

A. INTRODUCTION

The energy analysis focuses on consumption and on the transmission of energy. The *City Environmental Quality Review (CEQR) Technical Manual* recommends performing a detailed assessment of energy impacts only for those actions that could significantly affect the transmission or generation of energy or that result in substantial indirect consumption of energy (such as a new roadway). All new structures requiring heating and cooling must conform to the New York State Energy Conservation Code, which reflects state and city energy policy. Therefore, those actions that would result in new construction or substantial renovation of buildings would not create adverse impacts, and would not require a detailed energy assessment. Because the proposed action involves the construction of new buildings, this chapter simply discloses the proposed action's anticipated energy consumption.

The Reasonable Worst Case Development Scenario (RWCDS) for the energy analysis assumes a mix of uses that maximizes residential uses. Therefore, the analysis is based on RWCDS 1 (see Chapter 1, "Project Description"), which assumes 3,000 residential units, 151,598 gross square feet (gsf) of community facility (public school), 131,622 gsf of retail, 276,011 gsf of auto showroom/service uses, and 1,800 parking spaces.

PRINCIPAL CONCLUSIONS

The Proposed Project would not have a significant adverse impact on energy supply and distribution systems. The Proposed Actions would result in increased energy demands of approximately 475,932 million British Thermal Units (BTUs) per year. Compared with No Build Scenario 1, the Proposed Project would create an incremental energy demand of approximately 101,129 million BTUs per year. Compared with No Build Scenario 2, the Proposed Project would create an incremental energy demand of approximately 383,995 million BTUs. This additional demand is not expected to overburden the energy generation, transmission, and distribution system and would not result in a significant adverse energy impact.

B. SUMMARY OF 1992 FEIS FINDINGS

The 1992 *Riverside South Final Environmental Impact Statement (FEIS)* assessed the potential impacts of the Riverside South redevelopment (the 1992 FEIS project) on the energy systems in New York City and found the following:

- A combination of electricity, natural gas, steam, and oil could be used to provide lighting, heating, and cooling for the 1992 FEIS project;
- New utility connections lines would to be constructed, and the 1992 FEIS project's energy demand was estimated at about 250 billion BTUs; and

- It was determined that energy supply and delivery systems would be able to meet this demand.

C. METHODOLOGY

This chapter:

- Presents data on the existing energy systems and energy usage in New York City;
- Estimates future energy demands with and without the Proposed Project, using energy consumption rates provided in the *CEQR Technical Manual*, which are based on factors from the Association of Energy Engineers, 1997; and
- Assesses the effects of this incremental energy demand on the energy systems.

D. EXISTING CONDITIONS

Electricity within New York City is generated by Consolidated Edison (Con Edison), as well as by a number of independent power companies, including National Grid, which recently acquired KeySpan Energy.

Electrical energy in New York City is supplied from a variety of sources that originate both within and outside the city. These include non-renewable sources, such as oil, natural gas, and coal fuel; and renewable sources, such as hydroelectricity and, to a much lesser extent, biomass fuels, solar power, and wind power. New York City's electrical demands are met by a combination of sources, including electricity generated within New York City, at locations across the Northeast, and from places as far away as Canada. For the more distant sources, once electrical energy is generated as high voltage electrical power, a transmission grid conveys this power to New York City for distribution. An interconnected high voltage power grid extending across New York State and the Northeast allows for power to be imported from other regions as demand requires. A total of an estimated 50 billion kilowatt hours (kWh) or 170.75 trillion BTUs of electricity are consumed in the city annually.

According to the New York Independent System Operator (NYISO) *2009 Load & Capacity Data* report, the peak electrical demand for New York City in summer 2008 was 10,979 megawatts (MW).¹ Typically, electricity generated within the city is sufficient to satisfy demand. However, during the summer peak demand period, this electricity is often supplemented by the Northeast transmission grid. As a result, there is an ongoing service and distribution improvement program for infrastructure, which upgrades localized areas that are continually high demand zones. Electricity required for these zones is supplied by other zones in New York City, or from sources elsewhere within the larger grid, if necessary.

Con Edison distributes power throughout the city. 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 street "grid." Within the grid, voltage is further reduced for delivery to customers. Each area substation serves one or more distinct geographic areas, called networks, which are isolated from the rest of the local distribution system. The purpose of the networks is if one substation goes out of service, the problem can be isolated to that network

¹ New York Independent System Operator 2009 Load & Capacity Data.

and not spread to other parts of the city. Substations are designed to have sufficient capacity for the network to grow.

Power plants in the five boroughs generate electricity for New York City. According to NYISO's Revised Locational Installed Capacity Requirements Study for the 2006-2007 period, New York City has an existing installed generating capacity of 10,364 MW.¹

Con Edison provides natural gas service to the boroughs of the Bronx and Manhattan. In addition to residential and commercial uses for space heating, hot water, and cooking, natural gas is also used for transportation and to generate electricity and steam in power plants.

In addition Con Edison maintains steam utilities. High-pressure steam is generated in cogeneration plants and conventional plants, and is distributed through an interconnected piping network (with pipe sizes up to 30 inches in diameter) to approximately 1,800 customers throughout Manhattan for heating, hot water, and air conditioning. Gas mains ranging from 4 to 24 inches supply natural gas for heating and cooking uses within the study area. Typically, these gas lines are located between 2 and 4 feet below the street.

ENERGY INITIATIVES

In 2001, New York State began taking measures to address the increasing capacity needs of the metropolitan New York City region. NYISO implemented the Emergency Demand Response and the Day-Ahead Demand Bidding programs to reduce utility electrical power demand during peak load periods. New York State Governor's Executive Order No. 111 (EO 111) was introduced in June 2001, directing state agencies, state authorities, and other affected entities to address energy efficiency, renewable energy, green building practices, and alternate fuel vehicles. EO 111 identified the New York State Energy Research and Development Authority (NYSERDA) as the organization responsible for coordinating and assisting agencies and other affected entities with their responsibilities. NYSERDA and the utilities have implemented programs to encourage businesses to reduce energy usage and increase energy efficiency. In addition to the energy conservation techniques, the New York Power Authority (NYPA) constructed 11 new 44-MW, natural-gas-fired, simple-cycle turbine-generating units, 10 of which are located within New York City, for emergency power generation, including the NYPA facility located near the project site on River Street between Grand and North 1st Streets.

The independent, nonprofit New York State Reliability Council (NYSRC) has determined that a minimum of 80 percent of the city's peak load must be provided by generating sources within the city to maintain compliance with the criteria established by the regional and national reliability councils. Presently, there is sufficient capacity within the city to meet this 80 percent local energy generation requirement. However, if energy demand increases over time, additional in-city generation would be needed to satisfy this requirement.²

On April 9, 2008, the governor launched the current state energy planning process with Executive Order No. 2, establishing a state energy planning board and authorizing the creation and implementation of a state energy plan. The 2009 New York State Energy Plan was released

¹ NYISO Revised Locational Installed Capacity Requirements Study Covering the New York Control Area for the 2006-2007 Capability Year, March 28, 2006 (July 25, 2007)

² NYISO Comprehensive Reliability Planning Process (CRPP) 2008 Reliability Needs Assessment (December 10, 2007).

in December 2009. The plan has a 10-year planning horizon, establishes policy objectives and sets forth strategies and recommendations to achieve those objectives. The five policy objectives outlined in the plan are:

- Assure that New York has reliable energy and transportation systems;
- Support energy and transportation systems that enable the State to significantly reduce greenhouse gas (GHG) emissions;
- Address affordability concerns of residents and businesses caused by rising energy bills, and improve the State’s economic competitiveness;
- Reduce health and environmental risks associated with the production and use of energy across all sectors; and
- Improve the State’s energy independence and fuel diversity by developing in-state energy supply resources.

EXISTING ON-SITE ENERGY CONSUMPTION

The three parcels are currently used for surface and structured parking. Minimal energy is used on site. Con Edison currently provides electrical service to the parcels.

E. THE FUTURE WITHOUT THE PROPOSED PROJECT

The demand for electricity is expected to increase by approximately 1.5 percent per year in New York City. According to the latest NYISO projections¹, New York City will have a peak electrical demand between 12,965 to 13,360 MW in 2017, the last date of the yearly projections. To meet that demand, various methods are being developed. Con Edison has announced a Demand Side Management plan to reduce demand by 500 MW. The NYISO has identified a number of power plant generation and transmission projects. These projects have an equivalent capacity of about 3,380 MW. While not all of the projects will likely go forward, sufficient additional generating and transmission capacity is expected to be built to meet New York City’s projected future energy demands.

While long-range energy planning is taking place, no large-scale changes in energy generation and consumption policies are foreseen at the present time. In the future, Con Edison and other energy providers are expected to continue to generate and deliver energy throughout New York City.

FUTURE ON-SITE ENERGY CONSUMPTION

In the future without the project and as described in greater detail in Chapter 1, “Project Description,” Parcels M, N and L could be developed with one of two scenarios—No Build Scenario 1 (full build-out of the 1992 FEIS project) or No Build Scenario 2 (full build out of Parcels L and M and a parking to remain on Parcel N). The incremental energy demand of the Proposed Project was compared with these No Build scenarios.

¹ *NYISO 2008 Comprehensive Reliability Plan*, “A Long-Term Reliability Assessment of New York’s Bulk Power System,” July 15, 2008.

NO BUILD SCENARIO 1

No Build Scenario 1 represents a total of approximately 3,030,279 gsf of development. This scenario would develop approximately 743 parking spaces, and include commercial office and studio space, residential, retail and cinema uses. As shown in **Table 15-1**, these uses would create a demand for approximately 374,803 million BTUs per year.

Table 15-1
Projected Energy Consumption—No Build Scenario 1

Use	Size (square feet)	Rate ¹ (BTUs/square foot/year)	Consumption (million BTUs/year)
Office	350,370	77,900	27,294
Studio	1,962,554	125,000	245,319
Residential	598,290	145,500	87,051
Retail	82,065	55,800	4,579
Cinema	37,000	65,300	2,416
Parking	297,200	27,400	8,143
Total Energy Consumption			374,803
¹ 2001 <i>CEQR Technical Manual</i> ¹ , Table 3N-1 "Energy Use Index Averages."			

NO BUILD SCENARIO 2

No Build Scenario 2 represents a total of approximately 618,600 gsf of development. This scenario would develop approximately 301 parking spaces, and include residential and office uses. The existing parking use on Parcel N would remain. As shown in **Table 15-2**, these uses would create a demand for approximately 91,937 million BTUs per year.

Table 15-2
Projected Energy Consumption—No Build Scenario 2

Use	Size (square feet)	Rate ¹ (BTUs/square foot/year)	Consumption (million BTUs/year)
Office	20,370	77,900	1,587
Residential	598,290	145,500	87,051
New Parking	120,400	27,400	3,299
Existing Parking	249,310	27,400	6,831
Total Energy Consumption			91,937
¹ 2001 <i>CEQR Technical Manual</i> , Table 3N-1 "Energy Use Index Averages."			

¹ In May 2010, shortly prior to the completion of the Draft SEIS, a substantive update to the 2001 *CEQR Technical Manual* was released. Prior to the public hearing for Proposed Project, a Technical Memorandum was prepared (published on DCP's website in September 2010) that considered whether one or more analyses contained in the Draft SEIS should be revised in the Final SEIS in light of the updated guidance set forth in the 2010 *CEQR Technical Manual*. The evaluation of the Proposed Project under the 2010 *CEQR Technical Manual* focused on technical areas where changes in methodology would have the potential to affect the analyses and/or conclusions of the Draft SEIS for the Proposed Project. With respect to energy, the 2010 *CEQR Technical Manual* updates would not materially change the analyses or conclusions presented in the Draft SEIS.

F. THE FUTURE WITH THE PROPOSED PROJECT

As mentioned above, the RWCDs for the energy analysis assumes a mix of uses that maximizes residential uses. Therefore, the analysis is based on RWCDs 1 which assumes 3,000 residential units, 151,598 gsf of community facility (public school), 131,622 gsf of retail, 276,011 gsf of auto showroom/service uses, and 1,800 parking spaces. The proposed project would also include publicly accessible open space, which is not included in the energy analysis because the demand for energy generated from this use would be minimal.

As shown in **Table 15-3**, it is estimated that the proposed project would create a demand for approximately 475,932 million BTUs per year.

Table 15-3
Projected Energy Consumption Proposed Project

Use	Size (square feet)	Rate ¹ (BTUs/square foot/year)	Consumption (million BTUs/year)
Residential	2,957,325	145,500	430,291
Retail	131,622	55,800	7,345
School	151,598	76,400	11,582
Below Grade Auto	276,011	55,800	15,401
Parking	412,900	27,400	11,313
Total Energy Consumption			475,932
¹ 2001 CEQR Technical Manual, Table 3N-1 "Energy Use Index Averages"			

Compared with No Build Scenario 1, the Proposed Project would create an incremental energy demand of approximately 101,129 million BTUs per year. Compared with No Build Scenario 2, the Proposed Project would create an incremental energy demand of approximately 383,995 million BTUs. Compared with the approximately 489 trillion BTUs of energy consumed annually within Con Edison’s New York City and Westchester County service area, each of these incremental increases would be considered a negligible increment.¹ This additional demand is not expected to overburden the energy generation, transmission, and distribution system and would not result in a significant adverse energy impact.

The Proposed Project would comply with the New York State Energy Conservation Construction Code. This code governs performance requirements of heating, ventilation, and air conditioning systems, as well as the exterior building envelope. The current code, promulgated on January 1, 2008, pursuant to Article 11 of the Energy Law of the State of New York, requires that new and recycled buildings (both public and private) be designed to ensure adequate thermal resistance to heat loss and infiltration. In addition, the code provides requirements for the design and selection of mechanical, electrical, and illumination systems. In compliance with the code, the building’s basic designs would incorporate all required energy conservation measures, including meeting the code’s requirements relating to energy efficiency and combined thermal transmittance.

Additionally, as described in Chapter 18, “Air Quality and Greenhouse Gas Emissions,” the Proposed Project would include a number of measures aimed at reducing energy consumption.

¹ The comparison of the Proposed Project’s energy consumption to the energy consumption in New York City does not include the energy supplied in New York City by National Grid and the Long Island Power Authority.

Energy efficiency measures with respect to fuel consumption and energy use will be incorporated into the building design that will result in at least 10 percent less energy consumption in building systems than the standards imposed by the New York State Energy Code in effect at the time of building design. Examples of measures which would achieve this objective include high performance glazing, increased insulation, high efficiency lighting (occupancy sensors), more efficient HVAC equipment, variable frequency drives for pumps and fans, premium efficiency motors, improved temperature controls, and full control by residents of their fresh air, heating, and cooling. The project will also be utilizing steam provided by Con Edison. The steam demand added by the Proposed Project would be a small percentage of the total steam provided by Con Edison in Manhattan and would therefore not be expected to adversely affect its ability to service its existing customer load. The Con Edison steam distribution system allows for any number of steam production facilities to supply steam to the Proposed Project, including facilities that are more energy efficient like the Con Edison East River Power Plant, which operates a combined cycle turbine plant, generating both steam and electricity. The use of steam results in significant energy savings, and is consistent with the goals of PlaNYC. In addition to the project steam, the practicability of providing combined heating, and power (“cogeneration”) at the Project site has been evaluated. See Chapter 23, “Alternatives,” for details. Additional measures to reduce energy use beyond those discussed above are described further in Chapter 18, “Air Quality and Greenhouse Gas Emissions.”

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