3.14 ENERGY

INTRODUCTION

The proposed action would not result in significant adverse impacts on energy. Although present uses at the projected development sites create some demand for energy, development resulting from the proposed action would place an increased overall demand on utilities supplying energy to this area. The additional demand resulting from the proposed action, however, would not be large enough to constitute a significant adverse impact on energy services.

As discussed in Chapter 2.0, "Project Description," a reasonable worst-case development scenario (RWCDS) for development associated with the proposed action at the 31 projected development sites by 2018 has been identified. The RWCDS results in net increases of 3,414 DUs, including 591 units of affordable housing; 571,162 square feet (sf) of retail commercial space; 164,285 sf of hotel space; 63,700 sf of community facility space; 1,291 parking spaces; and net decreases of 308,872 sf of storage/manufacturing space; 598,351 sf of office commercial space; and, 96,142 sf of vacant space.

3.14.1 EXISTING CONDITIONS

The Energy System

Consolidated Edison (Con Edison), along with other transmission companies, delivers electricity to New York City and almost all of Westchester County. The electricity is generated by Con Edison as well as a number of independent power companies, including Keyspan Energy. In the Bronx, Con Edison supplies electricity and natural gas.

The New York Power Authority (NYPA) is the governing authority responsible for overseeing power distribution across the state. The recent deregulation of the energy market across New York State has led to the transition of formerly government-regulated utilities to independently owned energy generators. Con Edison has sold many of its power generating facilities and is now primarily involved in energy distribution.

Electrical energy is created from non-renewable sources such as oil, natural gas, coal, nuclear fuel, and renewable sources like hydroelectric, biomass fuels, solar, and wind. New York City's energy is produced within the City, and at sites across the Northeast US and as far as Canada. Once electrical energy is generated in the form of high voltage electrical power, a transmission grid provides high voltage electrical power to, and within, New York City. The interconnected power grid, extending across New York State and the Northeast, allows for power to be imported from other regions as the demand requires. Substations located throughout New York City convert high-voltage electrical power to low-voltage electrical power for distribution to end users.

According to the New York Independent System Operator (NYISO) *2008 Load & Capacity Data* report, the peak electrical demand for New York City during the Summer of 2007 was 10,970 Megawatts (MW), and the peak demand for the Summer of 2008 is forecasted at 11,955 MW.[1] Typically the electricity generated within the City is sufficient to satisfy the demand. However, during the peak summer demand period, the required electricity must be supplemented by the transmission grid across the Northeast. Con Edison's distribution grid has a finite capacity, and during heavy demand periods the transmission grid is strained. 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 local "hot" zones are supplied by other regions of New York City or from sources elsewhere within the larger grid, if necessary.

Con Edison provides the electrical power transmission system for the City through a series of substations. Transmission substations receive electricity from the generating stations through the transmission system and reduce the voltage to a level that can be delivered to area substations. Area substations receive electricity from a transmission substation and reduce the voltage to a level that can be delivered into the distribution system or "grid" in the streets. In the distribution system, the electricity's voltage is reduced further to be delivered 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 would be localized to that network area and would not spread to other parts of the city. Substations are designed to have sufficient capacity for the network to grow.

A number of power plants are located in the five boroughs, providing electric generation resources to New York City. According to NYISO's *Revised Locational Installed Capacity Requirements Study* for the 2007-2008 capability year, New York City has an existing installed capacity of 10,320 MW (not including Special Case Resources).[2]

Recent Energy Conservation Directives

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 of 2001, and directed 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. The NYSERDA and other utilities have implemented programs to

[1] New York Independent System Operator *2008 Load & Capacity Data*, revised 06/26/08 (see website at www.nyiso.com/public/services/planning/index.jsp).
[2] NYISO *Revised Locational Installed Capacity Requirements Study Covering the New York Control Area for the 2007-2008 Capability Year, February 16, 2007*. According to the Study, Special Case Resources (SCRs) are "loads capable of being interrupted, and distributed generators, rated at 100 kW or higher, that are not directly telemetered."

encourage businesses to reduce energy usage and increase energy efficiency. The NYPA has purchased and constructed 11 new 44-MW, natural gas-fired, simple cycle turbine generating units (ten of which are located within New York City). Additionally, NYPA has focused on reducing energy consumption at public facilities throughout New York City.

The independent, non-profit 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. As the energy demand increases over time, additional in-city generation would be needed to satisfy this requirement.

The NYISO, which manages the safety and reliability of the state's electric transmission system, developed and implemented the Comprehensive Reliability Planning Process (CRPP). The first step of the CRPP is the preparation of a Reliability Needs Assessment (RNA), which determines the reliability needs over a ten-year planning period based on the forecast of the demand for electricity and the projected system conditions. The second step begins with the request for solutions, with the expectation that Market-Based Solutions will come forward to meet the identified needs. In the event that Market-Based Solutions are not sufficient, the process provides for the identification of Regulated Backstop Solutions proposed by designated transmission owners, and of Alternative Regulated Solutions proposed by any market participant. The NYISO then evaluates all proposed solutions to determined whether or not they meet the identified needs. The NYISO determined that, based on the 2008 RNA, additional resources would be needed over the ten-year study covering the period 2008-2017 in order for the New York Control Area (NYCA) to comply with all applicable reliability criteria. However, the NYISO has determined that no action needs to be taken at this time to address the reliability needs identified in the 2008 RNA, and the proposed system upgrades will maintain the reliability of the power system.[3]

Existing Demand

In estimating the existing annual energy consumption at the 31 projected development sites, the rates provided in Table 3N-1 of the *CEQR Technical Manual* were utilized. The measure of energy used in the analysis is BTUs per year. One BTU, or British Thermal Unit, is the quantity of heat required to raise the temperature of one pound of water one Fahrenheit degree. According to the *CEQR Technical Manual*, this unit of measure can be used to compare consumption of energy from different sources (e.g., gasoline, hydroelectric power, etc.), taking into consideration how efficiently those sources are converted to energy. Its use avoids the confusion inherent in comparing different measures of output (e.g., horsepower, kilowatt hours, etc.) and consumption (e.g., tons per day, cubic feet per minute, etc.). In general, one kilowatt (KW) is equivalent to 3,413 BTUs per hour. As shown in Table 3.14-1, current annual energy use on the 31 projected

[3] NYISO, *The Comprehensive Reliability Plan 2008: A Long-term Reliability Assessment of New York's Power System*, July 15th, 2008.

development sites is estimated to be approximately 36.67 billion BTUs for all heating, cooling, and electric power.

Table 3.14-1:
Estimated Annual Energy Consumption on Projected Development Sites Under Existing Conditions

			Existing
Use	**Consumption Rates**	**SF**	**Annual Energy Use (million BTUs*)**
Storage/Manufacturing	44,100 BTUs/sf/y	532,626	23,489
Parking	27,400 BTUs/sf/y	0	0
Vacant	0 BTUs/sf/y	349,831	0
Community Facility	76,400 BTUs/sf/y	36,599	2,796
Residential	145,500 BTUs/sf/y	3,522	512
Office/Commercial	77,900 BTUs/sf/y	0	0
Retail	55,800 BTUs/sf/y	105,163	5,868
Hotel	145,500 BTUs/sf/y	0	0
TOTAL			32,666

Notes: *Based on the following assumptions per *CEQR Technical Manual* Table 3N-1:
Storage/Manufacturing: rate for "warehouse and storage";
Parking/Auto: rate for "parking garage";
Community Facility: rate for "education";
Residential: rate for "lodging". Assume 900-square feet/DU average size of existing dwelling unit;
Office/Commercial: rate for "office";
Retail: rate for "mercantile and service";
Hotel: rate for "lodging".

3.14.2 FUTURE WITHOUT THE PROPOSED ACTION

In the future without the proposed action, the existing zoning controls would remain in place. It is expected that the rezoning area would experience growth in primarily industrial uses. In the future without the proposed action (No-Build condition), as-of-right development would be expected to occur on some of the 31 projected development sites. The Future No-Action Scenario is expected to result in higher energy consumption on the projected development sites than under existing conditions.

The NYISO *2008 Load & Capacity Data* report forecasts energy requirements through 2018 and expects the summer peak load for New York City to be 13,085 MW in 2018. The 2018 annual energy requirements are forecasted at approximately 62,979 gigawatt hours (GWH).[4]

In the future without the proposed action, the existing zoning controls would remain in place. It is expected that the rezoning area would experience growth in industrial uses. In the future without the proposed action (No-Build condition), as-of-right development

[4] New York Independent System Operator *2008 Load & Capacity Data*, revised 04/01/07 (see website at www.nyiso.com/public/services/planning/index.jsp).

would be expected to occur on 14 of the 31 projected development sites identified by DCP in the rezoning area. Development on the projected development sites is expected to consist of the existing two dwelling units or 3,522 sf of residential space; 106,358 sf of retail; 598,351 sf of office space; 404,372 sf of industrial space; 90,589 sf of community facility space; 227 sf of parking; and 93,142 sf of vacant space.

It is expected that the incremental difference between the existing conditions and the No-Action scenario would total 598,351 sf of office space; 256,689 sf of vacant space; 128,254 sf of storage/manufacturing uses; 227 sf of parking; and reductions of 1,195 sf of retail and 74,576 sf of community facility space.

Table 3.14-2 summarizes the annual energy consumption for each use under No-Action conditions. The same assumptions utilized for existing conditions were applied in calculating energy consumption on the 31 projected development sites in the future without the proposed action. As shown in Table 3.14-2, it is estimated that as-of-right development on 14 of the 31 projected development sites would use approximately 79,392 billion BTUs of energy annually in 2018 without the proposed action.

Table 3.14-2:
Estimated Annual Energy Consumption on Projected Development Sites Under 2018 No-Action Conditions

		No-Action	
Use	**Consumption Rates**	**SF**	**Annual Energy Use (million BTUs*)**
Storage/Manufacturing	44,100 BTUs/sf/y	404,372	17,833
Parking	27,400 BTUs/sf/y	227	6
Vacant	0 BTUs/sf/y	93,142	0
Community Facility (1)	76,400 BTUs/sf/y	111,175	8,494
Residential	145,500 BTUs/sf/y	3,522	512
Office/Commercial	77,900 BTUs/sf/y	598,351	46,612
Retail	55,800 BTUs/sf/y	106,358	5,935
Hotel	145,500 BTUs/sf/y	0	0
TOTAL			79,392

* Refer to Table 3.14-1 for consumption rate assumptions.

(1) No-Action community facility energy consumption includes 20,586-square feet of institutional conversion.

3.14.3 FUTURE WITH THE PROPOSED ACTION

As described in Chapter 2.0, "Project Description," it is expected that under conditions with the proposed action, the projected development sites would consist of 3,416 DUs (591 of which would be affordable housing units); 677,520 sf of commercial retail space; 164,285 sf of hotel space; 95,500 sf of storage/manufacturing space; 154,289 sf of community facility space and 1,518 sf of parking uses.

It therefore follows that under conditions with the proposed action, the projected development sites would consist of a net increase of 3,414 DUs (591 of which would be affordable housing units); 571,162 sf of commercial retail space; 164,285 sf of hotel space; 43,114 sf of community facility space; 1,291 sf of parking space; a decrease of 308,872 sf of storage and manufacturing space; and a decrease of 598,351 sf of commercial office space; and 93,142 sf of vacant space. The incremental difference between the No-Action energy demand and energy demand projected in the future with the proposed action serves as the basis for the impact analyses.

Projected development resulting from the proposed action would be required to comply with the New York State Conservation Construction Code, which governs performance requirements of heating, ventilation, and air conditioning systems, as well as the exterior building envelope of new buildings. In compliance with the Code, the buildings to be constructed on the projected development sites would incorporate all required energy conservation measures, including meeting the Code's requirements relating to energy efficiency and combined thermal transmittance.

The same assumptions utilized for the various uses under No-Action conditions were applied in calculating estimated annual energy consumption on the 31 projected development sites in the future with the proposed action. Table 3.14-3 shows the energy expected to be consumed by the projected development sites in the future with the proposed action, comparing it to the future without the proposed action, and identifying the incremental change in energy consumption associated with the proposed action.

Table 3.14-3:
Estimated Annual Energy Consumption on Projected Development Sites Under 2018 With-Action Conditions Compared to No-Action Conditions

	No-Action		With-Action		Increment
Use	**SF**	**Annual Energy Use (million BTUs*)**	**SF**	**Annual Energy Use (million BTUs*)**	**SF**
Storage/Manufacturing	404,372	17,833	95,500	4,212	-308,872
Parking	227	6	1,518	42	1,291
Vacant	93,142	0	0	0	-93,142
Community Facility	111,175	8,494	154,289	11,788	63,700
Residential	3,522	512	3,488,316	507,550	3,484,794
Office/Commercial	598,351	46,612	0	0	-598,351
Retail	106,358	5,935	677,520	37,806	571,162
Hotel	0	0	164,285	23,903	164,285
TOTAL		79,392		585,300	

*Refer to Table 3.14-1 and Table 3.14-2 for notes.

Based on the above assumptions, it is estimated that the 31 projected development sites would use approximately 585.30 billion BTUs of energy annually in the future with the proposed action. Therefore, the proposed action would result in an incremental increase of approximately 507.48 billion BTUs in annual energy use compared to No-Action conditions. This annual incremental demand on an hourly basis would represent a small fraction of the City's forecasted peak summer load of 13,085 MW in 2018, as well as an infinitesimal amount of the City's forecasted annual energy requirements for 2018, and is therefore not expected to be a significant additional load. As such, the operational energy demand from the proposed action would not have significant adverse impacts.

CONCLUSION

The proposed action is not anticipated to result in significant adverse energy impacts. Consumption of electrical energy on the projected development sites would experience a net increase of approximately 507.48 billion BTUs in annual energy use compared to No-Action conditions. This annual incremental demand on an hourly basis would represent a small fraction of the City's forecasted peak summer load of 13,085 MW in 2018, and an infinitesimal amount of the City's forecasted annual energy requirements for 2018. This incremental increase in demand would not be large enough to significantly impact the ability of the City's energy system to deliver electricity and would not constitute a significant adverse impact.