12.0 Energy

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 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 energy assessment. However, a proposed action's operational energy consumption should be estimated.

As described in **Chapter 1, Project Description**, under the reasonable worst-case development scenario (RWCDS), the Proposed Actions would facilitate the incremental development of 5,143 DUs, or 5,206,685 sf of residential floor area, 286,507 sf of local retail space, 50,410 sf of destination retail space, 4453,426 sf of office space, and 121,716 sf of community facility space. The Proposed Actions would also result in a net decrease of 209 accessory parking spaces, 160,276 sf of industrial, 3,500 square feet of other commercial space, and 81,000 sf of automotive-related uses on the projected development sites (as compared with No-Action condition).

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.

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. Development associated with With-Action conditions on the 54 projected development sites would result in an increase of approximately 754 million British thermal units (BTUs) over No-Action conditions. This increase in annual demand would represent less than 0.01 percent of the City's forecasted future annual energy requirement of 179 trillion BTUs and, therefore, 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 of heating, ventilation, and air conditioning 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. 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.

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 54 projected development sites form the basis for this assessment of energy demand.

According to the 2021 *CEQR Technical Manual*, if a project such as the Proposed Actions, would rezone an area where projected development would occur on development sites not controlled by the applicant, detailed energy modeling would likely not be 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.

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 independent power companies. Electrical energy in New York City is drawn from a variety of sources that originate both within and outside the City and 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 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 (MVA), 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 (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 over 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 that has the goal of achieving a 70 percent renewable energy grid by 2030 and a zero-emission grid by 2040 (City of New York 2023).

As referenced in the "Public Policy" section of **Chapter 2, Land Use, Zoning, and Public Policy**, the Project Site 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. In order to make New York City one of the most sustainable big 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 reduction of 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. As presented in **Table 12-1**, current annual energy use on the 54 projected development sites is estimated to be approximately 239,108,245 MBTU for all heating, cooling, and electric power. This is equivalent to less than 0.1 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

Use	Floor Area (sf)	Average Annual Energy Use Rate (MBTU/sf)[1]	Anticipated Annual Energy Use (MBTU)
Commercial[2]	152,755	216.3	33,040,906.5
Industrial	249,454	554.3	138,272,352.2
Institutional	267,686	250.7	67,108,880.2
Large Residential (>4 Family)	N/A	126.7	N/A
Small Residential (1-4 Family)	7,299	94	686,106
		Total	**239,108,244.9**

Source: 2021 *CEQR Technical Manual.*
Notes:
[1] From Table 15-1 of the 2021 *CEQR Technical Manual*.
[2] Includes retail, supermarket, restaurant, office, hotel, auto related, and storage/garage uses.

No-Action Condition

Energy consumption under the No-Action condition would increase compared with existing conditions. Annual energy consumption estimates for each use under No-Action conditions are provided in **Table 12-2**. As shown in the table, energy demand from the 54 projected development sites is estimated to total 247,935,095.9 MBTU annually, which represents an increase of approximately 8,826,851 MBTUs over existing conditions.

Table 12-2: No-Action Annual Energy Consumption for the Projected Development Sites

Use	Floor Area (sf)	Average Annual Energy Use Rate (MBTU/sf)[1]	Anticipated Annual Energy Use (MBTU)
Commercial[2]	161,466	216.3	34,925,095.8
Industrial	237,371	554.3	131,574,745.3
Institutional	267,686	250.7	67,108,880.2
Large Residential (> 4 Family)	107,658	126.7	13,640,268.6
Small Residential (1-4 Family)	7,299	94	686,106
		Total	**247,935,095.9**

Source: 2021 *CEQR Technical Manual.*
Notes:
[1] From Table 15-1 of the 2021 *CEQR Technical Manual*.
[2] Includes retail, supermarket, restaurant, office, hotel, auto related, and storage/garage uses.

According to the New York Independent Systems Operator's (NYISO) 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 247,935,095.9 MBTU use in annual energy consumption due to anticipated development on the projected development sites under the No-Action condition would represent less than 0.01 percent of New York City's forecast future total annual energy demand.

With-Action Condition

As described in **Chapter 1, Project Description**, under the RWCDS, the total development expected to occur on the 54 projected development sites under the With-Action condition would consist of approximately 6,665,448 sf of floor area, including 5,321,642 sf of residential floor area (5,279 units), 344,325 sf of local retail uses, 50,410 sf of destination retail uses, 472,574 sf of office uses, 77,095 sf of industrial uses, and 389,402 sf of community facility uses. The Proposed Actions would facilitate the incremental development of approximately 5,143 DUs, or 5,206,685 sf of residential floor area, 286,507 sf of local retail space, 50,410 sf of destination retail space, 453,426 sf of office space, and 121,716 sf of community facility space. The Proposed Actions would also result in a net decrease of 209 accessory parking spaces, 3,500 square feet of other commercial space, 160,276 sf of industrial-related uses, and 81,000 sf of automotive-related uses on the projected development sites (as compared with No-Action condition).

Table 12-3 presents the With-Action land uses anticipated on the 54 projected development sites under the RWCDS, as well as their associated annual energy demands. As indicated in **Table 12-3**, it is estimated that annual energy demand from the 54 projected development sites would total approximately 1 billion BTUs, which represents an increase of approximately 754 million BTUs over No-Action conditions. This increase in annual demand would represent less than 0.01 percent of the City's forecasted annual energy requirement of 179 trillion BTU for 2034 and, therefore, 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 of heating, ventilation, and air conditioning 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 12-3** would be reduced.

Table 12-3: With-Action Annual Energy Consumption for the Projected Development Sites

Use	Floor Area (sf)	Average Annual Energy Use Rate (MBTU/sf)[1]	Anticipated Annual Energy Use (MBTU)
Commercial[2]	867,309	216.3	187,598,936,7
Industrial	77,095	554.3	42,733,758.5
Institutional	389,402	250.7	97,623,081.4
Large Residential (>4 Family)	5,321,642	126.7	674,252,041.4
Small Residential (1-4 Family)	N/A	94	N/A
		Total	**1,002,207,818.0**

Source: 2021 *CEQR Technical Manual*.
Notes:
1 From Table 15-1 of the 2021 *CEQR Technical Manual*.
2 Includes retail, supermarket, restaurant, office, hotel, auto related, and storage/garage uses.

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