Executive Summary

The purpose of this report is to propose a redesign of the mechanical system used in The Waverly on Lake Eola. The building is a 317,000 square foot luxury condominium high-rise in Orlando, Florida. Work on redesigning the system will take place throughout the spring semester as my fifth-year design project.

The current system was analyzed in previous technical assignments and some of the information from these reports can be found in the following proposal. After researching the existing system, a variety of alternative solutions were looked at. These solutions included renewable energy technologies such as a surface water heat pump system, and use of photovoltaic cells. The idea of combined heat and power as a way to save energy costs not only on heating, but also on electricity was researched as well. These ideas were found to be unsatisfactory for The Waverly based on location and monetary constraints.

Over the course of the next semester I will propose a design using a desiccant wheel with heat recovery. The original design will be tweaked so that the desiccant wheel could be added with minimal first cost to the developer. The Waverly on Lake Eola had serious potential to be designed with LEED certification in mind. During the redesign process aspects of the building that could have been made to meet LEED standards will be analyzed, and interpreted. The redesigned Waverly will be able to gain LEED certification, however the costs of this process must be analyzed during the next semester in order to study the feasibility.

Improvements that can be made on The Waverly's other systems are important. During the redesign process possible improvements to the original construction process with relation to LEED certification and cost analysis will be researched. Since the desiccant wheel will require extra mechanical room space on the roof of the 19th floor, the structural stability must be analyzed to determine cost and feasibility issues involved with additional rooftop mechanical facilities.