

**OR design & construction**

## ORs go green for staff, planet benefits

**O**R managers who participate in the design of new or renovated OR suites have an opportunity to promote a healthy environment. But can hospitals afford to “go green”? What are the implications for staff and patients?

The good news is that hospitals are finding that being environmentally conscious not only bolsters staff and patient satisfaction but also can pay off financially. OR managers are collaborating with architects on sustainable design and tapping staff for ideas about simple, effective ways of “going green.”

### Rewards of sustainable design

Sustainable design meets the needs of the current user while being aware of the needs of future generations. “It’s balancing environmental responsibility with social justice and community issues,” says an architect, Kristi Ennis, AIA, LEED AP, sustainable design director for Boulder Associates, Inc, Boulder, Colorado. Ennis specializes in developing “green” buildings and has worked on several hospital projects. She was the lead architect when Boulder Community Foothills Hospital (BCFH), Boulder, Colorado, was built. BCFH was the first hospital to receive Leadership in Energy and Environmental Design (LEED) designation.



Ennis dispels a common myth, saying, “Sustainable is not automatically more expensive. Many initiatives pay back in a reasonable time frame, from 2 months to 2 years.” Water-saving fixtures normally don’t cost much more than standard fixtures, she notes, and recycling can be implemented relatively easily. Choosing Energy Star appliances, which meet strict energy efficiency criteria, also brings quick returns.

Some changes are more difficult to quantify. Selecting wood-based products without urea formaldehyde binders avoids the release of low levels of carcinogenic gas into the air but increases costs about 20%, although the percentage varies considerably per region.

Hospitals should decide the number of years they will accept to recoup the costs of environmental choices and give the information to the design team upfront.

“Remember that these buildings aren’t being sold, so you have time to get your money back,” says Ennis. BCFH chose 12 years as the cut-off point.

Be sure to document your choices during the project to head off future problems. “You have to look at the project holistically,” says Ennis. Someone may change the glass in the windowpanes to save money, but then the heating/cooling system isn’t adequate, creating higher costs. Because heating/cooling systems are good ways to save money, it’s important to pick these carefully. Your organization’s engineering team can help.



*Boulder Community Foothills Hospital, Boulder, Colorado, emphasizes sustainability. The hospital is flooded with natural light, which saves on utilities and provides respite for patients and staff.*

Support for decisions to improve sustainability must come from the top level. The board of directors of Boulder Community Hospital adopted "Principles of environmental and recycling efforts," which included such bold statements as, "We eliminate emissions of toxic or dangerous substance into air, water, or earth," and "We seek, evaluate, and implement methodologies that limit the use of nonrenewable resources."

### Starting off green

OR managers who are part of planning for a new hospital and OR suite have many energy-efficient options, says Karen Weylandt, RN, BSN, MHA, regional director for design and construction for Providence Health & Services in Oregon. She lists several sustainable initiatives used when Providence Newberg Hospital in Newberg, Oregon, was built in 2006. The hospital uses 100% outside air without recirculation. "We reclaim the energy from the exhaust air to preheat or precool the hospital," Weylandt says. "It's also effective for infection control."

The hospital also upsized its backup generators and placed them in Portland General Electric's (PGE) "Dispatchable Generation" program. In exchange for limited access to the generators use for peak load sharing, the PGE program benefited the hospital by upgrading the connection to the grid. PGE is also obligated for all fuel, maintenance, and repair costs for the length of the contract. "This provides Providence Newberg a substantial upgrade in electrical reliability," Weylandt says. Weylandt also recommends investigating "green power" such as wind and geothermal, noting, "these are relatively inexpensive," though they are not available in many areas.

Other strategies include furniture with finishes from recyclable products, low-flush toilets, individually climate-controlled ORs, and occupancy sensors in support areas of the OR so lights are on only when someone is in the room.

When upgrading or building a new OR room, Ennis recommends choosing "green" designated flooring, nontoxic paints, and furniture that is low maintenance to reduce the need for excessive cleaning materials.

### Everyone can go green

Even if you aren't involved in a new or redesigned OR suite, you can improve sustainability by starting a recycling program.

"The number one key to a sustainable OR is having recycling bins in each OR room," says Julie Moyle, RN, MSN, surgery manager, BCFH. "You have to make it convenient for the staff."

She says unused packaging materials account for 40% of clean waste. "The sterility that's required in the OR creates twice the amount of packaging as other areas of the hospital. That's a big opportunity," Moyles notes. Only clean packaging materials that have not had patient contact are collected, and the bins are emptied each night.

Moyle acknowledges the need for upfront work, including purchasing the bins, educating staff, and selecting vendors, but says the payback is worthwhile on several levels, including reducing costs, landfill, and incineration, which can release toxins.

How can OR managers and staff fit a recycling program into their already hectic days? Moyle advises to start small and involve staff in the planning.

"Once you take that first step, you'll find so many people want to support the ini-



*Recycling is a way of life for the ORs at Foothills Hospital. Each OR has recycling bins.*

tiative that it will take off." Sterile processing, the postanesthesia care unit, environmental services, the purchasing department, and the OR can collaborate to set up a program. Finding a staff member who can champion the program is essential for success.

Once started, it takes little effort to keep the program going. "It's self-perpetuating," says Moyle. "You get an instant feel-good every time you put something in the recycle bin."

### **The people side**

Going green can benefit both patients and staff, says Roger Ulrich, PhD, professor of architecture at Texas A & M University, College Station, Texas, and faculty fellow with the university's Center for Health Systems and Design. Hospitals are creating outside and inside gardens accessible to visitors and staff. Research has shown that gardens can reduce stress even with short exposure.

Ulrich also says, "I'd like to see more ORs with big windows." He would likely appreciate the OR suite at Saint Joseph Mercy Hospital in Ann Arbor, Michigan. Windows line the OR's outside corridor, and natural light enters ORs through clerestory windows. (See "A year in a new OR, happy with the result" in the February 2008 *OR Manager*.) One benefit of effective lighting may be to help prevent mistakes such as medication errors.

### **Contributing to sustainability**

OR managers have a responsibility to improve sustainability on 2 levels. On a micro level, AORN's guidance statement for environmental responsibility says perioperative nurses should "serve as a steward of the environment" and "actively promote and participate in resource conservation." On a macro level, part of a hospital's mission is to improve health; incorporating sustainability contributes to meeting that mission.

"We have the responsibility to protect the health of our patients and community and to protect the environment," says Moyle. "It's just caring for our patients on a much larger scale." ❖

—Cynthia Saver, RN, MS

*Cynthia Saver is a freelance writer in Columbia, Maryland.*

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## **References**

AORN position statement: Environmental responsibility. *2007 Standards, Recommended Practices, and Guidelines*. AORN: Denver, CO: 2007.

Ulrich R, Quan X, Zimring C, et al. *Role of the Physical Environment in the Hospital of the 21st Century: A Once-in-a-Lifetime Opportunity*. Center for Health Design, September 2004. [www.healthdesign.org/research/reports/physical\\_enviro.php](http://www.healthdesign.org/research/reports/physical_enviro.php).

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## **Green resources**

### **Green Guide for Health Care (GGHC)**

[www.gghc.org](http://www.gghc.org)

### **Health Care without Harm**

[www.noharm.org/us](http://www.noharm.org/us)

### **Hospitals for a Healthy Environment (H2E)**

[www.h2e-online.org](http://www.h2e-online.org)

### **US Green Building Council**

[www.usgbc.org](http://www.usgbc.org)

## **Greener choices**

Here are some environmentally conscious choices you can make for your OR:

- Cut down on excess inventory to reduce waste (and cut costs!).
- Minimize use of blue wrap. For example, put towel packs in peel-packs instead of blue wrap. The sterile processing department at Boulder Community Hospital, reduced use of blue wrap at one facility by about 50%, leading to a savings of \$111,000 and a waste reduction of about 11 tons.
- Select reusable pulse oximeters and blood pressure cuffs.
- Select reusable trochar sleeves and light handles.
- Install motion sensors on scrub sinks and for towel dispensers.
- Use a closed waste management system such as the Neptune Waste Management System from Stryker Corporation.
- Use the tabs on paper gowns for writing messages.
- Use natural cleaning products, which are better for both staff and patients who may be allergic to regular cleaning materials.
- Select full-spectrum lights. These lights cost \$3 to \$4 more upfront but last 24,000 hours—6 years at 12 hours per day. They also use less energy and generate less heat.
- Include sustainable requirements in vendor selection criteria.

*For more ideas, refer to the AORN position statement: Environmental responsibility in AORN's 2007 Standards, Recommended Practices, and Guidelines.*

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## **What is LEED?**

Leadership in Energy and Environmental Design (LEED) is a system designed by US Green Building Council (USGBC) for certifying the design, construction, and operations of green buildings.

Scores are tallied in 6 categories: site planning, water management, energy management, material use, indoor environmental air quality, and innovation and design process. The USGBC compares the LEED system to knowing the nutritional content of the food you eat.

The voluntary system has 4 levels of achievement: certified, silver, gold, and platinum. Increasing numbers of hospitals are applying and receiving LEED recognition, although they are still a small percentage of total buildings.