Chapter 4.9: Energy

4.9.1 INTRODUCTION

This chapter describes the potential for the proposed Project to affect energy consumption in the study area. The energy assessment considers potential impacts on energy sources and transmission of energy. The applicable NEPA guidance requires a discussion of energy resources, which can include issues such as major direct energy use (e.g., energy consumed by vehicles using a proposed facility) and/or indirect energy use (e.g., increase in automobiles due to a new roadway).

The *CEQR Technical Manual* states that detailed assessments of energy impacts should be limited to actions that significantly affect the transmission or generation of energy, or that generate substantial indirect consumption of energy.

4.9.2 EXISTING CONDITIONS

Con Edison provides the electrical power transmission system for the City through a series of area and transmission substations. The electricity is generated by a number of independent power companies as well as Con Edison. 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. Each area substation serves one or more distinct geographic areas, called networks, which are isolated from the rest of the local distribution system (as to localize any potential system malfunctions). Con Edison currently has 35 networks and 25 area substations in Manhattan. Substations are designed to have sufficient capacity for the network to grow. Electrical conduits, including high-voltage transmission lines and low-voltage distribution lines, are aligned beneath the streets of Manhattan.

Annual electric sales total nearly 50 billion kilowatt hours (KWH) of electricity supplied to Con Edison’s delivery area (New York City and Westchester County). This is equivalent to about 170.75 trillion British Thermal Units (BTUs) and does not include the energy content in the natural gas and other energy sources used in New York City. Based on CEQR rates of 77,900 BTUs per square foot per year for office use, current energy use at the Farley Complex is estimated to be 70 billion BTUs per year and 789 million BTUs per year on the Development Transfer Site for all heating, cooling, and electric power. This is a minimal amount of energy when compared with overall energy used in New York City.

In addition to the electrical distribution network serving the City, Con Edison maintains the gas and steam utilities. High-pressure steam is generated in cogeneration and conventional plants, and is distributed through an interconnected piping network (with pipe sizes up to 30 inches in diameter) to approximately 1,800 customers throughout Manhattan for heating, hot water, and air conditioning. Natural gas in the study area for heating and cooking uses is supplied through mains ranging from 4 to 24 inches. Typically, these gas lines are located between 2 to 4 feet below the street.

The Farley Complex is heated by high-pressure steam supplied by Con Edison. Two high-pressure steam connections are currently provided to the building, one from Ninth Avenue and the other from Eighth Avenue. Low-pressure steam is utilized for all air handling heating coils and perimeter heating in the Western Annex. Portions of the Farley Complex are supplied with chilled water from the Morgan Facility Chiller Plant. The Development Transfer site is also heated by high-pressure steam supplied by Con Edison.

4.9.3 NO ACTION ALTERNATIVE

In 2001, New York State began taking measures to address the increasing electricity capacity needs of the metropolitan New York City region. The New York State Independent System Operator (NYISO), as the responsible body for overseeing the safe and reliable operation of the electric transmission system across the State of New York, performs an annual review of the electricity needs for the State and monitors the system supply and distribution capabilities for adequacy to meet projected demand. The NYISO also implemented the Emergency Demand Response and the Day-Ahead Demand Bidding programs to reduce utility electrical power demand during peak load periods. In its 2009 *Reliability Needs Assessment* for the period from 2009 through 2018, the NYISO anticipates that the resources needed to meet the forecast electricity needs of New York will be adequate in 2018.

New York State Governor’s Executive Order No. 111 (EO 111), was introduced in June of 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 (NYSERDA) as the organization responsible for coordinating and assisting agencies and other affected entities with their responsibilities. NYSERDA and other utilities have implemented programs to encourage businesses to reduce energy usage and increase energy efficiency. Under EO 111, the following energy efficiency goals have been established:

- Subject entities must seek to achieve a reduction in energy consumption by all buildings they own, lease, or operate of 35 percent by 2010 relative to 1990 levels.
- New projects implemented by subject entities must achieve at least a 20 percent improvement in energy efficiency performance relative to the levels required by the State’s Energy Conservation Construction Code and major renovations must improve energy efficiency by 10 percent relative to the State Energy Conservation Construction Code Requirements.
- At least 20 percent of the total annual energy use by subject entities is to be generated by wind, solar thermal, photovoltaic, sustainable managed biomass, tidal, geothermal, methane gas and fuel cells.

Executive Order 111 has been renewed several times, most recently by Governor Paterson on March 20, 2008.

The New York State Energy Plan (June 2002, updated March, 2006) sets out the New York State policies and objectives for the next 5 years. The policy objectives of the plan are to support safe, secure, and reliable operation of the energy and transportation systems; to stimulate sustainable economic growth through competitive market development; to increase energy diversity; to promote a cleaner and healthier environment; and to ensure fairness, equity, and consumer protection. These objectives continue the policies developed in earlier energy plans. Therefore, no large-scale changes in energy generation and consumption policies are foreseen.

In the future, Con Edison and other energy providers are expected to continue to deliver energy throughout New York City.

Based on CEQR rates of 77,900 BTUs per square foot per year for office use and 55,800 BTUs per square foot per year for retail use, redevelopment of the Farley Complex in the No Action Alternative would have an estimated energy use of 96.5 billion BTUs per year for all heating, cooling, and electric power. On the Development Transfer Site, it is assumed that the existing uses and its energy use of 789 million BTUs per year would remain in the No Action Alternative.

Therefore, the overall energy consumption at the Farley Complex in the No Action Alternative is expected to increase approximately 38 percent from existing conditions. Redevelopment of the Farley Complex in the No Action Alternative would comply with or exceed the state energy code, as applicable.

As a state entity, MSDC will also need to incorporate into the No Action Alternative, as applicable, the requirements of the State Green Building Construction Act adopted in August 2009, which calls for the NYS Office of General Services (OGS) to issue regulations establishing green construction requirements and procedures for new state-owned buildings and substantial renovations of existing buildings. OSG has not promulgated new regulations as of this EA but future project planning and design would need to stay abreast of new requirements and their potential applicability to the No Action Alternative.

4.9.4 POTENTIAL IMPACTS OF THE PREFERRED ALTERNATIVE

All new structures requiring heating and cooling are subject to the *New York State Energy Conservation Code*, which reflects State and City energy policy. The code was originally promulgated on January 1, 1979, pursuant to Article 11 of the Energy Law of the State of New York and has since been revised several times. Most recently, New York State formally adopted the 2007 version of the New York State Energy Conservation Construction Code (ECCCNYS 2007) on January 1, 2008. All projects permitted after this date, including residential and commercial buildings and buildings regulated by the Residential Code of New York State, must comply with the ECCCNYS 2007. The code governs performance requirements of heating, ventilation, and air conditioning systems, as well as the exterior building envelope. The code requires that new buildings and buildings undergoing substantial renovations (both public and private) 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. ECCCNYS 2007 establishes minimum regulations for energy-efficient buildings using prescriptive and performance-related provisions. It makes possible the use of new materials and innovative techniques that conserve energy.

In compliance with the code, the basic designs would incorporate all required energy conservation measures, including meeting the code's requirements relating to energy efficiency and combined thermal transmittance, and the proposed project would be substantially more energy-efficient than conventional pre-code buildings. Therefore, those actions that would result in new construction, such as the Preferred Alternative, would not result in adverse energy impacts, and do not require a detailed energy assessment. Moreover, in accordance with applicable public policy, the Project may be designed to incorporate additional energy efficiency measures, to the extent practicable.

MOYNIHAN STATION

As part of the proposed Project, the existing 120/208 volt, 3-phase, 4-wire existing electrical services would be removed and a new 265/460 volt, 3-phase, 4-wire service would be provided by Con Edison to serve the new facilities being constructed in the Farley Complex. Although the design for the Project is still evolving, it is envisioned that it would include two “spot networks” each with six transformers and associated network protector compartments. A separate transformer vault would also likely be required to power the emergency ventilation system fans that are proposed to be installed in the train shed under the Farley Complex. Con Edison has been contacted concerning this facet of the Project, and ongoing coordination would be undertaken to ensure that the tie-in to the existing power network will be appropriately designed and sited. (It is expected that the new vault would be located under one of the sidewalks adjacent to the Farley Complex, either on West 31st or 33rd Streets. That determination has not yet been finalized.)

The proposed Moynihan Station and associated transit-related retail would require approximately 28.2 billion BTUs of energy per year, as shown in Table 4.9-1. The consumption would be small compared with the existing energy demands of New York City. Further, this demand is not expected to overburden the energy generation, transmission, and distribution system and would not result in a significant adverse energy impact.

Table 4.9-1
Preferred and No Action Alternatives: Energy Consumption (million BTUs per year)

Use	Preferred Alternative Units/ Size/FA	Energy Consumption Rate (BTUs/sf/year)	Preferred Alternative Annual Energy Consumption	No Action Alternative Annual Energy Consumption
MOYNIHAN STATION				
Train station	300,000	77,900	23,400	–
Transit retail	86,000	55,800	4,800	–
Subtotal Moynihan Station	**386,000**		**28,200**	**0**
NON-STATION DEVELOPMENT				
Farley Complex				
USPS	265,000	77,900	20,600	20,600
Hotel	125,000	145,500	18,200	–
Commercial retail[1]	597,350	55,800	33,300	33,050
Banquet facilities	35,000	113,800	4,000	–
Office	0	77,900	–	42,900
Subtotal Non-Station Development Farley Complex	**390,000**		**76,100**	**96,550**
Development Transfer Site				
Residential	940,000	145,500	136,800	–
Retail	120,000	55,800	7,000	789
Subtotal	**1,060,000**		**143,800**	**789**
Total Non-Station Development			**219,900**	**97,339**
		TOTAL	**248,100**	**97,339**

Note:
[1] Commercial retail square footage includes common areas, docks/service, and office core/lobby square footage.
Energy consumption rates provided in the *CEQR Technical Manual*.

As described above, the Farley Complex is heated by high-pressure steam supplied by Con Edison. The Farley Complex would continue to be heated by high-pressure steam for the

Preferred Alternative. The feasibility of receiving chilled water for the Preferred Alternative from the Morgan Facility Chiller Plant was evaluated and it was determined that the Morgan Facility could not provide the additional chilled water required. Although the proposed mechanical system for the Farley Complex under the Preferred Alternative has not been fully designed at this time, it is expected that a new mechanical facility would be provided for the proposed Project. In connection with the design of the Project, an energy consultant would be retained to undertake a detailed energy efficiency analysis for the Farley Complex to assess the feasibility and best design for seeking to achieve energy reduction goals, including, if applicable, Executive Order 111.

As with the No Action Alternative, MSDC would need to incorporate into the Project, as applicable, the requirements of the State Green Building Construction Act described above. Future project planning and design would need to stay abreast of new requirements and their potential applicability to the Preferred Alternative.

NON-STATION DEVELOPMENT

The non-station development at the Farley Complex would require approximately 76.1 billion BTUs of energy (see Table 4.9-1). Overall, the total energy demand at the Farley Complex, including Moynihan Station, would result in a total energy demand of 104.3 billion BTUs for the Preferred Alternative. This would result in an approximately 8 percent increase in energy demand at the Farley Complex as compared to the No Action Alternative.

The Development Transfer Site would require 143.8 billion BTUs of energy per year for the Preferred Alternative, a substantial increase over the energy demand of 789 million BTUs for the site in the No Action Alternative. The total non-station development for the Preferred Alternative—both the commercial development at the Farley Complex and the mixed-use development at the Development Transfer Site—would require approximately 219.9 billion BTUs of energy per year, as shown in Table 4.9-1. Although the proposed mechanical system for the Development Transfer Site has not been fully designed at this time, it is expected that the new building would be heated by natural gas.

The total demand for the Preferred Alternative would be 248 billion BTUs of energy per year, a substantial increase from the No Action Alternative energy demand of 97,339 million BTUs of energy per year. Con Edison currently supplies energy to the Farley Complex and Development Transfer Site and this demand is not expected to overburden the energy generation, transmission, and distribution system and would not result in a significant adverse energy impact. ✷