

## **A. INTRODUCTION**

The reasonable worst-case development scenario (RWCDS) would generate new demands for energy services relative to the uses on the project sites today and in the future without the proposed actions. This chapter describes the increase in energy usage expected on the project sites and assesses the proposed actions' effects on municipal energy infrastructure systems and services.

## **PRINCIPAL CONCLUSIONS**

Given the growth and extent of new development occurring in Long Island City, and to reduce the potential for a similar outage to one that occurred in Long Island City in July 2006, Con Edison has committed to invest \$58 million in the Long Island City (LIC) network. The planned improvements would include upgrades to equipment within the northern Queens substation, construction of a new substation in northwest Queens with operations starting 2015, additional phone lines to call centers, and tracking systems to alert Con Edison of power outages. With these planned improvements, the proposed actions would not have a significant adverse impact on energy systems and services. The proposed actions 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. Improvements would be made to the local electric and gas distribution grids that would ensure proper service to the project sites. It is therefore concluded that the demands of the proposed actions would not result in a significant impact on the supplies of electricity and gas in the region or the City as a whole. In addition, with the future improvements to the distribution network, no impact would occur locally on electrical or gas utilities.

## **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 actions for 2017, using energy consumption rates for typical land uses provided in the *CEQR Technical Manual* and other available literature sources.
- Assesses the effects of this incremental energy demand on the local distribution system and regional energy supplies.
- Describes the proposed sustainable features that would be incorporated into the project design to minimize project demands on energy infrastructure and services.

## **C. EXISTING CONDITIONS**

### **ENERGY PROVIDERS**

Con Edison delivers electricity to all areas of New York City (except the Rockaway area in Queens) and almost all of Westchester County. The electricity is generated by a number of independent power companies as well as Con Edison. In 2006 (the latest year for which data are available), annual electric sales totaled about 57.0 billion kilowatt-hours (KWH) in Con Edison's delivery area. This is equivalent to about 195.8 trillion British Thermal Units (BTUs). In addition, Con Edison supplied about 107.5 trillion BTUs of natural gas and 23.25 billion pounds of steam, which is equivalent to 22.5 trillion BTUs. Overall, about 325.8 trillion BTUs of energy are consumed within Con Edison's New York City and Westchester County service area.

Electrical energy in New York City is supplied from a variety of sources that originate both within and outside the City. These sources include 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). 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 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 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).

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 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.

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 megawatts (MW).<sup>2</sup> Typically, electricity generated within the City is sufficient to satisfy demand. However, during the summer peak demand

---

<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. (November 8, 2007)

<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 (November 8, 2007)

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.

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 megawatts.<sup>1</sup>

### **ENERGY DISTRIBUTION IN LONG ISLAND CITY**

The LIC network is one of seven networks supplying Queens County. It serves the northwest and west sections of Queens and includes the neighborhoods of Long Island City, Astoria, Sunnyside, Woodside, and Hunter's Point. The LIC network is bounded by the East River on the west and the north, the Brooklyn-Queens Expressway on the east, and the Newtown Creek on the south. It delivers power to approximately 115,000 customers. When compared with Con Edison's other distribution networks, the LIC network has the highest capacity and demand for a network and the highest connected capacity and demand per feeder. It also has the highest number of customers and the third highest number of primary feeder cable miles. The LIC network is supplied by the North Queens substation, which is capable of supplying 483 MW of electric power. The substation supplies 22 primary network feeders, totaling approximately 290 circuit miles in length, and 1,198 network transformers. These feeders and transformers supply electricity through and in an extensive underground system of 4,400 manholes, 11,000 service boxes, and 1,700 miles of secondary cable and an overhead system of 3,000 utility poles.

Con Edison made several investments in the Long Island City (LIC) network and the rest of the electric delivery system which include the following:

- \$90 million in repairs and upgrades in the LIC network;
- \$4 billion in capital improvements from 2000-2005 to the electric transmission and distribution system;
- Of \$2.8 billion spent for improvements to the electric distribution system, 29 percent or \$800 million was invested in the Brooklyn/Queens distribution system that includes the Long Island City network;
- Close to \$50 million of operation and maintenance costs related to the LIC incident; the company will not seek to recover from customers any of those costs.<sup>2</sup>

A series of power outages struck the northwest and west sections of Queens in July 2006, primarily affecting the neighborhoods of Astoria, Long Island City, Sunnyside, and Woodside. The outages affected residents, caused business losses, airport and transit delays and cancellations, and caused unpleasant living conditions due to a concurrent heat wave. In October 2006, Con Edison released a comprehensive report on the causes of the July 2006 outage that affected the 25,000 customers in Queens and the actions the company would take to improve

---

<sup>1</sup> KeySpan Energy website: [http://www.keyspanenergy.com/corpinfo/about/facts\\_all.jsp](http://www.keyspanenergy.com/corpinfo/about/facts_all.jsp) (November 8, 2007).

<sup>2</sup> Con Edison website: <http://www.coned.com/publicissues/LIC.asp> (December 4, 2007)

## **Hunter's Point South Rezoning and Related Actions DEIS**

---

service, reliability and communication. The report also outlined plans for reducing the potential for a similar outage, including:

- Upgrading equipment within the northern Queens substation, and at others around the system;
- Investing \$58 million in the Long Island City network;
- Studying advancing the construction of a new substation in northwest Queens, based on enhanced reliability to customers by the summer of 2007.

As of August 2006, Con Edison anticipated that the peak demand for energy City-wide will rise 14 percent in the next 10 years. To meet the energy demands spurred by this growth, Con Edison would also invest approximately \$6 billion in its electric, gas, and steam systems over the next three years throughout the City. During 2006, work continued on substations in Westchester County, the Bronx, and Manhattan, to meet the growing demand of developing neighborhoods. Con Edison also installed new transformers at two substations in Queens, and another in Westchester County, and established new residential gas services and reinforced pipelines in its gas transmission system to improve reliability and allow for greater supply diversity.

### **EXISTING DEMAND AT PROJECT SITES**

The Hunter's Point South site (Site A) is occupied by a tennis facility, New York Water Taxi's ferry landing and Water Taxi Beach, and a temporary staging area for a construction contractor. The tennis courts in the tennisport facility are lit with halogen lights. The construction contractor does not occupy a building on Site A but is temporarily using the southern portion of the site for staging construction material; no energy is required. Site B is occupied by low-rise manufacturing buildings used by Anheuser-Busch as a distribution facility and by NBC for television operations and other studio-related uses. There are no dwelling units on the project sites. In addition, street lights on the streets on Sites A and B use a small amount of energy.

To estimate the existing annual energy consumption on the project sites, the rates provided on Table 3N-1 of the *CEQR Technical Manual* were used. One measure of energy is the British Thermal Unit (BTU). One BTU is the quantity of heat required to raise the temperature of one pound of water by one Fahrenheit degree. 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, kilowatt-hours, 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. Based on the rates of the *CEQR Technical Manual*, current annual energy use on the project sites (both Sites A and B) is estimated to be approximately 23,165 million BTUs, as shown in **Table 15-1**.

Con Edison released a comprehensive report on the causes of the July outage that affected 25,000 customers in northwest Queens and the actions the company would take to improve service, reliability and communication. The report was intended to be a blueprint for strengthening reliability and explains the events that led to the failure of 10 of the Long Island City network's 22 feeder cables starting July 17, 2006. It also identifies areas for improvement in the company's method for estimating the number of customers without electrical service. The detailed, in-depth analysis resulted in the identification of specific steps the company plans to take to strengthen the reliability of the LIC network. Con Edison engineers and other company

**Table 15-1**  
**Existing Energy Consumption on the Project Sites**

Existing Use	Size (square feet)	BTUs/square feet/year	Million BTUs/year
<b>Site A</b>			
Tennisport facility <sup>1</sup>	115,291	113,800	13,120
Water Taxi landing and beach <sup>2</sup>	13,332	77,900	1,940
<b>Site A total</b>			<b>15,060</b>
<b>Site B</b>			
Anheuser-Busch distribution facility <sup>3</sup>	183,797	44,100	8,105
<b>Site B total</b>			<b>8,105</b>
<b>TOTAL Site A and B</b>			<b>23,165</b>
<p><b>Notes:</b>  <sup>1</sup> The "food service" use group from Table 3N-1 was conservatively used to calculate the total energy use on the Tennisport facility  <sup>2</sup> The "other" use group from Table 3N-1 was used to calculate the total energy use on the New York Water Taxi ferry landing and Water Taxi Beach  <sup>3</sup> The "warehouse and storage" use group from Table 3N-1 was used to calculate the Anheuser-Busch distribution facility and NBC's storage facility's total energy use.</p> <p><b>Sources:</b>  Table 3N-1 in the <i>CEQR Technical Manual</i> for energy demand rates.  New York City Department of Finance Real Property Assessment Database (RPAD) 2005 and business information provided by the New York City Economic Development Corporation for the floor area by use group.</p>			

experts analyzed various components of the northwest Queens outage to find why they failed, resulting in recommendations to improve the company's reliable delivery of electricity. The 600-page report outlines plans for reducing the potential for a similar outage, including:

- Upgrading equipment within the northern Queens substation, and at others around the system;
- Investing \$58 million in the Long Island City network;
- Studying advancing the construction of a new substation in northwest Queens, based on enhanced reliability to customers.

To assist customers during outages, Con Edison is:

- Adding 250 telephone lines to call centers, increasing them to 650 phone lines;
- Installing a better system to track outages;
- Improve the interactive automated system for customers to report electrical outages;
- Installing electric meters that could alert the company when a customer is out of service.

Because of projected increasing customer demand in the LIC network, Con Edison has plans to build an additional area substation in the southern portion of the network. The company purchased the land for this new area substation in January 2006. The projected in service date for the new area substation is 2015. The new area substation will also enhance electrical reliability in the area. Simultaneously, a review of potential reliability projects for the LIC network demonstrated that the addition of two new feeders in the LIC network would further improve the

network reliability. Based on this finding two new feeders were also established in the LIC network in 2007.<sup>1</sup>

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

In 2017, in the future without the proposed actions, it is conservatively assumed that the uses currently on the project sites would remain, although it is possible that some properties would be reused and that some limited development could occur. Independent of the proposed actions, Anheuser-Busch, the distribution facility currently on Site B, will relocate to a new 12-acre vacant waterfront site in the Hunts Point Food Distribution Center in the Bronx. It is assumed that the company's existing location on Site B will be occupied by a similar use, with no significant change in the site layout.

In the future without the proposed actions in 2017, the existing energy demands at the project sites will therefore remain similar to existing conditions. The remaining portion of Queens West development is expected to be completed by 2010. This development will add around 2,136 residential units, 100,000 square feet of community facility use and 800 square feet of retail. The development is therefore expected to increase energy demands by 317,360 million BTU's per year, over existing conditions. It is expected that adequate electrical capacity would be available in 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 northern/western Queens area and with investments in the Long Island City network.

Because of the existing supply and the recently added or proposed capacity, it is expected that an adequate generating capacity, which would exceed projected demands, would be available in the New York City metropolitan area through the proposed action's analysis year of 2017.

#### **E. PROBABLE IMPACTS OF THE PROPOSED ACTIONS**

The proposed actions would result in added energy demand, as shown in **Table 15-2**. The total energy consumption estimate for the proposed actions was based on the reasonable worst-case development scenario (RWCDS) floor area for each use and the energy consumption rates provided in the *CEQR Technical Manual* (Table 3N-1). No energy efficiency or green design measures that may be implemented in the proposed actions were accounted for in this conservative estimate.

The total annual energy demand for the project sites would be about  $0.99 \times 10^6$  Million BTUs. The average power load increase associated with this conservative estimate of future energy consumption is about 28 MW.

To provide this level of energy service to the sites, upgrades to electrical and gas transmission lines serving the project sites would be made. Within the project sites and adjoining streets, new gas mains, service lines, and metering would be reconstructed as part of the implementation of proposed actions. Improvements to the local distribution grid may also be required. These would include electrical substations and primary feeder cables that would be needed to meet the demands of the development on the project sites. As site design moves forward, the local utility companies may also identify any additional site-specific upgrade needs of the proposed actions. The improvements in local connections that are necessary to provide these services to the project sites would not adversely impact the local system.

---

<sup>1</sup> Con Edison website: <http://www.coned.com/messages/pr20061012.asp> (January 14, 2008)

**Table 15-2**  
**Energy Consumption for the Proposed Actions in 2017**

<b>Future Use</b>	<b>Size (square feet)</b>	<b>BTUs/sq. ft/year</b>	<b>Million BTUs/year</b>
<b>Site A</b>			
Residential	5,000,000	145,500	727,500
Retail	90,500	55,800	5,050
Community Facility/ Cultural Uses	45,000	65,300	2,939
School	180,000	76,400	13,752
Parking	2,000	27,400	55
<b>Site A total</b>			<b>749,295</b>
<b>Site B</b>			
Residential	1,650,000	145,500	240,075
Retail	36,000	55,800	2,009
Parking	600	27,400	16
<b>Site B total</b>			<b>242,100</b>
<b>TOTAL Site A and B</b>			<b>991,395</b>
<b>Source:</b> The <i>CEQR Technical Manual</i> , April 2001, Table 3N-1			

As mentioned earlier, Con Edison has taken several steps to improve their services in Northwest Queens by investing \$58 million in the LIC system, to provide upgrades to equipment within the northern Queens substation, construction of a new substation with operations beginning in 2015, and providing better assistance to customers during outages. With these upgrades and construction of a new substation, the proposed actions are not expected to adversely impact the City's energy systems. \*