A. INTRODUCTION

This chapter assesses the potential significant adverse impacts of the Proposed Project on the City's energy supply.

New building and alteration projects that require heating and cooling are subject to the 2020 New York City Energy Conservation Code (NYCECC), in addition to a series of local laws. According to the 2021 *City Environmental Quality Review Technical Manual (CTM)*, a detailed assessment of energy impacts would be limited to projects that may significantly affect the transmission or generation of energy. Although most projects' energy consumption would not create a significant impact on the energy supply that would require a detailed energy assessment, a proposed project's operational energy consumption should be estimated.

As discussed in **Chapter 02.0, "Project Alternatives,"** there are four feasible alternatives under consideration for implementation of the Proposed Project. These include: Alternative 2 – the Rezoning Alternative, which has been identified as the Preferred Alternative and is referred to by the latter term for the remainder of this chapter; Alternative 3 – the Non-Rezoning Alternative; Alternative 4 – the Midblock Bulk Alternative; and Alternative 7 – the City of Yes (COY) Alternative. A discussion of Alternative 5 – the Rehabilitation and Infill Alternative, which has been determined to be infeasible, is presented in **Chapter 05.22, "Rehabilitation and Infill Alternative Analysis."** Refer to **Chapter 04.0, "Analysis Framework," Table 04.0-4,** for information on the analysis approach for the four feasible alternatives for each technical area.

B. PRINCIPAL CONCLUSIONS

The Proposed Project would create an increased demand in energy systems including electricity and gas but would not result in a significant adverse impact on energy supply as a result of the Preferred Alternative, Non-Rezoning Alternative, Midblock Bulk Alternative, and COY Alternative. Refer to **Section E, "Environmental Effects,"** for further information.

C. METHODOLOGY

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

- Presents data on existing data energy distribution system and estimated energy usage for existing conditions;
- Determines future energy demands in the 2041 Build Year, using energy consumption rates for typical land uses provided in the *CTM*; and
- Assesses the effects of this incremental energy demand on the local distribution system and regional energy supplies.

Pursuant to *CTM* methodology, this chapter uses the *CTM's* Table 15-1 to estimate annual energy consumption as a result of the Proposed Project. The measure of the energy use in this chapter is British Thermal Unit (BTU) per sf of building floor area per year.[1]

D. AFFECTED ENVIRONMENT

Energy Supply and Transmission

For New York City, electricity is generated and delivered mainly by Consolidated Edison (Con Edison), with a small number of Rockaway users receiving power from the Long Island Power Authority. Con Edison delivers electricity to a population of more than 9 million residents located in New York City (except Rockaway Peninsula in Queens) and most of Westchester County, for a total service area of approximately 604 square miles. The electrical energy is supplied from a variety of non-renewable and renewable sources that originate both within and outside of New York City. Non-renewable sources include nuclear, oil, natural gas, and coal fuel; and renewable sources include hydroelectricity, biomass fuels, solar power, and wind power.[2]

Con Edison's electric power delivery system is separated into three distinct sub-systems: generation, transmission, and distribution. The electricity generated by Con Edison is transmitted through a series of area and transmission substations. Transmission substations receive electrical power from the regional high voltage transmission system and reduce the voltage to a level that can be delivered to their respective area substations. The voltage is reduced at the area substation for distribution (the street "grid"). Within the grid, the voltage is further reduced to deliver to customers. Each distinct geographic area, called "networks," is served by an area substation isolated from the local distribution system to prevent a widespread city outage. Substations are also designed to have sufficient capacity for the network to grow.

Currently, Con Edison has 62 area substations along with various distribution facilities in the New York City and Westchester County area. As of the end of 2021, Con Edison has a transformer capacity of 33,413 mega volt ampere (MVA), with 37,477 miles of overhead distribution lines and 98,806 miles of underground distribution lines. In total, the underground distribution lines represent the country's single longest underground electric delivery system. Con Edison's electric generating facilities consists of plants located in Manhattan that have an aggregate capacity of 718 megawatts (MW), aka 1,000 kilowatts. The company also distributes natural gas through an estimated 4,350 miles of mains and 377,971 service lines to a service area including Manhattan, the Bronx, northern Queens, and most of Westchester. A natural gas liquefaction facility and storage tank in Astoria, Queens can store 1,062 thousand dekatherms (MDt) of which a maximum of about 240 MDt can be withdrawn per day. Con Edison also has another 1,226 MDt of natural gas storage capacity in upstate New York. Lastly, Con Edison generates steam at one steam-electric generating station and four steam-only generating stations, which is distributed through

[1] One BTU is the quantity of heat required to raise one pound of water by one degree Fahrenheit.
[2] Con Edison, Inc. Operational Excellence: Fuel Mix and Generating Capacity, https://lite.conedison.com/ehs/2020-sustainability-report/operational-excellence/fuel-mix-and-generating-capacity/.

approximately 105 miles of transmission, distribution and service piping to a service area from the Battery to 96th Street in Manhattan.

In 2023, annual electricity usage in Con Edison's service area totaled approximately 52.3 billion kilowatt hours (KWH), or 178.3 trillion BTU. In addition, in 2023 Con Edison supplied approximately 158.2 trillion BTU of natural gas and approximately 15,444 million pounds of steam (MMlb), which is approximately 18.4 trillion BTU.[3]

According to the Con Edison *2023 Annual Report*, the peak electrical demand for New York City in summer 2023 occurred on July 28, 2023, when the actual hourly peak demand was 1,342 MW. Con Edison forecasts an average annual increase in hourly electric peak demand over the next five years to be approximately 0.7 percent per year. The report notes that the five-year forecast includes "the effect of certain electric energy efficiency programs, the anticipated phase-out of natural gas in certain new construction buildings in Consolidated Edison Company of New York, Inc. (CECONY)'s service territory, and the anticipated increase in electric vehicles in CECONY's service territory."

Peak gas and steam demand occurs during the winter heating season; the peak day demand for gas during the winter of 2023/2024 (through January 31, 2024) occurred on January 20, 2024, when the demand reached approximately 1,181 MDt, while the one-hour peak day demand for steam during the winter of 2023/2024 occurred on January 17, 2024, when the demand reached approximately 6.7 MMlb. Con Edison forecasts an average annual decrease in the peak natural gas demand over the next five years to be approximately 0.8 percent per year and an annual decrease in steam peak demand over the next five years of approximately 0.5 percent per year.

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 that the two worst (non-simultaneous) contingencies will not result in equipment loading that exceeds 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.

Existing Demand

Based on the existing uses on the Project Site, which are detailed in **Chapter 04.0,** the Project Sites generate approximately 248.5 billion BTU of annual energy demand (refer to **Table 05.12-1**).

[3] Con Edison, *2023 Annual Report*, https://investor.conedison.com/static-files/f53f00f0-94eb-4e98-9736-9dd4aea9124c.

Table 05.12-1: Existing/No-Action Alternative Annual Energy Consumption for the Project Sites

Use	Floor Area (gsf)	Average Annual Energy Use Rate (MBTU/sf)[1]	Existing Annual Energy Use (MBTU)
Residential (>4 DUs/building)	1,828,561	126.7	231,678,679
Community Facility	67,159	250.7	16,836,761
Commercial	0	216.3	0
		Total	**248,515,440 (248.5 billion BTU)**

Note:
[1] From Table 15-1 of the *CTM.* MBTU = one thousand BTU.

E. ENVIRONMENTAL EFFECTS

Alternative 1 – No-Action Alternative

No-Action Alternative Demand

As outlined in **Chapter 02.0**, there would be no change in building program on the Project Sites under the No-Action Alternative. As such, for the purposes of this Environmental Impact Statement (EIS), the forecasted energy demand for the No-Action Alternative would be the same as estimated for existing conditions, identified in **Table 05.12-1** as approximately 248.5 billion BTU of annual energy demand.

According to the New York Independent System Operator's (NYISO's) *2023 Load & Capacity Data* report, accounting for the impacts of energy efficiency programs, building, codes, and appliance efficiency standards, as well as solar photovoltaics (PV) and Distributed Energy Generation (DEG), annual energy requirements for 2041 are forecasted at approximately 208,910 gigawatt hours (GWh) (or 712.8 trillion BTU) for the "New York Control Area," i.e., New York State. Of this forecasted annual energy demand, the 2041 expected demand from Zone J (New York City) is 62,230 GWh (or 212.3 trillion BTU). The anticipated 248.5 billion BTU annual energy consumption from the Project Sites represents 0.1 percent of New York City's forecasted future total annual energy demand. While the No-Action Alternative would still need to comply with the applicable regulatory requirements, this does not, for example, include the large parts of the NYCECC, such as electrification of buildings, which is applicable to new construction and major alterations.

Con Edison Utility Thermal Energy Network Chelsea Pilot Project

Under the No-Action Alternative, Con Edison and the Zero Carbon Mile Consortium, which consists of Reshape Strategies and Related Companies (affiliated with the PACT Partner), are currently investigating a potential energy project (independent of the Proposed Project) but may affect a portion of the Fulton Houses Project Site. As envisioned, it is a pilot project led by Con Edison that would create a thermal energy network that would capture and recycle heat from a nearby data center, located within a commercial office building at 85 10th Avenue, on the block bound by W. 16th Street, 10th Avenue, W. 15th Street, and 11th Avenue. The heat would be used to provide heating, cooling, and domestic hot water services (DHW) to some of the existing buildings at the Fulton Houses Project Site, located approximately 600 feet to the east, via a

thermal energy main (Primary Ambient Loop) along W. 16th Street to a clean heat pump facility (Energy Center) to be located at the New York City Housing Authority (NYCHA)'s Fulton Houses Project Site. Water-source variable refrigerant flow (VRF) systems at each of the affected buildings would connect to a Secondary Ambient Loop to provide both heating and cooling to the residents.[4] This potential energy project is still in the early stages of design and neither its commencement date nor the buildings that it would serve have been finalized.

Alternative 2 – Preferred Alternative and Alternative 4 – Midblock Bulk Alternative

Energy Supply and Transmission

As development resulting from the Preferred Alternative and Midblock Bulk Alternative and other developments planned in the service area would occur over time, Con Edison will have sufficient notice in advance to incorporate these demands into long-term plans. Therefore, the Preferred Alternative and Midblock Bulk Alternative would not adversely affect the electric transmission system or energy supply serving the area.

Energy Demand

Table 05.12-2 presents the Preferred Alternative and Midblock Bulk Alternative land use gross areas anticipated on the Project Sites, as well as their associated annual energy demands. As indicated in **Table 05.12-2**, it is estimated that the energy demand from the Project Sites would be 665.2 billion BTU of energy annually. This represents an increase of approximately 416.7 billion BTU over the existing/No-Action Alternative baseline, as shown in **Table 05.12-3**. The increment would represent 0.2 percent of the City's forecasted annual energy requirement of 212.3 trillion BTU for 2041,[5] and therefore, is not expected to result in a significant adverse impact on energy supply and no further assessment is warranted.

Table 05.12-2: Preferred Alternative/Midblock Bulk Alternative Annual Energy Consumption for the Project Sites

Use	Floor Area (gsf)	Average Annual Energy Use Rate (MBTU/sf)[1]	Estimated Annual Energy Use (MBTU)
Residential (>4 DUs/building)	4,825,782	126.7	611,426,579
Community Facility	175,852	250.7	44,086,096
Commercial	44,951	216.3	9,722,901
Total			**665,235,577 (665.2 billion BTU)**

Notes:
[1] From Table 15-1 of the *CTM.* MBTU = one thousand BTU.
The table has been revised for the FEIS, due to minor revisions to the development program (detailed in **Chapter 02.0**).

[4] Con Edison, Supplemental Information for Consolidated Edison Company of New York, Inc.'s Utility Thermal Energy Network Pilot Project Proposals, https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={50C13588-0000-CD14-ABF3-6D5DFFB6067B}
[5] *Ibid.,* p. 05.12-6. KWh values converted to BTU.

Table 05.12-3: Incremental Annual Energy Consumption for the Preferred Alternative/ Midblock Bulk Alternative

Use	Floor Area (gsf)	Average Annual Energy Use Rate (MBTU/sf)[1]	Incremental Annual Energy Use (MBTU)
Residential (>4 DUs/building)	+2,997,221	126.7	379,747,901
Community Facility	+108,693	250.7	27,249,335
Commercial	+44,951	216.3	9,722,901
		Total	**416,720,137 (416.7 billion BTU)**

Notes:
[1] From Table 15-1 of the *CTM*. MBTU = one thousand BTU.
The table has been revised for the FEIS, due to minor revisions to the development program (detailed in **Chapter 02.0**).

For informational purposes, it should be noted that the estimated energy consumption presented in **Table 05.12-2** conservatively does not account for any energy efficiency measures that may be implemented by the build year as it is based on average energy consumption sourced from historical data. The Preferred Alternative and Midblock Bulk Alternative would be required to comply with the NYCECC, which governs performance requirements of heating, ventilation, and air conditioning (HVAC) systems, as well as the exterior building envelope of new buildings. In compliance with the code, new developments must meet standards for energy conservation, which include requirements relating to energy efficiency and combined thermal transmittance. If there should be a voluntary utilization of higher performance standard designs on the Project Sites, then there would be a reduction in the energy load forecasted in **Table 05.12-2**.

Con Edison Utility Thermal Energy Network Chelsea Pilot Project

Although the Con Edison Utility Thermal Energy Network Chelsea Pilot Project described above under the No-Action Alternative is being investigated as a separate project, it is envisioned that if implemented it would be coordinated with either the Preferred Alternative or Midblock Bulk Alternative. It would be expected to reduce the Preferred Alternative and Midblock Bulk Alternative's energy demand from other sources via the conventional energy grid, but to be conservative, this is not accounted for in the estimate of the Preferred Alternative and Midblock Bulk Alternative's energy demand.

Alternative 3 – Non-Rezoning Alternative and Alternative 7 – COY Alternative

As discussed in **Chapter 04.0**, given that energy is a density-based technical area in which the Preferred and Midblock Bulk Alternatives would not result in significant adverse impact on energy supply, a detailed analysis for the Non-Rezoning Alternative and COY Alternative are not warranted as their development programs are smaller than the Preferred and Midblock Bulk Alternatives. The latter two alternatives represent a higher potential for environmental impacts than the Non-Rezoning Alternative or the COY Alternative. Therefore, as the Preferred Alternative and Midblock Bulk Alternative would not result in significant adverse impacts to the energy supply, there is no potential for the Non-Rezoning Alternative or the COY Alternative to result in a significant adverse impact to energy and further analysis is not warranted.