

## **1.0 Executive Summary**

Part I of this report utilizes building simulation software, Trane TRACE, to estimate the loads of The M Resort for one calendar year. The design documents were utilized to obtain the necessary information required by TRACE to run the simulation. In some instances information was not available and estimations were used such as in the case of the schedules.

The results of the load analysis fell within a marginal percentage of those values found in the design documents. In a majority of cases the Trace model yielded results that were conservative as compared to the design data. The model was tweaked and re run several times however there are still areas in which more detail could be added with knowledge from the design team as to correct occupancy and equipment use.

The second portion of this report focuses on the energy analysis of the M Resort. The Trace model developed in part one was again used to attain the needed yearly energy use requirements of the building. Energy costs were found through the Nevada Power Company and the Southwest Gas Corporation.

An important observation that was made during the energy analysis had to do with the demand charge for the electricity. During the peak summer hours the electrical demand charge per kW is \$8.47 compared to about \$0.50 for the non summer period of the year. This increases costs significantly and is an issue that needs to be addressed in the future. It is also important to note how very sensitive the model is to change. Small changes in the schedules and other loads can have big impacts on the bottom dollar.

The overall cooling cost per square foot was found to be \$9.86, which seems high, therefore a more detailed look at the model must be completed although there are climatic concerns as well as the demand charge that affect this value.