8.0 EFFECTS ON THE USE AND CONSERVATION OF ENERGY RESOURCES

Energy consumption will occur during construction and occupancy of the proposed residences and commercial space. During construction, energy will be used to power equipment and construction vehicles. The residences and commercial space will consume energy for space heating, air conditioning, lighting, household appliances and other electrical devices once occupied.

Electricity and gas for the Minisceongo Park development will be provided by Orange and Rockland Utilities from a new underground distribution system that will constructed to distribute electricity to the development. Actual electrical and gas demands may vary considerably based upon the lifestyles and habits of the residential and commercial occupants.

The 219 dwelling units would be inhabited by households that would place demand on various energy sources. In a residential dwelling, energy is consumed for space heating, air-conditioning, water heating, refrigerators, appliances and lighting. According to data published in the 1997 Residential Energy Consumption Survey (Source: U.S. Department of Energy), approximately 123 million BTUs are consumed per household annually in New York State. It is expected that 219 households would consume 26.9 billion BTU[1] of energy annually.

Likewise, the 270,850 square feet of commercial space would consume electricity and gas, and the amount of consumption would depend on the specific tenant that would occupy the space. In a commercial building, energy is consumed for space heating, air-conditioning, water heating, and lighting. Natural gas and electricity are the predominant fuel sources for commercial uses. According to data published in the 1995 Commercial Buildings Energy Consumption Survey (Source: U.S. Department of Energy), retail space consumes approximately 61,700 BTUs per square foot annually. It is expected that 270,850 square feet of commercial space would expend 16.7 billion BTU of energy annually.

Energy conservation is regulated at the state level. The design and plans for residential and commercial buildings must comply with the New York State Energy Conservation Construction Code.

The code specifies basic requirements that are mandatory for all residential buildings. Requirements apply to heating and cooling systems, the hot water system, electrical system, material and equipment specifications and, sealing the building envelope.

The code also specifies basic requirements that are mandatory for commercial buildings. Requirements apply to the building envelope, mechanical systems, and lighting.

With regard to the design of building envelopes, the NYS Energy code requires that:

- insulation R-values and glazing and door U-factors be certified by the National Fenestration Rating Council (NFRC) or by using default values found in tables published in the Code.

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[1] *BTU, or British Thermal Unit, is a unit of heat equal to the amount of heat required to raise one pound of water one degree Fahrenheit at one atmosphere pressure; equivalent to 251.997 calories.*

- vapor retarders be installed in nonvented framed ceiling, wall, and floor areas.
- insulation levels for walls, roofs, and below-grade walls and glazing areas, and U-factors for windows and skylights meet or exceed minimum efficiency levels.
- air leakage be limited through the building envelope.

The NYS Energy Code also requires that water and air cooling and heating mechanical systems and equipment comply with code, and compliance is dependent on the type of mechanicals proposed.

In terms of lighting standards, the NYS Energy Code requires:

- manual or automatic controls or switches that allow occupants to dim lights and turn them on or off when appropriate. The Code identifies control, switching, and wiring requirements that apply to all buildings.
- total connected loads for indoor lighting systems that do not exceed power allowances for a building. The Code demonstrates how to comply with interior-lighting power limits.
- energy-efficient exterior lighting. The Code specifies criteria for complying with exterior-lighting requirements.

The Minisceongo Park project will comply with the requirements of the NYS Energy Conservation Construction Code.