

DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM
ENERGY STAR BENCHMARKING AND LABELING PROGRAM

CASE STUDY

WAIKIKI PARC HOTEL



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CREDITS

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INTRODUCTION

The purpose of this case study is to provide information on the ENERGY STAR Technical assistance program as well as feature a facility that has installed a new and efficient air conditioning system and the impact that has on the energy performance rating of a building in Hawaii.

BACKGROUND

The State of Hawaii Department of Business, Economic Development and Tourist (DBEDT), with support from the U.S. Department of Energy developed a technical assistance program to assist facility owners and operators with ENERGY STAR benchmarking and labeling of buildings in Hawaii. The Chong Group, LLC was contracted by DBEDT to provide direct technical assistance to personnel at facilities throughout the State from 6/30/2010 to 4/30/2012.

At the beginning of the program, a participation form was developed to gather information from the facilities that volunteered to participate in the program and accept the technical assistance that was being offered. The following information was requested on the participation form, as they were deemed to have the most significant impact affecting a facility's probability of being eligible for the ENERGY STAR Label.

- Has your facility previously earned the ENERGY STAR Building Label?
- Has your air conditioning system been upgraded in the past 7 years?
- Has your lighting system been upgraded in the past 7 years?
- Has your water heating system been upgraded in the past 5 years?
- Have your guestrooms been upgraded in the past 5 years?
- Has your Lobby been upgraded in the past 5 years?
- Do you meter all of the energy sources (electricity, gas, diesel, etc) to your facility?

CASE STUDY SUBJECT FACILITY

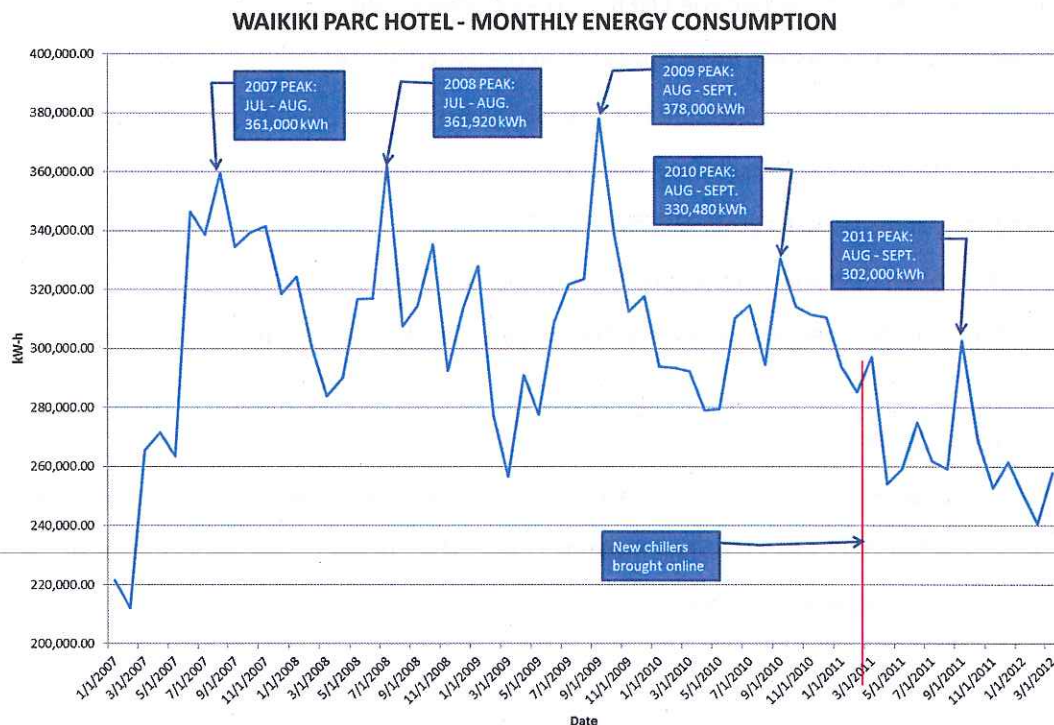
The personnel at the Waikiki Parc Hotel chose to participate in the ENERGY STAR Technical assistance program and earned the 2012 ENERGY STAR Building Label. The energy performance rating of the facility was a 79 at the time of their application.

The Hotel is approximately 20 years old and recently (in March 2011) upgraded the chiller plant by replacing equipment that was installed during the original building construction. The replaced equipment included two 155 ton chillers, chilled water pumps, cooling towers, and condenser water pumps (Appendix C). Energy efficiency measures employed in the upgrade work included high efficiency frictionless chillers and variable speed drives. The upgraded system was brought on-line in March 2011.

Energy and Cost Reduction

Prior to the chiller plant upgrades, the Waikiki Parc Hotel consumed approximately 3.6 million kW-h per year with an annual electricity cost of \$754,000 for and average cost of 21 cents per kW-h. Their consumption typically reaches a high point of 360,000 kW-h for the month of August and a low point of 280,000 kW-h for the month of March. A full year after the upgraded chiller plant was brought on line, the consumption in the month of August was reduced to 302,000 kW-h and the consumption in the month of March was reduced to 240,000 kW-h (See Graph 1). The annual reduction in electricity consumption was 480,240 kW-h while the average cost of electricity rose nearly 40% to 28 cents per kW-h. Based on this data, the hotel avoided approximately \$135,000 in annual electricity costs.

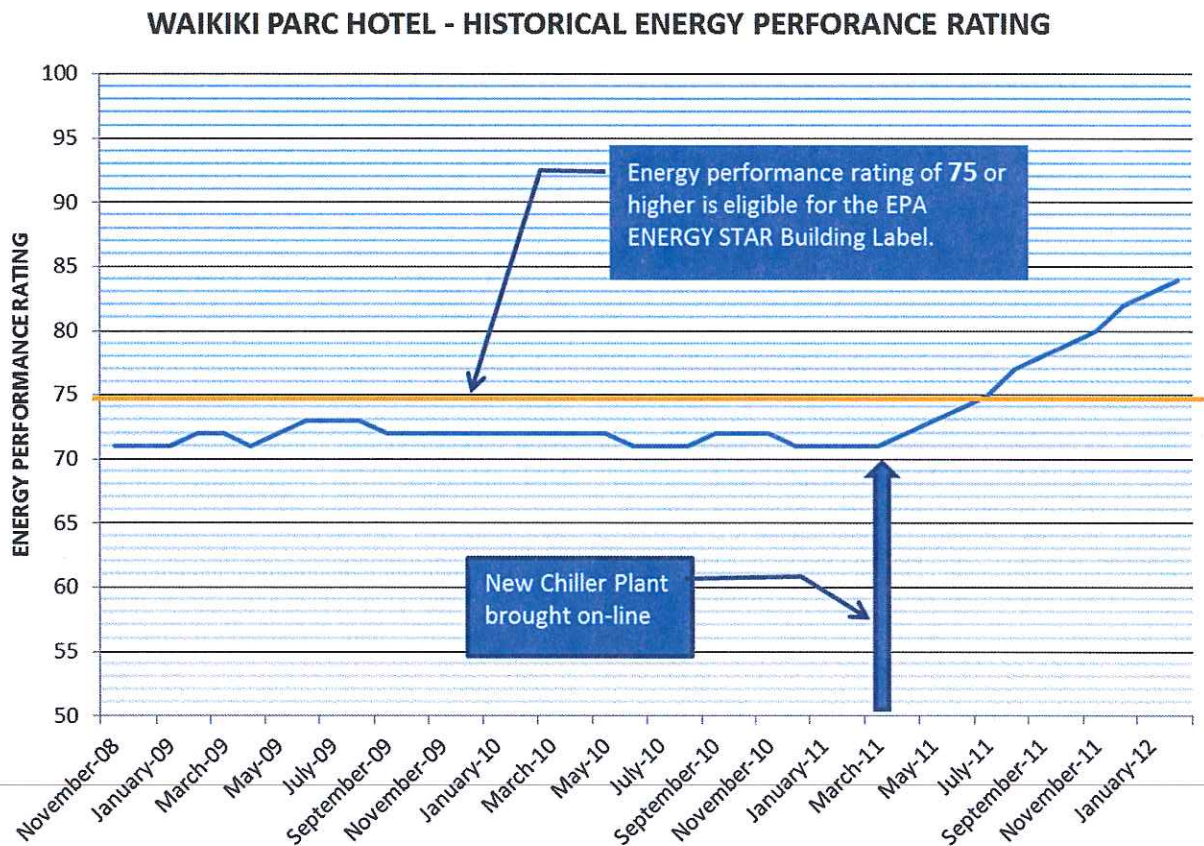
GRAPH 1



Energy Performance Rating

The Waikiki Parc Hotel had a fairly steady energy performance rating of 72 (based on a scale of 1-100) prior to the chiller plant upgrades. The EPA's energy performance rating is a monthly rating based on a facility's 12 prior months of energy consumption. An energy performance rating of 75 or higher is required for a facility to be eligible for the ENERGY STAR Building Label. Four months after the upgraded chiller plant was brought on line, the hotel reached an energy performance rating of 75 and it steadily increased to a current rating of 84 (See Graph 2).

GRAPH 2



CONCLUSION

This study shows that having a new and efficient air conditioning system can positively impact the energy performance rating of a building in Hawaii. After the upgraded chiller plant at the Waikiki Parc Hotel was brought on-line, the facility's energy performance steadily increased from a rating of 72 to a current rating of 84. This also allowed the facility to become eligible for the ENERGY STAR Building Label. As indicated in the facility's participation form, there are additional energy conservation measures that the hotel has yet to implement (i.e. full lighting upgrade and water heating system upgrades) which should further improve the energy performance rating of the facility.