Chapter 14: Climate Change

A. INTRODUCTION

This chapter evaluates the greenhouse gas (GHG) emissions that would be generated by the construction and operation of the Proposed Project and its resilience to climate change effects. Since the Proposed Project would be located outside of the potential future flood zones as projected by New York State for 2100, and since the Proposed Project would not introduce any major drainage infrastructure with the potential to affect local flooding conditions during severe precipitation events, the focus of the climate change analysis is on potential GHG emissions.

As discussed in the Federal National Climate Assessment[1] and New York State Department of Environmental Conservation (NYSDEC) policy,[2] 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. The United States and New York State have established sustainability initiatives and goals for greatly reducing GHG emissions and for adapting to climate change. Additionally, the Town of Hempstead has registered as a participating community in New York State's Climate Smart Communities program.

NYSDEC recommends that agencies quantify GHG emissions where appropriate data inputs are reasonably available, with the appropriate level of review to assess the broad-scale effects of GHG emissions to inform decisions. Therefore, GHG emissions associated with the Proposed Project's operations are quantified, and construction-related emissions are evaluated qualitatively. The guidance states that agencies should consider reasonable measures to lower the level of the potential GHG emissions. Therefore, the analysis reviews potential relevant measures aimed at reducing GHG emissions associated with the Proposed Project, and where practicable, the potential effect of various measures to reduce GHG emissions is evaluated.

PRINCIPAL CONCLUSIONS

The building energy use and vehicle use associated with the Proposed Project would result in up to approximately 158 thousand metric tons of carbon dioxide equivalent (CO_2e) emissions per year.

The *Climate Smart Communities Pledge* includes five elements by which a project's consistency is evaluated: (1) Decrease community energy use; (2) Increase community use of renewable energy; (3) Realize benefits of recycling and other climate-smart solid waste management practices; (4) Reduce greenhouse gas emissions through use of climate-smart land use tools; and (5) Enhance community resilience and prepare for the effects of climate change.

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[1] U.S. Global Change Research Program. Climate Science Special Report: Fourth National Climate Assessment. Volume I. 2017.

[2] NYSDEC. DEC Policy: Assessing Energy Use and Climate Change in Environmental Impact Statements. July 15, 2009.

The Applicant is currently evaluating specific energy efficiency measures and design elements that may be implemented, and is seeking to achieve certification under the Leadership in Energy and Environmental Design (LEED) for Building Design and Construction rating system, version 4. The Applicant is committed at a minimum to achieve the prerequisite energy efficiency requirements under LEED and would likely exceed them. To qualify for LEED, the Proposed Project would be required to exceed the energy requirements of New York State's Energy Conservation Construction Code (currently the same as ASHRAE 90.1-2013), resulting in energy expenditure lower than a baseline building designed to meet but not exceed the minimum building code requirements by approximately 12 to 20 percent for new construction. Furthermore, additional energy savings would likely be achieved via guidance for tenant build-out, which would control much of the building's energy use and efficiency, but those are unknown at this time. The Proposed Project's commitment to building energy efficiency, exceeding the energy code requirements, would ensure consistency with the decreased energy use goal defined in the *Climate Smart Communities Pledge* as part of the Town's GHG reduction goal.

The Proposed Project would also support the other GHG goals by virtue of its proximity to public transportation, reliance on natural gas, commitment to construction air quality controls, and the fact that as a matter of course, construction in the New York City metropolitan region 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 Town's emissions reduction goals, as defined in the *Climate Smart Communities Pledge*.

Since the Proposed Project would be located outside of the potential future flood zones as projected by New York State, all components of the Proposed Project would be located well above flood elevations out to 2100 and beyond. A stormwater analysis was performed for the Proposed Project (see Chapter 9, "Water Resources"), and found that infrastructure for the Proposed Project would be able to accommodate peak precipitation under future conditions, and implementation of the Proposed Project would not have a significant adverse impact on on-site or off-site stormwater management facilities, stormwater runoff on surrounding communities, and would not exacerbate local flooding conditions during severe precipitation events.

B. GREENHOUSE GAS EMISSIONS

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. The general warming of the Earth's atmosphere caused by this phenomenon is known as the "greenhouse effect." Water vapor, carbon dioxide (CO_2), nitrous oxide (N_2O), methane, and ozone are the primary GHGs in the Earth's atmosphere.

There are also a number of entirely anthropogenic 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 GHG, 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 12, "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.

Methane and N_2O 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 United States Environmental Protection Agency (EPA) identifies seven types of GHGs that are relevant for GHG inventory purposes: CO_2, N_2O, methane, hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), nitrogen trifluoride (NF_3), and sulfur hexafluoride (SF_6). The analysis focuses mostly on CO_2, N_2O, and methane. There are no significant direct or indirect sources of HFCs, PFCs, NF_3, or SF_6 associated with the Proposed Project.

To present a complete inventory of all GHGs, component emissions are added together and presented as 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[3] 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)	25
Nitrous Oxide (N_2O)	298
Hydrofluorocarbons (HFCs)	124 to 14,800
Perfluorocarbons (PFCs)	7,390 to 12,200
Nitrogen Trifluoride (NF_3)	17,200
Sulfur Hexafluoride (SF_6)	22,800

Note: GWPs presented are based on the Intergovernmental Panel on Climate Change's (IPCC) Fourth Assessment Report of 2007, to maintain consistency in GHG reporting. The IPCC has since published updated GWP values reflecting new information on atmospheric lifetimes of GHGs and 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: EPA. *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2014.* 2016.

[3] *Radiative forcing* is a measure of the influence a gas has in altering the balance of incoming and outgoing energy in the Earth-atmosphere system and is an index of the importance of the gas as a GHG.

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

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 addressing energy consumption and production, land use, and other sectors. Although the U.S. has not ratified the international agreements that set emissions targets for GHGs, in December 2015, the U.S. signed the international Paris Agreement[4] that pledges deep cuts in emissions, with a stated goal of reducing annual emissions to a level that would be between 26 and 28 percent lower than 2005 emissions by 2025.[5] On June 1st, 2017, The president announced that "the United States will withdraw from the Paris Climate Accord."[6]

Regardless of the Paris Agreement, the EPA is required to regulate GHGs under the Clean Air Act 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. On August 24, 2018, NHTSA and EPA proposed to amend certain existing Corporate Average Fuel Economy (CAFE) and greenhouse gas emissions standards for passenger cars and light trucks and establish new standards, covering model years 2021 through 2026.[7] The preferred alternative for the proposed rule would keep existing CAFE passenger car and light truck standards through model year 2020 and apply no increase for model years 2021–2026. Additionally, beginning in model year 2021, air conditioning refrigerant leakage, nitrous oxide, and methane emissions would no longer be included with tailpipe CO_2 for compliance with the standards.

In 2015, EPA also 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. The Clean Power Plan sets carbon pollution emission guidelines and performance standards for existing, new, and modified and reconstructed electric utility generating units. On February 9, 2016, the Supreme Court stayed implementation of the Clean Power Plan pending judicial review. In August 2018, EPA proposed regulations that would repeal the Clean Power Plan and replace it with a scheme allowing states to develop their own emissions reduction targets, and that is predicted to result in increased GHG emissions as compared to the Clean Power Plan.

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

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

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

[6] Under the Agreement, countries are allowed to withdraw four years from the date the agreement entered into force—meaning the United States can officially withdraw on November 4, 2020. However, given the voluntary nature of the agreement, any action in the U.S. may or may not occur regardless of this status.

[7] The Safe Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021–2026 Passenger Cars and Light Trucks, 83 Fed. Reg. 165 (August 24, 2018). Federal Register: The Daily Journal of the United States.

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; an interim draft plan has been published.[8] 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 New York State Energy Plan outlines the State's energy goals and provides strategies and recommendations for meeting those goals. The latest version of the plan was published in June 2015. The new plan outlines a vision for transforming the state's energy sector that 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 new targets: (1) reducing GHG emissions in New York State by 40 percent, compared with 1990 levels, by 2030; (2) providing 50 percent of electricity generation in the state from renewable sources by 2030; and (3) 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, and reducing an additional 30 percent from 2020 to 2030. 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.

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. 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. The Applicant is currently evaluating the specific energy efficiency measures and design elements which would be implemented, and intends to achieve certification under the LEED rating system.

METHODOLOGY

Climate change is driven by the collective contributions of diverse individual sources of emissions to global atmospheric GHG concentrations. Identifying potential GHG emissions from a project can help decision makers identify practicable opportunities to reduce GHG emissions and ensure consistency with policies aimed at reducing overall emissions. 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

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

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. (Note that this differs from most other technical areas in that it does not account for only the increment between the condition with and without the Proposed Actions. The reason for that different approach is that to truly account for the incremental emissions only would require speculation regarding what energy use and efficiency might be like for those alternatives and other related considerations, as well as similar assumptions regarding commercial and other uses. The focus is therefore on the total emissions associated with the uses, and on the effect of measures to reduce those emissions.)

Estimates of emissions of GHGs from the Proposed Project have been quantified, including off-site emissions associated with use of electricity, 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. The analysis of building energy is based on the current carbon intensity of electricity, which will likely be lower in the 2021 build year and lower still in future years as the fraction of electricity generated from renewable sources continues to increase. Emissions from transportation also apply the current emission factors, which are currently anticipated to continue to decrease in future years as vehicle engine efficiency increases and the use of lower carbon technology increases, resulting in lower emissions in future years.

Since the methodology does not account for future years and other changes 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 estimates of 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 CO_2e emissions per year (see "Pollutants of Concern," above).

BUILDING OPERATIONAL EMISSIONS

Estimates of emissions from building electricity and fuel use were prepared using preliminary projections of energy consumption developed for the Proposed Project by the Applicant's engineers, the latest estimate (for 2016) of electricity intensity for the Long Island sub-region,[9] and emission factors for natural gas from EPA's inventory guidance.[10] When fully built, the Proposed Project is estimated to require approximately 34.499 gigawatt-hours per year (GWh/yr) of electricity for general building use and a total of approximately 88.238 million standard cubic feet of natural gas for heat and hot water per year for all uses combined. Note that these preliminary estimates are based on similar existing uses and do not yet include specific design measures intended to reduce energy consumption and GHG emissions. Therefore, these estimates are conservatively high. Since the electricity emissions represent the latest data (2016) and not future build year (2021), future emissions associated with electricity production are expected to be lower

[9] EPA. *Power Profiler ZIP Code Tool with eGRID2016 Data*. V 8.0. June 14, 2018. Data for NYLI sub region.

[10] EPA. Emission Factors for Greenhouse Gas Inventories. Last Modified: 9 March 2018.

as efficiency and renewable energy use continue to increase with the objective of meeting State GHG reduction goals.

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 the transportation planning assumptions developed for the analysis and presented in Chapter 11, "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. For the arena uses, specific estimates were developed for various types of events and accounted for the number of the various types of events and attendance per year. Travel distances were estimated for each use based on the same assumptions used in Chapter 11, "Transportation" for allocating trips, resulting in annual vehicle miles traveled by light duty vehicles and trucks. Emissions for light duty vehicles were then estimated based on average emission factors conservatively assuming all conventional internal combustion engines.[11] Emissions for trucks were based on EPA on-road emission factors per gallon of diesel.[10] In order to account for upstream emissions associated with extraction, refinement, and transportation of fuel to fueling stations (well-to-pump emissions), a factor of 1.21 was applied to on-road emission factors based on the ratio of well-to-wheels emissions (total emissions including both on-road and upstream factors) to well-to-pump emissions.[12]

Additionally, the Proposed Project would have the potential to increase congestion and therefore increase GHG emissions from existing traffic on the regional highway network, and in particular the Cross Island Parkway. As discussed in Chapter 11, "Transportation," average travel speeds on the Cross Island Parkway would generally be similar to speeds in the No Action condition, except for a reduction in speeds on the Cross Island Parkway by up to 36 mph on individual segments of the Cross Island Parkway during the analyzed peak hours. This may result in an increase to GHG emissions up to 25 percent on these segments during the peak hours. However, these potential increased emissions would generally be limited to small segments (approximately 2 miles) of the Cross Island Parkway and would not extend to all hours on such segments. Therefore, the potential to increase congestion is not anticipated to significantly increase regional GHG emissions and were not quantified.

CONSTRUCTION EMISSIONS

A description of construction activities is provided in Chapter 15, "Construction Impacts." 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.

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[11] Argonne National Laboratory. *GREET 1 2017 Model*. October 2017 release. 12/04/2017.

[12] Argonne National Laboratory. *GREET WTW Calculator 2017*. 12/04/2017 using GREET1_2017 version, October 2017 release

EMISSIONS FROM SOLID WASTE MANAGEMENT

The Proposed Project would not fundamentally change the local solid waste management system. Therefore, the GHG emissions from solid waste generation, transportation, treatment, and disposal are not quantified.

PROJECTED GHG EMISSIONS

OPERATIONAL EMISSIONS

The fuel consumption, usage, emission factors, and resulting GHG emissions are presented in **Table 14-2**. Note that fuel consumption, usage, and emission factors are specific to different locations dependent on regional climate, available fuel sources, and the carbon intensity of regional electricity generation. If new buildings were to be constructed elsewhere to accommodate uses and space, 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.

Table 14-2
Annual Operational Emissions

Category	Type	Annual Usage	Emission Factor	Emissions (metric tons CO_2e/year)
On-Road	Light Duty	301,786,827 VMT	421.0 g(CO_2e)/mile	127,052
	Trucks	3,821,584 VMT	1,932 g(CO_2e)/mile	7,383
Building Energy	Electricity	36,017,682 kWh	0.5380 kg CO_2e/kWh	19,376
	Natural Gas	88,237,900 standard cubic feet	53.06 kg CO_2e/MMBtu	4,776
			Total	**158,587**

Notes:
VMT—vehicle miles traveled
g—grams
kg—kilograms
kWh—kilowatt-hour
MMBtu—million British thermal units

As described in the following section, the Applicant is currently evaluating specific energy efficiency measures and design elements that would be implemented, and intends to achieve certification under the LEED rating system. To qualify for LEED, the buildings would be required to exceed the energy requirements of ASHRAE 90.1-2013 so as to reduce energy expenditure by at least 2 to 4 percent as compared with a baseline building designed to meet the minimum building code requirements, but the Applicant is considering measures estimated to reduce consumption in the range of 12 to 20 percent lower than that level. The above estimate does not yet reflect such measures under LEED.

ELEMENTS THAT WOULD REDUCE GHG EMISSIONS

The Proposed Project would include a number of sustainable design features discussed below which would, among other benefits, result in lower GHG emissions—these features would be specified and required pursuant to the GPP and Design Guidelines for the Proposed Project. As a prerequisite for LEED certification, the Proposed Project would use less energy than it would if built only to meet the New York State Energy Conservation Construction Code. In general, 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, demonstrating consistency with the State and Town's goals of reducing GHG emissions.

DECREASE COMMUNITY ENERGY USE

Build Efficient Buildings

All Proposed Project uses would be designed to achieve LEED version 4 certification at a minimum, and are expected to achieve energy efficiency resulting in energy expenditure in the range of 12 to 20 percent lower than buildings designed to meet but not exceed building code requirements.

While measures to improve energy efficiency for the proposed arena have been identified, specific measures for uses other than the arena are not yet known. The arena is expected to have an energy-efficient building envelope and energy-efficient glazing designed to reduce heat loss and facilitate daylight harvesting by admitting more daylight than solar heat. The energy systems would utilize high-efficiency heating, ventilation, and air conditioning (HVAC) systems designed to reduce energy consumption. The building would have high-albedo roofs to reduce energy consumption and reduce the buildings contribution to the urban heat-island effect. Motion/occupancy sensors for lighting and potentially for climate control would be incorporated. Water conserving fixtures exceeding building code requirements would be installed, including 1.26 gallons-per-flush toilets and pint-flush urinals—or potentially waterless urinals, indirectly reducing energy consumption associated with potable water production and delivery. Energy performance would be tracked to allow for strategies to maintain and improve efficiency. Storage and collection of recyclables would be incorporated in building design.

The Applicant is also considering efficient, directed exterior lighting, and eliminating or reducing the use of refrigerants in cooling and climate systems.

Transit-Oriented Development and Sustainable Transportation

The Proposed Project is located in an area supported by transit options including Long Island Rail Road and transit bus service. There is stated interest to increase public transit service frequency during games, similar to race season route service scheduling increases; any increase to service or route frequency would depend on coordination between many public partners in order to realize the magnitude of benefits associated with a shift to sustainable transit options. The Proposed Project relies heavily on shared parking opportunities between all mixed used properties, arena, hotel, retail, and the existing Belmont Park services. The arena's LEED pursuit includes strategies for a reduced parking footprint, including limited onsite parking and carpool preferred parking within the hotel parking podium and within the retail parking podium. The arena and other employers within the Proposed Project may also implement strategies to encourage sustainable employee transportation such as ride sharing information, transit passes, on-site amenities for employees, and other measures.

Reduce Construction Operation Emissions

Construction specifications would include an extensive diesel emissions reduction program, as described in detail in Chapter 15, "Construction Impacts," including diesel particulate filters for large construction engines, requiring ultra-low sulfur diesel fuel, the use of best available tailpipe technologies such as diesel particulate filters, and the utilization of newer equipment. 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. The Proposed Project may also consider the use of biodiesel blends for construction engines.

INCREASE COMMUNITY USE OF RENEWABLE ENERGY

The Proposed Project would use natural gas, a lower carbon fuel, for the typical operation of the heat and hot water systems. On-site renewables such as wind or solar may also be considered for certain processes (e.g., heating water for HVAC/hot water systems).

REALIZE BENEFITS OF RECYCLING AND OTHER CLIMATE-SMART SOLID WASTE MANAGEMENT

Recycled steel would most likely be used for most structural steel since the steel available in the region is mostly recycled. The Proposed Project plans to pursue and include specifications for high recycled content for permanently installed materials and require reporting requirements by the trades. Typically, steel products, including bar, plate, decking and similar uses can be specified with 80 percent post-consumer recycled, and some manufacturers are capable of providing steel products documented at 90-98 percent recycled content.

Some cement replacements such as fly ash and/or slag would also be used, and concrete content would be optimized to the extent feasible. The arena is also expected to utilize cement meeting ASTM C1157, which allows for integration of more low-carbon content as compared to traditional cement.

Construction waste would be diverted from landfills to the extent practicable by separating out materials for reuse and recycling, with a diversion target of minimum 75 percent. Opportunities exist for early diversion of wood and asphalt waste streams, while during construction of the arena, materials like concrete, drywall, metal, cardboard, and more will be targeted for waste diversion. The selected general contractor would be required to identify five waste diversion streams, and divert 4 streams while reaching 75 percent by weight diversion minimum for the arena and associated site work.

C. RESILIENCE OF THE PROPOSED PROJECT TO CLIMATE CHANGE

Since the Proposed Project would be located outside of the potential future flood zones as projected by New York State, all components of the Proposed Project would be located well above flood elevations out to 2100 and beyond. It is anticipated that the Proposed Project would include installation of a comprehensive stormwater management system to accommodate stormwater runoff from the proposed improvements. This system would be designed to infiltrate up to and including the 10-year storm event, with overflow directed via existing conveyances to an on-site detention pond in the infield of the Racetrack. The overflow peak volume is substantially lower than the existing runoff being directed to this pond. The pond’s outlet connects into the Cross Island Parkway drainage system. Furthermore, installation of drywells would assist in directly infiltrating a portion of the additional runoff generated by the Proposed Project.

A stormwater analysis was performed for this system (see Chapter 9, “Water Resources”), and found that infrastructure for the Proposed Project would be able to accommodate peak precipitation under future conditions, and implementation of the Proposed Project would not have a significant adverse impact on on-site or off-site stormwater management facilities, stormwater runoff on surrounding communities, and would not exacerbate local flooding conditions during severe precipitation events. Therefore, the Proposed Project would overall be designed to provide resilience to the potential future conditions. ✷