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<http://www.facilitiesnet.com/lighting/article/Forprofit-and-Government-Hospitals-Can-Earn-Tax-Deductions-for-New-Construction-and-Renovations--11563>



## For-profit and Government Hospitals Can Earn Tax Deductions for New Construction and Renovations

By Charles Goulding, Jacob Goldman and Malcolm Thomas

The recent debate on the U.S. health care system has focused a lot of attention on the high cost of hospital care in this country. Rarely mentioned in those discussions is the fact that energy costs are one of the larger controllable costs for hospitals. It is estimated that U.S. hospitals spend more than \$6.5 billion annually on energy costs, which is equal to about 15 percent of hospital profits.

As a result of their 24/7 operation, patient comfort and other needs, hospitals use about 2.5 times the amount of energy as similarly sized commercial buildings. Recognizing this huge opportunity in the hospital energy cost area, the U.S. Department of Energy (DOE) recently announced the Hospital Energy Alliance to help drive energy efficiency in hospitals.

As a group, hospitals are well behind other building categories in addressing energy reduction. Upgrading lighting is one of the easiest major energy reduction opportunities for hospitals to act on. A hospital facility manager considering a lighting or other energy upgrade is well-advised to be aware of the possibility of a federal tax deduction for energy improvements that meet targets specified in the Energy Policy Act of 2005 (EPAct).

For-profit hospitals are eligible for tax deductions of up to 60 cents per square foot under the Energy Policy Act (Section 179(D) of the Internal Revenue Code) for energy efficient lighting. Government hospitals — Veterans Administration hospitals, as well as state, county and city hospitals — cannot take the tax deductions themselves, but can pass along Section 179(D) tax deductions for the architects, engineers, lighting designers, and design and build electricians that design qualifying energy efficient lighting.

Deductions are available for new construction as well as upgrade projects.



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EPAAct deductions are based on reductions of energy use below levels spelled out in ASHRAE 90.1, 2001. For a reduction in lighting power density of 25 percent below the requirements of ASHRAE 90.1, 2001, a facility is eligible for a deduction of 30 cents per square foot for the space where the upgrade took place. As the reduction in lighting power density increases, the deduction also rises, reaching a maximum of 60 cents per square foot for a 40 percent reduction in lighting power density.

Facilities must also meet two other EPAAct requirements to qualify for the lighting tax deduction:

- Facilities must provide minimum IESNA light levels.
- Facilities must have bi-level switching in all spaces. That means a facility must provide at least two levels of light, in addition to off, in all areas surrounded by floor-to-ceiling walls.

EPAAct deductions of up to 60 cents per square foot are also available for both the HVAC system and the building envelope. Obtaining those deductions requires modeling with a program approved by the Internal Revenue Service. The deductions for lighting can often be obtained without modeling, using a prescriptive method based on watts per square foot. For lighting, modeling can also be used to show a 16.67 percent reduction in energy costs compared to costs associated with ASHRAE 90.1, 2001. For lighting controls, modeling is required to obtain EPAAct tax deductions.

Modeling is less an obstacle to EPAAct deductions than in the past. One reason is that the number of modeling programs approved by the Internal Revenue Service has grown. Another factor is the popularity of the LEED green building rating system, which also requires modeling. A third factor is that modeling capabilities are becoming more widespread as a new generation of architects, engineers and designers enters the workforce.

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**OPPORTUNITIES FOR TAX SAVINGS:  
SPACES IN A HYPOTHETICAL HOSPITAL**

Space Type	Square Feet	Base Lighting Deduction	Maximum Lighting Deduction
Exam Rooms	171,000	\$51,300	\$102,600
Data Center	100,000	30,000	60,000
Kitchen/Dining	56,000	16,800	33,600
Lobby/Corridor	14,000	4,200	8,400
Mechanical	175,000	52,500	105,000
Offices	23,000	6,900	13,800
Operating	87,000	26,100	52,200
Patient Rooms	112,000	33,600	67,200
Storage	118,000	35,700	71,400

Spaces that reduce lighting power intensity to 25 percent below targets in ASHRAE 90.1, 2001, may qualify for a federal tax deduction of 30 cents per square foot under EPAAct. If lighting power intensity reaches 40 percent below ASHRAE 90.1, 2001, the facility qualifies for the maximum deduction of 60 cents per square foot. (On government hospital projects, the EPAAct deductions go to designers of the systems.)

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http://www.facilitiesnet.com/lighting/article/Lighting-and-HVAC-Considerations-per-Hospital-Space-Type--11564

## Lighting and HVAC Considerations per Hospital Space Type

By Charles Goulding, Jacob Goldman and Malcolm Thomas

A hospital has a range of very specialized rooms, and there are specialized lighting and HVAC considerations for each type of space.

**Patient Rooms.** Lighting for patient rooms should be designed to meet patient and caregiver needs. Patient needs include non-glare lighting with a patient reading light at the end of the bed. The patient should be able to control the lighting, including integrated window-shading and daylighting systems. Caregivers need examination lighting at the torso level for patient evaluation.

LED (light emitting diode) lighting has an extremely long product life, often at the 50,000 hour level — substantially longer than older lighting technologies. This makes LED lighting an ideal application for hospitals because of the inconvenience and disruption involved in replacing lamps in hospital spaces such as patient rooms and operating rooms. LED lighting is also mercury-free which is important to health care facilities.

Studies have demonstrated that patient room LED lighting can help both nursing staff and patients. The Lighting Research Center at Rensselaer Polytechnic Institute conducted an experimental study at the Schuyler Ridge Residential center, a 120-resident skilled residential nursing facility in Clifton Park, New York. The LRC team installed energy-efficient LEDs to determine whether an energy-efficient solution could "improve the comfort and care of seniors, assist the nursing staff in their nightly rounds, and help residents navigate hallways." The LRC team concluded that "an automated, non-disturbing lighting scheme could be designed to help patients get in and out of bed at night, as well as give nurses enough light for their rounds. Hallways could be distinguished through the uses of colored lighting, which theoretically would serve as a navigation guide for residents and visitors."

For patient rooms, HVAC systems should insulate the patient from direct air flow and existing air should

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repeatedly be replaced with clean air based on building code or higher per-hour air-change requirements.

**Operating Rooms.** Lighting is literally life critical in operating rooms, and operating room lighting is experiencing rapid technological change. Today's operating rooms are equipment-intensive, so quality, reliability, long life, heat reduction, energy consumption, and physical size are important lighting characteristics.

Many hospitals are experimenting with high-end LED systems that have longer life, use less energy and operate at lower temperatures. As with many health technologies, there are choices between very high-end, high-cost products and value-oriented choices. Large-budget teaching hospitals attempting to attract the best physicians may opt for a new expensive state-of-the-art LED operating room system. By contrast, a community hospital on a tight budget may be able to refurbish an existing lighting system and satisfy most of its lighting needs.

A major hospital LED lighting beta test was conducted in 2008 at Florida Hospital, a part of the Adventist Health System in central Florida. The Adventist Health System sees more Medicare patients than any system in the country, so operating cost reduction is crucial to this organization. The intense LED lighting was particularly helpful to surgeons who had to operate in deep cavities. The lighting was modular and very easily plugged in and out of the base, which was useful in the operating room setting.

**Parking Garages.** Many hospitals have large adjoining parking garages that can save substantial energy costs and generate large tax deductions by upgrading to energy efficient fixtures. In Notice 2008-40 issued March 7, 2008, the IRS announced that parking garages are a property class that is specifically entitled to use the EPAct tax deductions. Also, parking garages are excluded from the tax bi-level switching requirement. LED parking garage lighting is one of the fastest growing LED lighting categories.

**Hospital Support Spaces.** Hospitals often have large kitchen, storage, and laundry (so called back-of-the house) spaces that have historically used T12 fluorescent lighting. This lighting is so energy inefficient compared to today's lighting products that it is illegal to manufacture or sell standard T12 lamps in the United States as of Jan. 1, 2010. Although 34 Watt T12 lamps are still available, hospitals should consider replacing T12 lighting systems to save both energy and maintenance costs. Upgrades from T12 systems often bring substantial energy savings and are often good candidates for EPAct deductions.



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http://www.facilitiesnet.com/lighting/article/Evaluate-New-Construction-Renovations-with-EAct-in-Mind--11565



## Evaluate New Construction, Renovations with EAct in Mind

By Charles Goulding, Jacob Goldman and Malcolm Thomas

There is a great deal of health care construction going on today or being planned for the future. Those projects may present opportunities to earn EAct tax deductions. But to maximize those opportunities, facility managers should take a hard look at planned capital expenditures to identify opportunities to achieve deductions.

While lighting deductions are easiest to obtain, facility managers should keep in mind HVAC projects may also qualify and therefore should evaluate plans with EAct in mind. Lighting project planning should include planned HVAC work as well.

For example, virtually all hospital interior and parking garage LED lighting installations will meet the 40 percent wattage reduction as compared to ASHRAE 90.1, 2001 that is necessary for the full EAct lighting tax deduction of 60 cents per square foot. What's more, having low wattage LED lighting in hospitals makes it more probable that energy efficient HVAC will qualify for the HVAC EAct tax deduction. A hospital of less than 150,000 square feet that installs LED lighting and a high efficiency chiller or energy recovery ventilation unit will likely qualify for the combined lighting and HVAC EAct tax deduction of \$1.20 per square foot and may well qualify for the maximum \$1.80 per square foot deduction.

Chiller right-sizing is a perfect interface for tax savings, since the optimal way to right-size and select a chiller is to model a building using building energy simulation software. The HVAC EAct tax deduction also requires building energy simulation modeling in IRS-approved software.

Air handling equipment — including heat recovery ventilation, energy recovery ventilation and demand recovery ventilation — are all good techniques to improve air quality, reduce energy costs, and help generate EAct tax deductions. Hospitals are also excellent candidates for special purpose HVAC measures that can greatly reduce

energy costs and qualify for EAct tax deductions. Such measures include thermal storage and geothermal. For commercial purchasers of geothermal systems, there is a 10 percent credit or 10 percent grant under Internal Revenue Code Section 48.

With the major national initiatives to automate patient medical records, hospital data centers have become the focus of attention. Hospital information technology has evolved from support functions to core operations including real time data transmission to operating rooms, digital imaging and electronic prescription processing in the digital pharmacy.

Basic paradigms are being revisited, such as redefining how cool a data center really has to be and targeting the need for cooling at the actual heat generation source rather than the entire facility. Because of the immense energy needs, some rebate providers, such as NYSERDA in New York, are creating enhanced rebate programs to support data center energy reduction measures.

Facility managers considering lighting projects should also be aware that some large lighting manufacturers also have major health care divisions within their respective companies that focus primarily on products for the health care sector. Facility managers may be able to benefit from the national account cross selling and financing available from these sellers of lighting products.

The overall mandate to reduce medical costs, along with U.S. federal government sponsored initiatives to reduce hospital energy costs, means that hospital energy management is getting a lot of attention. Advances in energy efficient technology, combined with EAct tax deductions, represent an important opportunity for many hospital facility managers.

#### **BOM**

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