Zoning for Coastal Flood Resiliency
Chapter 13: Energy

A. INTRODUCTION

This chapter focuses on the Proposed Action's consumption of energy and, where relevant, potential effects on the transmission of energy from implementing the action. In most cases, an action does not need a detailed energy assessment, but its operational energy is projected. As noted the 202014 *City Environmental Quality Review* (CEQR) *Technical Manual*, electricity used in New York City is generated both within and outside the city, and Consolidated Edison (Con Ed) delivers it to most New York City users. The New York State Independent System Operator and Con Ed forecast projected generation and transmission requirements to ensure that the City's power supply and transmission systems have the capacity to meet expected future demand.

Additionally, all new structures requiring heating and cooling are subject to the New York City Energy Conservation Code, which reflects State and City energy policy. Accordingly, a detailed energy assessment is not necessary for most actions that entail new construction. Detailed energy analyses are typically limited to actions that may substantially affect the transmission or generation of energy.

As detailed in **Chapter 1, "Project Description,"** the New York City Department of City Planning (DCP) is proposing a zoning text amendment to update the Special Regulations Applying in Flood Hazard Areas (Article VI, Chapter 4) of the New York City Zoning Resolution (ZR), which includes the "Flood Resilience Zoning Text" (the "2013 Flood Text") and "Special Regulations for Neighborhood Recovery" (the "2015 Recovery Text"). These temporary zoning rules were adopted on an emergency basis to remove zoning barriers that were hindering the reconstruction and retrofitting of buildings affected by Hurricane Sandy and to help ensure that new construction there would be more resilient. The 2013 Flood Text provisions are set to expire with the adoption of new and final Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs), which is anticipated to occur within the next few years. Applicability of the 2015 Recovery Text expired in July 2020. Therefore, DCP is proposing a citywide zoning text amendment, "Zoning for Coastal Flood Resiliency" (the "Proposed Action"), to improve upon and make permanent the relevant provisions of the existing temporary zoning rules of the 2013 Flood Text and 2015 Recovery Text. In addition, the Proposed Action includes special provisions to help facilitate the city's long-term recovery from the COVID-19 pandemic and its associated economic effects by providing more time for existing non-conforming uses to reopen and builders to undertake certain construction projects. The Proposed Action also includes updates to other sections of the ZR, including the Special Regulations Applying in the Waterfront Area (Article VI, Chapter 2) and provisions within various Special Purpose Districts. The Proposed Action would mostly affect New York City's current 1% annual and 0.2% annual chance floodplains. However, select provisions of the Proposed Action would be applicable citywide. To help the City prepare for or respond to other disasters, select provisions in the Proposed Action regarding power systems and other mechanical equipment, ramps and lifts, vulnerable populations, and disaster recovery rules, would be applicable citywide.

Due to the broad applicability of the Proposed Action, it is difficult to predict the sites where development would be facilitated. In addition, the Proposed Action is not in-and-of-itself expected to induce development where it would not otherwise have occurred absent the Proposed Action. Although the Proposed Action may allow developments and existing buildings to retrofit to resilient standards, the overall amount, type, and location of construction within the affected area is not anticipated to change. Owing to the generic nature of this action, there are no known or projected as-of-right development sites identified as part of the

Proposed Action's Reasonable Worst-Case Development Scenario (RWCDS). To produce a reasonable analysis of the likely effects of the Proposed Action, 14 representative Prototypical Analysis Sites containing either new developments, infill, reconstructions, or retrofits of existing buildings in the city's 1% and 0.2% annual chance floodplains were identified to demonstrate the wide range of proposed regulations for sites that would be able to develop as-of-right in the future with the Proposed Action, as detailed further in **Chapter 1**.

B. PRINCIPAL CONCLUSIONS

The Proposed Action would not result in significant, adverse impacts on the generation or transmission of energy. The energy screening analysis for the Proposed Action considers the projected operational energy consumption for the Prototypical Analysis Sites in the future with the Proposed Action as compared to the No-Action conditions. Based on the incremental change in energy use at each Prototypical Analysis Site, the Proposed Action would not have a substantial impact on the City's energy systems.

C. PRELIMINARY SCREENING

The 20202014 *CEQR Technical Manual* notes that, while most actions do not warrant a detailed energy analysis, an action's projected energy consumption should be disclosed during the environmental review process. The incremental demand generated by most projects results in incremental supply to meet that demand; consequently, an individual project's energy consumption typically does not have a significant impact on energy supply. Detailed analyses are generally limited to those actions that would have a substantial effect on energy generation and/or transmission.

The Proposed Action is not expected to induce development or cause a significant change in the overall amount, type, or location of development, beyond that which would occur under the No-Action scenarios. However, the specific sites where development would be facilitated under the Proposed Action cannot be accurately projected, given the generic nature of the Proposed Action. Therefore, a screening assessment was completed to determine the potential for adverse energy impacts. The preliminary screening is based on a comparison of the development of the 14 Prototypical Analysis Sites under the No-Action and With-Action scenarios, as described in **Chapter 1, "Project Description."**

Table 13-1 presents CEQR energy usage rates by building type for the purposes of estimating a project's energy consumption. Annual energy use for each Prototypical Analysis Site was estimated for the No-Action and the With-Action scenarios by applying the rates in **Table 13-1** to the size (in square feet) of the use type. **Tables 13-2a** and **13-2b** present the annual energy consumption for each site and incremental energy usage under the No-Action and With-Action scenarios in the 1% and 0.2% annual chance floodplains, respectively.

Table 13-1: Average Annual Whole-Building Energy Use in New York City

Building Type	Source Energy (Thousand BTU (MBTU)/square feet)
Commercial	216.3
Industrial	554.3
Institutional	250.7
Large Residential (>4 Dwelling Units)	126.7
Small Residential (1-4 Dwelling Units)	94

Source: Table 15-1, 20202014 *CEQR Technical Manual.*

As indicated in **Table 13-2a**, annual energy usage in the 1% annual chance floodplain scenario would decrease for three of the 14 Prototypical Analysis Sites in the future with the Proposed Action, and remain unchanged on one (Site 14). 10 sites would generate an increase in demand for energy under With-Action

conditions, and the largest increase in energy consumption is projected to occur at Site 5. The incremental energy consumption for Site 5 would be 589,155 MBTU. Therefore, the Proposed Action would generate an incremental increase in energy demand in the 1% annual chance floodplain scenario that would be negligible when compared to the overall demand within Con Ed's New York City service area. Consequently, the Proposed Action would not affect energy generation or transmission. According to the Con Edison *2018 Annual Report*, the peak electrical demand for New York City in Summer 2018 was 12,686 MW, which occurred on August 29, 2018. Con Edison forecasts an average annual growth in peak demand in its service area at design conditions over the next five years for electric and gas to be approximately 0.1 percent and 1.0 percent, respectively, and an average annual decrease in steam peak demand in its service area at design conditions over the next five years to be approximately 0.5 percent.

In 2018 (the latest year for which data is available), annual electricity usage in Con Edison's service area totaled approximately 56.8 billion kilowatt hours (KWH), or 194 trillion BTU.[1] In addition, Con Edison supplied approximately 182.1 trillion BTU of natural gas and approximately 21.8 trillion BTU of steam in 2017.[2] This increase in annual demand would represent approximately less than one percent of the city's forecasted future annual energy requirement of 194 trillion BTU and, therefore, is not expected to result in a significant adverse impact on energy systems.

Table 13-2a: 1% Annual Chance Floodplain Annual Energy Use per Prototypical Analysis Site

Site	No-Action Development Size by Use (GSF)	No-Action Energy Usage (MBTU)	With-Action Development Size by Use (GSF)	With-Action Energy Usage (MBTU)	Increment Energy Usage (MBTU)
1	Small Residential: 2,900	272,600	Small Residential: 2,835	266,490	***-6,110***
2	Small Residential: 1,600	150,400	Small Residential: 2,231	209,714	**59,314**
3	Small Residential: 2,835	266,490	Small Residential: 3,927	369,138	**102,648**
4	Small Residential: 5,500	517,000	Small Residential: 5,630	529,220	**12,220**
5	Large Residential: 56,330	7,137,011	Large Residential: 60,980	7,726,166	**589,155**
6	Large Residential: 270,000	34,209,000	Large Residential: 247,200	31,320,240	***-2,888,760***
7	Large Residential: 21,600	2,736,720	Large Residential: 19,800	2,508,660	***-228,060***
8	Large Residential: 10,800	1,368,360	Large Residential: 12,105	1,533,704	**165,344**
9	Commercial: 5,040	1,090,152	Commercial: 6,000	1,297,800	**207,648**
10	Industrial: 11,500	6,374,450	Industrial: 12,000	6,651,600	**277,150**
11	Small Residential: 3,195	300,330	Small Residential: 3,461	325,334	**25,004**
12	Small Residential: 2,204	207,176	Small Residential: 2,254	211,876	**4,700**
13	Small Residential: 2,100	197,400	Small Residential 2,130	200,220	**2,820**
14	Large Residential: 50,000	6,335,000	Large Residential: 50,000	6,335,000	**0**

Source: 202014 *CEQR Technical Manual*. Refer to **Appendix A** for further discussion of the Prototypical Analysis Sites.

[1] 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.

[2] Con Edison, *2018 Annual Report.*

As presented in **Table 13-2b**, annual energy usage in the 0.2% annual chance floodplain scenario would not change for two of the 14 Prototypical Analysis Sites (Sites 3 and 14), and annual energy usage would decrease for four sites in the future with the Proposed Action. Eight Prototypical Analysis Sites would generate an increase in demand for energy under With-Action conditions, and the largest increase in energy consumption is projected to occur at Site 10. As such, the Proposed Action would generate an incremental increase in energy demand in the 0.2% annual chance floodplain scenario that would be negligible when compared to the overall demand within Con Ed's New York City service area. Therefore, the Proposed Action would not affect energy generation or transmission.

Table 13-2b: 0.2% Annual Chance Floodplain Annual Energy Use per Prototypical Analysis Site

Site	No-Action Development Size by Use (GSF)	No-Action Energy Usage (MBTU)	With-Action Development Size by Use (GSF)	With-Action Energy Usage (MBTU)	Increment Energy Usage (MBTU)
1	Small Residential: 2,900	272,600	Small Residential: 2,835	266,490	***-6,110***
2	Small Residential: 1,600	150,400	Small Residential: 2,231	209,714	**59,314**
3	Small Residential: 2,835	266,490	Small Residential: 2,835	266,490	***0***
4	Small Residential: 5,500	517,000	Small Residential: 5,630	529,220	**12,220**
5	Large Residential: 63,920	8,098,664	Large Residential: 60,980	7,726,166	**-372,498**
6	Large Residential: 270,000	34,209,000	Large Residential: 247,200	31,320,240	***-2,888,760***
7	Large Residential: 20,040	2,539,068	Large Residential: 19,850	2,514,995	***-24,073***
8	Large Residential: 10,800	1,368,360	Large Residential: 12,105	1,533,704	**165,344**
9	Commercial: 5,040	1,090,152	Commercial: 6,000	1,297,800	**207,648**
10	Industrial: 11,500	6,374,450	Industrial: 12,000	6,651,600	**277,150**
11	Small Residential: 2,110	198,340	Small Residential: 3,182	299,108	**100,768**
12	Small Residential: 2,204	207,176	Small Residential: 2,254	211,876	**4,700**
13	Small Residential: 2,100	197,400	Small Residential: 2,130	200,220	**2,820**
14	Large Residential: 50,000	6,335,000	Large Residential: 50,000	6,335,000	**0**

Source: 202~~0~~14 *CEQR Technical Manual*. Refer to **Appendix A** for further discussion of the Prototypical Analysis Sites.

D. CONCLUSIONS

The Proposed Action is not expected to result in any significant adverse energy impacts. The preliminary screening assessment conducted on the Prototypical Analysis Sites to assess energy demand concluded that the incremental increase in energy demand that may occur at any one site in the future with the Proposed Action would not affect energy systems in the city as compared to No-Action conditions.