A. INTRODUCTION

The *City Environmental Quality Review* (CEQR) *Technical Manual* recommends a detailed analysis of energy impacts for projects that could significantly affect the transmission or generation of energy or that cause substantial new consumption of energy. Because the Proposed Action would not result in any of these conditions, a detailed assessment of energy impacts is not necessary. Nevertheless the *CEQR Technical Manual* recommends that a project's energy consumption be calculated and disclosed. Therefore, this chapter projects the amount of energy consumption required to operate the proposed project on an annual basis.

The measure of energy used to determine energy consumption is British Thermal Units (BTUs) per year. One BTU is the quantity of heat required to raise the temperature of one pound of water one degree Fahrenheit. This unit of measure may be used to compare consumption of energy from different sources (e.g., gasoline, hydroelectric power, etc.), taking into consideration how efficiently those sources are converted to energy. Its use avoids the confusion inherent in comparing different measures of output (e.g., horsepower, kilowatt hours, etc.) and consumption (e.g., tons per day, cubic feet per minute, etc.).

B. PRINCIPAL CONCLUSIONS

Development facilitated by the Proposed Action (the proposed project) is projected to generate demand for approximately 124.3 billion BTUs of energy per year. This energy demand represents the total incremental increase in energy consumption between the future without the Proposed Action (the No-Action condition) and the future with the Proposed Action (the With-Action condition). As explained in the *CEQR Technical Manual*, the incremental demand produced by most projects would not create a significant impact on energy capacity, and detailed assessments are only recommended for projects that may significantly affect the transmission or generation of energy. The proposed project would generate an incremental increase in energy demand that would be negligible when compared to the overall demand within Con Edison's New York City and Westchester County service area. Therefore, the Proposed Action would not result in any significant adverse energy impacts.

C. EXISTING CONDITIONS

Energy Generation

Within New York City, electricity is generated and delivered to most users by Consolidated Edison (Con Edison) as well as a number of independent power companies. 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, natural gas, and coal fuel; 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. 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.

In 2012 (the latest year for which data are available), approximately 57 billion kilowatt hours (kWH), or 194 trillion BTUs were delivered in Con Edison's service area. In addition, Con Edison supplied approximately 116 trillion BTUs of natural gas and approximately 20 billion pounds of steam, which is equivalent to approximately 24 trillion BTUs.[1] Overall, approximately 334 trillion BTUs of energy are consumed within Con Edison's New York City and Westchester County service area annually.

Project Site Energy Consumption

For this analysis, energy consumption was calculated for the existing building on the project site. Energy consumption can be assessed by estimating the amount of energy that would be required to operate the various systems found within a building. Usually, this encompasses those systems that provide for heating, cooling, lighting, pumps, fans, domestic hot water, elevators, etc. for a building or buildings.

Existing uses on the project site that generate demand for energy include space for construction contractors, wholesale uses, an appliance showroom, a moving and storage company, school bus storage, and a metal and engraving warehouse and storage facility totaling approximately 194,700 gross square feet (gsf). For analysis purposes, these uses are assumed to consume energy at the industrial building type rate (554,300 BTU/sf/year) as defined in Table 15-1 of the *CEQR Technical Manual.* Therefore, the existing energy consumption on the project site is approximately 107.9 billion BTUs per year (see Table 12-1).

Table 12-1: Existing Energy Consumption

Use	Size (gsf)	Rate (BTUs/sf/year)	Energy Consumption (BTUs/year)
Storage/Warehousing	194,700	554,300	107,922,210,000

Source: *CEQR Technical Manual*, Table 15-1.

D. FUTURE WITHOUT THE PROPOSED ACTION (NO-ACTION CONDITION)

In the No-Action condition, it is expected that the existing light industrial and warehousing uses would remain on the project site. These consist of approximately 194,700 gsf of warehouse and storage space and an estimated 100 accessory parking spaces. It is assumed that the upland portions of the project site, which are currently zoned R6, would be redeveloped on an as-of-right basis in the future without the Proposed Action. These upland parcels are estimated to accommodate approximately 166 residential units (approximately 166,452 gsf) in the No-Action condition.

[1] Consolidated Edison Annual Report, 2012.

For analysis purposes, these uses are assumed to consume energy at the industrial building and residential type rate (554,300 BTU/sf/year and 126,700 BTU/sf/year, respectively) as defined in Table 15-1 of the *CEQR Technical Manual.* Therefore, the No-Action energy consumption on the project site is approximately 129 billion BTUs per year (see Table 12-2).

Table 12-2: No-Action Energy Consumption

Use	Size (gsf)	Rate (BTUs/sf/year)	Energy Consumption (BTUs/year)
Residential	166,452	126,700	21,089,468,400
Storage/Warehousing	194,700	554,300	107,922,210,000
		Total	***129,011,678,400***

Source: *CEQR Technical Manual*, Table 15-1

D. FUTURE WITH THE PROPOSED ACTION (WITH-ACTION CONDITION)

As described in Chapter 1, "Project Description," the proposed project would redevelop the project site with residential, retail, community facility (elementary school), and open space uses.

The proposed project would result in a total of approximately 1,689,416 gsf of residential floor area, 109,470 gsf of local retail space, and a site for a 62,248 gsf of elementary school space. For analysis purposes, the proposed project's residential use is assumed to consume energy at the large residential building type rate (126,700 BTU/sf/year), the retail space is assumed to consume energy at the commercial use rate (216,300 BTU/sf/year), and the school use is assumed to consume energy at the institutional rate (250,700 BTU/sf/year) as defined in Table 15-1 of the *CEQR Technical Manual.* Overall, the proposed project would generate an estimated total energy demand of 253.3 billion BTUs per year (see Table 12-3). Con Edison or another power company would provide electricity or gas to heat, cool, and light the proposed project.

Table 12-3: With-Action Energy Consumption

	Use	Size (gsf)	Rate (BTUs/sf/year)	Annual Energy Use (BTUs/year)
No-Action Condition	Residential	166,452	126,700	21,089,468,400
	Storage/Warehousing	194,700	554,300	107,922,210,000
			Total	***129,011,678,400***
With-Action Condition	Residential	1,689,416	126,700	214,049,007,200
	Commercial – Retail	109,470	216,300	23,678,361,000
	School	62,248	250,700	15,605,573,600
			Total	***253,332,941,800***
			Net Difference: No-Action Vs. With-Action Condition	**124,321,263,400**

Source: *CEQR Technical Manual*, Table 15-1.

The total incremental energy use between No-Action and With-Action conditions would be 124.3 billion BTUs per year. This calculation was derived by subtracting the No-Action energy consumption on the project site from the total With-Action energy consumption (see Table 12-3). Compared with the approximately 334 trillion BTUs of energy consumed annually within Con Edison's New York City and Westchester County service area, this incremental increase would be considered a negligible change (approximately 0.037 percent of Con Edison's annual consumption). Therefore, the Proposed Action and RWCDS development of the project site would not have any significant adverse impacts on energy.