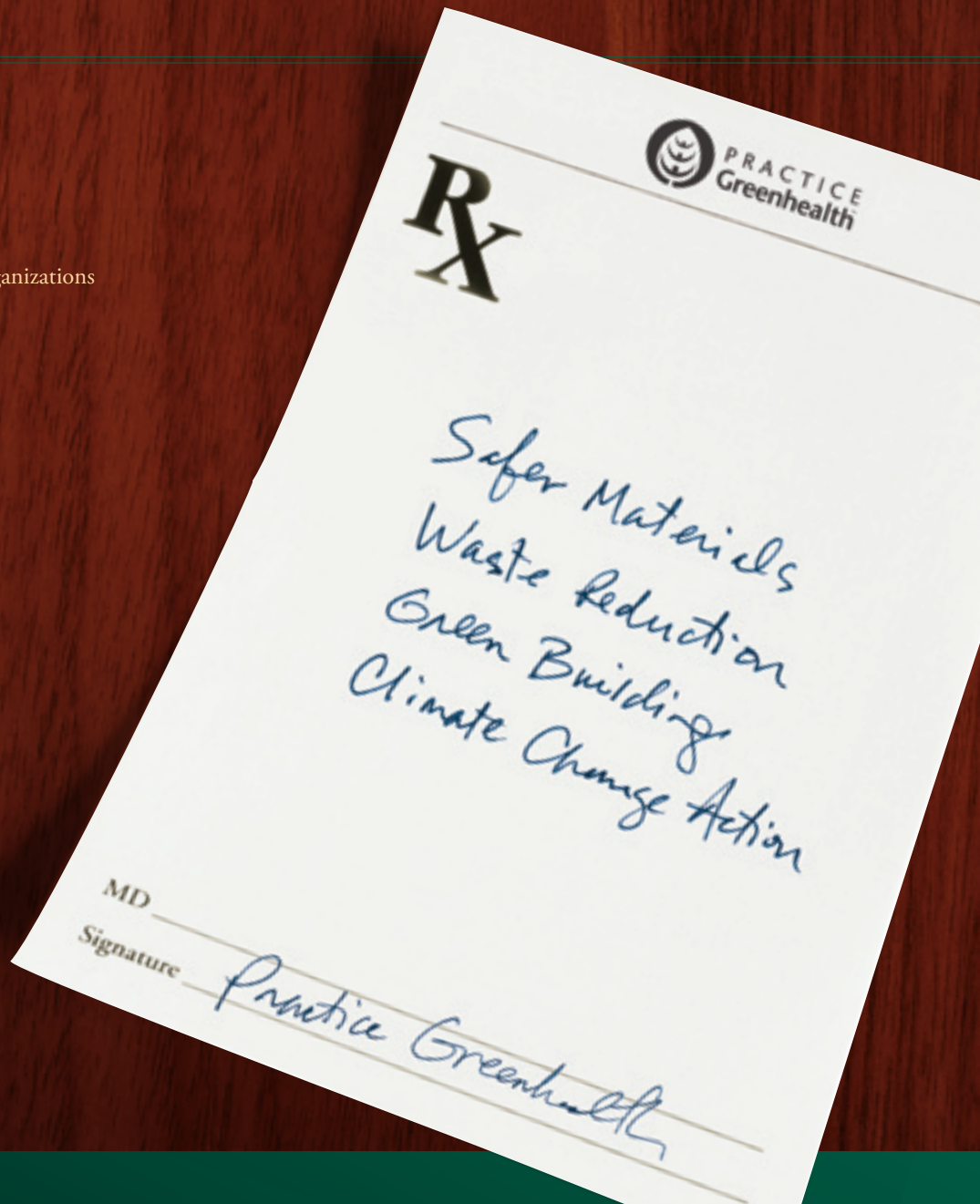


# The Business Case for Greening the Health Care Sector



Report prepared by the  
Institute for Innovation in Large Organizations





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## The Business Case for Green Healthcare Facilities

January 10, 2008

### Key Question

What is the business case for green healthcare facilities?

### Key Findings

1. The case for green healthcare design is no longer just about energy savings. The rationale for building green today takes into account financial gains, improved patient outcomes, better staff health and reduced turnover, and community benefit through a reduced environmental impact.

- Gary Cohen, co-executive director of Health Care Without Harm and executive director of the Environmental Health Fund, says that this broader rationale allows **“the hospital to situate itself in the broader ecology of its community and region and act as a healing force.”**

2. Greener facilities tend to improve patient outcomes and reduce health risks to staff, according to a growing body of research. Examples include **decreased lengths of stay** for patients in sunlit rooms and **decreased tuberculin conversion** for employees working in patient rooms with better ventilation.

- The Green Patient Room developed by architects Anshen+Allen is an example of evidence-based design. The concept was developed on the basis of research showing improved patient outcomes through increased sunlight, fresh air, and the use of nontoxic building materials and supplies.

- A study by Robin Guenther of Guenther 5 Architects finds “**a consistent positive correlation between green buildings, staff recruitment and retention, and performance**—and provide[s] a bottom-line justification for green building on financial payback terms.”

3. Green building does not necessarily cost more than traditional construction, despite the common misperception among health-care professionals that it does.

- A cost-benefit analysis on green buildings for the state of California determined that “a minimal upfront investment of about 2% of construction costs typically yields life-cycle savings of over ten times the initial investment.”
- A study by the David and Lucille Packard Foundation found that the cost differential between a certified Leadership in Energy and Environmental Design (LEED) facility and one built the traditional way was less than 1%. When the cost of environmental pollution was taken into account, the LEED certified building cost less over 20 years.
- A study by construction financial consulting firm Davis Langdon found that “there is **no significant difference in average costs for green buildings as compared to non-green buildings.**”

In spite of the potential benefits, an organization considering moving to green construction practices faces some crucial obstacles, according to a research report from investment firm RREEF:

1. **The lack of awareness** of green construction.
2. The **experience curve** required for an organization to migrate to green facilities.
3. The **limited supply of trained professionals** in design, architecture, engineering, and various subspecialties

Research shows that, with an experienced team, a green hospital project can be built at or near the cost of a conventional project. Higher costs and delays are associated with organizations that use lesser-experienced teams.

Thus, a health-care organization planning a move into green building would do well to seek out **a well-experienced, LEED-certified design team**, and to consider **starting with a smaller, less-complex project** to gain an internal base of knowledge and skills in sustainable building.

- For example, the Geisinger Health System in Pennsylvania chose a more conventional building project, a research center, for its first green building, instead of starting out with a complex hospital project with all of its special needs.

4. Integrated design—involving early and close collaboration among architects, engineers, contractors, construction managers, facility directors and operators, and medical staff—results in a better-functioning green building at lower cost.

- An integrated design effort at the Oregon Health & Science University (OHSU) Center for Health and Healing resulted in a building “**that uses 60% less energy than a code-compliant building.**”

5. Best practices in a green hospital project should include environmentally sensitive operations, including the use of nontoxic cleaning products.

- The EPA notes that “thousands of chemicals and biological pollutants are found indoors. The known health effects include asthma, cancer, developmental defects and delays, plus effects on vision, hearing, growth, intelligence, learning and the cardiovascular system.” Green construction promises to greatly reduce the effects of sick-building syndrome.

6. Health-care organizations that are building green can make a substantial case for themselves as **responsible corporate citizens** to the community and funding agencies. As significant purchasers of construction services and materials, as well as supplies for their operations, hospitals have great potential to affect markets and supply chains and to advocate for healthier products and materials.

7. **Foundation grants and state incentives** can help pay for green hospital projects and stimulate project approval at the executive and board levels and with other constituencies.

- A planning grant from the Kresge Foundation gave the Discovery Health Center in Harris, New York, a “major boost” for board support for fund-raising. “It validated to my board that this was a good thing to do,” says the organization’s CEO.
- For the Providence Newberg Medical Center in Newberg, Oregon, local and state incentives “will shorten the payback period associated with ... green design to 14 months.”
- The CEO of Children’s Hospital of Pittsburgh of UPMC says that, as a result of a \$5 million grant from the commonwealth of Pennsylvania, “I haven’t had to go through that same justification process that some of the others have done.” Having the grant locked in ahead of time during the preliminary design phase served as de facto proof of the project’s validity.

## An Extended Business Case for Green Healthcare Facilities

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The traditional business case for green construction has rested on financial savings through energy efficiency.

However, now that the health-care industry has several successful green projects under its belt, more sophisticated business cases for green hospital construction are emerging. These extended cases are more persuasive for hospital executives and boards, especially in nonprofits that need to demonstrate community benefit to governmental and funding agencies.

Jim Moler, manager of engineering systems for Turner Construction, notes that “in the early days of green building, we always tried to make the case for green based on how much energy we were going to save in terms of reduced operating cost.” (“The Business Case for Green Buildings,” *Healthcare Design*, June 2006)

Such a case was not always so persuasive for executives, Moler says, as “the energy budget for a hospital amounts to less than 1% of the operating cost. Saving 20% of something that was less than 1% of the hospital executives’ overall ‘headache’ didn’t get a lot of attention.”

However, Moler is excited about what is happening today: “The issues relating to the things we care about—sustainable design, green building—are starting to become important to the people who occupy the hospital executive suite.”

The multidimensional rationale for green building includes:

- Recruiting advantage: “If executives want to recruit and retain the best staff, a green facility is a way to do that,” says Moler.
- Better treatment outcomes: “a green facility can contribute to faster and better recovery.”
- Risk mitigation: “a green facility can help avoid patient infections and staff illnesses and injuries.”
- Improved public perceptions and opportunities for philanthropic funding.

ILO believes that the new rationale, or extended case for green health-care facilities, rests on multiple foundations:

1. **Economic:** Cost savings through energy efficiencies; research demonstrating that green construction is, in fact, not necessarily more expensive than conventional construction; improved staff retention, which reduces turnover and recruiting costs.

2. **Patient Services:** Greater patient safety from reduced contact with toxic building materials, cleaning supplies, and other agents; better health for patients through more healthful dietary programs; better treatment outcomes through friendlier architectural features and improved environmental quality.
3. **Community Benefit:** Less negative impact on the environment from construction and operations; the institution's service as a role model for the community, acting as educator and leader on sustainable practices; positive impact on the larger economy through implementation of green practices; improved public perception of the institution; increased access to philanthropy and government incentives.

Arguing for such an extended, multipronged case for green hospitals, Gary Cohen, co-executive director of Health Care Without Harm and executive director of the Environmental Health Fund, writes, "The hospital, in essence, can situate itself in the broader ecology of its community and region and act as a healing force" ("First, Do No Harm," in *Designing the 21st Century Hospital: Environmental Leadership for Healthier Patients and Facilities*, The Center for Health Design, 2006).

Adopting such an extended case for green construction stands to place the health-care industry in a unique position to influence the larger marketplace and move it toward more sustainable practices.

This is especially so now, as the industry is embarking on "a \$200 billion construction program over the next decade to replace or rebuild decaying facilities and meet growing demand from aging baby boomers," according to Laura Landro, writing for the *Wall Street Journal* ("Hospitals Go 'Green' to Cut Toxins, Improve Patient Environment," Oct. 4, 2006).

That said, the health-care industry's increasing experience with green construction is proving its value even at the purely economic level.

For example, Grant Walker, vice president of facilities at the Ochsner Health System in New Orleans, tells ILO that "12 years ago, we began using water taken directly from the Mississippi River in place of our traditional cooling towers for air conditioning. It was better for the environment and saved us \$3 million a year in electricity."

Ochsner hospitals have also replaced the organization's more than 60,000 fluorescent lighting fixtures with newer energy-efficient bulbs. This measure has reduced energy consumption by 20%, saving \$1.2 million a year in electricity.

Walker says, "Sometimes you find opportunities to go green in the unlikeliest place." He tells ILO that his organization "replaced thousands of pump and suction motors with variable speed motors, reducing the hospital's energy footprint to the tune of \$350,000 a year."



## The Triple Bottom Line

Gary Collins, principal at Anshen+Allen Architects and president of the International Facility Management Association (IFMA) Healthcare Council, tells ILO that the business case for a green hospital involves much more than simply building with environmentally friendly materials.

“The simplest way to think about this is in terms of **the triple bottom line**,” Collins says. The triple bottom line (TBL) is an **emerging standard for public and nonprofit accounting that takes in three larger factors, “people, planet, and profit,”** he says.

Some of the most important rationales, according to Collins, include:

- “Improved patient and staff outcomes and reduced health risk”
- “Improved capacity and smaller facility requirements”
- “Significantly reduced life-cycle costs and operating budget”
- “Optimized first cost, at or near the original cost goal”

To make the case for a green facility at the board and executive levels and to funding agencies, **Collins advocates providing a “detailed investment grade financial analysis of specific project life-cycle benefits and costs to show the funding worthiness of the project.”**

Doing this, he says, “in the early pre-programming phase ... will provide a sound financial basis for making decisions on budget, size, and project timing. Ultimately it will show the strong economic benefit of such a project not only from a lifecycle viewpoint, but from a first-cost point of view as well.”

Using the TBL approach in making the case for a green facility, says Collins, “allows for a financial analysis that not only economically justifies the project, but also demonstrates the close alignment between stakeholder mission and vision and project outcomes.”

The TBL concept makes particular sense for nonprofit health-care organizations that have mission-related mandates far beyond fiscal responsibility. Such organizations are dedicated to promoting the health of patients and the community and are subject to requirements to demonstrate community benefit.

The possible extra costs of adopting evidence-based environmental and green building policies can be justified through demonstrating benefits provided to the “people” and “planet” portions of the bottom line. The organization is able to serve as a role model in the community by promoting health and protecting the environment. In this way, a green building program can be viewed as furthering the organizational mission.



## Improved Patient Outcomes

An increasing body of evidence points to the value of a green facility in improved patient outcomes and staff health risk. Following are some examples:

- A case study at the Mackenzie Health Sciences Centre in Edmonton, Alberta, Canada, finds that depressed patients in sunny rooms recover faster. Researchers write that “those in sunny rooms had an average stay of 16.9 days compared to 19.5 days for those in dull rooms, a difference of 2.6 days (15%)” (“Sunny Hospital Rooms Expedite Recovery from Severe and Refractory Depressions,” K. M. Beauchemin and P. Hays, *Journal of Affective Disorders*, Sept. 1996).
- A study at Inha University Hospital in Korea found a 41% reduction in average length of stay (ALOS) for gynecology patients in sunlit rooms over patients in dull rooms. The study found a 26% reduction similarly for surgery ward patients (“Study of the Relationship Between Indoor Daylight Environments and Patient Average Length of Stay (ALOS) in Healthcare Facilities,” Joon Ho Choi, M.Sc. thesis, Texas A&M University).
- A study of 17 hospitals in Canada examined tuberculin conversion (a positive tuberculin test result) among employees working in patient rooms. The researchers concluded that “tuberculin conversion among health-care workers was strongly associated with inadequate ventilation in general patient rooms.” They found a 71% reduction in risk for workers in rooms with ventilation rates greater than two air changes per hour (ACH) (“Hospital Ventilation and Risk for Tuberculous Infection in Canadian Health Care Workers,” Dick Menzies, Anne Fanning, Lilian Yuan, and J. Mark FitzGerald, Canadian Collaborative Group in Nosocomial Transmission of TB, *Annals of Internal Medicine*, Nov. 2000).
- A study at Bronson Methodist Hospital in Kalamazoo, Michigan, found that by applying green design practices in its redevelopment project, the institution was able to reduce nosocomial infections by 11% and decrease nursing turnover rates to below 7%. Measures taken included eliminating shared rooms; improving ventilation to introduce more fresh air; and incorporating music, light, and nature into the design (“Evidence-Based Hospital Design Improves Healthcare Outcomes for Patients, Families and Staff,” Robert Wood Johnson Foundation, June 2004).

Anshen+Allen Architects, in collaboration with the IFMA Healthcare Council, construction firm Skanska, and participating vendors, have created what it calls the **Green Patient Room**.

Gary Collins, principal at Anshen+Allen, describes this concept as “a mock patient room that demonstrates green materials and technologies that are economically viable, readily available, and appropriate for use in intensive health-care settings.” He tells ILO that this “prototypical room” demonstrates “how to create a healing environment that improves the quality of life for patients, staff, and family.”

Collins refers to the Green Patient Room as an example of **“evidence-based design,” based on research showing improved patient outcomes through increased sunlight, fresh air, family-friendliness, and use of nontoxic building materials and supplies.**

## Does Building Green Really Cost More?

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A survey by the construction trade publication *Building Design + Construction* reveals a perception among health-care professionals that green building costs more:

*Nearly half (47%) of respondents to a 2007 survey by the publication expected to pay a 3%-15% premium for green building. Only 8% expected the cost differential between a green and non-green hospital to be negligible. ("Where Building Owners, End Users, and AEC Professionals Stand on Sustainability and Green Building," white paper, Nov. 2007)*

Answering such concerns, some experts argue that the premium for green building is quite small and yields a substantial payback. Others argue that, in fact, green building costs no more than conventional construction.

An extensive cost-benefit analysis for the state of California by the Sustainable Building Task Force and the U.S. Green Building Council (USGBC) found that **an added investment of 2% on top of normal construction costs yielded life-cycle savings of over ten times the initial investment** (*The Costs and Benefits of Green Buildings: A Report to California's Sustainable Building Task Force*, Oct. 2003)

For example, an upfront investment of "up to \$100,000 to incorporate green building features into a \$5 million project" would yield "a savings of at least \$1 million over the life of the building, assumed conservatively to be 20 years." This would mean the additional costs would pay for themselves in just two years.

The financial benefits include "lower energy, waste disposal, and water costs, lower environmental and emissions costs, lower operations and maintenance costs, and savings from increased productivity and health," according to the report.

Even discounting these longer-term benefits, hard construction costs for green building are declining and today are about on par with conventional building methods, experts say.

There are multiple reasons for this. For one, design and construction professionals and the trades have gained significant skills and knowledge in green construction over the past five years, decreasing the cost premium. Also, as green construction becomes more mainstream, contractors and suppliers are better able to implement supply chain efficiencies that reduce costs.

### Built Green and On Budget

Green building costs are not only on par with traditional methods but also coming in on budget and on time while meeting the strict LEED standards.

“Every [green] project I have worked on has been designed and constructed within the same tight schedules, budgets, and parameters as we see on most of our health-care projects,” Peter Levasseur, director of sustainable design at architectural firm EwingCole, tells ILO.

A study by construction financial-consulting firm Davis Langdon finds that, on the basis of its 2006 study sample, many construction projects are achieving LEED certification within budget—without considering sustainable design as an add-on factor and within the same cost range as non-LEED projects (“The Cost of Green Revisited: Reexamining the Feasibility and Cost Impact of Sustainable Design in the Light of Increased Market Adoption,” July 2007)

Davis Langdon concludes that **“there is no significant difference in average costs for green buildings as compared to non-green buildings.”** In fact, **“in many areas of the country, the contracting community has embraced sustainable design, and no longer sees sustainable design requirements as additional burdens to be priced in their bids.”**

The firm believes that “conceiving of sustainable design as a separate feature” in a construction project is counterproductive and unnecessary. Such a practice biases project leaders to regard sustainability as an added cost. The report’s authors maintain:

*The most successful [projects] are those which had clear goals established from the start, and which integrated the sustainable elements into the project at an early stage. Projects that viewed the elements as added scope tended to experience the greater budget difficulties.*

In health care, Davis Langdon analyzed 17 ambulatory care construction projects, nine of which were LEED-seeking and eight of which were not. The buildings included cancer treatment centers, ambulatory surgery suites, and ambulatory care centers.

	Construction cost per square foot			
	\$200-\$300	\$300-\$400	\$400-\$500	\$500-\$600
Ambulatory Care Projects:				
Non-LEED	1	4	2	1
LEED Certified	2	6	0	0
LEED Silver	0	1	0	0

The chart shown here based on the report’s data shows that the nine LEED-seeking projects fell well within the lower cost-per-square-foot ranges. In fact, they tended to cost less than the eight non-LEED projects.

(The LEED system grants four certification levels representing increasing application of sustainable best practices: certified, silver, gold, and platinum.)

A report from the David and Lucile Packard Foundation illustrates the kind of analysis that can reveal the value of green construction. *Building for Sustainability: Six Scenarios for the David and Lucile Packard Foundation* (Oct. 2002) includes charts showing the comparative construction costs for various scenarios for a proposed 90,000-square-foot facility, including the four LEED-certification levels.

The following table based on the Packard data summarizes costs for each scenario:

Building System	Total Hard Costs	Total Pollution Costs	Total Adjusted Cost
Market	\$10,000,000	\$3,173,346	\$13,173,346
LEED Certified	\$10,087,347	\$2,498,140	\$12,585,487
LEED Silver	\$11,309,380	\$1,958,211	\$13,267,657
LEED Gold	\$11,548,625	\$1,344,758	\$12,893,383
LEED Platinum	\$12,100,619	\$692,479	\$12,793,098
Living Building	\$12,895,248	\$0	\$12,895,248

As this chart shows, the hard building costs increase with more demanding green standards. The “Market” scenario represents conventional big-box construction. The “Living Building” scenario represents a design that makes maximum use of solar energy, daylight, and natural ventilation, with zero net pollution and waste.

However, when the report’s authors analyzed the costs to society of various building pollutants, they found that additional construction cost was approximately balanced out by the reduced damage to society.

Packard determined the costs to society of various pollutants produced by the building in each scenario over 20 years, including carbon dioxide, sulfur dioxide, nitrogen dioxide, and particulate matter. This analysis produced the data enumerated in the third and fourth columns of the table.

The report’s authors maintain that **assigning dollar values to pollution is reasonable, as “pollution has an overall negative effect on the economy.”** One might say “that **buildings externalize their costs because the price paid for energy does not reflect the true cost of pollution.**”

As an organization interested in environmental issues, the Packard Foundation argues that it is not only appropriate but also necessary to “determine what the external costs to society might be for the operations of its new facilities as pollution is generated.” The analysis considered only the externalized cost of air pollution and did not take into account energy use and pollution that might be attributed to construction materials.

The Packard report includes extensive analysis with descriptions of major building systems, sample wall system sections, and detailed cost breakdowns.

## The Contribution of Integrated Design

The practice of integrated design by many green-oriented architectural firms and construction project teams has proven effective in the implementation of green health-care facilities on schedule and on budget.

Integrated design is achieved when a collaborative team synthesizes knowledge of the local climate, the planned use of the facility, and the required loads and systems.

This requires “the early and close collaboration of a cross-disciplinary team that includes architects, engineers, contractors, construction managers, facility directors, operators, and medical staff,” according to a report by BetterBricks, an educational initiative of the Northwest Energy Efficiency Alliance (“Guide to the Design and Construction of High Performance Hospitals”).

Under a traditional linear approach to building design, the engineering function enters into the project only at a later stage. Integrated design brings engineering into the project as early as possible. According to the report:

*Through Integrated Design, loads are minimized and equipment is right-sized or eliminated, resulting in lower mechanical, electrical, and plumbing (MEP) costs than for a conventionally designed building.... With conventional energy conservation strategies, individual efficiency measures are added incrementally, cumulatively adding cost. With Integrated Design, the opportunity to downsize or eliminate equipment leads to substantial cost reduction as efficiency increases.*

For example, the design team for St. Luke’s Regional Medical Center in Twin Falls, Idaho, brought climate data into the design process at an early stage. Data on prevailing winds showed various potential problems with the initial design concept around the locations of key features, including the entrance, healing garden, helipad, and air intakes.

The wind data allowed the design team to create a better-sheltered entrance and healing garden. The helipad was relocated to prevent exhaust fumes from entering the building through air intakes.

According to the BetterBricks report:

*The [St. Luke’s] team looked for ways to reduce the heating and cooling loads on the new building. They analyzed climate data, determined the occupancy of each programmed area and then developed several design options. Heat gain in the summer was one of the larger loads in the first pass of energy modeling. So the team developed suggestions for high performance glazing and external shading devices. Along with other measures to reduce internal loads, the total load reduction was over 30%.*

Integrated design shifts the team's efforts toward the beginning of the project, saving money down the road and resulting in a better-designed building.

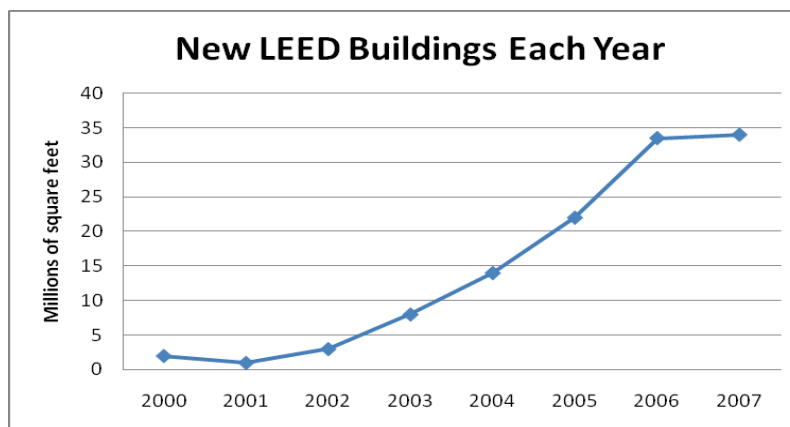
**An integrated design effort at the Oregon Health & Science University Center for Health and Healing resulted in a building “that uses 60% less energy than a code-compliant building,”** according to a report.

*By reducing loads and right-sizing equipment, the MEP [mechanical, electrical, and plumbing] costs were 10% less (\$3.5 million) than the baseline budget. The capital cost increase to achieve high performance was \$1.86 million, resulting in a net capital savings of \$1.64 million. With \$1.6 million in incentives and tax credits, the total benefit is over \$3.2 million. In addition, the annual energy costs are projected to be \$660,000 less per year than if the building were designed to just meet the Oregon Energy Code.*

### Green Construction's Market Penetration

Although the rationale for green building is strong, green construction is still in the early phases of market penetration. This has implications for an organization that is considering pursuing a project.

The following chart based on data from USGBC and RREEF Research show a fast growth rate for LEED-certified buildings:



RREEF's Andrew Nelson, writing in the firm's report "The Greening of U.S. Investment Real Estate: Market Fundamentals, Prospects, and Opportunities" (Nov. 2007), says that **"the number of projects has been growing at a compound annual growth rate of 50% to 100%."** This is "despite the general economic downturn from 2001 to 2003."

However, Nelson points out that the first LEED program, LEED-NC (for new construction) started only in 2000. **So, the overall market penetration of green construction is still low;** for example, RREEF estimates that LEED-designated space accounts for **less than 2% of total U.S. Class A office space.**



A McGraw-Hill report estimated that in 2010, LEED projects would be 5% to 10% of total construction, though Nelson believes that the estimate is low given current growth rates.

What are the chief obstacles to green construction? Nelson cites three primary factors:

1. **Lack of awareness:** Although LEED buildings now stand in all 50 states and about 400 cities, they tend to be clustered in more eco-friendly states like Oregon, Washington, California, and Pennsylvania. Thus, writes Nelson, “in many metros, few developers or investors can point to—or walk through—a local green building.”
2. **The experience curve:** Organizations need a fair degree of specialized knowledge of green construction to walk through the processes of initial project conception, design, permits, certification, and operations. Such projects require new relationships with such professionals as architects and engineers experienced in green building.
3. **A limited supply of trained professionals:** Most design and engineering professionals are not certified by the USGBC to work on LEED projects, though the number is growing quickly. Nelson writes that there are 40,000 now. However, he admits that the figure has doubled in the past two years, which means that many of those certified are relatively inexperienced.

### Migrating to Green Construction

Given the benefits, sustainable design has much to recommend it to a health-care organization. However, the relative newness of the practice suggests a cautious approach.

The right team can deliver a green project at or around the same cost as conventional construction. However, choosing an experienced team of architects, engineers, and designers is important.

Also, starting small can help an organization develop internal knowledge and skills that will contribute to more complex projects down the road. The case of the Geisinger Center for Health Research illustrates some valuable lessons.

Geisinger, a physician-led health system in North Central Pennsylvania, used a “baby steps” approach to migrate into green construction.

Peter Levasseur, director of sustainable design at architectural firm EwingCole, points to the Geisinger Center for Health Research as an example of a strategy that health-care organizations can follow to migrate into green construction.

Levasseur tells ILO that, though “the idea of green hospitals makes a lot of sense,” for many health-care organizations “it has not been a priority because hospitals have very specific functional needs that define it as a building type.”

For Geisinger to move into sustainable design, he says, its “first ‘green building’ needed to be a more generic building type.” This scenario worked for the Center for Health Research, which is a conference center rather than a clinical facility, allowing it to serve as “a stepping point to understanding how to build green facilities.” Levasseur says:

*Now that Geisinger has a LEED Silver Certification on [its] healthcare campus, turning an acute care hospital addition into a “green hospital” is much more tangible to the owner team, and the health-care staff who will be operating in the new hospital expansion, and demonstrates that a green hospital does not mean a radically different hospital.*

## Rationale for Green Operations

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Health-care organizations interested in environmental responsibility are going beyond green construction into green operations. Such practices include eliminating harmful chemicals and products in such areas as maintenance and cleaning, medical procedures, and patient care. Prominent examples include the use of nonlatex gloves and the elimination of mercury thermometers.

Tim Sanchez, communications director for the Center for the New American Dream, an organization advocating responsible consumption, tells ILO that “healthier products reduce the exposure to elements that can have serious negative long-term effects on those people who come into contact with them.” The organization advocates the use of such materials as nontoxic cleaners and paints.

Such measures, he points out, “can translate into something as simple as reducing insurance premiums down the road.”

Sanchez’s rationale appeals to common sense: “The bottom line is that green products have built-in health benefits to them. This is probably the most compelling argument in urging hospitals to make that shift. It just makes sense,” he asserts.

Janet Brown, partner program manager at Practice Greenhealth (formerly Hospitals for a Healthy Environment), goes even further. “You shouldn’t even be asking the question of ‘Why sustainability?’” she insists. The question is ‘Why not?’ There’s no reason not to do it. At this point, if you have to be convinced, then you’re missing something.”

Brown explains that the approach of her organization, which assists health-care organizations in implementing green purchasing programs, has begun to “take a more assertive stand” recently:

*We know so much more now about the connection between human health and the environment. I’m getting a little cranky about the ‘convincing’ part of things. If I have to convince you, then you’re not ready for me.*

*We need to take control as purchasers in a healthcare environment. The days of just paying the bills and getting out of here are over. But the good news is that the responsible management of materials saves you money.*

A case in point comes from the Boulder (Colorado) Community Hospital, which decided that “even if the hospital must pay more for products with recycled content, those products should be purchased anyway,” according to a report in the *Journal of Healthcare Contracting (JHC)* (“Waste Not,” Jan.-Feb. 2005).

In fact, Boulder discovered that sustainable practices do not necessarily cost more. Kai Abelkis, environmental coordinator at the hospital, tells *JHC*:

*Anywhere there's waste, there's not only an environmental impact, but there's also money being wasted. I always keep my eye on the prize, reducing the environmental impact [of our buying decisions and practice patterns], and saving the hospital money. Those two go hand in hand.*

For example, Abelkis was able to make a financial case for eliminating products containing mercury at the hospital. He tells *JHC*, “I asked [the members of the product committee], ‘If we had one mercury spill, what would it cost for a hazmat team to remove it?’ And I researched products that would work just as well.”

Abelkis believes that the economic case goes hand in hand with the larger case, which seeks community benefit and better patient care as well. He says:

*The key to the success of our program and others is that everyone in the medical industry is values driven. All I'm doing is allowing people to reflect those values, whether it's recycling, alternative transportation or purchasing products that are environmentally sound.*

### Impact of the Built Environment on Occupants

The impact of the built environment on a building's occupants is an important element of the case for green hospital projects. Improvements in this area translate into better patient care, as well as greater employee satisfaction, well-being, and retention.

Gary Cohen of Health Care Without Harm cites sick-building syndrome (SBS) as “a frequent contributor to short-term or chronic illness” (“First, Do No Harm,” in *Designing the 21st Century Hospital: Environmental Leadership for Healthier Patients and Facilities*, The Center for Health Design, 2006)

Green construction promises to greatly reduce the effects of SBS on employees and especially on patients. As Cohen writes, “for people confined to the indoors due to illness, the consequences are even more severe” than for normal building occupants.

In discussing SBS, the EPA reports that “Americans spend about 90% of their time indoors, where concentrations of pollutants are often much higher than those outside” (*Healthy Buildings, Healthy People: A Vision for the 21<sup>st</sup> Century*, EPA, Oct. 2001).

The agency says that “thousands of chemicals and biological pollutants are found indoors, many of which are known to have significant health impacts both indoors and in other environments.... **Known health effects of indoor pollutants include asthma; cancer; developmental defects and delays, including effects on vision, hearing, growth, intelligence, and learning; and effects on the cardiovascular system.**”

Research shows that indoor air quality is associated with respiratory diseases, employee absenteeism, and losses in productivity.

In contrast, some studies have indicated that sustainable design can improve worker productivity:

- A study by Heschong-Mahone Group found that students working in classrooms with high daylighting performed 20% better than students with little daylight (“Daylighting in Schools: An Investigation into the Relationship Between Daylight and Human Performance,” 1999).
- A study at Herman Miller Inc. found that worker productivity increased up to 7% after the company moved to a green facility with high daylighting (“Do Green Buildings Enhance the Well Being of Workers?” Judith Heerwagen, *Environmental Design and Construction*, July-Aug. 2000).
- A study at Lawrence Berkeley National Laboratory concluded that improvements to indoor air quality could save U.S. businesses \$58 billion in sick time and yield \$200 billion in employee performance improvement (“Health and Productivity Gains from Better Indoor Environments,” William Fisk, 2000).

In his cost-benefit analysis conducted for the state of California, principal author Greg Kats of Capital E, a clean energy consultancy, determined the net present value (NPV) of various benefits of green buildings, calculated in dollars per square foot. (*The Costs and Benefits of Green Buildings: A Report to California’s Sustainable Building Task Force*, Oct. 2003, a study conducted through a partnership between the Sustainable Building Task Force and the USBGC).

- Kats found that energy savings were worth about \$5.79 per square foot.
- Emissions savings were worth \$1.18 and water savings \$.51.
- However, the analysis showed that productivity and health benefits far outweighed other benefits,

at \$36.89/sf for LEED Certified and Silver construction

and \$55.33/sf for LEED Gold and Platinum construction

The Certified, Silver, Gold, and Platinum designations refer to the various levels of green construction certification granted under the LEED Green Building Rating System developed by the USGBC.

After an extensive literature review on the subject for his report to the state of California, Kats concludes:

*There is a very large body of technically sound studies and documentation linking health and productivity with specific building design operation attributes—e.g., indoor air quality and tenant control over work environment, including lighting levels, airflow, humidity, and temperature.*

*It is clear that green building measures that improve these attributes increase worker comfort, health, well-being, and measured productivity.*

### Green Hospitals and Employee Health

Hospitals that have taken an advanced approach to green construction and operations **report a meaningful connection with reduced turnover, employee health, and productivity.** One group tracking this is Guenther 5 Architects, a New York design firm that specializes in green hospital design, and its principal Robin Guenther. Guenther places hospitals in three categories: Tier 1, which go beyond basic regulatory requirements; Tier 2, which embrace green operations to save money; and Tier 3, which employ an extended business case for green, which is “informed by the inextricable link between environment and human health.”

In a study of 15 Tier 3 institutions, Guenther found **“a consistent positive correlation between green buildings, staff recruitment and retention, and performance [that] provide a bottom-line justification for green building on financial payback terms.”**

- For example, Deirdre Imus of Hackensack University Medical Center in New Jersey told researchers that a study at her institution revealed that “the cleaning products we were using before caused the employees to call in sick a lot.... Their eyes were all red, and different illnesses were happening.” After implementing the “Greening the Cleaning” program, Imus reports that “it all went away, and our workers’ compensation claims went down.”
- Similarly, Patrick Dollard, CEO of the Discovery Health Center in Harris, New York, reports that introducing green cleaning products has improved job satisfaction for his environmental services workers:

*There’s a sort of worker-respect aspect of green cleaners that sends a message to a group of people who generally feel undervalued that somebody actually cares about their occupational exposure and the materials they work with. It makes them more energized to do their jobs, the way respect energizes all of us.*

## The Community Case: The Broader Environmental Impact

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As significant consumers of construction services, health-care institutions' building activities have a substantial impact on the larger environment. Green building practices minimize negative effects of hospital construction and the environmental footprint of a facility.

Thus, health-care organizations that are building green can make a substantial case for distinguishing themselves as responsible corporate citizens to the community, patients, and funding agencies.

Gary Cohen of the Environmental Health Fund Studies writes that "buildings throughout their life cycles are major contributors to environmental degradation and human illness" ("First, Do No Harm," in *Designing the 21st Century Hospital: Environmental Leadership for Healthier Patients and Facilities*, The Center for Health Design, 2006).

Buildings, he points out, use substantial resources, including "about 40% of raw stone, gravel, sand, and steel, ... 25% of virgin wood, ... and more than 75% of PVC." They use about "40% of energy assets and 16% of water resources." Building construction and demolition "generates about 25% of municipal solid wastes," Cohen writes. Buildings also release carbon dioxide and ozone-depleting refrigerants.

As consumers become more aware of environmental issues, green building and operations will likely become important market differentiators for hospitals.

An August 2007 survey of healthcare professionals by construction trade publication *Building Design + Construction* bears out that prediction ("Where Building Owners, End Users, and AEC Professionals Stand on Sustainability and Green Building," white paper, Nov. 2007). In the survey:

- 68% of respondents agree that green hospitals "have a marketing or public relations advantage over comparable conventional hospitals."
- 56% agree that green hospitals "are more desirable to patients than standard facilities."
- 49% believe that going green "would give their hospital a competitive edge over conventional hospitals in their service area."

Tom Badrick, sustainability coordinator at Legacy Health System in Portland, Oregon, tells *Building Design + Construction* that the organization's customers, employees, and prospective employees are already fairly knowledgeable about sustainability. "Sooner or later, they will factor in environmental stewardship as part of how they choose their health-care provider or employer. Sustainability will be a competitive advantage."



## A Message to the Market

Health-care institutions can have a broader impact on the environment by means of their purchasing practices. By such practices they can send a message to the market that they are ready to support sustainability through application of their financial resources.

Tim Sanchez of the Center for the New American Dream tells ILO:

*Since hospitals consume on such a large scale, it's important to create a shift in the way these facilities approach their supply needs.*

*When large facilities and companies green up their supply chains, they are positively impacting the environment due to the sheer volume of their purchases. These purchases matter in the larger picture.*

*Consumption is the problem—and the consumption of products that are harmful to both the health of individuals and the environment only compounds that.*

Individual health-care organizations can influence their upstream supply chains to move toward more sustainable practices by working with supply chain aggregators commonly used in health care, such as group purchasing organizations (GPOs) or integrated delivery networks (IDNs). Collaborative efforts with such suppliers can bring safer and cleaner products into health-care facilities.

Boulder Community Hospital's Kai Abelkis joined the advisory group of the GPO Novation, he says, "to persuade and request [manufacturers] to make better decisions" ("Waste Not," *JHC*, Jan.-Feb. 2005).

A larger aggregator such as Novation is in a position to influence or even pressure manufacturers to make products more environmentally friendly. Abelkis tells *JHC* that, working through the GPO, he is "trying to make products better, with less packaging and better packaging, and with materials that can be reused, so that at the end of the day, we're saving hospitals money and saving resources."

## Kaiser Permanente to the Market: 'We Want Clean Carpet'

Kaiser Permanente (KP) has earned a national reputation for its commitment to green design and construction. The organization's environmental efforts are directed by its Environmental Stewardship Council, a cross-disciplinary group that aligns the organization around a central vision: to "provide health-care services in a manner that protects and enhances the environment and health of communities now and for future generations," according to organizational background materials ("Kaiser Permanente Hailed as Leader in Environmental Stewardship, 'Green' Building," background, Kaiser Permanente staff, Feb. 22, 2007).

With this vision as a core value advocated at the executive and board levels, KP pursues policies to assure the use of safe and sustainable materials in construction and operations.

A key objective, says Kaiser, is to use “purchasing muscle with green-building product manufacturers ... to have a major impact across the entire construction industry.” The backgrounder quotes Tom Cooper, KP’s program lead of design and construction standards and chair of the High Performance Buildings Committee, KP’s green buildings leadership group:

*Because the safer, healthier products don’t exist out there in the market, KP is in a position to create market transformation, due to our size and demand.*

The market potential is enormous, as KP is planning about \$24 billion in approximately 4,000 construction projects between 2007 and 2014.

As an example of the potential market impact of healthcare’s decisions, Kaiser Permanente’s desire for low-toxicity, sustainable carpets resulted in the invention of a new kind of carpet. It also resulted in a national purchasing agreement (NPA) for Collins & Aikman (C&A), the carpet manufacturer that came up with the innovation, according to Tim Greiner and colleagues, in a report for Clean Production Action, an organization promoting safer products (“Healthy Business Strategies for Transforming the Toxic Chemical Economy,” Tim Greiner, Mark Rossi, Beverley Thorpe, and Bob Kerr, June 2006).

KP’s national environmental purchasing policy states a preference for less toxic and easily recyclable products. The organization also states a specific preference for products free of mercury, PVC, phthalates, bioaccumulative toxics, polybutylene terephthalate (PBT), halogenated flame retardants, bisphenol-A, or any carcinogens or reproductive toxicants.

Since the mid-1990s, such preferences have affected purchasing decisions for building products and for medical and chemical products. Thus, KP has pioneered the use of mercury-free thermometers, latex-free examination gloves, PVC-free medical and building products, recyclable solvents, and safer cleaning chemicals.

However, the organization decided to make a special case of carpets in 2002, after conducting an assessment of carpet conditions and carpet-cleaning methods in all of its medical facilities. After the assessment, writes Greiner, KP set out to “find a high performance, environmentally preferable carpet tile for the millions of square feet in new construction it is planning for the next decade.”

After an exhaustive investigation, the organization determined that no existing product met its criteria satisfactorily in areas such as product content, especially PVC; product life-cycle characteristics; sustainable manufacturing processes; and effect on indoor air quality through outgassing. Although PVC-free products existed, none met KP’s performance requirements.

Because no appropriate product existed, KP decided to take a collaborative approach to develop a new product. This led to its partnership with C&A.

The new material is a high-performance chlorine-free carpet with polyvinyl butyral (PVB) backing made from recycled auto safety glass. The backing itself is recyclable at the end of the carpet's life.

A new medical center in Modesto, California, scheduled for a 2008 completion, will use the new carpet but will also incorporate solar panels, natural rubber floors, special pavement materials to filter out chemicals from rainwater runoff, and dual-flush toilets that use more water for solid waste than for liquid ("Hospitals Go 'Green' to Cut Toxins, Improve Patient Environment," Laura Landro, *Wall Street Journal*, Oct. 4, 2006).

## Building Green and Raising Funds

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Architect Robin Guenther found that few of the Tier 3 organizations her group interviewed had “tied their early funding and development campaigns to the quest for a sustainable facility.”

However, for those who did, she writes, “dollars tied to green building positioned them ahead of the curve” (“Values-Driven Design and Construction: Enriching Community Benefits Through Green Hospitals,” Robin Guenther and colleagues, in *Designing the 21st Century Hospital: Environmental Leadership for Healthier Patients and Facilities*, The Center for Health Design, 2006).

The value of seeking specialized funds targeting green projects is emphasized by the case of Children’s Hospital of Pittsburgh of UPMC. CEO Roger A. Oxendale tells Guenther that early in the fund-raising process, his organization obtained a \$5 million grant from the commonwealth of Pennsylvania for its new \$425 million complex.

Though small in relation to the overall project, the state grant helped get other constituencies on board. Oxendale says, “I haven’t had to go through that same justification process that some of the others have done.” Guenther writes that “it was management’s sense that getting the grant well before finishing the preliminary design alleviated a lot of questions about possible tradeoffs between first dollar and longer-term operating costs.”

Patrick Dollard of the Discovery Health Center cites the planning grant his organization received from the Kresge Foundation as a “major boost” for board support for fundraising. “It validated to my board that this was a good thing to do,” he tells Guenther.

Kresge offers planning grants up to \$100,000 under its Green Building Initiative. Such grants have provided a valuable stimulus to green building projects in the past. However, Sandra McAlister Ambrozy, senior program officer at the foundation, tells ILO that the initiative is moving beyond new construction projects: “Now our program is focusing on the next frontier, in renovation and historic preservation projects” with a green focus.

The reason is the increasing mainstreaming of green building practices. “The marketplace has taken over most of the issue of green construction,” says Ambrozy, proving to itself that, when it comes to cost, there is no essential difference between building green and building conventionally.

Ambrozy notes that “other funders around the country are increasingly looking through a green lens.” She cites the **George Gund Foundation in Cleveland** and the **Heinz Endowment in Pittsburgh** as examples. “Some funders are even requiring green building as a baseline.”

In fact, recent news releases from the **Gund Foundation** announce that the organization “has a new policy limiting capital grants to projects that adopt green building principles” and “will require nonprofit organizations to submit a climate change statement as part of future grant applications” (“Gund Foundation Announces Green Building Policy” and “Gund Foundation Announces Climate Change Policy,” <http://www.gundfdn.org>).

“We are wedded to sustainable design largely because of the process used for achieving it,” says Ambrozy. She is referring to the use of integrated design, as practiced by the Anshen+Allen firm (discussed previously).

Integrated design results almost automatically in sustainable design. “You bring together the design team—the landscape architect, the building architect, the structural engineer, and others—as a group to consider the interplay between the various tasks that they are going to contribute.”

For example, if the structural engineer has the opportunity to discuss the building envelope with the mechanical engineer in the beginning, they can jointly optimize the building systems used and perhaps avoid overbuilding the HVAC systems, thereby saving money.

Ambrozy believes that at this point, the business case for integrated design and green building is practically a “gimme”:

*About all you need to do is show your commercial lender you’re going to do some energy improvements. I would hope it would be a no-brainer for the lender because you can see the payback flow.*

Likewise, it should be a no-brainer for the organization and its executives and board:

*Why would you not want to adopt a comprehensive best practice to develop your facility? The issue is not really whether it’s “green” or not. It’s a process that results in an efficient, less costly system to operate.*

*It’s simply the best way to build the building. That in itself is the business case. Why would you want to do it any other way?*

### Role of Public Incentives

Indications are that public incentives in green construction projects can substantially affect cost feasibility. For example, **for the Providence Newberg Medical Center in Newberg, Oregon, local and state incentives “will shorten the payback period associated with ... green design to 14 months,”** according to the *Green Guide for Health Care* (newsletter, Oct. 2006).

The following incentive programs are available for projects in Pennsylvania:

**Sustainable Development Fund Grant Program:** A local grant program serving the PECO territory and administered by The Reinvestment Fund (TR). Grants average \$25,000 and can be used for various kinds of solar energy projects, wind, biomass, hydro, fuel cells, and other alternative energy sources. The fund also offers loan programs up to \$250,000. More information available at <http://www.trfund.com/sdf>.

**Pennsylvania Energy Development Authority (PEDA):** The authority offers grants up to \$1 million, loans up to \$1 million, and loan guarantees up to \$500,000 for energy projects. Projects funded include solar, landfill gas, wind, biomass, fuel cells, renewable transportation fuels, waste coal, and others. More information available at <http://www.depweb.state.pa.us>.

**Pennsylvania Energy Harvest Grant Program:** This program initiated by the Pennsylvania Departments of Environmental Protection and Agriculture focuses on projects that can demonstrate dual goals in energy savings and environmental protection. According to the Database of State Incentives for Renewables and Efficiency (DSIRE) at North Carolina State University, the program issued \$5.4 million in grants for 28 projects in 2007. More information available at <http://www.depweb.state.pa.us/energy>.

## Green Roofs

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Green roofs are grouped into two general classifications, according to the Michigan State University Green Roof Research Program (<http://www.hrt.msu.edu/greenroof>):

1. **Intensive** green roofs, which use a wide variety of plants, including trees and shrubs. Intensive roofs can allow public access, usually involve a deeper substrate of greater than four inches, and are usually limited to flat roofs. These roofs are referred to as “intensive” because of the need for intensive care and maintenance.
2. **Extensive** green roofs, generally limited to herbs, grasses, mosses, and other species that require minimal maintenance and that can survive on a shallower substrate. Extensive roofs are usually not open to the public.

Green Roofs for Healthy Cities, a professional association, cites the following benefits as justification for a green-roof project:

- Protects the roof membrane, extending the life of the roof—the association estimates that a green roof lasts twice as long as a conventional roof.
- Savings on heating and cooling costs.
- Sound insulation.
- Reduced need for other building systems, such as HVAC, insulation, roof drains, and storm-water management.
- Aesthetic appeal for building occupants and neighbors, and a pleasing outdoor space for meetings and other activities.
- Potentially increases self-sufficiency through horticultural production, such as flowers, herbs, and even food.
- Potential to attract grants and philanthropy.
- Potential to earn LEED credits.
- Community benefit through improved air quality, reduced ambient temperature, absorbed carbon dioxide, and habitat creation.

The association says that “**an installed extensive green roof with root repellent/waterproof membranes may be installed for \$10–\$24 per square foot.**”





# STEP-BY-STEP GUIDE TO



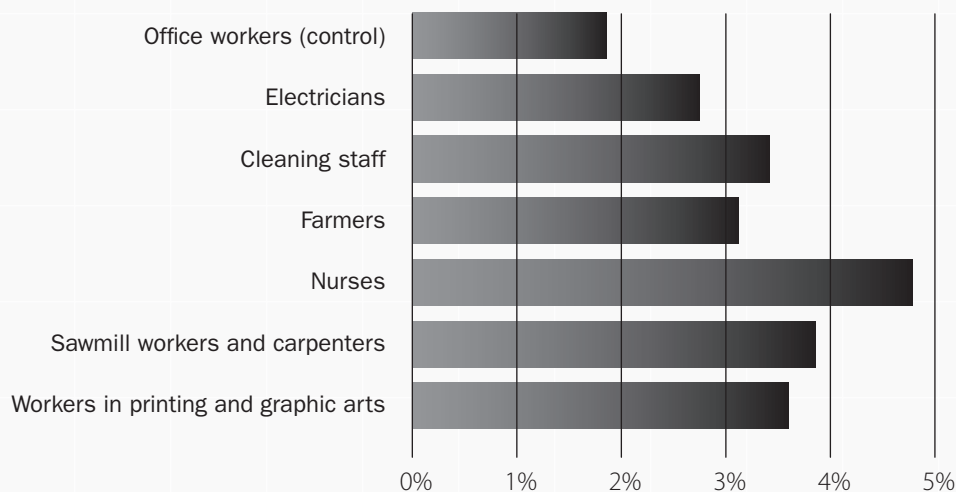
## Creating the Environmental Imperative in Healthcare

### A Guide for Healthcare Executives

The impacts of healthcare on the environment are notable. The healthcare sector spends more than \$8.3 billion on energy each year,<sup>1</sup> and hospitals are consistently within the top ten water users in their communities.<sup>2</sup> At the same time, healthcare facilities use an array of toxic chemicals—from cleaning products to chemotherapy drugs—and generate thousands of tons of solid and medical waste each year. As science has begun to emerge documenting the growing effect of low-level chemical exposures on infants, children, and fertility, a new study in the *Lancet* reveals that nurses have the highest incidence of work-related asthma of any occupation studied, followed closely by cleaning staff.<sup>3</sup>

Consistent with their ethical imperative to “first, do no harm,” healthcare organizations have an obligation to address aspects of their operations that have the potential to negatively impact the health of patients, staff, and the community. The healthcare sector is increasingly recognizing the critical link between human health and environmental health, and is choosing to act upon this knowledge. In response, many hospitals are developing organization-wide programs that dramatically reduce the effect of their facility’s operations on the environment while concurrently saving money and minimizing liability and compliance risks.

#### ASTHMA CASES ACCORDING TO OCCUPATION<sup>3</sup>



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While the kinds of healthcare facilities leading the way in environmental excellence range from rural, critical access hospitals in Idaho to sprawling metropolitan hospitals in the medical mecca of Boston, these facilities share one important common thread that is integral to their successes—senior level engagement, support, and leadership. Healthcare executives play a critical role in helping these programs come to fruition.

Commitment is the first step. Once the healthcare organization makes a commitment to environmental excellence, there are several concrete actions that senior executives can take to ensure the success of these new programs and initiatives. The following ten steps are a framework for senior level engagement.

### **Step One: Announce senior-level support for environmental stewardship as part of your organization's community health mission.**

Approve an overarching *Statement of Environmental Principles* as a core value for the organization, to guide philosophy and operations related to a broad range of environmental considerations. Commitment from the administration reassures staff that these programs are supported at the highest levels of the organization. The *Statement of Environmental Principles* should also be used to highlight the organization's commitment to community benefit and community health, as well as to corporate social responsibility.

### **Step Two: Commit your healthcare organization to becoming an Practice Greenhealth Partner.**

Support your organization in joining a national community of hospitals and healthcare facilities that are working together to identify best management practices and environmental strategies for the entire sector. Practice Greenhealth provides your organization with the practical solutions, tools, education, and technical assistance necessary to implement comprehensive environmental programs in a healthcare setting, and can help actualize the commitments outlined in the *Statement of Environmental Principles*.

### **Step Three: Support the creation of the infrastructure necessary to evaluate and improve environmental programs.**

Environmental programs, like any other programmatic area, require strategic planning. Charge an existing committee, or create a "Green Team", to evaluate current programs and create facility-wide goals and an action plan. The committee should include representatives from senior management and report to leadership on outcomes related to the facility goals. Suggested participation:

- Safety
- Environmental Services
- Engineering
- Infection Control
- Nursing
- Purchasing/Materials Management
- Risk Management
- Laboratory
- Pharmacy
- Physician Liaison
- Marketing
- Occupational Health
- Environmental Health and Safety
- Food Services/Dietary
- Additional clinical departments where necessary, such as OR, ED, or NICU

### **Step Four: Hire a Sustainability Director to lead and coordinate environmental initiatives throughout the organization.**

Developing and implementing new environmental programs can be challenging, and involves a degree of coordination between a number of disciplinary areas. Hospital departments often operate in silos, and coordinating a change in work practices can be difficult. Healthcare organizations that have had the greatest successes in creating an environmentally responsible organization have done so primarily through the guidance and oversight of a facility-wide point person. Organizations often find that this person "pays for themselves" through the cost-savings and efficiencies that result from a focus on environmental performance.

Healthcare organizations that have had the greatest successes in creating an environmentally responsible organization have done so primarily through the guidance and oversight of a facility-wide point person.

### **Step Five: Understand where your facility is starting from—develop a baseline.**

Task the assigned Committee and/or the Sustainability Director with a facility-wide audit of waste data and environmental programs to identify current reporting relationships, compliance concerns, and initiatives already underway. Use the data to determine a facility baseline and performance metrics, which can then be compared to national Practice Greenhealth benchmarking information to assess progress and determine priorities for action.

### **Step Six: Direct Materials Management/Purchasing to purchase more environmentally responsible products and services.**

Environmentally preferable purchasing, or EPP, is an integral part of “greening” your facility. EPP is a proactive approach to environmental management—an attempt to look upstream at what is coming in the door versus just handling waste and toxic substances at the “back door” of the facility. Materials Management/Purchasing should work with your organization’s group purchasing organization (GPO) to select more environmentally preferable products. Incorporating environmental attributes into the product evaluation or value analysis process is critical, in addition to developing supportive policies and educating department heads, physicians, and nurse managers on the environmental imperative behind the new evaluation framework.

### **Step Seven: Integrate environmental considerations into any new building design, construction, or facility renovation project.**

Emerging research demonstrates that green building strategies add value to healthcare organizations beyond an improved environmental footprint, including the potential for fewer medication errors, decreased pain medication, shorter patient stays/faster recovery times, reduced infection rates,

increased staff retention, and lower rates of occupational asthma.<sup>4</sup> Evaluate the feasibility of designing and building a green healthcare facility as early as possible in the development process. Support the creation of an Integrated Design Team based on recommendations in the Green Guide for Health Care,<sup>5</sup> that includes representation from departments often overlooked at the design table such as Environmental Services, Facility Management, and Nursing.

### **Step Eight: Direct Marketing/Public Relations to create awareness of the facility’s environmental commitment and achievements within the local community.**

Creating an environmentally sustainable healthcare organization not only provides benefits to human and environmental health, it can also be an opportunity to create a market advantage. Be sure to have Marketing/Public Relations share your organization’s story and efforts with the community. In addition, many facilities are adding a branding aspect to their environmental programs—creating marketing slogans, posters and stickers that tie in with their environmental focus. This strategy successfully highlights the facility’s commitment to patients, staff and visitors.

### **Step Nine: Track environmental performance metrics each year against Practice Greenhealth benchmarks and report annually on progress.**

Like other strategic goals of the organization, it is important to track progress in environmental improvement. The assigned committee and/or Sustainability Director should report annually on progress to-date, including a synopsis of the facility’s annual goals, programs underway, any worker exposures or regulatory infractions, and key environmental performance metrics that can be compared each year with national Practice Greenhealth benchmarks. Including highlights of the facility’s environmental achievements in the Annual Report is also a good way to create transparency, build goodwill and demonstrate commitment to the organization’s community benefit or corporate social responsibility programs.

Creating and sustaining an outstanding environmental program in a healthcare organization can be challenging, but with support from senior leadership, it can—and is—being done.

### **Step Ten: Apply for an Practice Greenhealth Environmental Excellence Award each year to get recognition for achieving annual environmental goals.**

Get national recognition for all of the organization's hard work. Direct the assigned committee and/or Sustainability Director to apply for an Practice Greenhealth Environmental Excellence award—the premier awards program recognizing environmental leadership in healthcare. The application process provides an incentive to determine environmental performance metrics each year, and receiving an award honors staff for a job well done, while providing another opportunity to get positive press in the local community.

Creating and sustaining an outstanding environmental program in a healthcare organization can be challenging, but with support from senior leadership, it can—and is—being done. For more information on how to get started, contact Practice Greenhealth and learn how your organization can commit to making healthcare *healthier* through the integration of sound, cost-effective environmental programs.

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# Statement of Environmental Principles

We, Sustainable General Hospital (SGH), affirm our commitment to promote healthier communities both locally and globally, and to be an environmental leader in all aspects of our buildings and operations in a manner demonstrably protective of environmental and human health.

SGH recognizes the critical link between human health and the health of the environment, and will seek new and innovative ways to improve environmental performance through conservation, purchasing, reduction, re-use and recycling programs, and through partnership with others in the community to safeguard the environment.

SGH will apply these principles to achieve optimal environmental standards consistent with our mission, including our commitments to clinical excellence, community benefit, and fiscal responsibility.

In an effort to respect and protect the earth's resources, restore environmental quality, and protect human health, SGH will:

- Instill environmental responsibility as a corporate value.
- Incorporate environmental considerations and total facility life-cycle analysis into building design, construction, and renovation strategies.
- Minimize the generation of waste through source reduction, re-use, and recycling programs.
- Manage, minimize, and eliminate—where possible—the use of hazardous materials.
- Strive to purchase and utilize environmentally preferable products and services.
- Conserve energy/water and improve the energy/water efficiency of our operations. Make every effort to use and promote environmentally safe, cost-effective, and sustainable energy sources.
- Evaluate and minimize each aspect of our organization's impact on global climate change.
- Use renewable natural resources and conserve non-renewable natural resources through efficient use and cost-effective and careful planning.
- Employ prevention strategies to minimize negative environmental impacts we cannot eliminate.
- Ensure the health and safety of our employees by promoting safe work practices, reducing exposure to hazardous substances, and using the safest technologies and processes.
- Provide employees with safety and environmental information through training and education programs that enable and encourage them to make work practice decisions in support of these principles.
- Set annual goals and develop action plans to continuously improve the quality and measurable outcomes of our environmental programs.
- Monitor, evaluate, and report on our practices as they relate to these environmental principles.

**FOR MORE INFORMATION, CONTACT:**



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