12.0 Energy

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 includes the 2020 Energy Conservation Construction Code of New York State (ECCCNYS), in addition to a series of local laws. Therefore, according to the 2021 *CEQR Technical Manual*, a detailed assessment of energy impacts is 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 energy assessment. However, a proposed action's operational energy consumption should be estimated.

As described in Chapter 1, "Project Description," under the RWCDS, the Proposed Actions would facilitate the incremental development of 9,676 DUs, or 9,786,389 gsf of residential floor area, 462,129 gsf of local retail space, and 81,755 gsf of community facility space. The Proposed Actions would also result in a net decrease of 225 accessory parking spaces, 732,619 gsf of commercial office, 52,396 gsf of warehouse,17,386 gsf of industrial space, and 1,093,808 gsf of non-residential floor area on the 61 projected development sites and conversion sites.

As stated in the 2021 *CEQR Technical Manual*, in lieu of a detailed assessment, which is generally limited to actions that may significantly affect the transmission or generation of energy, 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 Actions is disclosed in this chapter.

B. Principal Conclusions

The Proposed Actions would not result in a significant adverse impact on energy systems. Development facilitated by the Proposed Actions would create an increased demand on energy systems, including electricity and gas and result in an increase of approximately 0.928 billion British thermal units (MBTUs) over the No-Action condition. This increase in annual demand would represent less than 0.52 percent of the City's forecasted 2034 future annual energy requirement of 179 billion MBTUs and is not expected to result in a significant adverse impact on energy systems. Moreover, any new developments resulting from the Proposed Actions would be required to comply with the NYCECC, which governs performance requirements for 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 related to energy efficiency and combined thermal transmittance. In addition, if voluntary higher performance standard designs are used on the projected development sites, the forecasted energy load would be reduced, as detailed below. Therefore, no significant adverse impacts related to energy are expected.

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 2034, using energy consumption rates for typical building types provided in the 2021 *CEQR Technical Manual.*
- 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 projected development sites identified in the RWCDS for the Proposed Actions under existing, No-Action, and With-Action conditions, and the net change in energy consumption, which represents the Proposed Actions' anticipated energy use. Only anticipated development on the 61 projected development sites and commercial area to be converted to residential use form the basis for this assessment of energy demand.

According to the 2021 *CEQR Technical Manual*, if a project such as the Proposed Actions, rezones an area where projected development would occur on development sites not controlled by the applicant, detailed energy modeling is likely not possible. For such projects, it is appropriate to estimate the project's energy consumption based on Table 15-1 of the 2021 *CEQR Technical Manual*, which provides the average annual whole-building energy consumption rates in New York City for various building types. The measure of energy use in this chapter is BTU per square foot of building floor area per year. The assumptions used in calculating energy consumption for the existing conditions were also applied to the projected development sites under the No-Action and With-Action conditions.

D. Existing Conditions

Energy Supply and Transmission

Within New York City, electricity is generated and delivered to most users by Con Edison and a number of other power companies. Electrical energy in New York City is drawn from a variety of sources that originate within and outside the City and include nonrenewable 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 600 square miles, serving a population of more than 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 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, with 37,489 miles of overhead distribution lines and 98,434 miles of underground distribution lines. The underground distribution lines represent the longest underground electric delivery system in the country (Con Edison 2022). In 2022, the total Con Edison New York City generation capacity was approximately 9,232 megawatts (MW), and annual electricity usage in Zone J of Con Edison's service area (which includes New York City) totaled approximately 49,740 gigawatt hours (GWh), or approximately 170 trillion BTU (New York Independent System Operator (NYISO) 2023).

According to the Con Edison *2022 Annual Report*, the peak hourly electrical demand for New York City occurred in August 2022 and was 12,424 MW. Con Edison forecasts an average annual growth of the peak electric demand in its service area over the next five years to be "approximately 0.6 percent per year, which includes the effect of certain electric energy efficiency programs and the anticipated phase-out of natural gas in certain new construction buildings, including major renovations, in New York City" (Con Edison 2022).

Recent Energy Conservation Directives

Both New York City and New York State have passed a variety of recent legislation with the aim of increasing the energy efficiency and reducing the overall carbon footprint of its buildings. Local Law 97, which was passed by New York City in 2019, as part of the Climate Mobilization Act, requires buildings larger than 25,000 sf to reduce carbon emissions by 2030 and achieve carbon neutrality by 2050. In December 2021, the City enacted Local Law 154, which requires that all new buildings be built to operate without fossil fuel systems beginning in 2024. The City also enacted more efficient Energy Conservation Codes, which will result in more efficient new construction. New York State has also passed the Climate Leadership Community Protection Act (CLCPA) that has the goal of achieving a 70 percent renewable energy grid by 2030 and a zero-emission grid by 2040 (New York State 2023).

As referenced in the "Public Policy" section of Chapter 2, "Land Use, Zoning, and Public Policy," the Affected Area is subject to the goals of PlaNYC and OneNYC. PlaNYC and OneNYC are the Mayor's plans to promote growth, sustainability, resiliency, and equity as the City seeks to address the challenges of climate change under a multi-faceted approach. To make New York City one of the most sustainable large cities in the world—one of the stated goals of OneNYC—is working to reduce New York City's energy consumption and its contribution to climate change. One of the most ambitious goals of OneNYC is to reduce greenhouse gas emissions by 80 percent by 2050, which includes requiring substantial shifts in the City's power generation system and reducing the carbon footprint of buildings.

Existing Demand

The rates provided in Table 15-1 of the 2021 *CEQR Technical Manual* were used to estimate the existing annual energy consumption at the projected development sites and commercial area to be converted to residential use. As presented in **Table 12-1**, current annual energy use on the 61 projected development sites and commercial area to be converted to residential use is estimated to be approximately 553,651,745.5 MBTU for all heating, cooling, and electric power. This is equivalent to 0.32 percent of the total annual energy consumption in 2022 within Con Edison's New York City and Westchester County service area.

Table 12-1: Existing Annual Energy Consumption for the Projected Development Sites and Conversion Area

Use	Floor Area (sf)	Average Annual Energy Use Rate (MBTU/sf)[1]	Anticipated Annual Energy Use (MBTU)
Commercial (Projected Development Sites)	1,230,946	216.3	266,253,619.8
Commercial (Conversion Area)	1,093,808	216.3	236,590,670.4
Industrial	69,782	554.3	38,680,162.6
Institutional	13,984	250.7	3.505,788.8
Large Residential (>4 Family)	29,057	126.7	3,681,512.9
Small Residential (1-4 Family)	52,553	94	4,939,982.0
		Total	**553,651,745.5**

Source: 2021 *CEQR Technical Manual*

Notes:

[1] From Table 15-1 of the 2021 *CEQR Technical Manual*.

E. No-Action Condition

Energy consumption under the No-Action condition would remain the same as consumption under existing conditions (refer to **Table 12-1**). Energy demand from the 61 projected development sites and commercial area to be converted to residential use in the No-Action condition would be 553,651,745.5 MBTU in 2034.

According to NYISO's 2023 Load and Capacity Data report, annual energy requirements for the 2034 Build Year are forecast to be approximately 171,840 GWh (or 586 trillion BTU). Of this forecasted annual energy demand, 52,550 GWh (or 179 trillion BTU) is expected to come from Zone J, which includes New York City. The anticipated 553,651,745.5 MBTU use in annual energy consumption under the No-Action condition would represent less than 0.30 percent of New York City's forecast future total annual energy demand.

F. With-Action Condition

As described in Chapter 1, "Project Description," under the RWCDS, the total development expected to occur on the 61 projected development sites under the With-Action condition would

consist of approximately 10,924,194 gsf of floor area, including 9,867,999 gsf of residential floor area (9,730 units), 893,752 gsf of local retail uses, 66,704 gsf of office uses, and 95,739 gsf of community facility uses. The Proposed Actions would facilitate the incremental development of approximately 9,676 DUs, or 9,786,389 gsf of residential floor area, 462,129 gsf of local retail space, and 81,755 gsf of community facility space. The Proposed Actions would also result in a net decrease of 225 accessory parking spaces, 732,619 gsf of commercial office space, and 69,782 gsf of industrial-related uses on the projected development sites and 1,093,808 gsf of non-residential area to be converted to residential use (compared with No-Action condition).

Table 12-2 presents the With-Action land uses anticipated on the 61 projected development sites and area to be converted from commercial to residential use under the RWCDS, as well as their associated annual energy demands. As indicated in **Table 12-2**, annual energy demand from the 61 projected development sites and conversion area is estimated to total approximately 1.5 billion MBTUs, which represents an increase of approximately 0.928 billion MBTUs over No-Action conditions. This increase in annual demand would represent less than 0.52 percent of the City's forecasted annual energy requirement of 179 billion MBTUs for 2034 and is not expected to result in a significant adverse impact on energy systems.

Additionally, any new developments resulting from the Proposed Actions would be required to comply with the NYCECC, which governs performance requirements for 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 related to energy efficiency and combined thermal transmittance. In addition, if voluntary higher performance standard designs are used on the projected development sites, the energy load forecasted in **Table 12-2** would be reduced.

Table 12-2: With-Action Annual Energy Consumption for the Projected Development Sites and Conversion Area

Use	Floor Area (sf)	Average Annual Energy Use Rate (MBTU/sf)[1]	Anticipated Annual Energy Use (MBTU)
Commercial[2] (Projected Development Sites)	960,456	216.3	207,746,632.8
Industrial	N/A	554.3	N/A
Institutional	95,739	250.7	24,001,767.3
Large Residential (>4 Family)	9,867,999	126.7	1,250,275,473.3
Small Residential (1-4 Family)	N/A	94	N/A
		Total	**1,482,023,873.4**
		Net Difference: No-Action v. With-Action Condition	**928,372,127.9**

Source: 2021 *CEQR Technical Manual*

Notes:

[1] From Table 15-1 of the 2021 *CEQR Technical Manual*.

[2] Includes retail and office.

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