARY

A summary of GHG emissions by source type is presented in **Table 14-5.** As described in the "Methodology" section, construction emissions were not modeled explicitly, but analyses of other 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 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, (metric tons CO_2e)

Source Type	Emissions
Building Operations	4,722
Mobile	30,482
Total	**35,204**

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. Since detailed design information is not yet available, per *CEQR Technical Manual* guidance, the estimate of annual GHG emissions from building operations presented in **Table 14-5** reflects the average performance of existing building in New York City. Detailed design measures will continue to evolve as the project design progresses.

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

This section discusses potential measures for reducing GHG emissions, and measures which would be included in the Proposed Project, addressing the *OneNYC* goals as outlined in the *CEQR Technical Manual*.

BUILD EFFICIENT BUILDINGS

The Proposed Project would have a building envelope and insulation that complies with or exceeds the minimum New York City building code requirements, including energy-efficient glazing designed to reduce heat loss and facilitate daylight harvesting by admitting more daylight than solar heat.[6] The building energy performance of the Proposed Project would meet the requirements for LEED Certification. The energy systems would utilize high-efficiency heating, ventilation, and air conditioning (HVAC) systems. The Proposed Project would include 4.52 acres of green roofs to reduce energy consumption and reduce the buildings contribution to the urban heat-island effect, as well as reducing runoff to the combined sewage system which reduces unnecessary sewage treatment and the energy associated with such treatment.

Efficient lighting in all areas controlled by the core and shell design, daylight harvesting in areas where practicable, and efficient, directed exterior lighting would be incorporated. Efficient elevators would be installed to reduce electricity consumption. All tenants would be provided with submeters for electricity, gas, and water (as applicable) allowing tenants to track and optimize their use.

Water-conserving fixtures meeting the stringent New York City building code requirements would be installed, indirectly reducing energy consumption associated with potable water production and delivery. Storage and collection of recyclables would be designed for explicitly and incorporated into building design.

[6] Note: Estimates were prepared prior to the recent increase in building efficiency requirements in New York City's building code, which updated the requirements from ASHRAE 90.1-2010 to ASHRAE 90.1-2013.

The Applicant may also consider third-party fundamental and enhanced building energy systems commissioning. The installation of motion sensors for lighting would also be considered.

The Proposed Project would not seek to achieve overall energy efficiency which would exceed the current New York City building code requirements.

USE CLEAN POWER

The Proposed Project would use natural gas for the normal operation of the heat and hot water systems. Natural gas is a lower carbon fuel. On-site renewable electricity generation is not proposed.

TRANSIT-ORIENTED DEVELOPMENT AND SUSTAINABLE TRANSPORTATION

The Proposed Project goals do not include transit oriented or infill development since the Project Site is not located within one of the City's multi-modal transit hubs. Since the Proposed Project is not located in an area directly supported by transit, it is conservatively assumed for CEQR transportation and traffic impact analysis purposes that a relatively small percentage of employees, patrons, and visitors to the Proposed Project would use transit as a mode of travel. However, there is public bus service along Arthur Kill Road (e.g., the S78) and there have also been recent transit improvements in the area by MTA with the new Arthur Kill Station of the Staten Island Rail Road immediately to the south of the Project Site and also along Arthur Kill Road (see also Chapter 12 "Transportation"). These transit improvements create the opportunity for future shifts over time in travel patterns in western Staten Island towards transit use and the Proposed Project is well situated to be part of that change. In addition, the Proposed Project would provide only the minimum required number of parking spaces as per zoning thereby limiting reliance on vehicle use and would also provide electric car-charging stations and bicycle storage to encourage these sustainable alternative means of transportation.

REDUCE CONSTRUCTION OPERATION EMISSIONS

No special measures are considered for the reduction of operational emissions during construction.

USE BUILDING MATERIALS WITH LOW CARBON INTENSITY

Recycled steel would most likely be used for most structural steel since the steel available in the region is mostly recycled. Some cement replacements such as fly ash and/or slag would likely be used. Construction waste would likely be diverted from landfills to the extent practicable by separating out materials for reuse and recycling, as required in New York City. The building is designed to use less concrete and steel, thus reducing the need for these materials which have a high carbon footprint. Although no measures for selection of lower carbon materials are currently considered, major materials proposed for the Proposed Project would emphasize environmentally preferred material choices, the characteristics of which would include the use of regional materials, recycled content materials, low-emitting materials, and where appropriate, repurposed materials.

CONCLUSIONS

The *CEQR Technical Manual* defines five goals for consistency with the City's emission reduction objectives: (1) efficient buildings; (2) clean power; (3) sustainable transportation; (4) construction operation emissions; and (5) building materials carbon intensity. Although the Proposed Project would not fully support the City's GHG reduction goals, the Proposed Project

has been designed to comply with the New York City Building Code and its building energy performance would meet the requirements for LEED Certification. Since the Proposed Project is currently at a conceptual level of design, as the design progresses, the Applicant would consider implementation of additional GHG emission reduction measures such as implementing building efficiency measures that exceed the New York City Building Code, use of clean renewable power, measures to reduce construction operational emissions and/or reduce the carbon footprint of materials used in construction.

The building energy performance of the Proposed Project would meet the requirements for LEED Certification. The Proposed Project goals do not include transit-oriented or infill development since the Project Site is not located within one of the City's multi-modal transit hubs. Therefore, since the Proposed Project is not located in an area directly supported by transit, it is conservatively assumed for CEQR purposes that a relatively small percentage of employees, patrons, and visitors to the Proposed Project would use transit as a mode of travel. However, there have also been recent transit improvements in the area by MTA with the completion of the new Arthur Kill Station of the Staten Island Rail Road immediately to the south of the Project Site and also along Arthur Kill Road (see also Chapter 12, "Transportation"). In addition, the Proposed Project would provide only the minimum required number of parking spaces as per zoning thereby limiting reliance on vehicle use and would also provide electric car-charging stations and bicycle storage to encourage these sustainable alternative means of transportation. The Proposed Project would also support other GHG goals by its reliance on natural gas and the fact that, as a matter of course, construction in New York City uses recycled steel and includes cement replacements. ✷