

A. INTRODUCTION

The proposed project would generate new demands on energy services provided in the project area. This chapter analyzes the potential impacts from the proposed project on energy systems, and considers the net incremental impact on energy demand in the 2011 analysis year.

PRINCIPAL CONCLUSIONS

The proposed project would result in added energy demand of approximately 78,480 million British Thermal Units (BTUs), which would constitute less than 0.02 percent of the total peak energy demand for New York City in 2011, and is not considered to be significant. Therefore, the energy demand from the proposed project would be met and the proposed project would not result in any significant adverse impacts on energy systems.

B. METHODOLOGY

As discussed below, this chapter:

- Presents data on the existing energy distribution system and estimated energy usage for existing conditions;
- Determines future energy demands with the proposed project, using energy consumption rates for typical land uses provided in the *City Environmental Quality Review (CEQR) Technical Manual* and other available literature sources; and
- Assesses the effects of this incremental energy demand on the local distribution system and regional energy supplies.

C. EXISTING CONDITIONS**ENERGY PROVIDERS**

Electricity within New York City is distributed by Consolidated Edison (Con Edison), and generated by a number of independent power companies, including KeySpan Energy¹.

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, 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

¹ Although KeySpan was acquired by National Grid, it continues to operate under the KeySpan name.

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) *2007 Load & Capacity Data* report, the peak electrical demand for New York City in summer 2006 was 11,350 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 electricity generated outside New York City and delivered by the 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.

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 street 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 that if one substation goes out of service, the problem can be isolated to that network 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.²

KeySpan Energy provides natural gas service to more than 1.1 million customers and operates more than 4,000 miles of gas mains in New York City. The company also owns and operates electrical generating plants on Long Island and within New York City, with a total generating capacity of more than 6,600 mw.³

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

¹ New York Independent System Operator 2007 Load & Capacity Data, www.nyiso.com/public/webdocs/services/planning/planning_data_reference_documents/2007_GoldBook_PUBLIC.pdf, Historic Summer Non-Coincident Peak Demand by Zone (July 25,2007).

² 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).

³ KeySpan Energy Web site: http://www.keyspanenergy.com/corpinfo/about/facts_all.jsp (July 25, 2007).

(NYSERDA) as the organization responsible for coordinating and assisting agencies and other affected entities with their responsibilities. NYSEDA 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 State Power Authorities (NYPA) constructed 11 new 44-mw, natural gas-fired, simple-cycle turbine-generating units, 10 of which are located within New York City, for peak power generation.

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.¹

EXISTING PROJECT SITE DEMAND

In estimating the existing annual energy consumption on the project site, the rates provided in Table 3N-1 of the *CEQR Technical Manual* were utilized. One measure of energy is the BTU. One BTU is the quantity of heat required to raise the temperature of one pound of water by one degree Fahrenheit. This unit of measurement is often used to compare consumption of energy from different sources, taking into account how efficiently those sources are converted to energy. Use of BTUs allows for a common unit of measurement for different energy sources (e.g., horsepower, kwh, etc.) and consumption rates (e.g., tons per day, cubic feet per minute, etc.). One kilowatt (kw) is the equivalent of 3,413 BTUs per hour.

Currently, the project site is comprised of various light industrial uses, totaling approximately 89,000 square feet. Using a representative Energy Use Index of 44,100 BTUs/square foot/year (as provided in the *CEQR Technical Manual*), current annual energy use on the project site is estimated to be approximately 3,925 million BTUs.

D. FUTURE WITHOUT THE PROPOSED PROJECT

Without the proposed project, no major changes to land use would be expected to occur on the project site by 2011. Land uses on the site would remain as one- and two-story buildings light-industrial buildings and vacant land serving primarily as space for vehicle storage. In the future without the proposed project in 2011, the existing energy demands on the project site are not assumed to change. The peak demand in 2011 for New York City is projected to be 12,480 mw². It is expected that measures will be taken to provide adequate electrical capacity to the New York City metropolitan area through this analysis year. It is also assumed that Con Edison would continue with its electrical distribution improvement programs in the Brooklyn area. In the future, the existing trend toward sustainability, as evidenced by the incorporation of green design by both the public and private sector, would lead to greater energy efficiency in the City.

¹ NYISO Comprehensive Reliability Planning Process (CRPP) 2008 Reliability Needs Assessment (December 10, 2007).

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

E. PROBABLE IMPACTS OF THE PROPOSED PROJECT

The proposed project would result in added energy demand, as shown in Table 15-1. The total energy consumption estimate for proposed project was based on the floor area for each use group and the *CEQR Technical Manual* Table 3N-1 energy consumption rates.

Table 15-1
Energy Consumption for the Proposed Project in 2011

Future Use	Size gsf	BTUs/sf/year	Million BTUs/year
Residential	527,608	145,500	76,767
Commercial	2,000	55,800	112
Community Facility ¹	2,000	65,300	131
Parking	53,640	27,400	1,470
Total			78,480
Note: ¹ The <i>CEQR Technical Manual</i> energy demand for public assembly was used.			
Source: Table 3N-1 of the <i>CEQR Technical Manual</i> .			

The annual energy demand for the project site in the future with the proposed project would be approximately 78,480 million BTUs. The average power load associated with this estimate of future energy consumption is approximately 2.6 mw. This would constitute less than 0.02 percent of the total peak energy demand for New York City in 2011, and is not considered to be significant. Therefore, the energy demand from the proposed project would be met and the proposed project would not result in any significant adverse impacts on energy systems. *