

A. INTRODUCTION

This chapter discusses the energy demand and energy efficiency measures anticipated with the reasonable worst-case development scenario (RWCDS), and assesses whether the RWCDS would result in any significant adverse impacts on energy transmission and generation that were not addressed in the 2008 Final Generic Environmental Impact Statement (FGEIS) and subsequent technical memoranda.

PRINCIPAL CONCLUSIONS

Consistent with the findings of the 2008 FGEIS and subsequent technical memoranda, this analysis concludes that the proposed project would not result in significant adverse impacts on energy demand and infrastructure. The cumulative annual energy consumption that would result from the RWCDS, including the potential future development on Lot B, would be 1,952,503 million British thermal units (BTUs). Phase 1A and 1B are subject to Local Law 86 of 2005 (see New York City Charter section 224.1) and the project sponsor would comply with the requirements thereof. To the extent Local Law 86 of 2005 applies to any portion of Phase 2, the City would further ensure that the sponsor for Phase 2 complies with the requirements thereof. Accordingly, in Phase 1A, the retail buildings, including the proposed development on the Willets West site, will be designed and constructed to achieve Leadership in Energy and Environmental Design (LEED) silver certification for core and shell (LEED-CS), and the hotel building will be designed and constructed to achieve LEED silver certification for new construction (LEED-NC). In Phases 1B and 2, as set forth in the FGEIS and reiterated in Technical Memorandum #4, all portions of the project within the Willets Point Special District will be required to achieve LEED for neighborhood development (LEED-ND) certification. Phase 1B buildings will also comply with all the applicable requirements of Local Law 86 of 2005. Specifically, retail, hotel, community facility and office buildings will be designed and constructed to achieve LEED silver certification pursuant to the LEED rating system that is most appropriate under Local Law 86 (see Section 10-02 of chapter 10 of title 43 of the Rules of the City of New York). To meet the requirements of LEED and the energy cost reduction requirements of Local Law 86 of 2005 that are applicable to the project under NYC Charter section 224.1(b)(2)(ii), energy efficiency measures would be incorporated into building designs, as described in this chapter. The requirements of Local Law 86 of 2005 and the commitments set forth in this chapter would be incorporated into the development agreements and/or amended lease agreements. The provisions of the development agreements and/or amended lease agreements, relating to substance and enforceability of these commitments, would be subject to approval by Mayor's Office of Environmental Coordination.

B. SUMMARY OF FINDINGS—2008 FGEIS AND SUBSEQUENT TECHNICAL MEMORANDA

The annual energy consumption projected in the 2008 FGEIS for the development proposed within the Special Willets Point District and the anticipated potential future development on Lots B and D was 1,176,686 million BTUs. To account for the 2010 revisions of the *City Environmental Quality Review (CEQR) Technical Manual*, Technical Memorandum #4 (TM4) projected the annual energy consumption for these same uses, with the updated energy consumption rates. With the updated rates, the annual energy consumption was projected to be 1,576,095 million BTUs. Although a number of energy efficiency and sustainability measures to reduce energy consumption were proposed in the 2008 FGEIS, the beneficial effect of these measures was not quantified.

C. 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 RWCDS for each development phase, using energy consumption rates for typical land uses provided in the 2012 *CEQR Technical Manual* and the 2001 *CEQR Technical Manual* energy consumption rate for parking (for which a consumption rate is not available in the 2012 *CEQR Technical Manual*).
- Assesses the effect of this incremental energy demand on the local distribution system and regional energy supplies; and
- Describes features that may be incorporated into the project design for the purposes of minimizing project demands on energy infrastructure and services.

D. EXISTING CONDITIONS

ENERGY SUPPLY AND TRANSMISSION

Within New York City, electricity is generated and delivered to most users by Consolidated Edison (Con Edison) as well as a number of independent power companies. Electrical energy in New York City is drawn 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. Electricity consumed in New York City is generated in various locations, including sites within New York City, locations across the Northeast, and places as far away as Canada.

Con Edison distributes power throughout the City and Westchester County. 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 the street “grid.” Within the grid, voltage is further reduced for delivery to customers.

In 2011, approximately 58 billion kilowatt hours (KWH), or 198 trillion BTUs were delivered in Con Edison’s service area. In addition, Con Edison supplied approximately 129 trillion BTUs of natural gas and approximately 22 billion pounds of steam, which is equivalent to approximately

26 trillion BTUs.¹ Overall, approximately 353 trillion BTUs of energy are consumed within Con Edison's New York City and Westchester County service area annually.

According to the Con Edison *2011 Annual Report*, the peak electrical demand for New York City in summer 2010 was 13,189 megawatts (MW). 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 that upgrades high demand zones.

ENERGY INITIATIVES

The New York State Energy Planning Board was created by a 2009 law that calls on the Board to complete a new State Energy Plan on or before March 15, 2013. The State Energy Plan will focus on reliably meeting projected future energy demands, while balancing economic development, climate change, environmental quality, health, safety and welfare, transportation, and consumer energy cost objectives. New York State also has goals to reduce electricity consumption by 15 percent and to provide 30 percent of the electricity used in the state from renewable resources by 2015.

In New York City, one of the nation's first green building laws was adopted in 2005 (Local Law 86). Local Law 86 of 2005 requires new buildings, additions, and substantial building reconstruction work in capital projects that receive city funds to be built in accordance with the rigorous standards of the LEED® green building rating systems developed by the U.S. Green Building Council (USGBC). It also requires that most of this work, as well as larger lighting, boiler, HVAC controls, and plumbing upgrade work, be designed to reduce the use of both energy and potable water well beyond that required by the current NYC building code.

Additionally, in New York City, the Greener, Greater Building Plan program was implemented through local legislation to target energy efficiency in large existing buildings. The program consists of four local laws that require that large buildings annually benchmark their energy performance (Local Law 84 of 2009); that a local energy code be adopted (Local Law 85 of 2009); that every 10 years these buildings conduct an energy audit and retro-commissioning (Local Law 87 of 2009); and that by 2025, the lighting in non-residential spaces be upgraded to meet code and large commercial tenants be provided with sub-meters (Local Law 88 of 2009). Together, these initiatives would help improve energy efficiency and reduce energy consumption.

EXISTING DEMAND

To estimate the existing annual energy consumption for the project site, the following rates (in 1,000 BTU per square foot), provided in Table 15-1 of the *2012 CEQR Technical Manual*, were used:

- **Commercial** (Office, Retail, and Other, including miscellaneous auto uses, a residence, a deli, and a private club): 216.3; and
- **Industrial** (storage, recycling uses, non-retail auto uses, transportation, consumption, distribution and manufacturing): 554.3.

¹ Consolidated Edison Annual Report, 2011.

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As no consumption rate is listed for parking garages in the 2012 *CEQR Technical Manual*, a rate of 27,400 BTU per square foot was used based on 2001 *CEQR Technical Manual* Table 3N-1.

Based on these rates, current annual energy use for the project site is estimated to be approximately 211,633 million BTUs, as shown in **Table 13-1**.

Table 13-1
Existing Annual Energy Consumption
for the Project Site

Existing Use	Square Feet (sf)	Million BTU
Office	69,293	14,988
Industrial	228,214	126,499
Retail	46,230	10,000
Parking Garage	262,019	7,179
Other	244,879	52,967
Total		211,633
Sources: New York City Department of Finance Real Property Assessment Database (RPAD) 2012 and business information provided by the New York City Economic Development Corporation for the floor area by use group.		

E. THE FUTURE WITHOUT THE PROPOSED PROJECT

Without the proposed project, it is conservatively assumed that the uses currently within the project site would remain, although it is possible that within the District, some properties that are currently vacant would be reused and that some limited development could occur. Therefore, in the future without the proposed project, it is assumed that the project site's energy demand would be consistent with existing conditions. The peak summer demand is projected to grow at an annual rate of 0.84 percent until 2021. While projections beyond 2021 are not available at this time, it is likely that the rate of demand growth would continue to increase, as population grows. To some extent, the demand growth would be slowed down by increases in energy efficiency. It is expected that measures will be taken to provide adequate electrical capacity to the New York City metropolitan area through 2032 and beyond. It is also assumed that Con Edison would continue to implement its electrical distribution improvement programs in Queens. In the future, it is expected that the existing trend toward sustainability would lead to greater energy efficiency in the City.

F. PROBABLE IMPACTS OF THE PROPOSED PROJECT

To provide the energy service needed for the RWCDs to the project site, upgrades to electrical and gas transmission lines and additional facilities serving the area would be needed. Within the Special Willets Point District and adjoining streets, gas mains, service lines, and metering would need to be reconstructed as part of the proposed project. Improvements to the local distribution grid would also be required, and coordination with Con Edison is under way to determine the nature and timing of the needed improvements. The District's zoning regulations allow for the provision of a new cogeneration facility and/or substation within that portion of the project site, provided they would primarily serve the District. Such facilities are not currently proposed as part of Phases 1A and 1B but may be included as part of Phase 2. Any such facilities, if proposed or needed at a future time, would require further study and additional approvals. Such

studies would require information on the facility location, size, and design that is not presently available. If proposed as part of Phase 2, these uses would be subject to separate environmental and public review processes.

As described in the 2008 FGEIS, the Willets Point Development Plan had been accepted as a pilot LEED-ND project by USGBC. Phase 1A and 1B are subject to Local Law 86 of 2005 (see New York City Charter section 224.1) and the project sponsor would comply with the requirements thereof. To the extent Local Law 86 of 2005 applies to any portion of Phase 2, the City would further ensure that the sponsor for Phase 2 complies with the requirements thereof. Accordingly, in Phase 1A, the retail buildings, including the proposed development on the Willets West site, will be designed and constructed to achieve LEED silver certification for core and shell (LEED-CS), and the hotel building will be designed and constructed to achieve LEED silver certification for new construction (LEED-NC). In Phases 1B and 2, as set forth in the FGEIS and reiterated in Technical Memorandum #4, all portions of the project within the Willets Point Special District will be required to achieve LEED for Neighborhood Development (LEED-ND) certification. Phase 1B buildings will also comply with all the applicable requirements of Local Law 86 of 2005. Specifically, retail, hotel, community facility and office buildings will be designed and constructed to achieve LEED silver certification pursuant to the LEED rating system that is most appropriate under Local Law 86 (see Section 10-02 of chapter 10 of title 43 of the Rules of the City of New York). The requirements of Local Law 86 of 2005 and the commitments set forth in this chapter would be incorporated into the development agreements and/or amended lease agreements. The provisions of the development agreements and/or amended lease agreements, relating to substance and enforceability of these commitments, would be subject to approval by the Mayor's Office of Environmental Coordination. To meet the requirements of LEED and the energy cost reduction requirements of Local Law 86 of 2005 a number of features that would lead to energy savings would be considered. The following measures would likely be included or considered, on a building-by-building basis: building orientation to minimize energy use; energy efficient building envelope to reduce heating and cooling demand; high efficiency heating, ventilation and air conditioning (HVAC) systems; highly reflecting roofing materials that would reduce air conditioning needs in the summer and help mitigate the urban heat island effect¹; window glazing to optimize daylighting, heat loss and solar heat gain; motion sensors and lighting and climate controls; efficient lighting and elevators, and appliances; efficient, directed exterior lighting; and third party building commissioning to ensure energy performance.

In addition, the proposed school in the District would be built according to the New York City School Construction Authority's *New York City Green Schools Guide*, as revised in May 2009. The *Green Schools Guide* addresses the sustainable design, construction, and operation of new schools, modernizing projects, and school renovations in New York City.

The specific energy-saving and sustainable design measures that would be implemented as part of the development that would occur in Phase 2, or on Lot B, would be defined at the time when the developer for those areas is selected. It is expected that the measures would be similar to

¹ The urban heat island effect refers to the temperature difference between urban areas and surrounding suburban or rural areas. Much of this temperature difference is attributed to the prevalence of dark roofs and dark colored pavement, which absorb more heat than lighter surfaces, as well as the declining presence of vegetation in cities.

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those described above for Phases 1A and 1B. Any future development on Lot B, which is under lease to the Queens Baseball Company (QBC), would require an amendment to the current lease agreement and discretionary approval by the New York City Industrial Development Agency (IDA), acting through the New York City Department of Parks and Recreation (DPR), which administers the IDA lease. This action would be the subject of a separate environmental review process subject to CEQR. Based on the anticipated size of the potential future development on Lot B, it is likely that a determination of consistency with PlaNYC would be required in this separate environmental review process. The demonstration of consistency with PlaNYC would require implementation of sustainable design measures that are likely to be similar to those for the proposed project.

Although the proposed project would implement the sustainable design measures discussed above, for the purposes of a conservative analysis the resulting energy savings were not accounted for in the calculation of energy demand.

ENERGY DEMAND WITH THE PROPOSED PROJECT

The annual energy consumption was projected for each project phase, use type, and location (i.e. Special Willeys Point District, Willeys West, and South Lot/Lot D), as well as for Lot B. The following energy consumption rates (in 1,000 BTU per square foot) from 2012 *CEQR Technical Manual* Table 15-1 were used:

- **Commercial** (Retail, Hotel, Community Facility, Office, Convention Center): 216.3;
- **Institutional** (School): 250.7; and
- **Large Residential** (Residential): 126.7.

For parking uses, as described under “Existing Conditions,” a factor of 27,400 BTU per square foot was used (based on 2001 *CEQR Technical Manual* Table 3N-1). It was assumed that the proposed parking facilities would average 340 sf per parking spot, consistent with the assumption made in the 2008 FGEIS.

As shown in **Table 13-2**, the proposed project’s energy demand in 2032 would be approximately 1,846,461 million BTUs. The energy demand of the RWCDS in 2032 (including the potential development of Lot B) would be approximately 1,952,503 million BTUs. Coordination with the utilities is underway to ensure that the needed infrastructure to supply the projected demand would be in place to serve the development in each project phase.

The improvements in local connections that are necessary to provide energy services to the proposed project would not adversely impact the local system. Therefore, the RWCDS would not have any significant adverse impacts on energy systems. In addition, as described above, the proposed project would include a number of energy conservation measures, which would decrease the overall energy demand presented above.

In summary, this analysis finds that the RWCDS would not result in any significant adverse impacts related to energy that were not addressed in the 2008 FGEIS and subsequent technical memoranda.

Table 13-2
Annual Energy Consumption for RWCDs, by Phase

Use	Project Area	Phase 1A (2018)	Phase 1B (2028)	Phase 2 (2032)	Totals by Use
Retail	SWPD	6,489	189,263	74,624	270,375
	WW	302,820	0	0	302,820
Hotel	SWPD	34,608	50,831	35,690	121,128
Residential	SWPD	0	315,483	425,712	741,195
Parking	SWPD	25,386	24,455	37,264	87,105
	WW	3,726	0	0	3,726
	Lot D/South Lot	9,949	25,386	0	35,336
School	SWPD	0	26,324	31,338	57,661
Community Facility	SWPD	0	5,408	27,038	32,445
Office	SWPD	0	108,150	0	108,150
Convention Center	SWPD	0	0	86,520	86,520
Proposed Project Total	All	382,979	745,298	718,184	1,846,461
Retail	Lot B	0	0	39,907	39,907
Office	Lot B	0	0	60,564	60,564
Parking	Lot B	0	0	5,571	5,571
RWCDS Total¹	All	382,979	745,298	824,226	1,952,503
Notes: All figures above shown in million BTUs. Until completion of Phase 2, some of the existing uses within the District may remain. The energy use for existing businesses during Phase 1A/1B would be lower than the total energy for existing uses shown in Table 13-1 . SWPD = Special Willets Point District WW = Willets West ¹ The RWCDs includes the potential future development on Lot B as analyzed in the 2008 FGEIS.					

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