

Energy Efficiency – for Environmental Responsibility, Comfort & Cost Savings

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A healthcare facility may achieve a reputation for innovation in patient care and medical procedures. But declining reimbursements, uncertainty of revenues and cash flows, limited access to capital, and skyrocketing energy costs can threaten a facility's ability to operate on the leading edge of technology – be it medical technology or comfort systems.

In addition to the demand for lighting, heating, ventilation and cooling 24-hours a day, healthcare facilities consume an enormous amount of energy to accommodate other applications -- including clinical equipment, sterilization, laundry, and food preparation. The healthcare industry ranks second only to the food service industry with respect to intensity of energy usage (kBtus consumed per square foot per year), according to the Office of Building Technology, State and Community Programs, Office of Energy Efficiency and Renewable Energy, U.S. Department of Energy (DOE).

Healthcare organizations spend over \$6.5 billion on energy each year, according to the DOE, Energy Information Administration. Saving money on energy costs enables healthcare organizations to redirect those dollars elsewhere – to focus on improving patient care, pursuing medical advancements, or helping make the difference between a year-end profit or loss.

Impacts & Challenges

When it comes to the development of a safe, comfortable, affordable and energy efficient healing environment, the healthcare industry is confronted with a myriad of challenges.

Heating, ventilation and air conditioning (HVAC) systems comprise approximately 45 percent of a typical healthcare facility's energy use, according to the Consortium for Energy Efficiency, Inc. This consumption pattern is often driven by 24-hour operating schedules, aging infrastructure, increased technology use and stringent air circulation requirements with rates that often double or triple those of other commercial buildings.

Investing in facility infrastructure and building systems is often postponed due to clinical or IT capital related expenditures. Facility managers are forced to use a "band-aid" approach to make their systems operate. Facility managers are aware of the amount of energy that is lost due to inefficient buildings and equipment but are unable to correct this problem due to limited capital.

Alternative programs are available that can help overcome these challenges with capital. Unless financing alternatives such as energy saving performance contracts are secured, incorporating energy efficient technologies may require an upfront capital commitment. Additionally, operational investments often compete for capital with critically important medical equipment. In order for infrastructure improvements to meet the hospital's financial criteria, the full life cycle savings of the project must be expressed on a pro forma basis to financial officers.

Updating Existing Facilities

The typical healthcare facility is designed for long term use – often more than 50 years. Updating aging infrastructure is critical to the long-term success of many facilities. Strategies include:

- **Retrofit and Renovate.** Before doing a complete system overhaul, work with a reputable facility solutions firm to assess, upgrade and enhance facility infrastructure and building

systems. Consider the benefits of new systems technology like automated, web-based building controls that help regulate energy consumption. System efficiency is best achieved when better design theory is complemented by modern technology.

- **Performance Contracting.** Performance contracting is often the best route to address specific facility infrastructure and operating problems in existing buildings. Under such agreements, healthcare organizations can partner with suppliers to implement self-funding solutions, manage the project, monitor results and guarantee savings with no up-front capital expenditures. Compensation is tied to performance results including long-term energy reductions and operating savings. A self-funded facility renewal program such as this enables facilities to reduce energy consumption, lower operating costs, and implement system upgrades and improvements while allowing facility owners to reallocate capital resources to other core business needs.
- **Preventive Maintenance.** Facility managers should benchmark facility performance and make routine comparisons to identify challenges that need to be addressed. Understanding system performance before something goes wrong will help protect a facility's investment and ensure that its system is as energy efficient as possible. Consider maintenance contracts with seasonal tune-ups for all major HVAC systems to ensure high levels of reliability, longer service life and improved efficiency.

Planning for New Construction

The DOE's Commercial Building Energy Consumption Survey concluded that the energy intensity of U.S. buildings varies by 200 to 400 percent despite the year of construction. Thus, a new building won't automatically be more energy efficient than one constructed 30 years ago.

But buying efficient HVAC equipment is only part of the equation for saving energy. Facility managers need to address such additional considerations as system:

- **Design.** Consulting engineers should utilize design tools for energy efficiency to counter increasing energy costs. Rather than defaulting to a lowest common denominator specification, facility managers must understand the impact of total system integration and optimization.
- **Installation.** Proper installation, integration, sizing and maintenance of building systems significantly improve operating efficiency. According to the Consortium on Energy Efficiency, Inc., this can save up to 50 percent of energy consumption. The American Institute of Architects (AIA) Guidelines for Design and Construction of Healthcare Facilities (2001) formalize this thinking in their requirements for commissioning of new healthcare facilities.
- **Control.** Controls have evolved. Rather than relying on the pneumatic controls of 40 years ago, embrace digital controls. The latest and greatest technology can significantly reduce energy consumption.
- **Maintenance.** Preventive maintenance equals savings. Maintenance programs targeting energy performance can save five percent to 20 percent on energy bills without a significant capital investment.

Solutions Yield Benefits

To achieve optimal efficiency and reap the overall business benefits of the investment, facility managers should incorporate the appropriate blend of facility solutions.

An integrated comfort system combines HVAC equipment, controls, service, and comprehensive turnkey solutions commissioned with applications expertise to comprise the most comfortable, reliable, energy efficient solution.

Energy savings are a great way to cut costs without eliminating services or staff. By incorporating energy efficient measures, facilities can improve their bottom line.

Consider the following industry metric extracted from the ENERGY STAR For Healthcare website: "Every dollar a nonprofit healthcare organization saves on energy is equivalent to generating new revenues of \$20 for hospitals or \$10 for medical offices. For-profit hospitals, medical offices, and nursing homes can boost earnings per share by a penny by reducing energy costs just 5 percent."

Because facility systems comprise a large part of building operating costs, increased energy efficiency may deliver significant advantages including:

- A new source of capital to fund additional facility expansion, improve aging infrastructure and purchase clinical equipment
- Improved operating margin to provide better access to capital
- Reduced environmental impact

These benefits not only affect the profitability of a healthcare organization, but ultimately enhance its reputation as a responsible, progressive part of the community that strives to improve the health and recovery rate of patients at any cost.

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