A. INTRODUCTION

This chapter describes the effects of the Proposed Actions 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. Therefore, according to the 2021 *City Environmental Quality Review* (CEQR) *Technical Manual*, a detailed analysis of energy impacts would be limited to projects that may significantly affect the transmission or generation of energy. Most actions resulting in new construction would not create significant energy impacts, and, as such, do not require a detailed analysis of energy. However, a project's operational energy consumption should be estimated.

As described in **Chapter 1, "Project Description,"** approval of the Proposed Actions would facilitate the development of five new buildings and potentially, a small retail kiosk on the projected development sites in the Project Area. The new mixed-use development on the projected development sites would either contain a combined total of approximately 1,589,202 gross square feet (gsf) under the Proposed Development, or a combined total of approximately 1,620,348 gsf under the Alternate Community Facility Scenario. A Reasonable Worst Case Development Scenario (RWCDS) has been established for the Proposed Actions for an analysis year of 2036.

As stated in the 2021 *CEQR Technical Manual*, in lieu of a detailed analysis, which is generally limited to projects that may significantly affect the transmission or generation of energy, the amount of energy that would be consumed annually because of the day-to-day operation of the future buildings and land uses resulting from the Proposed Actions is disclosed in this chapter. As shown in **Table 12-1**, compared to the Proposed Development, the Alternate Community Facility Scenario would generate the greatest demand for energy. Therefore, the energy consumption of the Alternate Community Facility Scenario is assessed herein.

TABLE 12-1
Expected Energy Consumption – RWCDS No-Action vs. With-Action[1]

	Land Use	Area (GSF)	Consumption Rates (Thousand BTUs (MBTUs)/sf/yr.)	Annual Energy Use (million BTUs)
No-Action Condition	Residential	0	126.7	0
	Commercial	9,000	216.3	1,946,700
	Community Facility	12,904	250.7	3,235,033
	Light Industrial	50,422	554.3	27,948,915
			No-Action Total	***33,130,648***
With-Action Condition (Proposed Development)	Residential	834,763	126.7	105,764,472
	Commercial (incl. accessory garage)	632,971	216.3	136,911,628
	Community Facility	22,985	250.7	5,762,340
	Light Industrial	98,483	554.3	54,589,127
			With-Action Total	***303,027,567***
Net Difference: No-Action vs. With-Action Condition (Proposed Development)				***269,896,919***
With-Action Condition (Alternate Community	Residential	688,065	126.7	87,177,836
	Commercial (incl. accessory garage)	705,659	216.3	152,634,042
	Community Facility	114,691	250.7	28,753,034

Facility Scenario)	Light Industrial	111,933	554.3	62,044,462
			With-Action Total	***330,609,374***
Net Difference: No-Action vs. With-Action Condition (Alternate Community Facility Scenario)				***297,478,726***

Note:
[1] Consumption rates are from the 2021 *CEQR Technical Manual* Table 15-1, "Average Annual Whole-Building Energy Use in New York City."

B. PRINCIPAL CONCLUSIONS

The Proposed Actions would not result in any significant adverse impacts to the transmission or generation of energy. The Alternate Community Facility Scenario developed in the future with the Proposed Actions (the With-Action condition) would result in increased energy demand of approximately 297.5 billion British Thermal Units (BTUs) of energy per year as compared with future conditions without the Proposed Actions (the No-Action condition). This incremental increase in annual energy demand would represent approximately 0.16 percent of the City's forecasted annual energy requirement of 187.5 trillion BTUs by the 2036 analysis year. The Proposed Actions would generate an incremental increase in energy demand that would be considered negligible when compared with the overall energy demand within Consolidated Edison's (Con Edison's) New York City and Westchester County service area; therefore, the Proposed Actions would not result in any significant adverse impacts on energy.

Any new development resulting from the Proposed Actions would be required to comply with the NYCECC, which governs performance requirements of heating, ventilation, and air condition systems, as well as the exterior building envelope of new buildings. In compliance with the NYCECC, new development must meet standards for energy conservation, which include requirements related to energy efficiency and combined thermal transmittance. In addition, should there be voluntary utilization of higher performance standard designs for development facilitated under the Proposed Actions, there would then be a reduction in the forecasted energy load. Therefore, the Proposed Actions would not result in any significant adverse impacts on energy.

C. METHODOLOGY

To assess the Proposed Actions' potential impacts on energy, this chapter:

- Presents data on the existing energy distribution system and estimated energy usage for existing conditions;

- Determines future energy demands without and with the Proposed Actions for the analysis year of 2036, using energy consumption rates for standard land uses provided in the 2021 *CEQR Technical Manual*; and

- Assesses the Proposed Actions' potential effects of incremental energy demand on the local distribution system and the regional energy supplies.

This chapter calculates the annual energy consumption of the Alternate Community Facility Scenario under existing, No-Action, and With-Action conditions on the projected development sites in the Project Area, as well as the net change in energy consumption between No-Action and With-Action conditions, which represents the Proposed Actions' incremental energy use under the Alternate Community Facility Scenario. Because the calculation of future energy demand is a density-based analysis, only the Alternate Community Facility Scenario on the projected development sites in the Project Area forms the basis for

the disclosure of energy demand presented herein.

According to the 2021 *CEQR Technical Manual*, it is appropriate to estimate a project's energy consumption based on Table 15-1 of the 2021 *CEQR Technical Manual*, which provides the average annual energy consumption rates in New York City for various standard land uses. Therefore, this chapter utilizes the average annual energy consumption rates provided in Table 15-1 of the 2021 *CEQR Technical Manual* to estimate annual energy consumption for the Alternate Community Facility Scenario. The measure of energy use in this chapter is BTUs per sf of building floor area per year. The assumptions utilized in calculating energy consumption for the existing conditions were also applied to the projected development sites in the Project Area under the No-Action and With-Action conditions.

D. BACKGROUND

Energy Supply and Transmission

Within New York City, electricity is generated and delivered to most users by Con Edison as well as several 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 (including 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 in Canada.

Con Edison distributes power throughout New York City and Westchester County, for a total service area of approximately 660 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 owns 63 area distribution substations and various distribution facilities located throughout New York City and Westchester County. As of the end of 2022, Con Edison's distribution system had a transformer capacity of 33,703 mega volt ampere (MVA), with 37,489 miles of overhead distribution lines and 98,434 miles of underground distribution lines.[1] The underground distribution lines represent the longest underground electric delivery system in the country. In 2022, annual electricity usage in Con Edison's service area totaled approximately 53,020 million kilowatt hours (KWH), or 180.9 trillion BTUs. In addition, Con Edison supplied approximately 166,516 thousand dekatherms (MDt), the equivalent of 166.5 trillion BTUs, of natural gas, and approximately 17,427 million pounds (MMlb), the equivalent of 20.8 trillion BTUs, of steam in 2022.[2] Overall, approximately 368.2 trillion BTUs of energy was consumed in 2022 within Con Edison's New York City and Westchester County service area. 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)

[1] Con Edison, *2022 Annual Report*.
[2] Ibid.

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 December 2009, the City Council passed four laws, collectively known as the Greener, Greater Buildings Plan (GGBP), that required energy efficiency upgrades and energy transparency in large existing buildings. Specifically, these laws call for annual benchmarking, energy audits, retro-commissioning, lighting upgrades, and sub-metering of commercial tenant space. Three out of these four laws only affect the City's 16,000 largest properties, both public and private, that comprise half of the built area in the City. Through the enactment of one of those laws, beginning in 2011, privately owned buildings over 50,000 sf were required to submit reports of energy performance measurements in a process called "benchmarking." Though buildings of this size represent just two percent of the total number of buildings in the City, they are responsible for approximately 45 percent of total energy consumption, making this law both targeted and high impact.

In 2018, Local Law 32 was introduced to amend the administrative code of New York City in relation to requiring periodic recommendations on adoption of more stringent energy efficiency requirements for certain buildings. Local Law 32 mandates that the City amend the NYCECC to align it with the latest version of the New York Stretch Energy Code developed by the New York State Energy Research and Development Authority (NYSERDA). In 2020, Local Law 48 of 2020 was adopted with the goal to bring the NYCECC up to date with the 2020 Energy Conservation Construction Code of New York State, which is based on the 2018 edition of the International Energy Conversation Code and ASHRAE Standard 90.1-2016 and aligns with the NYSERDA NYStretch Energy Code-2020 as required by Local Law 32 of 2018. Local Law 48 of 2020 continues to ensure that the construction of new buildings, additions, and alterations will meet the 80 percent greenhouse gas reduction goal by 2050.

As discussed in **Chapter 2, "Land Use, Zoning, and Public Policy,"** the Proposed Actions are subject to the goals of *OneNYC 2050: Building a Strong and Fair City* ("OneNYC 2050"). OneNYC 2050 is the City's strategic plan to promote inclusive growth, sustainability, resiliency, and equity as the City seeks to address the challenges of climate change with a multifaceted approach. To promote the goals of OneNYC 2050, DCP is working to reduce New York City's energy consumption and its contribution to climate change. One of the most ambitious goals of OneNYC 2050 is to reduce greenhouse gas emissions by 80 percent by 2050, which includes requiring substantial shifts in the City's power generation system and reduction of the carbon footprint of buildings.

E. EXISTING ENERGY DEMAND

In estimating the existing annual energy consumption on the projected development sites in the Project Area, the annual energy consumption rates by land use in New York City provided in Table 15-1 of the 2021 *CEQR Technical Manual* were utilized. As shown in **Table 12-2**, current annual energy use at the projected development sites in the Project Area is estimated to be approximately 33.1 billion BTUs for all heating, cooling, and electric power. This is equivalent to less than 0.0008 percent of the total annual energy consumption (368.2 trillion BTUs) in 2022 within Con Edison's New York City and Westchester County service area.

TABLE 12-2
Annual Existing Energy Consumption – Development Site

Land Use	Floor Area (GSF)	Average Annual Energy Use Rate (Thousand BTUs [MBTUs]/sf/yr)[1]	Existing Annual Energy Use (MBTUs)
Commercial[2]	9,000	216.3	1,946,700
Industrial[3]	50,422	554.3	27,948,915
Institutional[4]	12,904	250.7	3,235,033
Small Residential (1-4 Family)	0	94	0
Large Residential (>4 Family)	0	126.7	0
		TOTAL MBTUs	**33,130,648**
		(billion BTUs)	***(33.1)***
Notes:			
[1] Sourced from Table 15-1, "*Average Annual Whole-Building Energy Use in New York City*" of the 2021 *CEQR Technical Manual*.			
[2] Includes local retail, office, garage, and self-storage uses.			
[3] Includes manufacturing, auto-related, and warehouse uses.			
[4] Includes all community facility uses (educational, medical office, and house of worship).			
Source: 2021 *CEQR Technical Manual*			

F. THE FUTURE WITHOUT THE PROPOSED ACTIONS (NO-ACTION CONDITION)

In the 2036 future without the Proposed Actions (the No-Action condition), the Proposed Actions would not be approved, and the projected development sites in the Project Area would remain as under existing conditions. Therefore, annual energy use at the projected development sites in the Project Area in the No-Action condition is estimated to be approximately 33.1 billion BTUs for all heating, cooling, and electric power, the same annual energy use as under existing conditions (refer to **Table 12-2**).

According to the New York Independent Systems Operator's (NYISO) 2022 Load and Capacity Data report, annual energy requirements for the 2036 analysis year are forecasted to be approximately 182,200 gigawatt hours (GWh) or approximately 621.6 trillion BTUs for New York State. Of this forecasted annual energy demand, 54,960 GWh (or approximately 187.5 trillion BTUs) is expected to come from Zone J, which includes New York City. Therefore, the anticipated 33.1 billion BTUs of annual energy consumption at the projected development sites in the Project Area in the No-Action condition represents approximately 0.017 percent of New York City's forecasted future total annual energy demand in 2036.

G. THE FUTURE WITH THE PROPOSED ACTIONS (WITH-ACTION CONDITION)

In the 2036 future with the Proposed Actions (the With-Action condition), the Proposed Actions would be approved, and the projected development sites in the Project Area would be redeveloped. In the With-Action condition, the incremental change that could result from the Alternate Community Facility Scenario would be the net addition of approximately 688,065 gsf of residential space (911 DUs), 589,775 gsf of commercial space, 61,511 gsf of light industrial space, and 101,787 gsf of community facility space at the projected development sites in the Project Area. In addition, approximatley 106,884 gsf of garage space would be provided in the Alternate Community Facility Scenario. As shown earlier in **Table 12-1**, With-Action annual energy use at the projected development sites in the Project Area is estimated to be approximately 330.6 billion BTUs for all heating, cooling, and electric power, which, as shown in **Table 12-3**, represents an additional 297.5 BTUs annually, as compared with the No-Action condition.

TABLE 12-3
Annual No-Action to With-Action Energy Consumption – Project Area (Alternate Community Facility Scenario)

Land Use	Incremental Floor Area (GSF)	Average Annual Energy Use Rate (Thousand BTUs [MBTUs]/sf/yr)[1]	Incremental Annual Energy Use (MBTUs)
Commercial[2]	696,659	216.3	150,687,342
Industrial[3]	61,511	554.3	34,095,547
Institutional[4]	101,787	250.7	25,518,001
Small Residential (1-4 Family)	0	94	0
Large Residential (>4 Family)	688,065	126.7	87,177,836
		TOTAL INCREMENTAL MBTUs	**297,478,726**
		(billion BTUs)	***(297.5)***
Notes:			
[1] Sourced from Table 15-1, "*Average Annual Whole-Building Energy Use in New York City*" of the 2021 *CEQR Technical Manual*.			
[2] Includes local retail, office, garage, and self-storage uses.			
[3] Includes manufacturing, auto-related, and warehouse uses.			
[4] Includes all community facility uses (educational, medical office, and house of worship).			
Source: 2021 *CEQR Technical Manual*			

This incremental increase in annual energy demand would represent approximately 0.16 percent of the City's forecasted annual energy requirement of 187.5 trillion BTUs for the 2036 analysis year. Therefore, the Proposed Actions would not result in any significant adverse impacts on energy. Any new development resulting from the Proposed Actions would be required to comply with the NYCECC, which governs performance requirements of heating, ventilation, and air conditioning systems, as well as the exterior building envelope of new buildings. In compliance with the NYCECC, new developments must meet standards for energy conservation, which include requirements relating to energy efficiency and combined thermal transmittance. In addition, should there be voluntary utilization of higher performance standard designs for development facilitated under the Proposed Actions, there would then be a reduction in the forecasted energy load shown in **Table 12-3**.