

Executive Summary

This report is intended to analyze the building and plant energy for the University Ridge student housing complex at East Stroudsburg. The building is analyzed using ASHRAE's Standard 90.1-2004 Energy Standard and the LEED-NC Green Building Rating System. These two guides analyze the energy use and compliance for green and sustainable buildings. This report also looks at the impact of mechanical space which results in a loss of rentable space and the mechanical system first cost. Moreover, an energy and design load estimates were calculated using Trace 700 which is a readily used design and analysis program used by designers. Energy consumption and cost data using utility rates associated with the mechanical system were also determined using this program.

The degree of University Ridge's compliance for energy efficient design was demonstrated using ASHRAE Standard 90.1. This guide is the latest update and most acceptable design standard for energy efficient design. The buildings envelope, HVAC system, service water heating, and lighting were all analyzed to determine its degree of compliance.

The LEED Green Building Rating System was used to measure its degree of sustainability and environmentally friendliness. The system consists of 6 categories in which points can be earned towards a certification. For the intents and purposes of this report, only the topics concerning mechanical systems were analyzed.

The mechanical spaces comprise only 2% of lost rentable space of the buildings gross square footage. The first cost of the mechanical systems came in at \$3.4 million dollars or about 21.6% of the buildings total cost.

TRANE TRACE 700 was used to calculate the design load for the spaces using design conditions from the design documents. From these design calculations, energy and utility cost information was obtained. Utility rates were based on an actual utility bill from June of 2006.