

## Executive Summary

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The following report contains proposed alternatives and a final proposed redesign to the mechanical system for University Ridge at East Stroudsburg University. University Ridge is a 140,000 ft<sup>2</sup> apartment complex which is going to be analyzed and redesigned for a semester long thesis project. Preliminary ideas for redesign were thought about during several technical reports which analyzed different aspects of the building. An issue with the building is that there are individual heating and cooling systems for each apartment unit. Therefore, it was thought to centralize these units in one place and supply district services. After investigation in this report, it was determined that a combined heat and power cogeneration system would be the best solution for the above situation.

The combined heat and power system will provide the heating and cooling needed to condition occupied spaces and heat domestic water. Cooling will be accomplished by the use of an absorption chiller using waste heat from power production. The chiller will also be linked to an ice storage system to level loads on the chiller. Heating of hot water will also use this waste heat to heat spaces and domestic water.

This report also contains the justification for the proposed work. Also, it contains the integration and coordination issues associated with the proposed changes. Initial tools and methods which will be used to determine data and results are also briefly discussed. Finally a tentative schedule of tasks and research for next semester is provided.