3.10 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 Equestrian Estates development will be provided by Orange and Rockland Utilities from an underground distribution system that will be constructed to distribute electricity to the development. Actual electrical and gas demands may vary considerably based upon the lifestyles and habits of the residential occupants.

The 266 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 by the US Department of Energy, approximately 125 million BTUs are consumed per household annually in New York State. It is expected that 266 households would consume 33.250 billion BTU[1] of energy annually.

Energy conservation is regulated at the state level. The design and plans for residential 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.

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.
- vapor retarders be installed in non-vented 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 mechanical equipment proposed.

[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.*

Based on statistics compiled by the U.S. Energy Information Administration 2009 Residential Energy Consumption Survey (RECS)[2], it is anticipated that, once construction is complete, the project will demand 200,000 kilowatt hours of electricity per month (2.4 MWhrs a year). Based upon a review of billing records from Con Edison, the parent company for Orange and Rockland Utilities, Inc, it is estimated that gas usage for the single family homes would be approximately 10,000 therms annually or 620.000 (62 x 10,000) for the project; and that each multifamily (84 general population plus 118 Seniors) housing unit would use 3,000 therms annually or 606,000 therms for the project (202 x 3,000); resulting in a combined usage of 1,226,000 therms annually for the proposed Equestrian Estates.

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 Equestrian Estates project will exceed the requirements of the NYS Energy Conservation Construction Code through the installation of high efficiency lighting fixtures.

The need for a diversity of housing has been expressed as a stated goal in the Comprehensive Plan for the Village. The proposed Equestrian Estates project would be developed to include market rate multifamily housing, semi-attached townhouses and senior housing apartments. The proposed project, as designed, meets these goals while preserving open space areas of the site.

The preservation of resources and energy sustainability is enhanced through the request for a zone change to allow for a higher density development of the site to meet the Villages' identified need for a diversity of housing.

In an effort to further reduce the energy consumption needs of the proposed project, the following measures incorporated into the project design;

Energy Efficient Building Materials

Green building initiatives as listed below, including the consideration of solar panels and other alternative energy sources, will help to reduce the overall carbon footprint of the project;

The LEED (Leadership in Energy and Environmental Design) program has a varied list of design elements in which credits are applied to achieve various LEED certifications, this includes building material design and energy usage. In an effort to promote energy conservation, LEED program credits will be incorporated into the architectural and site design

[2] U.S. Energy Information Administration 2009 Residential Energy Consumption Survey (RECS) indicates 1,100 kwh per Single family home; 525 kwh per 2 BR Multifamily unit.

where practical; however, full LEED certification is not anticipated at this time. In addition to the building materials specified above, LEED measures that will be included relate to construction techniques, materials selection, and operational practices which reduce environmental impact, energy consumption, natural resource usage, and provide a better quality of life for the occupants and the surrounding community. Examples of the measures included in the project design include;

- Maximize Open Space - The project consists of 20% open space.
- Construction Activity Pollution Prevention – SWPPP - Erosion control measures will be incorporated into the final Storm Water Pollution Prevention Plan (SWPPP).
- Development Density and Community Connectivity - The site satisfies the Community Connectivity requirements for proximity to services and high-density residential development.
- Alternative Transportation - Public Transportation Access - The project site is next to a bus stop and is located within proximity to a commuter rail station.
- Stormwater Design - Quantity Control - The stormwater management plan will reduce peak discharge rates and quantity from the predevelopment rates and quantity for the specified storm events
- Stormwater Design - Quality Control – The project's SWPPP provides for water quality control.
- Exterior Light Pollution Reduction – Areas will be lit as necessary for comfort and safety without resulting in off-site light spillage.
- Use of energy efficient exterior and interior lighting fixtures.
- Use of energy efficient HVAC systems.
- Use of high efficiency double pane windows
- Installation of individual unit energy metering.
- Use of energy efficient insulation in excess of code requirements.
- Installation of individual unit energy metering.
- Water Use Reduction – Low flow fixtures will be used to reduce water usage by 25%.
- Water Efficient Landscaping - Water consumption for irrigation is expected to be reduced by 30% using a combination of rainwater harvesting and/or selective plantings with the final selections to be made at site plan approval.

Pedestrian Access

As shown in Figure 2-2, the project has been designed in a pedestrian friendly manner. There are sidewalks proposed throughout the development and along Red Schoolhouse Road. A pedestrian promenade through the center of the development, provides a pleasant and scenic pedestrian environment to encourage walking. This promenade provides a connection from the multi- family development in the eastern portion of the site, through the Townhouse development, connecting with the senior housing development in the northern portion of the site.

Mass Transit Access

The applicant will seek to coordinate a bus stop location along Red Schoolhouse Road near the main access. Accommodation could also be made in the vicinity of Loescher Lane. The availability of mass transit would enable residents to reduce dependence on private vehicle trips These efforts will be coordinated during the site plan approval process.

Employment Practices

The applicant will employ construction workers and purchase construction materials from local sources. In addition to stimulating the local economy, this practice will save in fuel by reducing the distance workers and materials have to travel to the project site.