

8.0 EFFECTS ON THE USE AND CONSERVATION OF ENERGY RESOURCES

8.1 Proposed Energy Sources and Alternatives

The geothermal heating energy sources are proposed for use at Depot Hill Farm as an alternative to fuel oil and liquefied petroleum gas (LP), both of which would be delivered by a local vendor and stored on site. These fuels are proposed for comfort heating and domestic hot water. Electric power from the local power grid is proposed for electric cooling, lighting, and convenience outlets.

Based on data provided by the New York State Energy Research and Development Authority's (NYSERDA) December 2003 publication "Trends and Patterns", each of the new residences will consume, on average 0.29 MMBtu's per day and 104.4 MMBtu's per year of propane/fuel oil for comfort and potable hot water heating.

The new residences will demand an average of 4 kilowatt-hours of electrical energy each day per year for a total of 35,000 kilowatt-hours consumed annually per house.

Energy consumption is not expected to be greater than the average household currently demands, in fact, on going improvements in energy efficiency in new construction, including increased R-values of walls, roofs and foundation walls, energy efficient windows and high efficiency heating systems and appliances can reduce energy use.

While the above energy consumption breakdown reflects only two primary heating energy sources for this area, alternative energy sources are available. Geothermal heat pump systems use heat from below the earth's surface for water and space heating in the winter months and cooling during the summer months. This is becoming more and more practical as technology advances, the systems become more reliable, and installation costs come down.

Energy consumption will increase as construction and occupancy progresses. Short term/long term energy consumption is based largely upon the rate of construction, which is largely unpredictable as far as short term/long term periods of consumption are concerned.

As discussed in Section 3.8, the maximum increase in the number of vehicular trips associated with this project is the p.m. peak of 160 trips per hour. This increase will result in the increase in consumption of automobile gasoline. However, the location of the subdivision is central to many community destinations and public transportation with direct access to New York State Route 22. Also, the subdivision is within 1-3 miles of shopping centers, schools, churches, doctor's offices, a hospital, a train station, parks, athletic fields and playgrounds. The proximity of the project to the community-at-large is key in minimizing energy (auto gasoline) expended associated with day to day errands and activities.

8.2 Energy Conservation Measures

The new housing units in the project will be constructed in accordance with the current New York State Building Code. This code, adopted by the State in 2002 is mandatory, and includes the State Energy Conservation Code. This code sets the energy conservation requirements for new construction. These requirements include minimum efficiencies for heating and cooling equipment, insulation types and thicknesses for conditioned spaces and/or individual components; walls, floors, slabs, ceilings, and roofs.

Energy Star rated appliances and low-flow plumbing fixtures will be used throughout the homes to reduce power and water consumption as part of the overall Energy Star rating of the homes themselves. Geothermal energy will be used for heat and air conditioning. Although energy efficiency is a critical objective for the project, no formal program such as Energy Star or LEED is proposed to be followed at this time due to the cost burden associated with such programs.

In general, energy expended for heating and cooling can be conserved by reducing the overall glazing percent in each unit and/or by aligning the majority of the windows to the south. This will create a passive solar condition using the windows to draw sunlight in the winter. Extensions over the windows could shield the sun in the summer, reducing heat gain. Other options like thermal storage in radiant heating systems could further increase energy conservation.

Although it is not anticipated that publicly funded mass transit will service the site, the Applicant is proposing to provide a shuttle from the site to the Wassaic train station. This mitigation is proposed primarily to alleviate impacts to parking congestion at the train station, however it has indirect impacts to energy consumption by reducing the number of vehicles traveling and the fuel consumed by the vehicles.