



# Sheraton Chicago Hotel & Towers Cityfront Center Detailed Energy Study

Chicago, Illinois



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The Sheraton Chicago Hotel & Towers Cityfront Center, owned by Tishman Hotel Corporation and operated by Starwood Hotels and Resorts Worldwide, is a 1.2 million square foot hotel and conference facility located in the heart of Chicago. The hotel includes 1,209 guest rooms and suites, conference and meeting room facilities, exhibition space, promenade reception space, a business center, a health club, retail stores, offices, multiple kitchens and dining/restaurant facilities, and a central laundry facility.

A dramatic utility rate increase and change in the utility rate structure caused the hotel's utility bills to skyrocket from \$2.4 million a year to an estimated \$3.8 million a year. In response, Architectural Energy Corporation was hired by Tishman to perform a detailed energy study of the hotel, including short-term diagnostic monitoring, energy modeling, and economic analysis of energy conservation measures, in an effort to mitigate this large operating cost increase.

The detailed energy study identified a number of energy saving opportunities, with an estimated total annual cost savings of \$1.2 million, representing a 32 percent reduction in annual energy costs. The implementation cost estimate for these measures is estimated at \$1.9 million, resulting in a simple payback period of 1.6 years.

## Project Information: Sheraton Chicago Hotel & Towers Cityfront Center

Project Type Hotel and Conference Center

Client Tishman Hotel Corporation  
New York City, New York

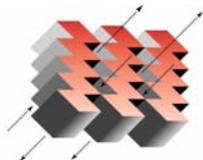
*Energy Engineering Consultant:*  
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Boulder, Colorado

Size 1.2 million ft<sup>2</sup>

Location Chicago, Illinois

Project Highlights Walk-through audit performed, including as-built document review, as well as interviews with facility operations personnel. Data logging equipment installed and short-term monitoring and diagnostic testing performed. DOE-2 energy simulation model developed, calibrated to historical utility data, and energy conservation measures analyzed. Measures evaluated and recommended included the following:

- Correcting the outside air fractions and air-side economizer operation.
- Correcting the supply air temperature control and heating element operation.
- New central DDC system with optimized control strategies.
- Networked guest room DDC controls.
- VFDs and controls on the supply and return fans using a duct static pressure reset strategy.
- Replacing electric heating elements with steam heating coils.
- Replacing existing chillers with high-efficiency chillers, including addition of one pony chiller.
- Addition of a plate and frame heat exchanger for waterside economizing.
- Replacing existing domestic hot water boilers with high-efficiency condensing boilers.
- Replacing existing pool boiler with a high-efficiency boiler.
- VFDs and controls on the exhaust fans.
- Heat recovery on the exhaust system.
- Incorporating central lighting control for the public spaces.
- Retrofitting the lighting fixtures in the garage.
- Retrofitting the lighting fixtures in the guestrooms.



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