

# Turning green into gold

Shining a light on hospital sustainability and energy savings

By B. Alan Whitson

**E**ars perk up when sustainability and energy efficiency become the topic of conversation in the healthcare industry. Yet, if one brings up the subject of energy-efficient lighting with a typical hospital administrator, the most common response is, "We operate 24/7, so there isn't much opportunity for savings."

It's precisely because hospitals operate 24/7 that they have a tremendous opportunity to reduce energy use, save money and be environmentally responsible. Let's demonstrate this by applying some commonly used metrics to an item you'll find in every type of medical facility — the ubiquitous 4-foot fluorescent lamp.

The decision to purchase a fluorescent lamp is often driven by the initial price of the lamp. Table 1 compares two T-8 fluorescent lamps. Both are brand-name products, one is a generic lamp and sells for \$2.26. The other is a low mercury lamp of much higher quality with nearly twice the lamp life with a price of \$5. Given that the initial light output of both lamps is almost identical, it is rare that a purchasing manager would select the \$5 lamp over the \$2.26 lamp. Yet, if the total cost of ownership of these two lamps is examined, the



TABLE 1

	Generic T8 Lamp	High-Performance T8 Lamp
Watts	34	25
Mercury mg	6.0	1.7
CRI	75	85
Avg. Lamp Life Hours	24,000	46,000
Initial Lumens	2,700	2,600
Design Lumens	2,320	2,330
Lumen Maintenance	86%	97%
Lumens per Watt	68.2	93.2
Price	\$2.26	\$5.00

\$5 lamp is a far better choice from the standpoint of energy, costs and environmental impact.

The total cost of ownership analysis is based on 1,000 lamps, 24/7 operation. A 10-year time horizon, and the lamps are replaced at 75-percent of rated-life. Labor and recycling costs are \$2 per lamp. Additional assumptions include: energy costs of 10 cents per kWh, 2.5-percent annual inflation rate and a 5 percent discount rate. The two lamps were compared on metrics in three categories:

- Energy
- Operating costs
- Environmental performance

TABLE 2

	Generic T8 Lamp	High-Performance T8 Lamp	Reduction	Percentage
Lamps – Total Used	5,000	3,000	2,000	40%
TCO 10 Years	\$357,691	\$268,632	\$89,059	25%
TCO Present Value	\$283,155	\$213,853	\$69,302	25%
Energy – kWh	2,978,400	2,190,000	788,400	27%
CO2 – tons	2,383	1,752	631	27%
Mercury – mg	22,000	5,100	16,900	77%

TCO — Total Cost of Ownership



## In brief



The high-performance lamp uses 27 percent less energy than the generic lamp. See Table 2. From the standpoint of cost, the high-performance lamp is so efficient that it recoups its initial cost premium of \$2.74 and provided an additional \$6.93 present value benefit per lamp. This means if the hospital purchased generic lamp at \$2.26, it would need to put \$6.93 per lamp in a bank account earning 5-percent annual interest to cover the additional costs for energy, lamps, labor costs and recycling during the 10-year analysis period.

The environmental performance of the high-performance lamp is also quite striking. Over the 10-year analysis period, 40 percent fewer lamps will be needed. This translates into less resources being consumed to produce and ship the lamps. While all fluorescent lamps require mercury to operate and should be recycled, the lower level of mercury in the high-performance lamps will permanently remove 16,900 milligrams of mercury from the manufacturing cycle — a reduction of 77 percent.

Overall, energy use is reduced 788,000 kWh, with a cost savings of \$69,302 present value. The hospital would need to add \$1,732,550 in revenue, assuming a 4 percent total margin, to equal the financial impact of buying the high-performance, sustainable fluorescent lamp over the generic lamp. ■

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### Report: Water efficiency will be next green building hot topic

Over the next five years, water efficiency and conservation will become critical factors in green design, construction and product selection, according to McGraw-Hill Construction's latest SmartMarket Report, *Water Use in Buildings*, recently released with support from The Chicago Faucet Company and Sloan Valve Company. Architecture and engineering firms, contractors and owners report that water efficiency is rapidly becoming a higher priority than other aspects of green building, such as energy efficiency and waste reduction.

According to the United Nations Environmental Program, buildings consume 20 percent of the world's available water, a resource that becomes scarcer each year. Efficient practices and products, such as gray water treatment and low-flow plumbing fixtures, provide significant opportunities for the industry to respond to this trend and build high-tech, low-water-demand projects that will turn the tide on the water crisis and create the conscientious buildings of tomorrow.

### Sustainable hospice on tap for Chicagoland

When the new Pepper Family Hospice Home and Center for Care in Barrington, Ill., opens in spring 2010, patients and their families will experience comfort through healing gardens and natural daylight. As one of the region's first free-standing hospice homes and centers for care, the facility will have the capacity to care for acute and complicated patients whose symptoms are no longer manageable at home.

The 47,000-square foot facility is one of the first green hospices in the country and bases its landscape design on strategies that are proved to reduce pain, stress and depression. The facility was designed to achieve LEED-Silver certification from the United States Green Building Council and followed portions of the Green Guide for Healthcare, a sustainable building tool kit specifically for the healthcare sector.

The Pepper Family Hospice Home and Center for Care broke ground in April. Harley Ellis Devereaux and Hospice Design Resources partnered to provide architectural services, and Harley Ellis Devereaux also provided interior architecture, landscape architecture and sustainable consulting services. Pepper Construction is the general contractor, and Hospice of Northeastern Illinois is the owner of the \$18 million project.

### ASHRAE introduces prototype of new building energy label

The American Society of Heating, Refrigerating, and Air-Conditioning Engineers is moving one step closer to introducing its building energy labeling program with release of a prototype label at its 2009 annual conference in Louisville, Ky. The Building Energy Quotient program, which will be known as Building EQ, will include both asset and operational ratings for all building types, except residential. ASHRAE is working with major real estate developers to implement the label prototype this fall with a widespread launch of the full program in 2010.

"As the United States looks to reduce its energy use, information is the critical first step in making the necessary choices and changes," said Bill Harrison, ASHRAE president. "With labeling mandatory in Europe and disclosure of a building's energy performance becoming required by several states, now is the time to introduce a label that can serve as a model for mandatory programs. ASHRAE's introduction of its prototype labeling program couldn't be better-timed." For more information, visit <http://buildingEQ.com/>.

### GBCI begins testing for new LEED credentials

In late May, the Green Building Certification Institute began testing candidates who wish to pursue the new LEED Green Associate credential or the new LEED Accredited Professional Operations and Maintenance credential.

The LEED Green Associate credential is intended for individuals seeking to propel their professional journey into the green building industry. It represents the demonstrable knowledge and skills needed in the allied professions and non-technical fields of practice related to green design, construction and operations. It also is the first step for professionals if they later choose to become a LEED-AP.

The LEED-AP O+M credential recognizes the advanced knowledge in sustainable operations and specialized expertise in best management practices required for greening existing buildings.

Attaining the LEED-AP O+M credential is a two-part process requiring a candidate to pass the LEED Green Associate exam as part one to demonstrate general knowledge and then pass a second operations and maintenance specialty exam.

The GBCI also recently announced that more than 100,000 professionals have attained the LEED-AP credential.