Chapter 12: Energy

A. INTRODUCTION

This chapter describes the effects of the Proposed Project on energy consumption. New building and alteration projects are subject to the New York City Energy Conservation Code (NYCECC), which comprises the 2020 Energy Conservation Construction Codes of New York State (ECCCNYS), in addition to a series of local laws. According to the *City Environmental Quality Review (CEQR) Technical Manual*, a detailed assessment of energy impacts is usually limited to projects that may significantly affect the transmission or generation of energy. Most projects resulting in new construction would not create significant energy impacts, and, as such, do not require a detailed energy assessment. However, a proposed project's operational energy consumption should be estimated.

As described in Chapter 1, "Project Description," the Proposed Project includes the adaptive reuse of the vacant, approximately 588,765-gross-square-foot (gsf) Kingsbridge Armory providing up to approximately 735,800 gsf of new uses, including a mix of community facility and cultural space, light manufacturing space, commercial office space, a 17,000-person capacity live event venue, and other entertainment uses, along with parking and loading docks. The National Guard Site would be redeveloped with a new residential building (up to approximately 494,500 gsf) containing 500 new permanently affordable dwelling units (DUs) and approximately 14,400 gsf of ground floor retail, replacing a one-story garage and a two-story office building. This analysis compares the daily energy consumption of the Proposed Project to daily energy consumption absent the Proposed Project in the 2032 build year. This analysis also discloses the amount of energy that would be consumed annually as a result of the day-to-day operation of the buildings and uses resulting from the Proposed Project.

The Proposed Project would be subject to New York City's energy efficiency and carbon intensity regulations and is anticipated to result in more energy efficient buildings. The commitment for buildings to use primarily electric heating, ventilation, and air conditioning (HVAC) and hot water systems[1] would result in estimated energy consumption being reduced substantially when compared to the City's energy consumption factors for buildings that utilize fossil fuel-fired systems. In addition, the Proposed Project would be required to comply with the NYCECC, which imposes performance requirements for HVAC systems, as well as the exterior building envelope of new buildings. In compliance with this code, the new residential building on the National Guard Site would be required to meet standards for energy conservation, which include requirements relating to energy efficiency and combined thermal transmittance.

[1] Some limited uses within the Armory building, such as food service, may utilize gas for commercial cooking.

PRINCIPAL CONCLUSIONS

This analysis determined that the annual energy consumption for the Proposed Project would not result in significant adverse energy impacts. In the 2032 analysis year, the Proposed Project is expected to result in an energy demand of approximately 74,324 million British thermal units (MMBTUs) of energy per year (approximately 0.0004 percent of New York City's forecast future total annual energy demand). This represents an increase of approximately 73,073 MMBTUs compared with the No Action condition. The Proposed Project would generate an incremental increase in energy demand that would be considered negligible when compared with the overall demand within Consolidated Edison (Con Edison)'s New York City and Westchester County service area. Therefore, the Proposed Project would not result in any significant adverse impacts related to energy.

B. METHODOLOGY

To assess the Proposed Project's potential to adversely affect energy, this chapter calculates the annual energy consumption of the Project Site in the No Action and With Action conditions as well as the net change in energy consumption, which represents the anticipated energy use in the future with the Proposed Project. More particularly, this chapter:

- Presents data on the existing energy distribution system.
- Determines the future electrical consumption with the Proposed Project for 2032.
- Assesses the effects of this energy demand on the local distribution system and regional energy supplies.

As discussed in Chapter 15, "Greenhouse Gas Emissions and Climate Change," the Proposed Project would also comply with the applicable requirements of New York City's Climate Mobilization Act that are in effect at the time of construction of the Proposed Project.

Energy consumption for the With Action condition was estimated using building energy consumption information provided in Table 15-1 of the *CEQR Technical Manual*.

New York State's Climate Action Council (CAC) has identified several pathways for building electrification that would include wide adoption of heat pump technology and has identified the use of air-source heat pumps (ASHPs) as the most feasible technology for buildings to use. Therefore, the electrical energy consumed to provide heating and hot water services was estimated assuming the use of electrical-powered air source heat pumps (ASHPs) that would meet federal performance standards for heat pumps with a minimum coefficient of performance (COP) for heating of 2.4. Estimates of electrical consumption associated with other uses (including air conditioning, lighting, appliances, etc.) were also included in the total energy consumption rates.

C. EXISTING CONDITIONS

ENERGY GENERATION

Within New York City, electricity is generated and delivered to most users by Con Edison, although some of the electricity delivered by Con Edison is generated by independent

power producers. Electrical energy in New York City is drawn from a variety of sources that originate both within and outside the City. These include non-renewable sources (such as oil and natural gas) and renewable sources (such as hydroelectricity and—to a much lesser extent—biomass fuels, solar power, and wind power). Electricity consumed in New York City is generated in various locations, including sites within New York City, locations across the Northeast, and places as far away as Canada.

Con Edison distributes power throughout New York City and Westchester County, for a total service area of approximately 600 square miles, serving a population of over nine million people. Transmission substations receive electricity from the regional high voltage transmission system and reduce the voltage to a level that can be delivered to area substations. Area substations further reduce the voltage to a level that can be delivered to the distribution system, or the street "grid." Within the grid, voltage is further reduced for delivery to customers. Each substation serves one or more distinct geographic areas, called networks, which are isolated from the rest of the local distribution system. If service is lost at a specific substation or substations, the network functions to isolate any problems from other parts of the City. Substations are also designed to have sufficient capacity for the network to grow.

Con Edison currently has 62 area distribution substations and various distribution facilities located throughout New York City and Westchester County. As of the end of 2018, Con Edison's distribution system had a transformer capacity of 32,872 megavolt ampere (MVA), with 34,399 miles of overhead distribution lines and 96,307 miles of underground distribution lines.[2] The underground distribution lines represent the longest underground electric delivery system in the country. As of 2024, the total Con Edison New York City generation capacity was 8,719 megawatts (MW),[3] and annual electricity usage in Zone J of Con Edison's service area (which includes New York City) totaled approximately 49,260 GigaWatt hours (GWh), or 168 trillion BTU. Con Edison is required by North American Electric Reliability Corporation (NERC), Northeast Power Coordinating Council (NPCC), and New York State Reliability Council (NYSRC) rules to maintain its transmission system so as to achieve the following: survive the two worst (non-simultaneous) contingencies that will not result in equipment loading exceeding the designated emergency rating of that equipment, will not result in the loss of any customer service, and—following corrective actions—will not result in equipment loading that exceeds the designated normal rating of that equipment.

RECENT ENERGY CONSERVATION DIRECTIVES

In 2019, the New York City Council enacted the Climate Mobilization Act—a legislative package targeting increased energy efficiency, utilization of roof space for installation of solar energy sources/green roofing, and reductions in Greenhouse Gas (GHG) emissions associated with building energy use in order to meet the City's climate change goals. The legislation aims to reduce buildings' GHG emissions, which currently account for approximately 70 percent of the citywide total, by 40 percent in 2030 and 80 percent by 2050 by compelling building owners to retrofit existing buildings and developers to design new buildings that are more energy efficient or be subject to prescribed financial penalties. The Climate Mobilization Act also established the Office of Building Energy

[2] New York Independent System Operator (NYISO) *Load and Capacity Data* Gold Book, 2024.

and Emissions Performance at the New York City Department of Buildings (DOB), which oversees implementation of the law, the creation of a method to assess building energy use, and development of a set of rules for establishing emissions limits.

Further, in 2020, the City brought the NYCECC up to date by adopting the 2020 ECCCNYS, which substantially increased the stringency of the building energy efficiency requirements and adopted the American Society of Heating, Refrigeration, and Air-Conditioning Engineers (ASHRAE) 90.1-2016 standard as a benchmark, and aligns with NYStretch Energy Code 2020 developed by New York State Energy Research and Development Authority (NYSERDA).[3] The NYCECC governs performance requirements for HVAC systems, as well as the exterior building envelope of new buildings.

EXISTING ENERGY CONSUMPTION ON THE PROJECT SITE

The Project Site is currently occupied by the Armory and National Guard Sites. The approximately 588,765-gsf Armory is currently vacant, while the approximately 26,000-gsf National Guard buildings are used as office and garage space. **Table 12-1** presents the existing conditions of the Project Site buildings and their associated annual energy demands. It is estimated that current uses on the Project Site consume 5,624 MMBTUs/year.

Table 12-1
Existing Conditions Annual Energy Consumption for the Project Site

Component	Use	Size (gsf)	Average Annual Energy Rate (mBTUs/sf)	Energy Consumption (MMBTUs/Year)
Armory Site	Vacant	588,765	0	0
National Guard Site	Office/Garage	26,000	216.3	5,624
			Total Energy Consumption	***5,624***

Notes: sf = square feet; mBTU = Thousand BTU; MMBTU = Million BTU
Source: *CEQR Technical Manual,* Table 15-1

D. THE FUTURE WITHOUT THE PROPOSED PROJECT

Absent the Proposed Project, none of the proposed actions would be sought or approved, and the Project Site would remain unchanged from its current state. The approximately 588,765-gsf Armory would remain vacant and substantially underutilized. In the No Action condition, the existing two National Guard buildings totaling approximately 26,000 gsf would remain on the Project Site and in use by the National Guard. Therefore, uses on the Project Site will continue to consume 5,624 MMBTUs/year in 2032.

[3] In March 2025, New York State Department of State (DOS) proposed to repeal the existing 2020 ECCCNYS and to adopt a new, updated Energy Code (2024 ECCCNYS). The proposed changes are anticipated to surpass the current energy requirements through adoption of 2024 NYS ASHRAE 90.1 and may reflect improvements when compared to the NYStretch Energy Code 2020, reflecting New York's ongoing commitment to energy-efficient, low-carbon buildings.

E. THE FUTURE WITH THE PROPOSED PROJECT

In the With Action condition, the Armory would be adaptively reused and redeveloped with approximately 735,800 gsf of new uses, including a mix of community facility and cultural space, light manufacturing space, commercial office space, a 17,000-seat live event venue, and other entertainment uses, along with parking and loading docks. The National Guard Site would be redeveloped with a new residential building (up to approximately 494,500 gsf) containing 500 new, permanently affordable DUs and approximately 14,400 gsf of ground floor retail. Electrical service to the new uses at the Armory and the new residential building on the National Guard Site would be provided by Con Edison. **Table 12-2** presents the land uses anticipated in the With Action condition and their associated annual energy demands. As shown, it is conservatively estimated that energy demand from the Project Site would be 259,404 MMBTUs/year in the With Action condition.

Table 12-2
With Action Annual Energy Consumption for the Project Site

Component	Use	Size (gsf)	Average Annual Energy Rate (mBTUs/sf)	Energy Consumption (MMBTUs/Year)
Armory Site	Museum	30,200	250.7	7,571
	Community Facility	54,200	250.7	13,588
	Office	73,000	216.3	15,790
	Recreation/ Entertainment and Flex Space/ Sports Field	152,700	216.3	33,029
	Event Venue	99,800	216.3	21,587
	Light Manufacturing/ Incubator Space	87,800	554.3	48,668
	Parking and Back of House (circulation, mechanical, etc.)	238,100	216.3	51,501
National Guard Site	Parking	41,600	216.3	8,998
	Local Retail	14,400	216.3	3,115
	Residential	438,500	126.7	55,558
			Total Energy Consumption	***259,404***

Notes: sf = square feet; mBTU = Thousand BTU; MMBTU = Million BTU
Totals may not sum due to rounding.
Source: *CEQR Technical Manual,* Table 15-1.

According to the New York Independent Systems Operator's (NYISO) 2024 *Load and Capacity Data* report,[4] annual energy requirements for the 2032 build year are forecast to be approximately 166,530 GWh (or 568 trillion BTU). Of this forecasted annual energy demand, 52,200 GWh (or 178 trillion BTU) is expected to come from Zone J, which includes New York City. The anticipated 259,404MMBTU use in annual electrical energy consumption under the With Action condition represents approximately 0.0014 percent of New York City's forecast future total annual energy demand. Therefore, the Proposed Project would not result in a significant adverse impact related to energy. ✷

[4] New York Independent System Operator (NYISO) *Load and Capacity Data* Gold Book, 2024.