

## Hospitals Realize Greatest Savings Through Formal Energy Management Program

While hospitals can save energy costs by undertaking independent energy-efficiency measures, savings are greatest when activities are part of an energy management program. This fact sheet has been developed by the U.S. Department of Energy's Hospital Energy Alliance to help building owners and operators develop a comprehensive program for managing energy use.

High-performance facilities coordinate energy-efficiency technologies and practices across every major building system. Hospitals can proactively manage energy with an energy management program (EMP)—achieving both financial and environmental goals.

Exemplary buildings generally are the creation of an integrated building design team. Once construction is completed and occupancy of the new space begins, responsibility shifts to the EMP team. This multidisciplinary group includes



The energy management program team develops and implements each element of a hospital's energy management program and verifies all high-performance goals are being met. Members assess occupant satisfaction, fine-tune the integration of energy-efficiency actions, and target new opportunities for peak energy and cost savings.

medical personnel and representatives from across the hospital spectrum. The team has primary accountability for the long-term success of all energy-efficiency planning and implementation.

An EMP optimizes energy performance through a process for benchmarking, agreeing on conservation goals, developing action plans, and tracking program results. A successful program can help maximize profits—or minimize costs—enhance competitive advantage, and provide a basis to budget for future energy-efficiency and renewable energy improvements.

### Successful Programs Start at the Top

A successful EMP requires commitment from hospital senior management. Allocation of funding and staff—and the ability to cut across organizational boundaries—is integral to a strong program. Demonstrating commitment involves the following key elements.

- **Appointing a Program Director**

The director acts as a liaison between senior management and all stakeholders. This role can be a full-time position or taken on in addition to other responsibilities, depending on the size of the organization. While not necessarily a technical expert, the director must understand the relationship between energy management and the hospital's bottom line.

- **Creating a Team**

The director creates and leads an EMP team composed of medical personnel

### Information Is Powerful

**Information generated through an EMP can be used for the following purposes:**

- Redirecting savings from reduced utility costs to medical needs.
- Providing predictive maintenance indicators (frequently reducing equipment downtime).
- Reducing exposure to energy cost volatility.
- Budgeting for future energy-efficiency and renewable energy improvements.
- Promoting an energy-efficiency mindset among stakeholders.

and representatives from all parts of the hospital, including finance, maintenance and facilities, purchasing, quality assurance, government relations, and clinical operations. In new buildings, many may have served on the integrated building design team. In large organizations, the team may include dedicated staff. In addition to overseeing the technical aspects of the program, the team also guides training, communications, and recognition related to the program.

#### • Establishing an Energy Policy

The director oversees the development of an energy policy, which formalizes the program and communicates high-level support to all stakeholders. This provides a solid base for seeking widespread buy-in, which is essential to the program's ongoing success. The policy should establish clear, measurable objectives (such as a certain percentage reduction in energy use intensity per year), as well as accountability and authority for achieving goals.

### Developing a Strong Program

A comprehensive EMP should be based on management systems concepts—planning, organizing, implementing, and controlling. All plans should align with

the hospital's mission and incorporate all ongoing energy projects into a single implementation plan. The nine-step model below and the details that follow provide an overview of hospital energy management. As illustrated, an EMP is an ongoing, cyclical process. Once improvements have been identified and implemented, regular monitoring confirms performance and leads into the next cycle of goal-setting and further improvements.

#### 1. Establishing Baseline

**Consumption**—Involves gathering and documenting at least two years of historic data on energy consumption, if possible. Initial information may be collected from monthly invoices or by contacting utilities. This will be used to compare the hospital's energy performance to that of other similar facilities.

#### 2. Performing an Energy Audit—

Focuses on identifying individual and bundled opportunities to improve energy efficiency, lower costs, and apply renewable technologies. It may involve reviews of processes, technology, and design, as well as surveys, pilot projects, and walk-throughs.

#### 3. Identifying Upgrades and Improvements—Reviews the broad list of potential improvements

with an eye to combining individual opportunities into upgrade projects. Implementation strategies are identified in this step, including how to apply resources, maximize returns, and make the case to upper management.

#### 4. Performing Financial Analysis—

Involves cost/benefit analyses of individual and bundled opportunities and financing options, with input from the financial department. This step helps to validate—or call into question—the proposed activities and resources required. It is wise for this step to include other considerations, such as life-cycle costs and impacts on patient health and greenhouse gas emissions.

#### 5. Prioritizing Activities—Evaluates

projects chosen and determines the order of implementation. Priority can be based on a number of factors, including financial impact, emissions reductions, or need for infrastructure renewal. Includes development of a detailed action plan.

#### 6. Implementing Activities—Ensures

that projects are accomplished and upgrades are completed according to plan and specifications. Work can be done using internal expertise or through outside services.

#### 7. Confirming Performance—Involves

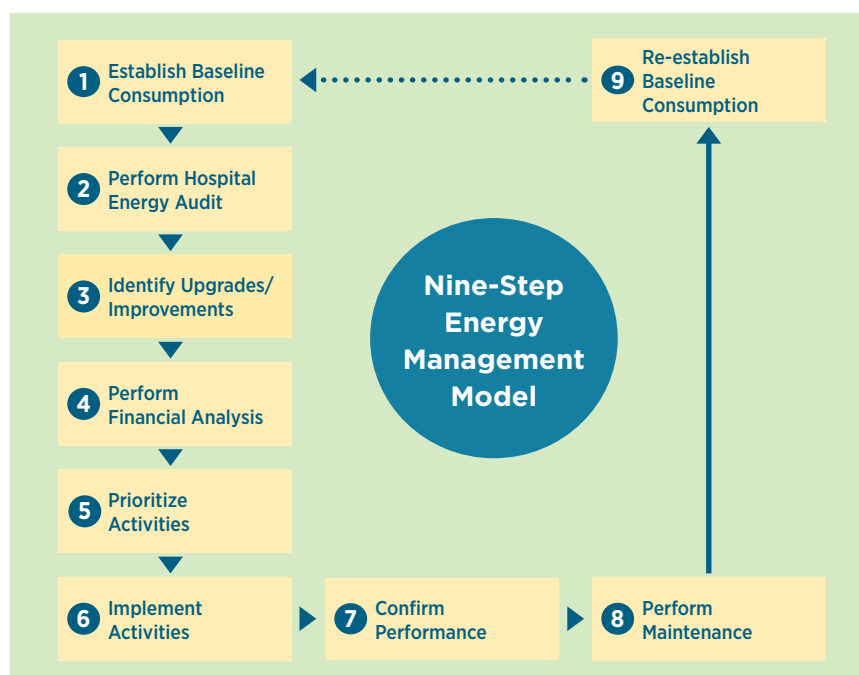
review and evaluation of the projects to determine if the established goals were achieved. Performance evaluation should be done immediately upon completion, and validation should be performed on an ongoing basis for at least one full operational cycle.

#### 8. Performing Necessary

**Maintenance**—Ensures operators understand new maintenance methods and requirements and integrate them into ongoing operations.

#### 9. Re-establishing Baseline

**Consumption**—Analyzes changes in the energy consumption patterns that result from implementing projects. Ongoing tracking of existing and new energy-usage data will guide adjustments to previous baseline parameters.







### Case Study

## University of Pittsburgh Medical Center

Pittsburgh • 2008

The University of Pittsburgh Medical Center (UPMC) is one of the country's leading nonprofit healthcare systems, representing 13 million square feet, with 20 hospitals, 400 outpatient sites, and a mix of rehabilitation, retirement, and long-term-care facilities—as well as insurance and academic partners. In 2008, with annual energy costs approaching \$100 million, UPMC began a major effort to reduce energy consumption. Collaborating with the U.S. Department of Energy, UPMC piloted an energy management training program for hospitals and developed a comprehensive energy management program. Efficiencies instituted by the program throughout 2009 led directly to the establishment of a Corporate Energy Department in 2010. Today, the efficiency project pipeline has more than 50 projects under evaluation, 10 under construction, and a \$4 million annual budget solely to address energy conservation goals.

### Details

- Installed a computer program that is helping UPMC to monitor power settings for 30,000 PCs across its network, setting them to a sleep mode at night.
- Re-tuning boilers twice a year.
- Recommissioning and retrocommissioning operating room air handlers.
- Consolidating lamp inventories, almost halving them for new facilities.
- Purchased a new burner analyzer.
- Uses a centralized bill-paying system that gathers energy data and continuously measures efficiency improvements.

### Benefits

- Reduced its system's total energy use by 3 percent using 2008 as the base year. UPMC's corporate goal is to reduce the system's energy use by 20 percent by 2015.
- Expecting savings of more than \$500,000 a year as a result of cutting 50 percent of the power used by PCs. This translates to a savings of 6,250,000 kWh yearly.
- A hospital in the system is saving about \$2 million annually on its gas bill as a result of a \$2,000 annual investment in re-tuning its boilers.

### Keys to Success

- Establish an independent budget that funds energy conservation and facility management projects across the entire health system.
- Engage support at the top of the organization.

### Hospital Energy Alliance

HEA is a forum in which healthcare leaders work together with DOE, its national laboratories, and national building organizations to accelerate market adoption of advanced energy strategies and technologies.

### A Strong Energy Portfolio for a Strong America

Energy efficiency and clean, renewable energy will mean a stronger economy, a cleaner environment, and greater energy independence for America. Working with a wide array of state, community, industry, and university partners, the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy invests in a diverse portfolio of energy technologies.

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