

A. INTRODUCTION

As discussed in the 2012 *City Environmental Quality Review (CEQR) Technical Manual*, increased concentrations of greenhouse gases (GHGs) in the atmosphere are changing the global climate, resulting in wide-ranging effects on the environment, including rising sea levels, increases in temperature, and changes in precipitation levels. Although this is occurring on a global scale, the environmental effects of climate change are also likely to be felt at the local level. Through PlaNYC, the City has established sustainability initiatives and goals for greatly reducing GHG emissions and adapting to climate change in the City. 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”).¹ The *CEQR Technical Manual* recommends that a project resulting in 350,000 square feet of development or more and other energy-intensive projects quantify project-related GHG emissions and assess the project’s consistency with the citywide GHG reduction goal.

The USTA Billie Jean King National Tennis Center (NTC) Strategic Vision (the proposed project) would result in a series of improvements on the project site, as described in Chapter 1, “Project Description.” As the proposed project would result in more than 350,000 square feet of development, the sources of GHG emissions and measures that would be implemented to limit those emissions are discussed in this chapter, along with an assessment of the proposed project’s consistency with the citywide GHG reduction goal.

PRINCIPAL CONCLUSION

The proposed project’s design includes many features aimed at reducing energy consumption and GHG emissions, and would be consistent with the City’s citywide GHG reduction goal.

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

Countries around the world have undertaken efforts to reduce emissions by implementing both global and local measures that address energy consumption and production, land use, and other sectors. In a step toward the development of national climate change regulation, the U.S. has committed to 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.² Without legislation focused on this goal, the U.S. Environmental Protection Agency (USEPA) is required to

¹ Administrative Code of the City of New York, §24-803.

² Todd Stern, U.S. Special Envoy for Climate Change, letter to Mr. Yvo de Boer, UNFCCC, January 28, 2010.

regulate GHGs under the Clean Air Act (CAA), and has already begun issuing regulations. The U.S. Department of Transportation (USDOT) and USEPA have established GHG emissions standards for vehicles that will reduce vehicular GHG emissions over time.

There are also regional, state, 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 by 80 percent compared to 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 (that effort is currently under way¹).

New York State also has regulations to cap and reduce carbon dioxide (CO₂) emissions from power plants, as part of the commitment to the Regional Greenhouse Gas Initiative (RGGI), a multistate agreement to reduce the amount of CO₂ from power plants.

Many local governments worldwide, including New York City, are participating in the Cities for Climate Protection 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 and identifies specific initiatives that can result in emission reductions and initiatives targeted at adaptation to climate change impacts. As mentioned, the PlaNYC 2030 goal to reduce citywide GHG emissions to 30 percent below 2005 levels by 2030 was codified by Local Law 22 of 2008. Projects that require a GHG assessment under CEQR are evaluated with this goal as the benchmark.

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.

C. SOURCES OF GHG EMISSIONS

The GHGs identified for analysis in the *CEQR Technical Manual* include the six internationally-recognized GHGs regulated under the Kyoto Protocol (an international agreement adopted in 1997 that is linked to the United Nations Framework Convention on Climate Change). CO₂ is the primary pollutant of concern from anthropogenic emission sources. CO₂ is emitted as a product of combustion, 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 uptake² by the oceans. CO₂ is considered in any assessment of GHG emissions from development projects. Other GHG emissions are included where practicable or in cases where they comprise a substantial portion of overall emissions.

¹ <http://www.nyclimatechange.us/>

² Biological and chemical processes by which CO₂ is removed from the atmosphere and stored in the oceans.

The proposed project would incorporate sustainability measures aimed at reducing energy consumption for both the US Open period and the non-event season. During US Open events, which take place over a two-week period in the summer and have been ongoing for years, GHG emissions would be generated as a result of electricity use onsite. Electricity would be used for lighting, displays and communication, and air conditioning of enclosed administrative and retail spaces. For the remainder of the year, peak energy use would be substantially less. As discussed in the following section, measures to minimize energy use and GHG emissions would be implemented as part of the proposed project. In the future With Action condition, the proposed increase in attendance of 10,000 persons for the daytime session would result in a projected peak period increase of approximately 954 vehicle trips (see Chapter 10, “Transportation”). The proposed project is accessible by public transportation, which the majority of the US Open patrons use. As described below, efforts will be made to further improve options for sustainable transportation to and from the proposed site. To minimize emissions from solid waste generated during events, an enhanced waste management and recycling plan would be implemented. Construction of the proposed project would generate GHG emissions—both direct emissions from construction equipment and delivery trucks and emissions embedded in the production and transport of materials used in construction, notably steel, rebar, aluminum, and cement. The majority of emissions from the proposed project would be associated with its construction rather than the two weeks per year the US Open operates. Therefore, many of the emission reduction measures that would be implemented as part of the proposed project would focus on construction activities.

D. STRATEGIES THAT WOULD REDUCE GHG EMISSIONS

The assessment of consistency with the GHG reduction goal, as defined in the *CEQR Technical Manual*, requires examination of how a project would reduce its carbon intensity, considering five goals: building efficient buildings, using clean power, creating transit-oriented development and sustainable transportation, reducing construction activity emissions, and using building materials with low carbon intensity. As discussed, the proposed project would incorporate measures to minimize GHG emissions. Specific measures that would be implemented and additional measures under consideration are described below.

BUILD EFFICIENT BUILDINGS

The following measures would be incorporated into project design:

- Reduce energy demand using peak shaving or load shifting strategies during the US Open.
- Efficient gas fired or generator powered electric air conditioning equipment could be used for the stadiums and retail building to reduce peak load and minimize impact on the electric grid during the US Open event.
- During the non-US Open event season, electric-powered HVAC and food service equipment would be replaced with natural gas.
- Efficient lighting will be used and event lighting would be focused with visors to eliminate spillage.
- During the non-US Open event season, reduced intensity lighting would be used for field courts.
- As with the existing facility, storage and collection of recyclables including paper, corrugated cardboard, glass, plastic, and metals would be provided.

USTA Billie Jean King National Tennis Center Strategic Vision

- The project design would facilitate walking, including the provision of new walkways, public spaces, and other circulation improvements within the site. USTA is considering the inclusion of additional bike racks.

Additional measures that are under consideration include:

- Designing energy efficient building envelopes to reduce cooling/heating requirement;
- Potential LEED certification for buildings;
- Installation of high-efficiency HVAC systems and generators that are economical;
- Use of *Energy Star* appliances;
- Use of water conserving fixtures that exceed building code requirements;
- Low impact development for stormwater design;
- Water efficient landscaping;
- Using high-albedo roofing materials;
- Maximizing interior daylighting in the retail spaces;
- Window glazing to optimize daylighting, heat loss, and solar heat gain;
- Providing construction and design guidelines to facilitate sustainable design for build-out for vendor sponsored areas;
- Motion sensors and lighting and climate control; and
- Third party building commissioning to ensure energy performance.

USE CLEAN POWER

The use of clean power or generation of renewable or low power on-site is under consideration for the proposed building that would seek LEED certification, subject to site design and economic feasibility.

TRANSIT-ORIENTED DEVELOPMENT AND SUSTAINABLE TRANSPORTATION

The proposed project strongly supports the City's transit-oriented development and sustainable transportation objective. Access to the site is available via the 7 subway line and Long Island Rail Road (LIRR). In addition, on-site parking for alternative vehicles and electric vehicle charging stations would support the greening of New York's vehicle fleet.

The following measures would be included in project design:

- A new east-west pedestrian walkway within the NTC and other pedestrian improvements implemented to support non-motorized transportation to and through the site;
- USTA is considering the inclusion of additional bike racks;
- A parking management program to minimize parking requirements, continuing the existing parking management program;
- Designated on-site parking for alternative vehicles in Parking Garage A;
- A charging station for electric vehicles in Parking Garage A; and
- USTA encouraging the use of public transit for US Open patrons, including in communications efforts.

REDUCE CONSTRUCTION EMISSIONS

A diesel emissions reduction program would be implemented during construction of the proposed project, including diesel particle filters for large construction engines and other measures (see Chapter 16, “Construction Impacts”). These measures would reduce particulate matter emissions; while particulate matter is not included in the list of standard greenhouse gasses (“Kyoto gases”), recent studies have shown that black carbon—a constituent of particulate matter—may play an important role in climate change. Biofuels could be used during construction. The feasibility of using biofuels will be considered and included in construction contracts if found to be practicable.

USE BUILDING MATERIALS WITH LOW CARBON INTENSITY

The proposed project would utilize a design resulting in the use of less concrete and steel by incorporating a structural composite material composed of steel and polyurethane elastomer—in place of stiffened steel and reinforced concrete. It could be used in the construction of the new Grandstand Stadium (Stadium 3) and potentially for the proposed addition of administrative space to Arthur Ashe Stadium (Stadium 1). Cement replacements, cement produced using lower GHG fuel, and concrete produced with optimized cement content would be considered and implemented if feasible, considering structural requirements and costs.

In addition, the requirement to divert construction waste from landfills by reusing and/or recycling materials would be specified. Materials with recycled content will be used to the extent that this would be economically feasible, and materials that are extracted and/or manufactured within the region will be specified. Rapidly renewable building materials and wood that is locally produced and/or certified in accordance with the Sustainable Forestry Initiative or the Forestry Stewardship Council’s Principles and Criteria will be used to the extent practicable.

CONCLUSION

The proposed project’s design includes many features aimed at reducing energy consumption and GHG emissions, and would be consistent with the City’s citywide GHG reduction goal. *