

GREEN + GREENER

Hospitals embrace environmentally sustainable practices, though laggards remain

ARTICLE BY DAVE CARPENTER • DATA BY SUZANNA HOPPSZALLERN

COVER STORY



They may not yet be treading lightly, but hospitals are starting to move a bit faster in efforts to reduce their carbon footprints. The improvements aren't all about saving the Earth. More health care organizations are finding measurable ways to reap savings from sustainable operations initiatives as, after years of green talk, they start to walk the green walk.

While some recommended practices are proving slow to take root nationwide, a *Health Facilities Management* survey conducted in cooperation with the American Society for Healthcare Engineering (ASHE) and the American Society for Healthcare Environmental Services (ASHES) found that hospitals generally are starting to embrace sustainability for its bottom-line benefits as well as the obvious pluses for the environment and community.

In a still-rocky economy, hospitals feel they have no choice but to make it about the money. Cost savings was the No. 1 factor cited by the 960 ASHE and ASHES members who participated in the survey in terms of influencing whether their facility opts for environmentally sustainable operations.

Yet it's clear that a return on investment is being found more often. The survey showed that organizations are incorporating greener ways of thinking into core areas of operations—energy, water, waste and cleaning—and achieving measurable results from various initiatives.

Some of the greatest progress has come in energy cost savings, critically needed since the nation's hospitals tend to be energy intensive.

Beyond energy conservation, though, organizations also are seeing steps in recycling, waste management, waste reduction and innovative cleaning methods pay off. The category selected most often by respondents when asked to describe their facility's single greatest success in a sustainable operations

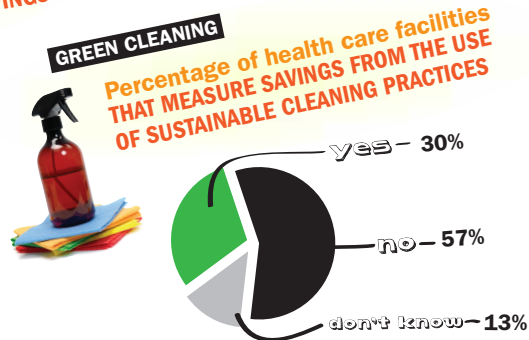
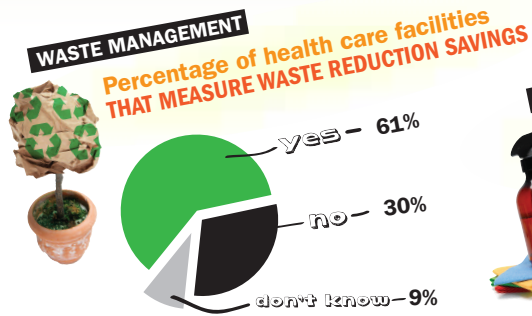
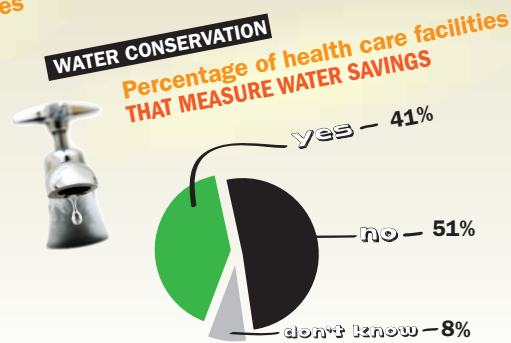
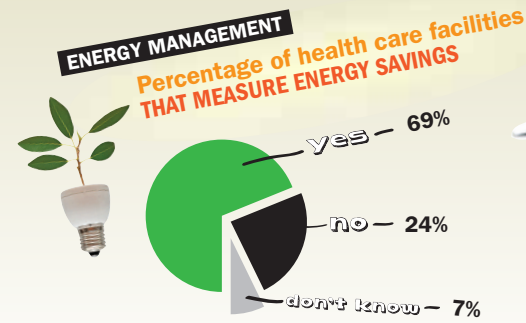
project was green cleaning—environmentally sustainable cleaning materials, chemicals and microfiber products.

The increased interest and commitment testify to unprecedented momentum behind sustainability efforts, according to Richard Beam, director of construction and sustainability at Providence Health & Services in Renton, Wash. “The health care community is really coming together around sustainability,” he says. “It is really resonating as a topic right now.”

That is a far cry from the prevailing skepticism of just a few years ago. Charles A. “Skip” Smith, CHFM, SASHE, corporate director of facilities for Catholic Health Initiatives and president-elect of ASHE, recalls the reluctance of other facilities professionals when the original *Green Guidelines for Healthcare Construction* were being developed. He remembers sitting at conference tables and hearing comments such as “It’s not going to happen,” “Costs are just too high” and “Leadership is not seeing this as important.”

No longer. “It’s night and day from where we were seven or eight years ago,” Smith says. “More people are seeing the light today than ever before, and they’re in the majority. Rarely do I see an organization that is not looking at environmental interests.”

Despite the widespread acceptance, the survey results underscore that sustainability gains are not universal. Large numbers of hospitals still do not monitor their energy performance, measure their water usage or participate in the U.S. Environmental Protection Agency’s ENERGY STAR® program. Along with all the early adopters and fast followers are many laggards who, while perhaps focused on clinical quality initiatives, are missing out on the savings and other benefits of eco-friendly practices.



SOURCE: HEALTH FACILITIES MANAGEMENT/ASHE/ASHES 2010 HEALTH CARE FACILITIES SUSTAINABLE OPERATIONS SURVEY

But the industry seems to have turned a corner in attitude and effort thanks to a combination of reasons—mission, momentum and money.

“Environmental operations are becoming extremely important to hospitals because they help make the link between public health and the environment while allowing the hospital to operate economically and efficiently,” says Clark Reed, director of the health care facilities division for the ENERGY STAR program.

BENEFITS OF BEING GREEN

The survey, conducted online in March and April by Perception Solutions Inc., Aurora, Ill., found that four factors were singled out by more than 70 percent of respondents as very important in determining whether they should pursue environmentally sustainable operations.

Besides cost savings, cited by 79 percent, the other most-mentioned reasons were quality of indoor environment for staff, patients and families (77 percent); long-term cost benefits and sustainability (75 percent); and “fits with hospital mission” (71 percent).

The priority on a quality indoor environment likely reflects that air quality is of paramount concern for hospitals. Indoor air can be as much as 10 times more polluted than outside air, and building materials and the products used to clean and maintain them can all be significant sources of volatile organic compounds (VOCs) and other indoor pollutants, Reed notes.

Bottom-line priorities also came through loud and clear in the responses to a question about how much of a challenge or barrier various issues are to envi-

ronmentally sustainable practices. The only issue deemed a major challenge by most poll participants was competing investment and spending priorities.

Dale Woodin, CHFM, FASHE, executive director of ASHE, says he realizes there’s a lot of pent-up demand for patient initiatives after last year’s slowdown, which could bump down sustainability projects to a lower organizational priority. But facilities management and environmental services departments can still generate support for their projects, he says, by updating other leaders frequently about how they’re reducing waste, improving efficiency and saving money.

Just 21 percent of survey respondents said their facility had designed a single title or position with responsibility for sustainability efforts. That number is likely to increase as organizations see more results, according to Woodin.

In another result that shows room for improvement, only 37 percent said their facility includes any performance metrics for sustainability—such as an ENERGY STAR rating, total waste generation or a recycling rate—in its senior management dashboard.

Woodin was flabbergasted. “You’ve got to be able to understand what your hospital is doing from a usage standpoint,” he says. “If you don’t even have that baseline data, you don’t even have the starting point of a conversation.”

ENTERING WITH ENERGY

When hospitals take the first step toward going green, it’s often in energy efficiency. There’s strong incentive to look for savings in this category: U.S. hospitals are among the most energy-intensive commercial buildings, with more than 2.5 times the energy intensity and carbon dioxide emissions of commercial office buildings.

Nearly 70 percent of those responding to the *HFM/ASHE/ASHES* survey said their facility measures energy savings.

“Hospitals are seeing that energy effi-

ABOUT THE HFM/ASHE/ASHES 2010 SUSTAINABLE OPERATIONS SURVEY

Health Facilities Management (HFM), the American Society for Healthcare Engineering (ASHE) and the American Society for Healthcare Environmental Services (ASHES) surveyed a random sample of 6,789 hospital executives to learn about trends in sustainable hospital operations. The response rate was 14.2 percent, or 967 completed surveys.



HFM thanks the sponsors of this survey—Georgia-Pacific Professional and Practice Greenhealth—for underwriting this research.



Experience better.™



ENERGY MANAGEMENT

TOP 5 ENERGY PERFORMANCE MONITORING AND ENERGY MANAGEMENT ACTIVITIES in health care facilities

Conduct energy audits	50%
Energy budget and performance targets are set and monitored annually	45%
Participate in the EPA’s ENERGY STAR® program	35%
Designate internal energy manager	23%
Do not monitor energy performance/management	21%



ENERGY MANAGEMENT

TOP 10 ENERGY MANAGEMENT INITIATIVES BEING IMPLEMENTED TO REDUCE ENERGY COSTS

	Plan to implement in the next 24 months	Implemented in the last 24 months
Preventive maintenance plans	80%	12%
Transition to electronic ballast and energy-efficient lamps (T8 or T5)	74%	16%
Install LED exit signs	69%	15%
Install occupancy sensors or timers to reduce use of lighting in unoccupied and appropriate areas (e.g., public restrooms)	57%	25%
Technology upgrades for plant equipment	55%	29%
Upgrade building control and automation systems	53%	28%
Energy conservation program	53%	25%
Upgrade central heating/cooling systems	46%	29%
Upgrade distributed heating/cooling systems	39%	30%
Commission or retro-commission buildings (audit to review performance of building energy systems)	35%	26%

SOURCE: HEALTH FACILITIES MANAGEMENT/ASHE/ASHES 2010 HEALTH CARE FACILITIES SUSTAINABLE OPERATIONS SURVEY

Top reasons why health care facilities opt for ENVIRONMENTALLY SUSTAINABLE OPERATIONS

SOURCE: HEALTH FACILITIES MANAGEMENT/ASHE/ASHES 2010 HEALTH CARE FACILITIES SUSTAINABLE OPERATIONS SURVEY



79%
Cost savings



77%
Quality of indoor environment for staff, patients and families



75%
Long-term cost benefits/sustainability



71%
Fits with hospital mission



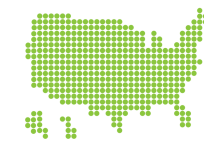
66%
Return on investment



63%
Positive impact on surrounding community



51%
Access to financial incentive programs



44%
Required by local/state programs



21%
Awards, recognition and press coverage

ciency is a good place to start," says Reed. "The savings are tangible, and they can then be used to increase further energy efficiency upgrades or fund other green

initiatives going on at their hospital." Energy savings can prove substantial. Three hospitals awarded ASHE's 2009 Energy Efficiency Commitment (E2C) des-

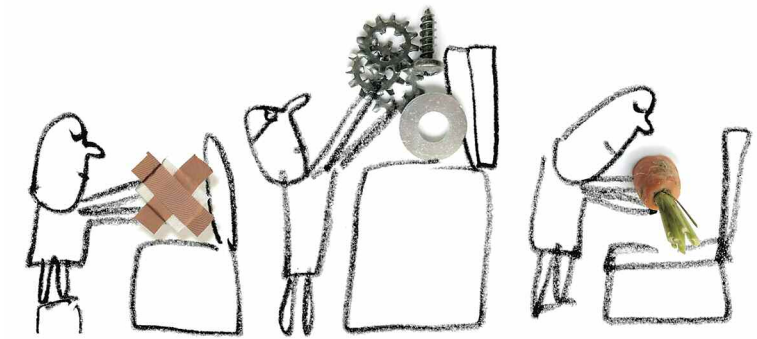
ignation achieved double-digit-percentage reductions in energy costs: Mercy Medical Center in Dubuque, Iowa (29 percent); St. John Medical Center in Longview, Wash. (20 percent); and Methodist Hospital in Houston (11 percent).

No single energy performance monitoring tool or energy management activity was cited by a majority of poll respondents. Half said they conduct energy audits, 45 percent set energy budget and performance targets and monitor them annually, and just 35 percent participate in ENERGY STAR. Because the federal program is free for hospitals, such a relatively low level of participation represents a big opportunity for the industry to improve its energy performance record once more are persuaded to join, says Janet Brown, director of facility engagement for survey co-sponsor Practice Greenhealth (formerly Hospitals for a Healthy Environment) in Amherst, Mass.

Organizations are using a variety of energy management initiatives to reduce energy costs. A majority of those surveyed said they had implemented at least one of the following in the last two years: preventive maintenance plans, transition to electronic ballast and energy-efficient lamps, light-emitting diode (LED) exit signs, occu-

pancy sensors or timers to reduce lighting use, technology upgrades for plant equipment and upgrades to building control systems.

Renewable energy practices are less in favor with hospitals. The three initiatives that most organizations said they have no plans to undertake are purchasing off-site renewable energy sources; upgrading conventional systems with hybrid plants using fuel cells, photovoltaic systems or solar thermal systems; and photovoltaic harvesting systems for low-power indoor devices. Photovoltaic systems don't yet have a very attractive return on investment, says Gail Vittori, co-coordinator of



WATER CONSERVATION

TOP 10 WATER CONSERVATION INITIATIVES
being implemented to reduce water usage

	Plan to implement in the next 24 months	Implemented in the last 24 months
Install flow control fixtures on faucets (e.g., motion sensors and aerators)	55%	15%
Install low-flow fixtures for toilets and urinals	55%	17%
Employ condensate recovery systems	43%	14%
Conduct a water use audit and repair leaks, drips and unnecessary flows	41%	21%
Use closed system for cooling as means of reducing process water	39%	13%
Use drought-tolerant landscaping or native vegetation to reduce watering requirements	35%	13%
Select water-efficient dish-washing and food disposal equipment for replacement or new purchases	23%	21%
Water management plan	22%	25%
Implement water conservation initiative in kitchen and cafeteria	12%	20%
Use rainwater or gray water for landscape irrigation	9%	11%

SOURCE: HEALTH FACILITIES MANAGEMENT/ASHE/ASHES 2010 HEALTH CARE FACILITIES SUSTAINABLE OPERATIONS SURVEY



WASTE MANAGEMENT

TOP 7 WASTE MANAGEMENT INITIATIVES
being implemented to reduce waste

	Plan to implement in the next 24 months	Implemented in the last 24 months
Ongoing process for tracking waste volume and cost for all waste streams	58%	21%
Waste management assessment for all materials and waste streams	56%	23%
Waste management plan for all materials and waste streams	53%	26%
Establish baseline generation rates and cost for all waste categories	50%	26%
Contract for waste stream reduction/environmentally preferred purchasing	37%	28%
Participate in manufacturer take-back programs and/or post-consumption materials management	36%	24%
Establish product specifications to include less packaging, recycled content, end-of-life collection and recycling services	27%	32%

SOURCE: HEALTH FACILITIES MANAGEMENT/ASHE/ASHES 2010 HEALTH CARE FACILITIES SUSTAINABLE OPERATIONS SURVEY



WASTE MANAGEMENT

MATERIALS THAT ARE RECYCLED
in health care facilities

Cardboard	91%
Paper	84%
Beverage containers	67%
Plastic	58%
Metal	54%
Glass	47%
Construction and demolition debris	39%
Blue wrap	16%

ILLUSTRATION BY SERGE BLOCH

HOSPITAL SUSTAINABILITY PROJECTS run the gamut

Health care systems across the country have launched a wide variety of initiatives designed to make both environmental and economic sense. A handful are even trying to go green from top to bottom, which makes for sustainability multitasking but with more chances for success.

For instance, Gundersen Lutheran Health System in La Crosse, Wis., has a lot of green on its plate: initiatives in renewable energy and energy conservation; engineering work on a new Leadership in Energy and Environmental Design (LEED) hospital; and projects in waste management, waste reduction and recycling.

Tom Thompson, Gundersen's sustainability coordinator, says it's good—and necessary—to have multiple opportunities because you don't get off track if one project gets bogged down. "To be sustainable you really have to have a balanced approach. You can't just pick and choose one or two things," he says.

These are not do-gooder projects; each brings real savings. "I've heard for so long that an environmental program would be nice but it costs too much money," Thompson says. "Well, we're proving that you can be green and you can make green. You can be economically viable, you can make money and save money by doing the right thing."

Following is a sampling of health system initiatives under way,

based on responses to the *Health Facilities Management/American Society for Healthcare Engineering/American Society for Healthcare Environmental Services 2010 Sustainable Operations Survey*.



ENERGY MANAGEMENT

Among the energy management initiatives, Gundersen Lutheran did energy audits of several campuses and used the results to perform retrocommissioning. That two-year process examined heating and cooling systems, lighting and employee behavior and used low-cost measures to improve efficiency and reduce energy demand. It helped the system achieve a 25 percent improvement in energy efficiency by the end of 2009, reducing its annual energy costs by \$1.2 million.

The Nebraska Medical Center in Omaha hopes to save \$600,000 annually in energy costs—30 cents per employee per day—by getting each of its 5,000 employees to turn off their computer monitors at the end of the day, turn off lights and adjust thermostats.

Swedish Medical Center in Seattle lowered energy usage at its First Hill campus by 14 percent after building systems engineer Jeff Grinzel recommissioned HVAC systems that had not been set up properly at its two-year-old Swedish Orthopedic Institute. Other energy-saving projects at the campus have included a garage lighting retrofit to change out obsolete lamps and ballasts, optimizing garage ventilation systems and improving the chilled water system that provides cooling to campus facilities.

Other energy initiatives mentioned by respondents include using landfill methane to operate boilers at a new hospital, using microturbines for cooling and heating, using thermal energy storage tanks to reduce peak elec-

tric demand and cut cooling costs, and a three-day "treasure hunt" analyzing a facility's energy use to develop over 100 energy savings ideas.



WATER CONSERVATION

In the area of water conservation, a "green linen" program at the Nebraska Medical Center has resulted in \$600,000 a year in savings. The program simply limits the linen taken into patient rooms, restricting the amount to what's needed and avoiding "just in case" extras. Excess linen must be washed because it is considered contaminated once it's taken to patient rooms, so the program eliminates a lot of clean linen needing to be washed. "Linen management hasn't been around for a long time and a lot of people don't know how effective it is," says Paul Turner, director of environmental services and housekeeping at the center.

Nathan Littauer Hospital & Nursing Home in Gloversville, N.Y., has cut its municipal wastewater treatment charges by 40 percent in four years by monitoring its solid waste sources and reducing them.

Other water conservation initiatives involve moisture sensors on an irrigation system, use of native plants to lessen the need for watering, and waterless urinals.



WASTE MANAGEMENT

Among the waste management initiatives, St. Mary's Regional Medical Center in Russellville, Ark., used bar code tags to reduce its medical waste to 0.9 pounds per patient per day from about 2.5 pounds in two years, saving the 117-bed facility \$20,000 a year. Liz Esarey, director of environmental services, pushed the initiative through persistent follow-up and an edu-

cation effort with the operating room department, which had put everything from disposable gowns to sterile pack covers into biohazard waste instead of the regular trash.

Providence Sacred Heart Medical Center and Children's Hospital in Spokane, Wash., recycles or reuses 22 percent of its solid waste. The single largest category of recycled materials is paper, but facilities manager Philip Kercher, FASHE, CHFM, also notes that Habitat for Humanity accepts used building materials and used ceramic toilets often can be recycled through local companies.

Gundersen Lutheran recycled virtually an entire building, achieving a 90 percent recycle/reuse rate for construction materials while removing a building built in the late 1800s. It also recycled 38 percent of the system's measurable waste in 2009.

Other waste initiatives include a pharmaceutical waste management project and recycling of everything from bulbs and furnishings to e-waste, mercury and X-ray film.



SUSTAINABLE CLEANING

In the "green cleaning" area, Mercy Hospital in Janesville, Wis., saves 40 percent on floor finishing costs in patient rooms and corridors with a more eco-friendly, efficient finish. It also installed door pods in public restrooms that freshen the air through door movement, eliminating the need for aerosol fresheners. Mercy, too, eliminated aerosol cleaning products and is moving away from spray bottles, using flip-top bottles instead.

Other cleaning initiatives feature ionized water for floor cleaning, green chemical purchasing and high-temperature steamers. ■

the *Green Guide for Health Care*, a project of Health Care Without Harm and the Center for Maximum Potential Building Systems. "It is not surprising that there is greater tendency to invest dollars in preventive maintenance that provides long-term, persistent savings," she says.

WASTE WATER?

As with energy, hospitals are prodigious users of water. But they have not moved anywhere near as aggressively to put conservation strategies in place. Only 41 percent of survey participants said their facility measures water savings.

Water's abundance and relatively cheap cost has made it a low priority among hospital sustainability programs. That may change, given forecasts for growing demand and strained supplies. "We expect water to become a much bigger issue for health care and other organizations in the not-too-distant future," says Janice Obiany, director of sustainability for Eco-lab Inc., a St. Paul, Minn.-based supplier of cleaning supplies to hospitals and other companies. Health care facilities, she notes, have many opportunities for water savings—from instrument reprocessing, environmental hygiene and patient care to on-premise laundry and warewashing. The most common water conservation

initiatives used by survey participants were flow control fixtures on faucets, such as motion sensors, and low-flow fixtures for toilets and urinals, both implemented by 55 percent in the last two years. About 43 percent had employed condensate recovery systems.

A majority of hospitals have no plans to use rainwater for landscape irrigation, water conservation initiatives in the kitchen and cafeteria, or water-efficient dishwashing and food disposal equipment. Those areas aren't seen as cost-effective for the most part; using rainwater, for example, would mean paying to install large holding tanks.

Having a water management plan, however, could prove economical for the 47 percent that have either implemented water management plans in the past two years or intend to do so in the next two. Reed notes that those hospitals would do well to emulate the University of Washington's facilities services department, which retrofitted 50 sterilizers and autoclaves with water-saving kits to eliminate water tempering—the inefficient use of cold water to reduce water temperature before sending it into local drains. The university, he says, will save over 2.5

million gallons of water per year, worth \$250,000 in avoided water and sewer costs.

WASTE NOT

Hospitals generate so much waste—25 to 30 pounds per bed per day, according to Brown—that it tends to be a high priority in sustainability efforts. About two of every three health care facilities surveyed (61 percent) said they measure waste reduction savings.

"Waste reduction and recycling has been well-embedded in health care operations and there is a well-established and growing infrastructure to support those initiatives, including composting programs being introduced in hospitals," says Vittori. The methods most commonly used are tracking waste volume and cost (58 percent), a waste management assessment for all materials and waste streams (56 percent), a waste management plan (53 percent), and establishing baseline rates and cost for recycling and all other waste categories (50 percent).

Not on the agenda: establishing product specifications to



ILLUSTRATION BY SERGE BLOCH

stream reduction sounds good, but when the consultant leaves can the culture sustain what has been accomplished given the higher priorities of patient satisfaction, quality and safety?"

CLEAN AND GREEN

Just 31 percent of facilities surveyed measured savings from environmental cleaning practices. But efforts in that area appear to be accelerating. All 10 cleaning initiatives listed on the survey had been implemented by 49 percent or more of respondents within the past two years.

"My sense is everybody is going to environmentally friendly cleaning materials or looking at them," says Smith. "With issues around air quality, the increase of asthma and other respiratory problems, people are just trying to stay away from those as much as they can."

Initiatives implemented most often involved microfiber mops and cleaning cloths, which data have shown perform better, reduce water consumption and minimize the need for chemical use;

cleaning equipment that does not hamper indoor air quality; infection control risk assessments; and the use of pre-diluted disinfectant systems for worker safety.

The top three items that organizations have no plans to implement are sustainable floor care materials, integrated pest control and eco-labeled cleaning products. The difficulty with most of these initiatives, says Costello, is that measuring the savings and efficiencies isn't always easy—yet that's what is needed to demonstrate their value to organization leaders.

'IT TAKES TIME'

Just as the survey results show that many doubters have been won over to eco-friendly practices, they provide evidence that many holdouts remain. And financial barriers may keep them on the sidelines if they can't find a way to overcome the high initial costs of some green programs.

"Just about everyone is tuned in to the environmental push," says Costello. "Finding balance between cost and competing priorities is a bigger challenge."

Sustainability programs will likely take a backseat to patient initiatives, Woodin agrees, at least until the financial crunch that began in 2008 has gone away. But if departments prove their value, ultimately the resources and funding will come.

In the meantime, advocates of environmental sustainability hope that health care organizations will continue their gradual greening.

"Hospitals are realizing success in sustainability a program at a time, and we're seeing the effects of that," Brown says. "But the survey shows that we're just getting started. It demonstrates that there's a lot of need for education around sustainability in health care. It takes time." **HFM**

Dave Carpenter is a Chicago-based freelance writer who frequently reports on health care industry topics. Suzanna Hoppszallern is senior editor of data



and research for *Health Facilities Management's* sister publication *Hospitals & Health Networks*.



GREEN CLEANING

TOP 10 CLEANING INITIATIVES being implemented to clean 'green'

	Plan to implement in the next 24 months	Implemented in the last 24 months
Use microfiber mops and cleaning cloths to reduce water and chemical use	81%	11%
Use cleaning equipment that does not negatively impact indoor air quality	78%	12%
Conduct an Infection Control Risk Assessment that identifies areas where use of disinfectants is required	76%	12%
Use prediluted disinfectant systems for worker safety	75%	7%
Adopt an operational policy to limit exposure of building occupants and staff to potentially hazardous chemicals, biological and particulate contaminants	67%	13%
Adopt an environmentally preferable cleaning policy for surfaces such as floors, walls, furniture and medical equipment	65%	19%
Use low-moisture carpet extractors	62%	15%
Integrated pest management program versus pest program based on use of chemicals	61%	13%
Use sustainable floor care materials (i.e., rubber)	50%	19%
Use cleaning products labeled GreenSeal™ or EcoLogo™-certified	49%	26%

SOURCE: HEALTH FACILITIES MANAGEMENT/ASHE/ASHES 2010 HEALTH CARE FACILITIES SUSTAINABLE OPERATIONS SURVEY

include less packaging and recycled content, participating in manufacturer take-back programs and contracting for waste stream reduction—the three areas cited most often by respondents when asked what they had no plans to implement.

Most respondents indicated that their facilities recycled cardboard (91 percent), paper (84 percent), beverage containers (67 percent), plastic (58 percent) and metal (54 percent).

Even an initiative as basic as recycling, however, can be hard for small, rural hospitals to pursue due to limited resources and staff, notes Patti Costello, executive director of ASHES. She knows of at least two facilities in downstate Illinois, for example, that want to recycle but cannot afford to because of the absence of competitive pricing. Take-back programs, too, are of widespread interest but are likewise focused on cities, she says.

Costello asks: "Contracting for waste