



RETROCOMMISSIONING CASE STUDY: SAN DIEGO MARRIOTT HOTEL & MARINA

OVERVIEW

Marriott International, a hospitality company with locations worldwide, sought ways to reduce energy consumption and minimize the environmental impacts of operations at its 1.4 million square foot San Diego Marriott Hotel & Marina in San Diego, California. The 1,362 room hotel is a full-service resort-style property that includes meeting space, multiple restaurants, and a marina. The Marriott Hotel & Marina's engineers suspected that there were opportunities to reduce energy use and increase hotel profitability, as well as improve guest comfort. For these reasons, Marriott's management decided to participate in a Retrocommissioning Program (RCx Program) administered by the local utility through a contract awarded to Portland Energy Conservation, Inc. (PECI).

The RCx Program supported Marriott in attaining energy and cost savings by providing the Marriott Hotel & Marina with:

- An in-depth RCx investigation to identify savings opportunities
- Implementation assistance
- Documentation and training for building staff on implemented measures
- Ongoing performance tracking of measures to ensure persistence

Marriott's participation in the RCx Program resulted in an 8.4% reduction in energy use at the Marriott Hotel & Marina with an expected annual cost savings of \$272,500. In addition, another 10.6% reduction in energy use, or \$346,000 in potential savings, has been identified for future implementation at the property.

INVESTIGATION & IMPLEMENTATION

FINDING THE SAVINGS OPPORTUNITIES

Through an in-depth analysis of the building operations, the retrocommissioning provider, PECO, worked closely with building staff and found that several operational improvements to the chillers, pumps, and air distribution system could bring dramatic savings and improve plant capacity by:

- Eliminating unnecessary simultaneous heating and cooling
- Reducing supply fan speed through terminal unit programming improvements
- Re-enabling the demand-controlled ventilation system in the parking garage
- Eliminating unnecessary pumping energy for the landscape water features
- Installing variable frequency drives on evaporator pumps and condenser pumps
- Modifying control sequences for pumping systems

Retrocommissioning

A systematic process for improving an existing building's performance by identifying and implementing relatively low-cost operational and maintenance improvements.



Photo courtesy of Marriott International

:: QUICK FACTS

Building: San Diego Marriott Hotel & Marina

Location: San Diego, CA

Year(s) built: 1984 and 1987 (South Tower)

Size: 1.4 million sq. ft.

Scope of retrocommissioning project: Chilled and heating water systems, air distribution systems, domestic water systems, landscape water features

Project timeline: 2004-2006

QUANTIFIED COSTS AND SAVINGS TO-DATE

Annual kWh savings: 1,470,000 kWh

Annual therm savings: 88,000 therms

Total cost savings: \$272,500

Total project cost: \$391,716

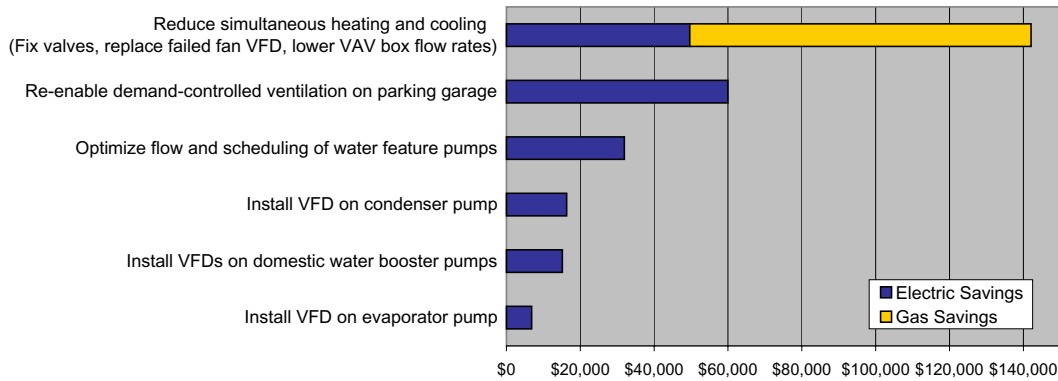
Total program incentive: \$196,412

Net owner cost: \$195,304

Simple payback: < 1 year

PROJECT BENEFITS

- Chilled water capacity improvements
- Reduced chiller runtime and resulting increase in equipment life
- More efficient operations
- Documented operation and maintenance procedures
- Hands-on training for O&M staff



Recommended measures for retrocommissioning and their associated cost savings.

Energy savings reflect anticipated project savings based on implemented measures.

IMPLEMENTING ENERGY SAVINGS MEASURES

Energy-saving measures identified during the investigation were implemented largely by Marriott staff, while assistance and measure verification was carried out by PEI. To implement one measure, the building's staff were thigh-deep in mud, digging out blockages in water feature pipes to improve the efficiency of the fountain pumps – truly going above and beyond the call of duty while helping save over \$17,000 in annual electric costs due to excessive pumping.

Throughout implementation, the Marriott Hotel & Marina submitted regular progress reports to PEI and received implementation assistance to complete each energy-saving measure. Following implementation, performance tracking activities were established to help ensure retrocommissioning activities result in persistence of benefits and savings over time.

“At the San Diego Marriott Hotel & Marina, retrocommissioning has helped us save almost \$300,000 a year in energy costs. Just as importantly, the retrocommissioning process gave our building staff a better understanding of the buildings’ systems operations and how to operate them more efficiently.”

E.J. Hiltz, Regional Director of Energy

The Marriott Hotel & Marina’s building staff’s dedication to retro-commissioning efforts has not only improved the operation of the property, it has given the staff the opportunity to identify problems that might have been missed during construction or initial equipment installation. Retrocommissioning will also help the staff identify problems that may develop throughout the hotel property’s life. The Marriott Hotel & Marina RCx project has been a huge success for the hotel, resulting in significant energy savings and increased hotel guest comfort, as well as earning it a 2006 San Diego Excellence in Energy award for its commitment to energy efficiency.

:: FOR MORE INFORMATION

The Retrocommissioning Services & Incentives Program is now available to help Pacific Gas & Electric Company (PG&E) commercial customers retrocommission their facilities. Through the Program, experienced engineers work closely with building owners and their staff to find cost-effective ways to optimize their building’s performance, lower energy bills, and improve occupant comfort.

Visit the program website at www.RCx-Program.com to learn how retrocommissioning can help you improve your bottom line, what to expect as a participant in the Program, and how the program incentives are structured and paid. Please contact us with any questions or to obtain a program application.

Retrocommissioning Services & Incentives Program
 (866) 513-1875
RCx-Program@peci.org
www.rcx-program.com

:: PROJECT PARTNERS

Building Manager:
 Marriott International
 Contact: E.J. Hiltz
www.marriott.com

Building Owner:
 Host Hotel and Resorts
www.hosthotels.com

Retrocommissioning Providers:
 PEI
 Contact: Hannah Friedman
www.peci.org

Facility Dynamics Engineering
 Contact: David Sellers
www.facilitydynamics.com

Incentives are provided on a first-come, first-served basis until allocated funds are depleted. This Program may be modified or terminated without notice. Actual energy savings and incentives will vary with each project, including but not limited to the actual measures or equipment installed, building construction, customer operation, age of existing equipment, and location. California customers are not obligated to purchase any full fee service or other services not funded by this Program. This Program is funded by California utility ratepayers under the auspices of the California Public Utilities Commission (CPUC). Los Consumidores de California no están obligados a comprar servicios completos o adicionales que no estén cubiertos bajo este programa. Este programa está financiado por los usuarios de servicios públicos en California bajo la jurisdicción de la Comisión de Servicios Públicos de California (CPUC).