A. INTRODUCTION

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* (CEQR) *Technical Manual*, 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.

This chapter assesses the potential significant adverse impacts of the Proposed Action on the City's energy supply. As described in **Chapter 1, "Project Description,"** the Applicant seeks discretionary and non-discretionary approvals that would facilitate the construction of a 23-story, 352-foot tall commercial building (the "Proposed Project"). The Proposed Project would be constructed at 500 Kent Avenue (Block 2023, Lot 10) on a 115,244-sf corner lot located at the intersection of Kent and Division Avenues (the "Project Site"). For conservative analysis purposes, the future with the Proposed Action (With-Action condition) anticipates that the approximately 684,242 gross square feet (gsf) Proposed Project would be comprised of 598,442 gsf of office space and 21,233 gsf of retail space. It would also comprise approximately 49,453 sf (1.14 acres) of waterfront public open space, including a shore public walkway and supplemental public access area. There would also be 14,301 sf (0.33 acres) of accessory open areas for building occupants. In addition to the commercial and open space component, there would be 234 public parking spaces (64,567 gsf) and two loading berths.

To facilitate the Proposed Project, the Applicant seeks the following discretionary approvals (the "Proposed Action"): (1) a zoning map amendment to rezone the 2.65-acre Project Site from M3-1 to M1-5; (2) a special permit pursuant to ZR 62-837 to modify various bulk requirements in sub-sections of ZR 62-341, including (i) ZR 62-341(a)(2) - initial setback distance, (ii) ZR 62-341(c)(1) - maximum base height, (iii) ZR 62-341(c)(2) – maximum building height, and (iv) 62-341(c)(5) – maximum width of walls facing shoreline; and (3) a special permit pursuant to ZR 74-52 to allow a 234-space public parking garage. The project also requires one non-discretionary ministerial action by the City Planning Commission: a waterfront zoning certification pursuant to ZR 62-81 to demonstrate compliance with applicable waterfront zoning regulations.

B. PRINCIPAL CONCLUSIONS

The Proposed Action would not result in a significant adverse impact on energy systems. Development facilitated by the Proposed Action is expected to create an increased demand on

energy systems, including electricity and gas. It is estimated the With-Action development would result in an increase of approximately 20.9 billion British thermal units (BTUs) over No-Action conditions. This increment would result in less than 0.001 percent of the City's forecasted future annual energy requirement of 166 trillion BTU for 2026 and therefore, is not expected to result in a significant adverse impact on energy systems. Furthermore, any new development resulting from the Proposed Action 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 this code, new developments must meet standards for energy conservation, which include requirements relating to energy efficiency and combined thermal transmittance.

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 without and with the Proposed Project for 2026, using energy consumption rates for typical land uses provided in the *CEQR Technical Manual*; and

- Assesses the effects of this incremental energy demand on the local distribution system and regional energy supplies.

This chapter calculates the annual energy consumption of the Project Site under existing, No-Action, and With-Action conditions and the net change in energy consumption, which represents the Proposed Project's anticipated energy use.

Pursuant to *CEQR Technical Manual* methodology, this chapter uses the *CEQR Technical Manual'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 Units (BTUs) per sf of building floor area per year.[1]

D. EXISTING CONDITIONS

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

[1] One BTU is the quantity of heat required to raise one pound of water by one degree Fahrenheit.

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.

Con Edison 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 have an aggregate capacity of 718 megawatts (MW). The company also distributes natural gas through an estimated 4,350 miles of mains and 377,971 service lines. 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 approximately 105 miles of transmission, distribution and service piping.

In 2022, annual electricity usage in Con Edison's service area totaled approximately 53.0 billion kilowatts per hour (KWH), or 180.9 trillion BTU.[2] In addition, Con Edison supplied approximately 166.5 trillion BTU of natural gas and approximately 17,427 million pounds of steam (MMlb), which is approximately 20.8 trillion BTU of steam in 2022.[3]

According to the Con Edison *2022 Annual Report*, the peak electrical demand for New York City in summer 2022 occurred on August 9, 2022, when the actual hourly peak demand was 12,424 MW. Con Edison forecasts an average annual increase in hourly electric peak demand over the next five years to be approximately 0.6 percent per year. Peak gas and steam demand occurs during the winter heating season; the peak day demand for gas during the winter of 2022/2023 (through January 31, 2023) occurred on December 24, 2022, when the demand reached 1,261 MDt, while the one-hour peak day demand for steam during the winter of 2022/2023 also occurred on December 24,2022, when the demand reached 6.7 MMlb per hour. Con Edison forecasts an

[2] The Con Edison service area includes electricity to all of New York City (except the Rockaway Peninsula in Queens) and most of Westchester County, gas to Manhattan, the Bronx, northern Queens, and most of Westchester, and steam from the Battery to 96th Street in Manhattan.
[3] Con Edison, *2022 Annual Report*.

average annual growth of the peak natural gas demand over the next five years to be approximately 1.0 percent per year and an annual decrease in steam peak demand over the next five years of approximately 0.1 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.

Recent Energy Conservation Directives

In December 2009, the City Council passed the *Greener, Greater Buildings Plan* (GGBP) that required energy efficiency upgrades and energy transparency in large existing buildings. It is comprised of four pieces of legislation and two supplemental components which call for annual benchmarking, energy audits, retro-commissioning, lighting upgrades and sub-metering for large, commercial spaces. Three of the four laws affect the City's largest 16,000 properties, both public and private, that comprise half the built area in the City.

Beginning in 2011, the enactment of one of those laws required privately-owned buildings over 50,000 sf to submit energy performance measurement reports in a process called "benchmarking," These buildings represent only two percent of the total number of buildings in the City, however, make up approximately 45 percent of total energy consumption, making this law both targeted and high-impacted. By 2030, it is expected these laws will reduce citywide greenhouse gas (GHG) emissions by at least 5 percent.[4]

The City has also taken steps to enable private property owners to install renewable energy systems on their buildings. In 2012, the New York City Planning Commission (CPC) approved the "Zone Green" proposal to amend the City's Zoning Resolution to more flexibly allow rooftop solar and wind facilities, as well as better insulation.

In 2023, the NYC Department of City Planning advanced City of Yes for Carbon Neutrality, a zoning text amendment application approved by the City Council in December 2023, which is intended to advance efforts to achieve New York City's 2050 greenhouse gas emissions reduction goals. This includes energy grid transformation, building retrofits, and shifts to electric vehicles, transit, and other modes. Among this initiative's specific measures, it will: remove existing zoning obstacles that severely limit how much space on a rooftop can be covered by solar panels; address burdensome restrictions on wall thickness, height, and other regulations that limit building electrification and retrofitting; facilitate electric vehicle charging in public garages and other places where it is needed; and expand the use of permeable paving and rain gardens, remove red tape and uncertainty for recycling and composting, and facilitate rooftop food production.[5]

[4] PlaNYC, adopted in 2007 and updated in April 2011; Energy Chapter, page 107.
[5] https://www.nyc.gov/site/planning/plans/city-of-yes/city-of-yes-carbon-neutrality.page

Existing Demand

As described in **Chapter 1, "Project Description,"** the 115,244-sf, irregular-shaped Project Site is unoccupied and does not contain any buildings. Accordingly, as presented in **Table 11-1**, there is no existing energy demand.

TABLE 11-1: Existing Annual Energy Consumption for the Project Site

Use	Floor Area (gsf)	Average Annual Energy Use Rate (MBTU/sf)[1]	Existing Annual Energy Use (MBTU)
Unoccupied	0	0	0 BTU

Notes:
[1] From Table 15-1 of the *CEQR Technical Manual.* MBTU = one thousand BTU.

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

Energy Supply and Transmission

In January 2019, Con Edison issued *The Long-Range Transmission Plan: 2019-2038,* which laid out a long-term plan for Con Edison's transmission system based on an evaluation of transmission load areas over a twenty-year period. As outlined therein, electric peak demand was approximately 13,230 MW in 2018 and has a forecasted five-year compound annual growth rate (CAGR) of 0.1 percent and a twenty-year CAGR of 0.4 percent.[6] It is also anticipated that the electric power industry will be significantly transformed due to technology improvements, policy goals, and customer expectations. As a result of new grid capabilities, new focus of clean energy, and new consumer expectations for control, convenience, and choice, Con Edison has outlined planned infrastructure investments to address these trends.

No-Action Demand

As outlined in **Chapter 1, "Project Description,"** in the future without the Proposed Action, it is expected that the Project Site would be developed as-of-right with no changes to zoning. The existing M3-1 zoning district permits a FAR of 2.0 and a maximum base height before setback of 60 feet. The No-Action development would include a total of approximately 312,599 gsf, comprising 58,000 gsf of office space, 181,401 gsf of warehouse space, and 73,198 gsf of accessory parking. As such, the Project Site would generate approximately 113.1 billion BTUs of annual energy demand (refer to **Table 11-2**).

TABLE 11-2: No-Action Annual Energy Consumption for the Project Site

Use	Floor Area (gsf)	Average Annual Energy Use Rate (MBTU/sf)[1]	No-Action Annual Energy Use (MBTU)
Commercial	58,000	216.3	12,545,400
Warehouse (Industrial)	181,401	554.3	100,550,574
		Total	113,095,974 (113.1 billion BTU)

Notes:
[1] From Table 15-1 of the *CEQR Technical Manual.* MBTU = one thousand BTU.

[6] Con Edison.

According to the New York Independent System Operator's (NYISO's) *2022 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 2026 are forecasted at approximately 147,550 Gigawatt hours (GWh) (or503 trillion BTU). Of this forecasted annual energy demand, the expected demand from Zone J (New York City) is 47,442 GWh (or 162 trillion BTU). The anticipated 113.1 billion BTU increase in annual energy consumption due to the anticipated 2026 No-Action development on the Project Site, therefore, represents approximately 0.070 percent of New York City's forecasted future total annual energy demand.

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

Energy Supply and Transmission

As noted under the No-Action Condition, Con Edison routinely evaluates its electric transmission system and regularly updates its long-term plans to meet the forecasted demand on that system. As development resulting from the Proposed Action 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 Proposed Action would not adversely affect the electric transmission system serving the area.

With-Action Demand

As described in **Chapter 1, "Project Description,"** for conservative analysis purposes, the RWCDS anticipates that the Proposed Project would be comprised of approximately 684,242 gsf (576,220 zsf). The Project Site will be comprised of 598,442 gsf of office space and 21,233 gsf of retail space, 49,453 sf of waterfront public open space, 14,301 sf of accessory open areas for building occupants, and 64,567 gsf of parking (234 public parking spaces) as well as two loading berths.

Table 11-3 presents the With-Action land uses anticipated on the Project Site in the future with the Proposed Project, as well as their associated annual energy demands. As indicated in **Table 11-3**, it is estimated that the energy demand from the Project Site would be 134.0 billion BTUs of energy annually. This represents an increase of approximately 20.9 billion BTUs over No-Action conditions. The increment will represent less than 0.1 percent of the City's forecasted annual energy requirement of 162 trillion BTU for 2026, and therefore, is not expected to result in a significant adverse impact on energy systems.[7]

[7] *2022 Load & Capacity Data Report* by New York Independent System Operator, Inc. Refer to Table 1-2, Baseline Annual Energy, Historical & Forecast. KWh values converted to BTU.; https://www.nyiso.com/documents/20142/2226333/2022-Gold-Book-Final-Public.pdf accessed May 2023

TABLE 11-3, With-Action Annual Energy Consumption for the Project Site

Use	Floor Area (gsf)	Average Annual Energy Use Rate (MBTU/sf)[1]	With-Action Annual Energy Use (MBTU)	Incremental Annual Energy Use (MBTU) over No-Action Conditions
Commercial (Office/ Retail Space)	619,675	216.3	134,035,703 (134.0 billion BTU)	20,939,728 (20.9 billion BTU)

Notes:
[1] From Table 15-1 of the *CEQR Technical Manual.* MBTU = one thousand BTU.

It should be noted that the estimated energy consumption presented in **Table 11-3** conservatively does not account for any energy efficiency measures that may be implemented. The Proposed Project also would be required to comply with the NYCECC, which governs performance requirements of 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 Site, then there would be a reduction in the energy load forecasted in **Table 11-3**.

Based on the above information, no significant adverse energy impacts would result from the Proposed Project.