# ENERGY Energy Efficiency & BUILDING TECHNOLOGIES PROGRAM

## Hospitals Save Costs With Water Efficiency

Hospitals are reducing waterutility costs by finding ways to decrease consumption throughout their facilities. In some cases, measures that conserve water also can reduce energy costs.

Healthcare systems are among a community's largest consumers of water. Consumption, however, varies greatly: Water use per capita ranges from 40 gallons per day to 350 gallons per day, depending on such factors as geographical location; services provided; size, age, and type of buildings; and water-use equipment and practices. A study of seven Massachusetts facilities found the potential for a reduction of almost 20 percent.<sup>1</sup>

This fact sheet has been developed by the U.S. Department of Energy's Hospital Energy Alliance to assist hospital owners and operators in using effective, water-efficient technologies and practices to reduce water consumption and water-related energy consumption.

Limiting water consumption provides hospitals with savings related to water supply and sewer costs. Some measures also can save energy costs, such as those that reduce the need for hot water. Water conservation also reduces the energy needed off-site to transport and

Water-savings measures need not be expensive or complex to be effective.

Massachusetts Water
Resources Authority



Hospitals are realizing water-utility costs savings by reducing water consumption. In some cases, water-efficiency measures also reduce energy costs. Savings generally result from a combination of behavioral and technological solutions.

process water and enables hospitals to be proactive stewards of their community's natural resources. Water conservation, of course, is particularly important in drier climates.

## **Getting Started**

Hospitals attempting to conserve water generally benefit most by establishing a comprehensive water management program. Such a program is especially effective when it involves the participation of the local utility and a wide variety of stakeholders, both inside and outside of the hospital. Decisionmakers must be particularly sensitive to issues of infection control and the potential for contamination of potable water supplies. For information on planning a water management program, visit www1.eere.energy.gov/femp/ program/waterefficiency\_bmp1.html.

Early in the process, hospitals must determine how much water is being consumed and the major areas of consumption. This helps to ensure that

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improvements are made where the likelihood of payback is greatest. It is best to track water and energy usage together to see how they relate to one another and to integrate decision-making. For an example of how this can be done, visit www.energystar.gov/index. cfm?c=business.bus water.

## Six Areas of Savings

In the Massachusetts study, sanitary water was by far the largest category of hospital water consumption, followed by water for the heating, ventilation, and air-conditioning (HVAC) system, medical processes, food service, laundry service, and miscellaneous purposes (see chart above).

In any water management program, before considering the replacement of costly equipment, attention should be paid to the small behavioral adjustments and operations and maintenance fixes that can result in major savings.

Older buildings typically squander a tremendous amount of sanitary water. For example, one leaking toilet alone can waste more than 50 gallons of water every day; one dripping faucet or showerhead can waste up to 1,000 gallons per week.<sup>2</sup>

Hospitals can realize significant savings by upgrading toilet, shower, and faucet technologies. A complete list of waterefficient Environmental Protection Agency WaterSense® program-labeled products can be found at www.epa.gov/ WaterSense/products/index.html.

The HVAC system represents the primary area where potential water and energy savings intersect:

- Consuming less hot water reduces the energy needed to heat water in boilers.
- Reducing the cooling load on a system with a cooling tower decreases the need for heat rejection. This, in turn, can reduce water consumption.
- Optimizing the controls for a chilled water plant can save both water and energy.

For specific guidance on ways in which to save water consumed by the HVAC system, visit www.energystar.gov/index. cfm?c=healthcare.ashe\_sept\_oct\_2005.

Background information and suggestions related to water consumption in kitchens, laundries, and medical processes also are available at the location cited above.

Miscellaneous hospital activities that use water include cleaning and maintaining

the building and vehicles, as well as maintaining the grounds. Even small changes can pay off in significant water reduction.

For an extensive compilation of watersaving measures throughout buildings and grounds, see Federal Water Efficiency Best Management Practices at www1.eere.energy.gov/femp/program/ waterefficiency\_bmp1.html.

## Get Staff Involved



Successful water conservation programs empower staff to do their part in conserving water. Some means of raising awareness and encouraging water savings include:

- Directing staff to identify water consumption related to their jobs.
- Soliciting ideas for water conservation measures.
- Publicizing hospital water conservation policies.
- Conducting water-efficiency workshops and discussions.
- Posting instructional signs in areas where water is used.
- Creating a website and printed materials dedicated to water management.

<sup>2.</sup> Water Conservation Checklist: Hospitals/Medical Facilities. North Carolina Department of Environment and Natural Resources Division of Pollution Prevention and Environmental Assistance. August 2002. www.p2pays.org/ref/23/22006.pdf.

## Case Study



## Aspirus Wausau Hospital Wausau, Wisconsin • 2009

Aspirus Wausau Hospital is a 665,000-square-foot, 321-bed regional general medical and surgical hospital serving North Central Wisconsin and the Upper Peninsula of Michigan. It specializes in cardiovascular care and is recognized for providing distinguished treatment for cancer, trauma, women's health, and spine and neurological health.

The newly constructed, Leadership in Energy and Environmental Design® (LEED) Gold, 9,200-square-foot Aspirus Women's Health Birthing Center/Newborn ICU—which opened in August 2009—incorporates many environmental features that enhance the care of newborns. In the new construction, the hospital focused on strategies and technologies intended to significantly limit water usage.

## Details

- New construction was completely financed by the hospital's annual construction budget.
- The unit is metered separately from the rest of the hospital.
- The hospital installed low-flow toilets, which discharge a third of a gallon less water per flush than their conventional counterparts.
- Low-flow kitchen sinks, which flow at a rate of 0.9 gallons of water per minute less than traditional sinks, were installed.
- Low-flow showers were incorporated.
- ENERGY STAR<sup>®</sup>-rated equipment was chosen for 90 percent of appliances.

## **Benefits**

- The hospital's total water sewage is expected to be reduced from 265,000 gallons to 185,000 gallons annually.
- The annual water sewage waste is expected to be lowered to levels 30 percent below code.

#### **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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