

## **A. INTRODUCTION**

The proposed project would generate new demands for energy services relative to the largely vacant building on the site today. This chapter describes the increase in energy usage expected on the project site and assesses the proposed project's effects on municipal energy infrastructure systems and services.

As described below, the proposed project would increase demands on electricity and gas; however, relative to the capacity of these systems and the current levels of service within New York City, the increases in demand would be insignificant.

## **B. METHODOLOGY**

The 2001 *New York City Environmental Quality Review (CEQR) Technical Manual* provides guidance on the methods to be used to assess impacts to energy. This chapter was prepared in accordance with the *CEQR Technical Manual's* guidelines. The assessment presents data on the existing energy distribution system and estimated energy usage for existing conditions; determines future energy demands with the proposed project for 2013, using energy consumption rates for typical land uses provided in the *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**

Electrical energy in New York City is supplied from a variety of sources that originate both within and outside the City. These sources include both non-renewable sources (such as oil, natural gas, coal fuel, and nuclear energy) and renewable sources (such as hydroelectric, and, to a much lesser extent, biomass fuels, solar, and wind power), and are generated within New York City, at locations across the Northeast, and from places further away. 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 Killowatt-Hours (KWHs) or 170.75 trillion British Thermal Units (BTUs) of electricity are consumed in the City annually.

Power plants in the five boroughs generate electricity for New York City. According to the New York Independent System Operator's (NYISO) *Revised Locational Installed Capacity*

## **The Shops at the Armory FEIS**

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*Requirements Study* for the 2006-2007 period, New York City has an existing installed annual generating capacity of 10,364 megawatts (MW)<sup>1</sup> (1,183 KWH).

Consolidated Edison (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 “grid.” Within the grid, voltage is further reduced for delivery to customers. Each area substation serves one or more distinct geographic area, 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.

According to NYISO’s *2007 Load & Capacity Data* report, the peak electrical demand for New York City in the summer of 2006 was 11,350 MW.<sup>2</sup> 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 Con Edison infrastructure that 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.

National Grid 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.<sup>3</sup>

### **EXISTING DEMAND AT PROJECT SITE**

Con Edison supplies electricity and gas to the area. The project site is occupied by the Armory building, which is substantially vacant. Therefore, the existing use on the project site does not have a substantial energy demand.

### **D. THE FUTURE WITHOUT THE PROPOSED PROJECT**

In 2013, in the future without the proposed project, it is assumed that the Armory will continue to remain substantially vacant. Therefore, no changes would be anticipated in energy consumption at the project site.

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<sup>1</sup> NYISO Revised Locational Installed Capacity Requirements Study Covering the New York Control Area for the 2006-2007 Capability Year, March 28, 2006. (September 2008)

<sup>2</sup> New York Independent System Operator 2007 Load & Capacity Data, [www.nyiso.com/public/webdocs/services/planning/planning\\_data\\_reference\\_documents/2007\\_GoldBook\\_PUBLIC.pdf](http://www.nyiso.com/public/webdocs/services/planning/planning_data_reference_documents/2007_GoldBook_PUBLIC.pdf), Historic Summer Non-Coincident Peak Demand by Zone (September 2008)

<sup>3</sup> National Grid website: <http://www.nationalgrid.com/corporate/about+us/> (May 2009)

## E. PROBABLE IMPACTS OF THE PROPOSED PROJECT

The proposed project would result in added energy demand, as shown in **Table 12-1**. The total energy consumption estimate for the proposed project was based on the floor area for each use and the energy consumption rates provided in the *CEQR Technical Manual* (Table 3N-1). The total annual energy demand for the project site would be about  $0.35 \times 10^5$  Million BTUs in 2013.

**Table 12-1**  
**Energy Consumption for the Proposed Project in 2013**

Future Use	Size (square feet)	BTUs/sq. ft/year	Million BTUs/year
Retail	345,765	55,800	19,289
Restaurant	31,560	113,800	3,592
Fitness Club	33,240	55,800	1,855
Community Facility	27,000	77,900	2,103
Cinema	57,485	65,300	3,754
Parking Garage	164,285	27,400	4,501
<b>Total</b>			35,093
<b>Sources:</b> The 2001 <i>CEQR Technical Manual</i> , Table 3N-1.			

The New York State Conservation Construction Code (the Code), instituted on January 1, 1979, pursuant to Article Eleven of the Energy Law of the State of New York, requires that new and recycled buildings (both public and private) must be designed to ensure adequate thermal resistance to heat loss and infiltration. In addition, it provides requirements for the design and selection of mechanical, electrical, and illumination systems. In compliance with the Code, the proposed project's design would incorporate all required energy conservation measures, including meeting the Code's requirements relating to energy efficiency and combined thermal transmittance.

Electricity and gas would be supplied by Con Edison, which would be used to provide heating, cooling, and lighting to the proposed project. Con Edison could easily supply this energy without disruption to the main distribution system. Thus, there would not be any significant adverse energy impacts from the proposed project. \*