



# Values-Driven Design and Construction: Enriching Community Benefits through Green Hospitals

**Robin Guenther, FAIA,  
Gail Vittori, and Cynthia Atwood**

Paper presented by The Center for Health Design® and  
Health Care Without Harm at a conference sponsored by  
the Robert Wood Johnson Foundation, September 2006.



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©2006 The Center for Health Design  
1850 Gateway Boulevard  
Suite 1083  
Concord, CA 94520  
925.521.9404 tel.  
925.521.9405 fax  
[admin@healthdesign.org](mailto:admin@healthdesign.org)  
[www.healthdesign.org](http://www.healthdesign.org)



Health Care Without Harm  
1901 North Moore Street  
Suite 509  
Arlington, VA 22209 U.S.A.  
703.243.0056 tel.  
703.243.4008 fax  
[infor@hcwh.org](mailto:infor@hcwh.org)  
[www.noharm.org](http://www.noharm.org)



Robert Wood Johnson  
Foundation

Robert Wood Johnson Foundation  
Route 1 & College Road East  
P.O. Box 2316  
Princeton, NJ 0854302316  
877.843.RWJF (7953)  
[www.rwjf.org](http://www.rwjf.org)

Graphic design: Glenn Ruga/Visual Communications  
Copyediting: Lisa Richter, Richter Communications

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## Introduction

For the past decade, the healthcare industry has been engaged in a transformation of design, construction, and operational practices with a goal of reducing environmental impacts. Quietly and without much fanfare, early industry leaders have begun a radical journey toward a new vision of the industry's health mission. Ten years after the founding of Health Care Without Harm and with early adopters having completed their first sustainable buildings, this is a pivotal moment to assess the state of sustainable design and construction in the healthcare industry from a leadership perspective. Why have organizations taken this on? What challenges have they faced? How have they framed the benefits to their communities? What have been the anticipated, and unanticipated, outcomes?

Healthcare leaders and their organizations engaged in sustainable design and construction are doing so largely because it aligns with their humanitarian and stewardship mission and vision. They've been able to harness their community and/or personal attitudes about the environment toward this end and, very often, their concerns about the environment's effect on their patients' health. They are *not primarily* motivated by pristine wilderness and resource conservation for its own sake, but for the sake of their mission to serve and steward resources and health. For them, it's more than saving energy. It's fundamentally connected to health or to a basic human value.

In the paper that follows, we have identified healthcare leaders and allowed those leaders to tell this story in their words. Of the many organizations and teams engaged in sustainable design, we have located a key group of early adopters who are reaching beyond measures that have economic payback and who are achieving community benefit beyond their four walls. And for a disparate set of reasons, they've been able to overcome certain obstacles that could be framed as having to take on and/or embrace an environmentalist agenda and change the status quo. Those who have made it through the process are emerging transformed—both personally and on an organizational level.

## Why this topic and approach

Sustainable design is driving both market transformation and organizational change. Each is necessary for the healthcare industry to sustain itself. There are many reasons the industry is overburdened and slow to change, but this paper begins with the notion that the industry is increasingly recognized as an outmoded system that pollutes. In fact, when viewed in this particular light, the system not only pollutes, it potentially participates in creating the very illnesses it is trying to cure.

Sustainability, or *green building*, calls into question the purpose of the healthcare system. Does it treat sickness or promote the conditions of health? Does it create sickness and prevent health? Is it a paradoxical situation that can be resolved and, if so, how? Do healthcare organizations that undertake green building recognize this paradox, and, if so, are they acting on it?

Can an ecological framework assist organizations in redesigning themselves to “rekindle a commitment to healing, hope, optimism, innovation, and creativity” as Hamilton and Orr (2006) describe it? Does a building program—in this case, a *green building* program, have the capacity to more broadly model change?

Organizations such as Health Care Without Harm that focus on operational initiatives to reduce environmental footprint think so. This paper supports the notion that building programs are agents of these—they are the vehicle by which organizations can transform themselves and/or much of the operational complexity that prevents them from changing course.

Not all green buildings are profoundly impacting the healthcare organizations that create them, but many are. Those are the leaders we sought for this paper, and their experiences confirm the power of sustainable design to guide transformation. They say it permeates their organizations. It affects everything that they do. And that the difference in capital costs between conventional and sustainable building practices is, in many instances, equal to the difference in time they have to spend persuading people to go forward with it. They often devote a lot of personal energy and political capital getting and keeping their organizations on board with this and contend that, if sustainable design practice was normalized, they could devote their organization’s energy to modeling this change more broadly in ways that would fundamentally affect healthcare, society, and global health.

Leaders recognize the high cost of inaction on matters of the environment—such as climate change and chemical contamination—on the health of our families, neighbors, and communities at hand and globally. By embedding sustainable design in a broader vision of leadership and mission, these projects and organizations are succeeding in delivering the first generation of sustainable healthcare projects.

We term these *Tier 3 organizations*, and for people in policy and philanthropy, these are the healthcare organizations worth investing in to model broader social and societal change.

## Part 1: Background

### Status of sustainable design in healthcare

Since 2000, the healthcare sector’s engagement in sustainable design has moved at an impressive rate. What was ever so slightly registering in the minds of healthcare industry leaders just six years ago has emerged as a hallmark of better buildings, reflecting a commitment to create physical facilities that support improved patient care, staff productivity and well-being, and environmental stewardship—healthcare’s triumvirate. The Setting Health Care’s Environmental Agenda (SHEA) conference, held in San Francisco in October 2000, marked the starting line for this short history of remarkable accomplishment. As the first gathering of healthcare leaders to explicitly address environmental stewardship, SHEA set out to “inspire ambitious achievements in every healthcare institution” (Brody 2001, page v). Since then, the industry response to Brody’s challenge “to transform the healthcare industry into a model of environmental responsibility” has been overwhelming, creating the essential elements of twenty-first century hospital design.

In the years since 2000, a steady progression of practical, nuts-and-bolts green building tools and resources—customized for the healthcare sector and informed by health-driven values—along with inspirational, on-the-ground accomplishments, have coalesced to create a body of knowledge and know-how that has been set in motion.

In 2002, the American Society for Healthcare Engineering (ASHE) published the *Green Healthcare Construction Guidance Statement*, the first sustainable design guidance document emphasizing a health-based approach (ASHE, 2002). The *Green Guide for Health Care*, the healthcare industry’s first best-practices, voluntary green building tool, modeled with permission after the U.S. Green Building Council’s

Leadership in Energy and Environmental Design (LEED) rating system, was initiated in 2002, followed by periodic updates and the registering of pilot projects to bolster participation (Green Guide, 2004). While emphasizing the importance of integrated design, the *Green Guide* is organized in two sections—construction and operations—to facilitate its use. Using the *Green Guide for Health Care* as a foundational reference document, the *LEED for Healthcare Application Guide* development process began in 2004. With its release anticipated in 2007, *LEED-Healthcare* will represent the first third-party green building certification tool customized for the healthcare sector.

The rapid market uptake of these tools and resources is manifested today in more than 40 million square feet of green healthcare facilities, representing about 180 healthcare projects. These include more than 100 *Green Guide* pilots, six LEED-certified projects, and about eighty LEED-registered projects. By embracing a life-cycle view of human health and environmental stewardship as strategic definers of success, this new generation of healthcare tools—and the buildings they guide—is poised to accelerate the adoption of health-based green building standards in other sectors.

## **Tiering environmental performance**

In a paper presented at CleanMed 2001, Ted Schettler, MD, MPH, identified three tiers of operational environmental performance evolving in hospitals.

- Tier 1: minimum local, state, and national environmental regulatory compliance
- Tier 2: beyond compliance to measures that save money
- Tier 3: informed by the inextricable link between environment and human health and moving beyond both compliance and monetary savings with a long-term plan to reduce environmental footprint

He contended that applying “triple bottom line” approaches to pollution-prevention initiatives—i.e., measuring economic, social, and environmental benefits—would deliver significant benefits for healthcare organizations and the communities they serve (Schettler 2001). Early Tier 3 hospitals supported this notion. Named one of the state’s top four recyclers, the University of Michigan Health System described its program’s social benefit as an institutionwide initiative that engages everyone (University of Michigan 2005). A 25 percent solid-waste reduction yielded \$30,000 in year 2000 annual savings and diverted more than 830 tons of waste from the community landfill.

As building initiatives accelerate, it is clear that we can apply the same system of tiered performance to organizations engaged in sustainable building. Tier 1 organizations will not undertake green building until they are mandated to do so through legislative policy initiatives. They will not make the link, or the organizational leap, between the health of their facility and the patients they serve.

Tier 2 organizations—lacking perhaps leadership, the necessary internal structure to produce change, and/or the necessary decision support mechanisms to help move beyond regulatory compliance—can move no further than to embrace sustainable building strategies that deliver proven economic performance benefits. Where there is no business case, the effort falls short of its potential; that said, these organizations see the value of having a sustainable healthcare facility and grasp its potential community value.

Finally, Tier 3 organizations create leadership vision and harness all available talent in uniting construction and operations together in transforming their organization’s approach to the environment—resource use and stewardship. Comprehensively, they move toward a more fully realized and integrated performance level that achieves both patient and environmental health and returns those benefits back to the



building occupants and the community. These organizations recognize that they can't build a green building and still have Styrofoam cups in their cafeteria. They create authentic stories of stewardship that spring from many levels simultaneously.

For the most part, this paper focuses on the experience of Tier 3 leaders and their organizations, based on the belief that these organizations will drive the necessary market transformation and social change. Their success is pivotal to moving the sustainable design and operational agenda in healthcare forward and forming the foundation for the next generation of Tier 3 leaders. While some Tier 3 leaders have used LEED as a green building framework and third-party certification tool, others have not, believing that it falls short of addressing the complex, overlapping design and operational improvement agenda unique to healthcare or not explicitly connecting buildings and human health. It is anticipated that *LEED-Healthcare*, with significant reliance on the healthcare-specific, health-based *Green Guide for Health Care*, will provide an important building and operational improvement tool for these leaders.

## A perspective on community benefit

Hospitals and healthcare represent an essential societal function, with a fundamental mission to care for and heal the sick. In many respects, healthcare institutions are held to a higher ethical standard than virtually any other enterprise, as Hyman and Sage (2005) put it: to do good, not merely to do well.

Moreover, the public perception of a hospital's mission and purpose is generally independent of whether it is for-profit or nonprofit. Commenting on the blurred perception of hospitals' legal status, Everson (2005) stated, "We at the IRS are now faced with a healthcare industry in which it is increasingly difficult to differentiate for-profit from nonprofit healthcare providers." While only tax-exempt healthcare institutions are legally obligated to provide and document community benefit, the healthcare sector as a whole is embracing an extended view of community benefit as aligned with its core mission and as a means to create a competitive advantage in an increasingly competitive marketplace.

The term *community benefit*, rooted in an 1891 legal decision, is defined as "charitable activities that benefit the community as a whole" (Everson 2005). For more than thirty years, nonprofit, tax-exempt hospitals in the United States have been required to provide community benefits in the public interest, expanding what constitutes community benefit beyond the original definition of providing indigent care. In 1969, the Internal Revenue Service (IRS) established a community benefit standard, later revised in 1983 (Everson 2005): "...the promotion of health...is deemed beneficial to the community as a whole." The standard provides for broad latitude including any activity deemed as promoting health. Many states require nonprofit hospitals to submit annual reports beyond those required by the IRS. In California, for example, nonprofit hospitals are required to prepare a community benefit plan and an annual document describing activities undertaken "to address community needs within its mission and financial capacity and the process by which the hospital developed the plan in consultation with the community" (IOM 2004). Similarly, in New York, since 1990, nonprofit hospitals are required to prepare community-service plans including the hospital's mission statement, publication of assets and liabilities, assessment of community needs and strategies to address them, and solicitation of input from community stakeholders (IOM 2004).

In light of the formidable financial advantages that come with tax-exempt status—most notably, property-tax exemption<sup>1</sup> (Keehan 2005)—hospitals have been subjected to increased scrutiny as to what constitutes community benefit. To this point, in May 2006, the IRS issued questionnaires to more than 500 tax-exempt hospitals and healthcare organizations seeking, in part, details about the organizations' provision of community benefits—services that "...promote health for the benefit for the community" (Pear 2006). The final question in the *Community Practices* section of the questionnaire—Did your hospital have any other programs or activities that promoted health for the benefit of the community?—opens the door

for hospitals to take credit for the multifaceted and measurable community benefits resulting from the implementation of green building practices increasingly playing out in healthcare today.

A study by Schlesinger and Gray (1998) offers a typology of community benefit, highlighting four different, but overlapping, perspectives:

- *Legal/historical* addresses historical responsibilities of nonprofit hospitals.
- *Market failures* addresses the cost and benefits of medical care.
- *Community health* addresses ways to develop evidence-based relationships between medical services and triggers of health problems.
- *Healthy community* addresses ways to strengthen the social institutions that influence health and quality of life in local communities.

Of the four perspectives, the *community health* and *healthy community* ones are intimately connected to green building. Community health is associated with offering preventive services and promoting health in local communities, with the benefit of reducing hospitalizations and demand for emergency services for what are often preventable illnesses. For example, promoting asthma awareness through community education on common building materials that are asthma triggers, as is the case with Children's-Pittsburgh, supports community health.

Healthy community has a broader frame, extending to "support and sustain optimal health and quality of life" (Schlesinger and Gray 1998). Again, drawing from Children's-Pittsburgh, employees are encouraged to consider moving to a neighborhood adjacent to their new facility, with the multiple benefits of neighborhood revitalization, ability to walk or bike to work, and reducing air emissions associated with automobile commuting.

In her May 2005 testimony to the House Committee on Ways and Means, Carol Keehan, chairperson of the Board of Trustees of the Catholic Health Association of the United States, Pensacola, Florida, and board chair of Sacred Heart Health Systems, also in Pensacola, addressed the issue of benchmarks for community benefit (Keehan 2005). Rather than establishing quantitative benchmarks, Keehan recommends assessing community benefit based on "the value we are providing to our communities," which, as she points out, is not always well-measured by numeric benchmarks.

While we find many community benefits of green buildings can be quantified, others are more challenging. Those that can be quantified include a reduction in electrical-energy use and reduced storm-water runoff with an increase in permeable surfacing. Those with a less direct corollary include a measurable increase in health indicators by creating a walkable campus or a shortening in the patient's length of stay with the addition of natural daylight. In such instances, it is difficult to isolate causal variables.

## Study methodology

The goal of this study was to identify a group of participants who express an array of sustainable health-care pursuits. We sought both geographic diversity, as well as project type differentiation in both scale and program. We included acute-care facilities, ambulatory and cancer centers, and children's hospitals that may or may not include women's services. We also sought those who had completed the first third-party-certified sustainable projects (BC Cancer, Boulder, Discovery, The Lacks Center) and heard stories of their unintentional leadership in this realm and the charmed consequences that followed.

Interview subjects also included representatives of the next generation of leaders and a range of completed (Boulder, Discovery), near completed (Dell Children's, San Juan Regional, Dublin Methodist), and early-stage (Palomar, Spaulding) projects. We found it useful to compare and contrast stories within similar project types

(Dell Children's, U-M Mott), while others add intrigue and variety or are noted for a particular position on public health and the environment (Arkansas CPH, BC Cancer).

We conducted one-hour interviews via conference call. Each call was professionally recorded and transcribed by third-party groups; the content from these are presented in Part 2 of this paper. The complete list of participants, their organizations and their projects are identified in the appendix. We've included an alphabetized listing of our interview subjects, by project name. Throughout the report, we have attributed quotes to the organization, followed by the speaker's last name.

The findings are organized into three sections: "Section A: Mission and vision," "Section B: Connection to community," and "Section C: Framing the benefits back to communities." "Mission and vision" looks at motivation, leadership, organizational change management, and the move toward reuniting construction and operation. "Connection to community" explores how these leading organizations key into community values and their exploration of community benefit, whether those benefits accrue to patients, staff, the surrounding neighborhood, or global health. "Framing the benefits back to communities" examines how organizations frame the benefits that derive from the pursuit of sustainable design and construction, whether those are financial or expressed through enhanced community reputation.

## Part 2: Dialogue

### Section A: Mission and vision

#### On health care and environmental leadership

*Summary Statement 1: As mission-driven organizations, Tier 3 hospitals and healthcare facilities emphasize environmental leadership.*

At the onset of the twenty-first century, healthcare leaders are recognizing their environmental leadership as an essential component of a broader commitment to excellence. "It's about what you value. How well do you know what you value? Are you concerned about the environment? Are you willing to reflect those values in what you're building and show that you'll do something about it? Our values are oriented toward a concern for the environment, a concern for people's welfare, and a concern for excellence and quality delivery" (The Lacks Center, McCorkle).

"Most of us have a mission that encompasses improving the health and well-being of the constituents that we serve through excellence in research, teaching, and patient care. We have a further responsibility to give back to the community, and, as leaders in healthcare, sustainable building is one way that we can fulfill that responsibility" (Children's-Pittsburgh, Oxendale).

For some, environmental stewardship is a legacy value well-embedded in the mission and goals of Tier 3 organizational and community culture. "The mission statement of our Trinity Health System has a phrase that says: 'We will steward the resources entrusted to us'" (The Lacks Center, McCorkle).

"One of Providence Health System's core values as a Catholic organization is stewardship, and a key operating principle is mission. And the last Pope had written encyclicals about care for the environment. I was actually able to stand up in front of the leadership team and say, 'Our organization needs to commit to an environmental initiative, because this allows us to connect to our very mission as a Catholic organization'" (Providence, Glass).

For others, environmental leadership, while consistent with a mission of healing, requires cultivating a broader view of mission "It is our responsibility as healthcare providers, but, more importantly, as senior leaders in this industry, to lead our organizations in thinking as broad as we can about our mission" (Children's-Pittsburgh, Oxendale).



"I always start by talking about our mission and vision. And they both encompass, without having to use the word directly, *stewardship*. The mission is to improve the health of those we serve. And the vision is to be the place where people want to work, physicians want to practice, and, most importantly, where people turn to when they need healthcare services. By building a better building, we are clearly going to improve the health of all those we serve—our patients, our families, our staff, and our physicians. Whether they're there as customers or in service to customers" (Dublin Methodist, Herbert).

"We have an obligation to do it. People want us to do it. Green building is essential for good health. And the indoor environment is intrinsic to our whole mission of healing people and allowing them to do that in a better way. So it works to our benefit and the benefit of the larger society as a whole" (Palomar, Covert).

Environmental leadership is galvanized by a belief that transcends short-term thinking. "One of the community members said, 'Don't build what you can afford; build what you really think you need and want. And, the community will figure out a way to fund it.' And, that's exactly what happened" (San Juan Regional, Frary).

Since the SHEA conference in 2000—the first gathering of healthcare industry leaders with an environmental focus—the significance of environmental leadership as fundamental to healthcare's mission and goals has gained prominence, recognition, and momentum. Environmental stewardship has emerged as a defining facet of leadership, excellence, and quality. "As we looked at the children's hospital, we wanted to make a statement about how committed we are to the internal, as well as the external, environment. It was just the right thing to do" (U-M Mott, Kelch).

A commitment to an expanded view of quality that includes environmental stewardship is affirmed by each of the Tier 3 healthcare organizations interviewed for this paper and provides a compelling foundation for why they have embraced green buildings as an expression of organizational excellence. "The most compelling and resonant benefit of green building, other than constructing a building that works, is to promote environmental sustainability and, by doing so, be viewed as a leader in the industry. As a community resource, a hospital has to be taking a lead role in that" (Spaulding, Waterston).

In some instances, leadership motivates healthcare organizations to seek third-party certification for green buildings. "We felt that Austin and the Seton Family of Hospitals could benefit by not only being perceived as, but fulfilling a role as, community leaders" (Dell Children's, Bonar).

With increasing acknowledgement of the linkages between buildings, development patterns, and human health, the hospital building as a manifestation of value becomes more than symbolic of mission. Indeed, the building sets in motion a connection to the experience inside the building and ramifications at the community and global scales. Healthcare leaders are joining the collective voice of leaders in other sectors in recognizing that buildings, through their life cycle, are significant definers of our ecological future. "As an industry sector, healthcare is uniquely positioned because it reaches across all classes, all economic strata, geographically. It's mission-driven and we're in the healing business. And it's a natural, when you're in the business of healing people, that you want to heal the Earth as well" (Providence, Beam).

"A lot of our mission is to approach everything in the context of environmental stewardship, because by identifying and controlling and, ultimately, preventing all these environmental factors that we're exposed to, we can prevent disease, protect our children, and the environment. We know that" (Hackensack-Gabrellian, Imus).

### **On the built environment and health**

*Summary Statement 2: As mission-driven organizations, Tier 3 healthcare leaders are making the connections between the built environment and human health and acting on their awareness through the pursuit of sustainable design and construction.*

For many, sustainable building is an extension of ongoing interest in the linkages between the built environment and human health. Initial moments of both personal and organizational awareness are expressed as vivid memories. “It brought into focus who and what we have been for thirty years. Twenty-five years ago, we had a national conference on infants at risk, with some of the smartest people in the country. They were talking about heavy metals and lead, air-quality issues and toxins” (Discovery, Dollard).

“Historically, Kaiser has been very cognizant of the connection between environmental issues and patient health. In 1964—a year after *Silent Spring* was published—Rachel Carson was the keynote speaker at a conference sponsored by Kaiser. It was her last public appearance before she died of cancer. At the end of her life, Carson was extremely controversial, and yet, because Kaiser understood the connection between environment and human health, they were willing to recognize and support her ideas” (Kaiser, Cooper).

“Green design lends guidance to aspects of site management and property ownership that are good for the healing environment; a clean jobsite, for example. You might ask how does that affect what’s going on? Well, in having a clean jobsite, we’re not only looking out for the health of the kids that come into the building that we design, but in having green products, the 500 workers that we have every day on site building this facility aren’t exposed. From our perspective, the benefits of green design begin with facilities’ design and construction, in preserving the health of our workforce” (Dell Children’s, Bell).

For people engaged in cancer care and pediatrics, there is growing recognition that the public understands the link between the built environment and human health; Tier 3 leaders are responding to their constituents’ concerns. “We talk about it a lot, and, in the cancer world, it is important. People are so paranoid about cancer. There are so many stories out there—and the focus more and more is on the environment” (BC Cancer, McNeil).

“My husband and I have a working cattle ranch for kids with cancer in New Mexico, where we spend all summer. We built it environmentally friendly and sustainable for health reasons. There are studies that have linked many pesticides and toxins—and the building materials that contain them—to why these kids are sick. Carcinogens and other toxins can lead to cancer and other childhood diseases, so when we built the ranch, we built it with all of that in mind. From the start, we have received most of our children from Hackensack Medical Center. I thought, ‘I wonder if hospital environments have considered all these things.’ We had to when we built the ranch” (Hackensack-Gabrellian, Imus).

For other Tier 3 organizations, this becomes a way to demonstrate commitment to the Hippocratic oath, “First, do no harm.” “*No harm* has true meaning. Not only internally but externally. Building a sustainable building is such a great opportunity to set the tone for your hospital—in your community” (Boulder, Abelkis).

“Once you know that there are toxic chemicals in products you are purchasing and using in your buildings, you have an obligation to do something about it. Kaiser uses the precautionary principle partly to manage risk—in five or ten years, there may be the science to definitively prove that we should have avoided this material—we try to move away from it earlier” (Kaiser, Kouletsis).

### **On intentional leadership**

*Summary Statement 3: For the most part, early adopters of sustainable design have been unintentional leaders who engaged in sustainability because they viewed it as fundamentally the right thing to do in their community and for their organization as a whole.*

The purpose of Tier 3 organizations is largely human, if not humanitarian, and done in the interest of the best possible outcome for serving the community’s needs. With a kind of enlightened pragmatism toward the design and construction process, these organizations have been able to harness their community and/or own personal attitudes about the environment toward this purpose. “I wasn’t forced to make it a

headline issue. Now, it's the headline issue! Had I had to justify it early on, I'm not sure if it would have been viewed in the same way. I sympathize with organizations where they really have to try and create the business case; I did not" (Dublin Methodist, Herbert).

A Tier 3 organization's understanding of how the environment affects patient health motivates them to seek action. "What I focused on more was to create a vision for the organization that was clearly inclusive of the evidence and is compelling both inside and outside the organization" (Dublin Methodist, Herbert).

Likewise, Imus was motivated by the connection of the patient's healing environment to the health of the environment as a whole. She approached the hospital with the idea of a nontoxic housekeeping program after considering whether the cancer patients she and her husband receive at their New Mexico ranch through the Tomorrow's Children Fund were exposed to carcinogenic cleaning products at the hospital.

Imus met with Hackensack University Medical Center Chief Executive Officer John Ferguson in his offices one afternoon. "Well, I got into five minutes, maybe, of telling him how important this was and why, and he said, 'Wait a minute, just stop. This makes too much sense, just common sense, and we're going to do it.' Of course, that's what we did. And successfully! In the spring of 2001, a matter of months, we literally revamped the entire campus at Hackensack. Mr. Ferguson had the right vision and saw the potential here. Immediately he thought, 'Well, this is going to be better for our employees, be better for our patients, be better for the staff, be better for our visitors. Why wouldn't we do it?'" (Hackensack, Imus).

In this and similar instances, sustainable design and healthy building operations become the building blocks for a new facility that yields improved health outcomes. These, then, are seen as a means to an end, not an end in itself.

Tier 3 organizations that were early pioneers of sustainable design rarely aspired to create a sustainable facility as a manifestation of their leadership agenda—it was viewed as simply the right thing to do. "When we were doing the clinic building, my friends and colleagues thought it was radically different. I never thought it was any more radically different than how we've run our agency. It really takes an organization with a green vision. I don't think it's possible to think of green as a hip thing to do and then just try to do it. I think the building has to be part of an overall vision. Now that it's built, I have more colleagues that ask: How did you do this? How can we do it also?" (Discovery, Dollard).

"I didn't really know we were a leader at the time. It just made sense. It was an opportunity that was presented to us that we could do something and build a building that was environmentally sustainable. I wasn't aware that this was really leading edge at the time we actually made the decision" (BC Cancer, McNeil).

At the end of the day, there is a simple enlightened pragmatism, or matter-of-factness, about their ability to embrace sustainable design. "The singular belief system that drives the work that I do is the direct link between quality of the environment and the quality of health. It's just that simple. Foothills has had a huge impact internationally and in the U.S. healthcare community. I can't even tell you how many people have toured it" (Boulder, Abelkis).

The next generation of adopters can be identified as aspirational leaders who recognize the capacity of sustainable building to define Tier 3 leadership and transform organizations. They have learned from these groundbreakers and value these new ideas and their organization's ability to push further: "Could we create this new hospital that incorporates all these ideas? Is there one in the United States? The answer was no. We'd like to be one of those destination sites where seeing is believing. We have taken the leap of faith" (Palomar, Covert).

### **On managing change**

*Summary Statement 4: Tier 3 organizations see the design process as embodying a bold view of themselves and exhibit a variety of leadership styles to manage the change necessary to realize the vision.*

"Today, medical centers talk about a tripartite mission, where your focus is not only on your patient care/operations but also your teaching and your research."

— Roger Oxendale

Leaders acknowledge the power of relatively small operational changes to inspire organizational transformation that resonates through the built environment. "No change that one can make is small, especially when it comes to our health or the environment or the impact it'll have on our health immediately. I think we've proven that at Hackensack. This single fundamental change is a huge change and a significant one because it immediately changed the indoor air quality on campus" (Hackensack-Gabrellian, Imus).

"It's really challenging to see if there are things we can do differently. What do we do in terms of pest control, environmental services? What do you do in terms of recycling, and how does that impact your purchasing policies?" (Children's-Pittsburgh, Oxendale).

To achieve high-performance buildings, leaders are challenging their teams, both internal and outside consultants, to think differently. "This is not that complicated. It's really common sense. All we are doing is challenging things that we've been doing for a long time, and why do we do things for a long time? Just because we are used to it" (Hackensack-Gabrellian, Ferguson).

"We wanted to challenge everything about we believed a typical hospital should look like, how it should act, how it should feel. My vision was to challenge the status quo at virtually every corner. And so that's how we came to 'Run until apprehended.' Frankly, it's hard for the designers, who have had the experience of working with owners, who, when the very first innovative idea that surfaces, say, no way. There was some trust building early on in the process between the owner and the designers to establish an environment that allowed good ideas to come forward. I wanted them to suggest everything. (Laughs) And then we'd go backward from the outer limits, where eventually even cost constraints do play a role but..." (Dublin Methodist, Herbert).

Tier 3 organizations have found local and community support for innovation. St. Mary's Health Care (The Lacks Center) introduced the idea of sustainable design to its in-house design group because LEED had already begun to influence industry and impact design construction standards in the Grand Rapids, Michigan, area. "With Peter Wege's involvement, the momentum and the spirit captured us all. He was giving us a tour, along with other Steelcase representatives, of Steelcase's new facility and we began to think, 'These are some of the same kinds of things that we should incorporate into our new building.' He had not reached that point in his gift giving. But we said, 'We think it's important to do because we can see the benefits of it.' Reduced gasoline, convenience for families...We also just sort of loved the challenge" (The Lacks Center, McCorkle).

Palomar exemplifies an organization inspired by the first wave of green building and primed to build on that early commitment. The organization is simultaneously engaged in a number of partnership and team-building activities, including with the Kresge Foundation, Kaiser Permanente, The Center for Health Design, and the *Green Guide for Health Care*. "Our champion teams went hard to work. Dealing with issues of sustainability, the healing environment and, as well, each group was charged to look at all the various aspects of our designs against finance, quality of the workplace, and making it better for our employees in general" (Palomar, Covert).

And for others, sustainable design taps into a germane set of cultural values that can be acted upon with the right decision supports in place. "It was at the *Boston Design for Health Summit* that it all came together. As a product of the 60s and 70s, I was very concerned with the environment while growing up in the Midwest. When I went to this Design Summit and started hearing what other hospitals across the country had done, or were contemplating, it seemed to me that we ought to put ourselves on a path to do likewise" (Spaulding, Waterston).

As the transformation occurs, Tier 3 organizations recognize their role in raising the bar for the larger industry. Within systems, demonstration projects resonate through the larger system. “The work we are doing is having an impact in the system, and it’s generally very well-received. With that comes the creak of the raising of the bar—it clearly is the sound we are hearing” (Dublin Methodist, Herbert).

Finally, these leaders acknowledge that the fear of change is not a reasonable excuse *not* to act. “People who are going through this process are realizing that change and the issues and pressures it brings with it are one thing. But to act on the fear of doing something different by doing nothing would be quite another problem. A lot of this is about stepping outside of the comfort zone... that’s what the journey involves” (Dublin, Herbert).

“Being a change agent requires a thick skin and a conviction that what you’re doing has value to your organization. And, eventually, what you start to see is hearts and minds changing” (Providence, Beam).

### **On bridging design and operations**

*Summary Statement 5: Environmental leadership among Tier 3 facilities is demonstrated through a mission-driven design process that integrates construction and operations in the service of continuous environmental improvement.*

Tier 3 organizations consider the operational issues that define their environmental footprint and community messaging in the context of sustainable design and construction undertakings. “Our coffee shop that’s in the building refuses to use Styrofoam cups or containers. That’s one of the decisions we made early on, even though it doesn’t have anything to do with LEED. We all know that Styrofoam is not exactly an environmentally friendly material. So they’re using alternatives, which, in fact cost five or ten times as much” (The Lacks Center, Benz).

Furthermore, Tier 3 leaders understand that their communities require authenticity and honesty in approaching matters of environmental responsibility. “It’s about having the organization embrace the green hospital from a cultural and mission perspective. One of the fears I had was that we would decide that we were going to be green, have everybody work to get all the points, and then forget about it when the construction was over. Instead, we opted for a comprehensive approach—it’s a transformational process to have our staff thinking about everything that they’re doing as it relates to the environmental impact. And challenging to see if there are things that we can do differently” (Children’s-Pittsburgh, Oxendale).

Environmental awareness, once created, informs all the different aspects of community relations and leads to a culture of continuous improvement. In Tier 3 organizations, green committees, including representatives of design, construction, and operational departments, are spearheading initiatives to reduce environmental footprint. Organizations rely upon, and empower, these groups to challenge the status quo and raise the standard.

Kaiser Permanente has an active High Performance Building Committee that reviews sustainable design and operational initiatives. “Once the stakeholders—members, labor unions, caregivers—are educated about what’s going on, the demand increases internally to drive improvement. They’re the ones who will generate more demand internally. It’s a long journey—it’s a huge company—145,000 employees” (Kaiser, Kouletsis).

Geoffrey Glass, director for facility and technology services at Providence St. Peter, launched a group called Stewards for a Sustainable Environment. “We borrowed on the idea of H2E [Hospitals for a Healthy Environment], and call it S2E. That’s been this interdisciplinary team of people, four of whom went to CleanMed. After that conference, we developed a listing of everything we wanted to achieve. We meet monthly at 7 a.m., and we’re all early. Amidst the rest of the work that we have to do in our jobs, we find time to chase down a number of initiatives simply because of our own passions for them!”



Often, operational improvement programs are implemented while capital projects are in design to ensure that improved operations are in place prior to move-in. For example, while Spaulding is only in the design-development phase, its Green Committee is actively engaging the hospital community through the monthly online newsletter that includes a column on “Greening the Hospital” and features articles on topics ranging from operational improvements to the debate on operable windows. Similarly, Children’s-Pittsburgh has been engaged in operational change initiatives for at least two years in anticipation of the opening of its sustainable building in 2008.

In organizations that can synthesize design and operational issues, operational improvements often lead to substantive changes in design and construction practices. Nowhere is this more evident than with Kaiser, which has researched material performance, purchasing contracts, and operational improvement in a comprehensive, coordinated manner.

“We started with a campaign to reduce the amount of material we were sending to landfill from Kaiser construction projects. As we learned more about carpet through the three companies we had national purchasing contracts with, we began to understand that there were a lot more environmental issues associated with carpet manufacture and emissions—indoor air quality. The indoor air-quality issues were connected to maintenance, the kinds of chemicals we were using. We asked tough questions: Is carpet a filter or a sponge, is carpet worse or better for the environment? We started looking more at the fibers as we talked to manufacturers about recycled content, what kind of backing they were using, and we used outside consultants to educate us beyond the waste issues associated with those materials. We now specify and purchase carpet differently” (Kaiser, Cooper).

Once the buildings are in place, their existence inspires continued environmental improvement. “I now have a director of environmental policy. We’re now putting out policy positions to bidders or contractors that won’t allow them to use certain materials. We don’t even have to talk about it anymore—we just implement it. I think the building has been this remarkable metaphor for us to say: We can do this...and more!” (Discovery, Dollard).

For many Tier 3 organizations, sustainable design has the capacity to positively impact the facility design process through policy enactment; creation of standards programs; or research, measurement, and verification activities. Within systems, the projects are universally seen as models for future system capital project initiatives. “There was an epiphany around our Newberg project. It’s fair to say that hearts and minds were changed within our organization about ecocharrettes and about building sustainability and energy efficiency into our facilities. And it was the genesis of what now has become a standard throughout Providence. We have a system here now that requires that an ecocharrette be conducted for every construction project over \$5 million. It’s now embedded in how we do our business of construction” (Providence, Beam).

“I don’t think the goal of LEED certification has substantially altered our processes about inclusiveness of the design, but it has brought more people into the process and opened some minds to this in a very positive way” (U-M Mott, Kelch).

“Foothills has set the standard. We basically threw out our maintenance book when we opened our LEED-certified facility and adopted those new standards—everything else went out the window. Whenever we’re looking at upgrading something, we will look to the Foothills as our common denominator” (Boulder, Abelkis).

### **On market transformation**

*Summary Statement 6: Tier 3 organizations recognize the power of the industry to transform markets through purchasing initiatives and wise use of resources.*

U-M Mott looked for demonstration opportunities to test and eventually grow the university's basic building standards by selecting environmentally preferred materials. These would be used for cosmetic upgrades at existing facilities and in successive new facilities that fell under the planned new major buildings program. "In our planning we already were looking for product substitutes. We had put down rubber flooring in our current hospital in one of the floors because we wanted to test its durability and see whether the staff felt a difference. That's an example of something we started before even registering our project with LEED" (U-M Mott, Warner).

This seeing-is-believing approach accrues other benefits as well. Manufacturers are incentivized at a much larger scale. They can respond easily to the communitywide expectation for their products and are encouraged to see new markets taking hold. Likewise, the design team is freed of many obstacles when the client gets involved.

"We need to really shake up, not only the architecture and design community, but also the manufacturers, because while they're taking the steps, they're baby steps. It's like the automotive industry: the technology is there. We used cotton denim insulation as an example. There were no LEED points for it because we had to drive it across the country from Colorado and Arizona, but then when we thought about it, why would we want fiberglass, and fiberglass sitting in those walls for years and years and years?" (Hackensack-Gabrellian, Heeley).

"Unless you have a major purchaser or market for a product, I'm not certain that even architect/specifiers can push it—it's really incumbent upon the owners—in this case, the healthcare industry—to demand these products. Kaiser, as a major voice for this industry, has taken a stand. Until we did, all of our visionary architects, interior designers, and supplier reps couldn't get the attention of the manufacturing industry" (Kaiser, Kouletsis).

Often, Tier 3 leaders express frustration at the limited sustainable material choices in the marketplace. They long for innovative products that meet the performance needs of healthcare settings and transparent material evaluation protocols to ensure environmental benefit.

"I often wish that there were magic bullets that would allow us to make clear tradeoff decisions quickly—is the chemical pack in the waterless urinal worse for the environment than using the water to flush a conventional fixture? These are the kind of tradeoff decisions we are asked to make daily around these issues, and the data are just not forthcoming or simple. A lot of times the choices are not great—either the products don't exist or they are so costly that they are not economically viable. One of my frustrations is that we are often forced to make the best of a range of poor choices" (Kaiser, Kouletsis).

They comment on the need to create industry demand for better, healthier materials—most have stories of battling the market for environmentally preferable options. Only with increased demand will the initial first-cost premiums for innovative materials be reduced or eliminated.

"We decided we'd try other than PVC (vinyl) materials. We went back through our materials palette and tried the rubber flooring experiment. That experiment failed. But we had migrated down the path of having decided, 'Yes, we want to be green in our choice of materials. Now, let's go out and learn what works and what doesn't.' And now we are saying, 'If we're going to have a resilient floor, it's going to be an eco-polymer, even if it's going to cause us to choke a little on the initial cost. We realize that we can service this economically and get a sustainable eco-polymer floor'" (Providence, Glass).

An appeal to commonsense knowledge of what patients would like and appreciate at hospitals and would positively affect their experiences as well as their health outcomes is causing officials in some instances to relax regulatory constraints and allow innovation to occur. "The Department of Public Health says you need, say, X-amount of foot candles for the doctor to examine the patient. But a green consultant might

say that a patient room should be able to get by with half that much. In negotiating with the DPH to separate the lighting circuits in the patient room into three separate circuits, we have a general room light, which is a couple of downlights that are dimmable and that are decorative, we have a reading light over the bed for the patient, and we have standard 2x4 fluorescent lights for the examination” (The Lacks Center, McCorkle).

## **Section B: Connection to community**

### **Connection to community values**

*Summary Statement 7: Tier 3 healthcare leaders view their buildings as manifesting the values embedded in the communities they serve; within environmentally progressive communities, the healthcare sector’s environmental leadership is essential.*

Organizations in environmentally progressive communities are compelled to demonstrate environmental leadership or lose their community connectivity. Many of the early adopters are community hospitals—organizations with close local ties—located in environmentally progressive regions or in cities with a public commitment to sustainable development. The Pacific Northwest and northern Michigan are regions described as having strong support for environmental improvement. “We’re blessed in Olympia to have a very progressive environmental community. People move here for the environment, sitting where we do in South Puget Sound, at the gateway to the Olympia River and the Cascade Mountains. Lots of folks enjoy the outdoors” (Providence, Beam).

Community environmental awareness is rapidly increasing; early adopters noted that standing with or being ahead of the community awareness level is key to maintaining market leadership. “We’re seeing a huge shift in awareness out in the general public about our impacts—both the hospital’s and their own. The City of Boulder is renowned for the idea of environmental stewardship. We’re trying to reflect a sense of community through what we value. You define values as a community. And to me, this community represents the values of people who live here. I’m a firm believer that, in life, you are the choices that you make” (Boulder, Abelkis).

Pittsburgh, Pennsylvania; Vancouver, British Columbia; Boston, Massachusetts; Boulder, Colorado; Grand Rapids, Michigan; Little Rock, Arkansas; and Austin, Texas—all have progressive, successful local green building initiatives that provided both context and local support for healthcare sector green building initiatives:

“One of the things that’s interesting about the Grand Rapids area is that it has a larger-than-normal number of green buildings. If you go to the U.S. Green Building Council’s site and look up Michigan, you’ll find a huge concentration of green buildings in this area. It’s part of our heritage. It stems from the forest industry and from living off the land in Michigan. It’s also tied to the psyche of the Grand Rapids population. As a result, we receive a lot of community support” (The Lacks Center, Benz).

In progressive communities, organizations that engage in sustainable building initiatives align themselves with leading peers in other private industries approaching sustainable building. “What’s happened since in the community has been astonishing; we have several LEED-certified buildings in Little Rock. When our staff see the success of the Heifer Project, the Clinton Library, and so forth, they say, ‘Yeah, we want that too’” (Arkansas COPH, Gehring).

In regions where sustainable building is under way, healthcare is redefined as a civic function and a pivotal community economic partner. As nonprofits, healthcare organizations are using their environmental leadership to maintain and enhance community support for programs, services, development, and expansion in the service of promoting health for the benefit of the community. “By charting the responsible path and replacing facilities within the construct of the City of Austin’s goals for a cleaner environment, we could add to our public image in the community” (Dell Children’s, Bonar).

“As we got closer to building the College of Public Health, it was all about, How do we do this as a demonstration project for what’s good for the community? What’s good for the nation? What’s good for our environment? All those questions” (Arkansas CPH, Gehring).

“We think that a sustainable, high-efficiency building makes a statement to our community about our commitment to them to provide the very best healthcare, in a healing environment that they will all benefit from” (Providence, Beam).

“We look at how we can serve our community. This LEED facility is just one more aspect of our hospital, as a community hospital, people feel connected to. People contribute, donate, volunteer, and that’s the reason why we can go forward. Our environmental stewardship is again just another natural extension of our community values” (Boulder, Abelkis).

### **Community connectivity and presence**

*Summary Statement 8: Tier 3 healthcare organizations, through sustainable siting, design, and construction, become visible advocates for Smart Growth initiatives, sustainable development patterns, site restoration, healthy-lifestyle options, and community revitalization.*

Sustainable design initiatives provide a mechanism to engage in and be recognized for supporting community economic revitalization and healthier lifestyles. Initiatives range from encouragement of staff to purchase neighborhood housing (Children’s-Pittsburgh) to hosting farmers markets on site (Kaiser). As a first step in aligning values, Tier 3 projects have consciously chosen urban and semi-urban sites (Children’s-Pittsburgh, Dell Children’s, Boulder, BC Cancer, Dublin Methodist, Palomar, Spaulding) over ex-urban and suburban locations to avoid greenfield development and/or to reduce transportation burdens. In nearly all other instances, a site was carefully chosen on an existing campus.

Pittsburgh opted to rehabilitate a vacant downtown hospital campus rather than to develop a greenfield site in a suburban location, citing concerns about loss of community connectivity. They are now working with their Community Development Corp. on incentive programs for staff to purchase housing in the immediate Lawrenceville area. For Palomar, creating solutions to address the affordable housing challenges confronting staff in the immediate area of the Palomar replacement hospital site are viewed as a priority: “Now we’re talking about how to create housing opportunities for our staff and for others” (Palomar, Covert).

Where projects are located in less densely populated areas, or where mass transit is already widely in use, Tier 3 leaders seek creative solutions to mitigate reliance on automobiles. They become vocal, active advocates in support of public transportation systems. “We will have to work with the city on public transportation. I would say over 60 percent of our staff and patients come by public transportation. Right now, the Navy Yard is not a very densely populated area, so buses don’t run frequently enough for our staff. Given our site and the budget, we know we can’t build more than 300 parking spaces” (Spaulding, Waterston).

In urban areas well-served by public transportation networks, organizations are successful at reducing the required on-site parking. “The City of Vancouver waived the parking requirement because we had a good argument, based on the idea that most of the people in the building do not use their cars. They’re post docs; they take the bus. We wanted to encourage bus use. So did they” (BC Cancer, McNeil).

Even in areas with limited options for public transportation, Tier 3 leaders think creatively about alternatives to private auto use. “We are expanding van pools and are in discussions with North County Transit Authority about connecting with the Sprinter (a light-rail system). Part of solving the transportation problem is through the creation of a mixed-use site—we see an opportunity for assisted-living capacity and other commercial business opportunities” (Palomar, Covert).

In some instances, Tier 3 leaders move toward consolidating services as a strategy for reducing transportation burdens for staff and patients. “Before the creation of The Lacks Cancer Center, cancer patients and their families needed two things: they needed reliable transportation and they needed a good map—a road map—because they were going twenty-six places. This was the idea behind The Lacks Cancer Center, that all of these services, the complete continuum of care, could be provided right here in this one extraordinary facility” (The Lacks Center, McCorkle).

In completed green projects, alternative transportation use often exceeds projected demand, further demonstrating that a strongly articulated environmental stewardship mission resonates with building users. “I do believe that, for a number of our employees, that idea of green building and living in a sustainable world is now a reality for them. It comes to mind regarding bicycles. I’ve had to put two or three more bike racks out at Foothills. It keeps expanding because more and more people are bicycling. We’re connected to a terrific bike path that literally almost directly connects to our Broadway facility. Some doctors who ride their bikes can get from here to there in 15 minutes” (Boulder, Abelkis).

Sustainable design programs reward healthcare organizations for remediating environmentally damaged properties and restoring damaged ecosystems. Dell Children’s, for example, revisited an initial decision to move to a suburban greenfield site and instead opted for a more central brownfield site in the city’s desired development zone. “We took it as an opportunity to be particularly careful about what kind of development example we set, and the city encouraged us to set a high bar for the construction that would come after us in the development of the site” (Dell Children’s, Bonar).

Likewise, Spaulding is remediating a brownfield site in the long-abandoned Boston Navy Yard. The City of Boulder encouraged Boulder Community Hospital to take on an environmentally damaged site in the hope of achieving its restoration. “Much of the site was wetlands—it had been really destroyed by cattle grazing. And so we created additional wetlands. A portion of the land is just not touched anymore; it’s going back to its natural state of being—We will never develop it, nor do we want to” (Boulder, Abelkis).

This concept of stewardship leads us to a final group of Tier 3 leaders who actively advocate for protecting valuable natural sites and habitat for their communities. “When people arrive at Providence St. Peter, the entire building campus is shrouded in a forest of trees. Of our 154 acres, only about 60 acres are developed as the building site, and the balance of it is second-growth forestland—150-foot trees. We border a class I salmon wetlands. We own it. And probably 40 percent of our property is undevelopable. There’s this little creature called an Olympic mud minnow we protect—we hear that half the world’s population lives in this creek that borders our hospital. We regard our site as a precious resource—our community agrees with that” (Providence, Glass).

As Tier 3 organizations engage in green building, they become more empowered, visible, and active participants in wider community sustainability initiatives.

“Our local community college has now put together an energy park. And we’re there with them trying to recruit energy companies, wind, solar, geothermal interests, to set up in the energy park at the college and start to have students get more involved in green stuff. We are the largest employer in our county, and we do a lot of construction. We’ve been asked to set up a laboratory there that would help train plumbers and electricians and other trades people to know how to install and better understand this green technology or sustainable technology. That could have remarkable payoff for us. So we’re trying to better educate contractors in our region. It’s a very practical step” (Discovery, Dollard).

### **Connecting to community and its behaviors**

*Summary Statement 9: Tier 3 organizations see the opportunity to model behaviors about healthier living and, conversely, model themselves after community needs and values.*



Hospitals engaged in sustainable building have the opportunity to create meaningful examples that are tangible demonstrations of doing the right thing for environmental and human health. For Kaiser, sustainable building is directly linked to its marketing and education campaign focused around healthier lifestyles: “We have the Thrive campaign, which is looking at people’s health and lifestyle. Our marketing folks are very interested in the sustainability program because it fits in perfectly with Kaisers’ ‘interest in improving your health and your lifestyle.’ By building smarter, better buildings that have fewer harmful impacts on the communities we serve, we’re promoting that same view that the campaign is projecting to potential members” (Kaiser, Cooper).

San Juan Regional removed a publicly visible facility that had unintentionally become a smoker’s hangout, held smoking-cessation classes, and is implementing a campuswide nonsmoking program, benefiting patient and community health. In this instance, the healthcare provider is able to effectively implement programs and policies from the top down in an effort to protect and advocate for health needs. Interestingly, San Juan Regional is also able to take from the community a healthy behavior that it then models back into the patients’ healing environment. Farmington, New Mexico, has a large Native American population with a need for gathering spaces large enough to accommodate families’ practices, social customs, and healing rituals. After receiving community input, a meditation room was provided on each floor.

Many Tier 3 leaders are using sustainable building and operation to catalyze larger organizational transformation in the service of the patient experience. In the landmark book, *The Experience Economy*, co-authors Joseph Pine and James Gilmore contend that people seek transformation in their healthcare encounter and that they look to hospitals in part to guide this transformation. “Patients don’t want to feel less sick, they want to be well” (Pine and Gilmore 2004).

Hospital patients and their families are looking for an environment that supports a transformational experience, and sustainable building is viewed as having the capacity to catalyze this change. “Another major theme that emerged in our design process was that of transformation, whether it was from a patient’s standpoint coming in ill and leaving well or from an employee’s standpoint coming in saying, ‘This day I want to be able to have a significant impact on the care of this organization and an impact on people’s lives’” (Children’s-Pittsburgh, Oxendale).

Many view the healing process as a teachable moment in the lives of patients and staff. The building and its operation can positively create healthy experiences that trigger behavioral changes.

“One of the interesting aspects of a sustainable healthcare facility is the number of people who come in and out of the doors. And where they are in their lives at the moment that you have them. You have people in an educable moment and, that is, I think, a really compelling argument. You have so many staff, and so many patients, and the patients are there because they’re vulnerable. And they’ve just gone through some potentially life-and-death situation and are coming out on the side of life, but are at a moment to think about quality of life” (Spaulding, Waterston).

Tier 3 providers are major employers in communities and regions and have the potential to reach and influence large numbers of people in their communities with sustainable building initiatives. “Hospitals are such an integral part of every community. We’re the largest health system in Alaska, Washington, and Oregon. And so when we have this philosophy, it tends to have an impact that is disproportionate because of how close we are to our communities” (Providence, Koster).

In many instances, this is about allowing people to live their environmental values while in the building. “We allow people to reflect their community values by recycling, taking their bike to work, the bus to work, using products that are more environmentally sound, whatever. A majority say this is what they believe in and this is how they want to live—they’re very proud of that and they tell me that themselves” (Boulder, Abelkis).

## On building community within

*Summary Statement 10: Tier 3 organizations recognize that medical spaces and technologies are in the service of humans and that a broader vision of health and wellness is a program imperative—not a program addition. This broader focus of creating community, healing environments, and experience inherently requires consideration of both evidence-based design and sustainable measures.*

Some Tier 3 organizations take a largely sustainable approach, while others focus on an evidence-based design approach—in fact, most are drawing from both. For all intents, one does not happen without consideration of the other since each encompasses a broad vision of occupant health and personal well-being as essential components of a twenty-first century better building.

San Juan Regional, which is neither formally engaged in evidence-based design nor sustainable-design processes, drew heavily on both in the design of its new bed tower. For example, it engaged almost 10 percent of its staff in the design process. It conducted multiple open houses with the community and three charrettes—one on sustainability, one on patient-room design, and one on healing-garden design. As a result, it included meditation rooms on each floor (see Summary Statement 9) and developed a building that stressed connection to the outdoors (see Summary Statement 13). It also included child-care amenities for staff. “As we designed the tower, we also kept in mind that need, or want, to personalize the experience for not only the patient, but also for the employee” (San Juan Regional, Frary).

This primary focus on people throughout both processes is what differentiates twenty-first century design approaches from those of the past. “Remember you are putting people in this building—remember who you are really serving. We always worry about whether we get everything we need for an X-ray unit. What if we just get the things we need for the humans who are going to work and live in this building for the point in time beyond our own?” (Arkansas CPH, Gehring).

As such, Tier 3 organizations today recognize that medical spaces and technologies are in the service of humans, not the other way around. For example, at BC Cancer, architects were charged with stirring interaction among the researchers, and, subsequently, designed a central, open stair. Initially seen as controversial program move, the communicating staircase is now a focal point for the building community. “We are building a bridge that reaches bench to bedside. ... We didn’t want them to go to the lab, stay there all day, and then leave. ... We wanted to encourage them to use the staircase and not the elevators as much, but you don’t do that by putting the staircase in the middle of the building in the dark. People do use it, but it’s much better if the staircase is attractive” (BC Cancer, McNeil).

“Today, medical centers talk about a tripartite mission, where your focus is not only on your patient care/operations but also your teaching and your research” (Children’s-Pittsburgh, Oxendale).

For many projects, this requires defining nontraditional spaces that create community within the buildings and on the grounds: “We visualized a meeting space that we called the Bruce Commons for Arkansans to come together on health issues. It’s named for one of the people deeply involved in the process, Dr. Bruce. We wanted to do this in a way that illustrated all those facets of health prevention and early treatment, so we included the open stair to encourage walking and interaction” (Arkansas CPH, Gehring).

In fact, it is unlikely that a Tier 3 organization will embrace the concept of patient-centered and family-centered care and not also embrace a connection to nature, the patient experience, healing, and the healing environment in its design approach. “One of the lenses we look through is around being environmentally conscious. We also ask ourselves if this is this going to be a healthcare facility that will last through the changes of healthcare over the next twenty years. And if so, does the business model make sense within the context of the demographics of the market ... Hospitals are big, huge investments. So when we have the opportunity to build one, we have to be able to build something that can really express what we stand for” (Providence, Koster).

“In our conversations we focused on the human aspects of LEED certification. We did not talk very much about what the advantages are of having the co-generation plant. While meaningful to us, it wouldn’t mean much to the brain surgeons” (Dell Children’s, Bonar).

And last, in embracing a comprehensive sustainable design approach, unexpected outcomes occur. “Interestingly enough, green design lends guidance to aspects of site management and property ownership that are good for the healing environment as well. ... It’s even likely we’ll have a struggle on our hands when this hospital opens. Nurses and recruits who’ve been in small hospitals with no access to daylight will easily say, ‘You know, I’d really like to go work at Children’s’” (Dell Children’s, Bell).

“What we are finally doing is putting the client in the center of the process instead of the technology. I think the College of Public Health started that process” (Arkansas CPH, Gehring).

### **On medicine and public health**

*Summary Statement 11: As a shift in medicine and medical education continues to occur, a new generation of medical professionals, with interest in the environment and health, are beginning to reintegrate the disciplines of medicine and public health. Increasingly, Tier 3 healthcare organizations are taking on a visible advocacy role with regard to public and community health.*

An ecological framework for construction and operations brings with it not simply a concern for impacts of the built environment on the local community and its resource base, but also a greater emphasis on community health. “Our responsibility as a pediatric healthcare organization is not just to care about the kids that come into our organization, but to care about all the kids in the community and what impacts their lives. ... There is a larger imperative for healthcare systems to advocate for the broader public on public-health and community-health issues. I don’t think it’s widely acknowledged, but it’s important for us as leaders in the community” (Children’s-Pittsburgh, Oxendale).

In this instance, a larger academic medical center brings forward a connection between sustainable design, operations, and the provision of medical services in a systemwide approach to improve community health. “Every one of our patients depends on us to advocate on their behalf. They cannot advocate for themselves because they’re children,” (Dell Children’s, Bonar). In both instances, these Tier 3 leaders are advocating a community health agenda that ripples through their respective systems (University of Pittsburgh Medical Center and Seton Healthcare Family of Hospitals, respectively).

Leaders in environmental medicine and public health are impacting decisions to pursue sustainable design and operational initiatives in healthcare organizations. In academic medical centers, these questions are prompting healthcare organizations to navigate the reconvergence of public health, medicine, and environmental health to “accomplish the synergies that we need to within the broader organization” (Children’s-Pittsburgh, Oxendale).

Some see it as fundamental to a physician’s value system:

“In healthcare, sustainable building represents a fairly bold move toward precaution and prevention. The building stands for health. In creating it, the organization is essentially saying, ‘We’re investing in keeping people healthier.’ And that is a difference in the way that the United States has approached healthcare. But it’s consistent with a physician’s value system. It represents a mindset and a culture of health as opposed to sickness treatment. Healing is something that is so intangible. Creating the right environment for people mentally, physically, spiritually is so important. Really being attentive to sustainability and wellness and developing a holistic view of healthcare has an impact that we may not be able to measure or test, but I’m convinced it has a tremendous impact on somebody’s ability to attain health. Not just to be not sick, but to be in health” (Providence, Koster).

Likewise, sustainable design and construction is energizing medical education. “Our residents and faculty members are very interested in the fact that we’re building a green hospital, and they’re enthused about the kinds of research questions that might be asked and the implications for the resident-training process” (Children’s-Pittsburgh, Oxendale).

“Many of the students going through medical school are getting master’s degrees in public health along with their doctorate in medicine. It used to be that they’d get it in biochemistry or research of some kind. Now they’re looking into public health” (Arkansas CPH, Gehring).

In academic settings, medical students are becoming champions for sustainable design and operational initiatives. “There is a lot of interest amongst our medical students and other students. They’re very, very bright; they’re influential; they’re persuasive. They may not be fully informed about all of the economics of healthcare, but they are very well-informed about environment and sustainable design. They brought a lot of information to the table” (U-M Mott, Kelch).

“Our second- and third-year residents heard that we were doing a sustainable building and asked to meet with me. They planned six different lunch-and-learn sessions around environmental impact on healthcare for this year. They initiated it on their own” (Children’s-Pittsburgh, Oxendale).

### **On an urgency to act**

*Summary Statement 12: As sustainable buildings explicitly message health, organizations recognize a massive culture change toward a broader, long-term view of mission and more proactive stance on global health and resource stewardship.*

Healthcare infrastructure and operations have both enormous impact on and responsibility to oversee change. “People in general are reluctant to embrace change. At some point in time, the idea is so pervasive it becomes the common wisdom. Being an environmentalist no longer is seen as radical—it’s just a component of being a responsible citizen. Global warming, recent unfortunate weather events—[hurricanes] Rita and Katrina—people are beginning to connect the dots. Some of the reaction is fear, but the majority of people is jumping on and saying it’s the right thing to do” (Kaiser, Kouletsis).

“I certainly sense it in our organization, that there’s a grassroots effort at Providence. It’s bubbling up all over the place. We’re starting to see programs emerge all around the Providence health system. ... And people are sensing that these resources that we all hold in trust for future generations, that we need to do something positive, to save the world from ourselves, I guess” (Providence, Beam).

Beam recalls a meeting with Janine Benyus, author of *Biomimicry: Innovations Inspired by Nature*. “I met with her at an inland Northwest sustainability conference in Boise, Idaho, last year, and I asked her to inscribe something in my copy of her book about her work and how her work and mine really meshed in some way. She wrote: ‘Providence Health and Services has two patients, the medical patient and the earth. To heal one without the other will not last.’ It’s true for healthcare. We have to do both” (Providence, Beam).

As an energy- and water-intensive sector, Tier 3 leaders grapple with the imperative to manage resources wisely and effectively. Sustainable design offers a way to more effectively quantify and manage energy and water use and communicate those improvements to the communities impacted by their operation. “When the architects were out here for their first few visits there was no water in the river. In terms of the environment, we knew we had multiple stressors. We knew that we needed to be very good neighbors when it came to water, so all of the landscaping features are designed for low water use” (San Juan Regional, Frary).

Across the country, early adopters recognize both the high cost of energy and the wider impact of fossil-fuel use on community health. “There’s a diabolical thing that’s hanging over all of us, if you pay attention. Energy itself is only going to get more expensive, and more complex to manage. For the long-term,

particularly in the Northeast, it's important to have control and a handle on what your energy source is going to be. Everybody has to move away from oil. It's critical" (Discovery, Dollard).

"Our health system operates in weather zones from Southern California to Alaska. It's interesting to note how different utilities view the environmental impacts of global warming and what they're trying to do about it in their communities. In the Northwest, particularly, there is this great sense that it's the right thing to do make energy efficiency or energy conservation part of a utility company's least-cost plan to provide electricity, both now and in the future, to their community" (Providence, Beam).

"The local newspaper environmental reporter and I are regularly in communication because John writes a weekly one-page paper that's dedicated to the environment. A couple years ago, when energy costs accelerated wildly, we were one of the first ones that John called. 'What have you done to save energy?' Of all the things I've done that have connected with our senior administration, it's been that behind-the-scenes, positive recognition to our community for something that is important to them" (Providence, Glass).

As the science converges on the intersection between chemicals and human health, leaders are challenging themselves to take a broader view and more proactive stance on global human health. Clearly, Tier 3 children's hospital chief executive officers and their spokespeople view the science as important to their constituents and communities. "People look at children's hospitals and expect them to be leaders in areas like this" (Dell Children's, Bonar).

"We approach everything from an environmental perspective because by identifying, controlling, and, ultimately, preventing all these environmental exposures, we can prevent disease. We know that. We can protect our children, the environment, and ourselves. It is the whole global picture" (Hackensack-Gabrellian, Imus).

"There are many, many examples where the environment has affected and can affect children in negative ways. Look at lead poisoning—leaded gasoline in the past; today lead paint is still doing damage. And when you damage the developing brain, it's often permanent. We're learning more and more that children are precious when they're developing, and they're more susceptible for all sorts of insults—including environmental insults. So as a pediatrician, I feel that we need to construct the best environment possible in the hospital" (U-M Mott, Kelch).

Finally, these Tier 3 leaders agree that reducing the sector's environmental impacts requires a long-term view of mission, responsibility, and resource use. "Try to take a very, very long term view...Sometimes we find ourselves forced to develop a shorter term fix-it-now-as-fast-as-you-can plan. And those usually are not the best plans. That has helped me think through situations and allowed me to say, 'We really need to do this because it's the right thing for the long term'" (U-M Mott, Kelch).

This requires commitments that extend for years. "In order to keep sustainability from becoming the flavor of the month, you have to have a commitment to the resources to keep an ongoing focus. As we have all discovered, even a simple issue requires research, specification, and selection, embedding in the standards program, and then successful education of teams toward implementation—that's two years, three years, five years—so, unless you have the commitment from leadership and the resources to sustain a multiyear effort, you'll be disappointed. It will fail because you didn't understand the commitment required" (Kaiser, Kouletsis).

"Once you head down this path, you're in it for the long run. You can't suddenly say, 'Hey, now that there's a new administrator and he doesn't want to do this so now we've got to make changes.' By this time, you're so far along, you can't go in and change out the glass because that means you've got to change your mechanical system because everything is so integrated: materials, glass, window locations, heat gain, heat loss. Not to mention there's a lot at stake in creating this environment, from its architecture and engineering, and with the expectations that have already been created for the doctors that you're trying to recruit.



Once they get involved in the process, they have their stake in the place they're going to go work" (Dell Children's, Bell).

## Section C: Framing the benefits back to communities

### On recruitment, retention, and performance

*Summary Statement 13: The multiple benefits associated with sustainable building reflect a comprehensive breadth of financial indicators beyond what is conventionally accounted for in return-on-investment analyses. Sustainable buildings create work environments that positively impact staff recruitment, performance, and retention.*

For an industry historically challenged by higher-than-average turnover rates (and higher-than-average associated risks, given the nature of hospital operations), enhancing recruitment and retention is a compelling bottom-line, measurable financial benefit. "If we provide the right workplace environment for staff, and they are able to focus on taking care of people instead of themselves, then we ought to be able to measure it in terms of our customer service without patient loyalty scores and all the other measurables. So we need to create an environment where people want to work. We can hire the best and the brightest" (Palomar, Covert).

In fact, some Tier 3 early adopters are already seeing evidence that their green buildings are positively impacting recruitment. "In the first six months of this year, three cancer surgical specialists contacted us. They heard about St. Mary's and The Lacks Cancer Center. They wondered what it was about, having heard about it from family members, and wanted to promote their surgical specialty" (The Lacks Center, McCorkle).

"I've been told that two or three of our latest recruits have come because of the building. I truly believe the fact that because we achieved a LEED standard, and then went above and beyond, is one of the reasons they're coming. Environment is huge, and it helps us recruit and retain our researchers" (BC Cancer, McNeil).

"I believe that a lot of folks come to work at this hospital, believe in this hospital, stay in this hospital because a lot of what they want to do is steward the environment" (Boulder, Abelkis).

Even before the buildings are completed, improved recruitment through a better work environment is a perceived benefit. "Nurses who've been in small hospitals with no access to daylight will say, 'I'd really like to go work at Children's.' We have already started getting so many calls from physicians from out of town who have heard about this project, who want to come here, that it's creating a difficulty because we only need so many heart surgeons, for example. I'm sitting on two resumés right now for people in two different surgical subspecialties that I don't think we have enough clinical throughput to support. But they want to come here" (Dell Children's, Bonar).

Another consideration associated with green building design features and operational protocols is occupant and staff well-being. Creating a workplace that models an environment of care protective of the well-being of building occupants—such as using nontoxic cleaners, providing day-lit workspaces and break-rooms, and ensuring enhanced air quality—contributes to staff retention and also boosts performance, including reducing sick days and workers' compensation claims. "We wanted to personalize the staff's experience so that they would choose us over someone else" (San Juan Regional, Frary).

"We did a research study that confirmed that the cleaning products we were using before caused the employees to call in sick a lot. This is before the Greening the Cleaning program was implemented. Their eyes were all red, and different illnesses were happening. When we changed the program, it all went away, and our workers' compensation claims went down" (Hackensack-Gabrellian, Imus).

“My environmental services people are the happiest people in the agency lately. And I wonder if it’s not because they’re working with such nice materials. 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. If you can cut sick days and absenteeism by 10 percent, you’re saving tens of thousands of dollars” (Discovery, Dollard).

Staff recruitment, retention, and performance are among the most impressive benefits derived from sustainable building initiatives. These benefits are well-documented in the green commercial office-building sector, though not yet broadly recognized in the healthcare sector. Our sector-specific results, demonstrated through these interviews, reveal a consistent positive correlation between green buildings, staff recruitment and retention, and performance and provide a bottom-line justification for green building on financial payback terms.

“Understanding that the people who work for us are also members, that their health is important to our success and mission, and that they are in our buildings for extended time periods. If you can reduce sick days, reduce injuries, there’s a business case around those issues that both benefits the bottom line and improves the relationship with employees. The same thing is true with patient safety. A lot of these new sustainable materials appear to improve patient safety and connect to other environmental initiatives as well. This program fits well into a larger program at Kaiser: The Three Safety’s: Patient Safety, Workplace Safety, and Environmental Safety” (Kaiser, Cooper).

### **On the occupant experience**

*Summary Statement 14: Tier 3 organizations provide for an improved occupant experience in their facilities with better connection to nature, occupant control, and enhanced air quality.*

Healthcare facilities have an extraordinary opportunity to create an experience that enhances patient healing and motivates the highest level of staff performance. “What we’ve found in green design is that we make a commitment from the very beginning about the job and what it means. There’s a lot at stake in creating this environment, from an architecture and engineering side, in terms of working here, and with the expectations that have already been created for the doctors that you’re trying to recruit. Once they get involved in the process, they have their stake in that this is the place they’re going to work” (Dell Children’s, Bell).

“Many of the students going through medical school are getting master’s degrees in public health along with their doctorate in medicine. It used to be that they’d get it in biochemistry or research of some kind. Now they’re looking into public health.”

— Leo Gehring

While contributing to delivering the essential programmatic functions, these results also yield favorable financial outcomes. In creating a coherent template for twenty-first century hospitals, these high-performance, Tier 3 facilities rely on a consistent palette of design features, healthy materials, and attention to building orientation and form that contribute to an enhanced human experience.

From the patient perspective, benefits associated with sustainable buildings include decreased length of stay, reduced reliance on medication, and lessened mental and physical stress. While our interviewees were not asked to evaluate this, many offered anecdotal evidence of satisfied patients.

“We’ve asked our patients how they rate the environment of the building and have seen a dramatic shift in response toward ‘acceptable’ and ‘appreciative.’ So it is with the creation of different spaces and the increase in light, and the quietness, and with all these different kinds of materials that we have created this environment” (The Lacks Center, McCorkle).

“One of our goals was to bring natural light into 100 percent of the occupied spaces in the building, and we have achieved that in the area of probably 90 to 95 percent. Within our organization we have framed that in the context of research that demonstrates the positive impact for patient, families, and staff” (Dublin Methodist, Herbert).

“Since we have such nice weather, we definitely wanted to have outdoor spaces. We kept shade in mind, also. For the patients, we built a healing garden. With each private room, we have a balcony for accessing fresh air. The balcony itself overhangs the floor below and provides shade. The rooms are oriented to reduce heat gain. Plus, the balconies are great spaces for patients and families to walk outside right off the room” (San Juan Regional, Frary).

These measures also create improved working conditions for the facilities’ medical and management staff. “Having a green building has been this remarkable opportunity for 1,000 staff to experience the building and realize how remarkable air quality can be if it’s handled right” (Discovery, Dollard). “I asked Mr. Ferguson whether we could replace all toxic cleaning agents with nontoxic ones. As soon as that was all eliminated, they felt better, and it said to them, ‘My boss is looking out for me’” (Hackensack-Gabrellian, Imus).

Providing opportunities for building occupants to control their environment is an expression of respect and enables people to act on their values through choices that are offered. “It’s the little things that make a difference. Both the operable windows and the dual-flush toilets are moments where a person interacts with the building to elicit control over resource use. ‘How much water am I going to use?’ You’ve given them more than personal control—you’ve provided them with a way to live their values” (BC Cancer, McNeil).

### **On financial effectiveness**

*Summary Statement 15: Sustainable building improves financial effectiveness in part because it fortifies team buy-in and public support.*

For Tier 3 organizations such as Dell Children’s, the goal is not to create a green facility as a public display (i.e., a trophy), but rather to create one as part of a sound development plan where the financial effectiveness of reducing long-term operating costs is as important as being a good neighbor. Many are developing life-cycle cost analyses or cost methodologies that recognize operational savings in making first-cost decisions.

“What we’ve found in using LEED is that we make a commitment from the very beginning about the job and what it means. It’s not about buying points. We’re not going to throw money or do meaningless things for the sake of points. The financial assessment that was completed showed we would save \$6 to \$8 million in operating expenses in about the first fifteen years of operations. And in working with Austin Energy to develop energy costs, we came to the conclusion that the project had to pay back in less than eight years. So that was part of the business decision on some of the LEED points” (Dell Children’s, Bell).

“Life-cycle cost assessment is thoroughly embraced, because we understand that it’s about the total cost of ownership—not only the first cost. We are a healthcare company and it permeates throughout the system—that the benefits you get from best practice, efficient operations accrue to the system” (Kaiser, Cooper).

In some instances, sustainable building assists organizations in obtaining public financial support for their capital project. One example is Palomar Health, which garnered tremendous public support to back a \$250 million revenue bond package for a proposed new hospital, campaigning on a commitment to deliver an unprecedented level of care to the community.

“When we passed Proposition BB, the community invested in us. This is what makes that significant: 70 percent of the people in our district voted for us, even though only 60 percent actually use our services. That means other people who don’t come here were willing to take money out of their pockets to invest in us as an organization” (Palomar, Covert).

Boulder is a telling example of earning community support. The benefit of being able to provide services in a town where residents had come to expect them was an undeniable asset for the city. In Boulder, the city incorporated the parcel, allowed the hospital to mitigate wetlands issues, and collaborated with the hospital to assure acquisition of all necessary federal permits.

“The City of Boulder votes in council members who are strong in the arena of quality of life and environmental stewardship. They’re willing to improve upon those and, with Boulder and Boulder County growing in leaps and bounds, we felt this was the perfect time to build a new standalone hospital. It was an unincorporated parcel that the city had already identified for development. So, we readily wanted to support that” (Boulder, Abelkis).

BC Cancer worked with the city to overcome floor-area limitations and parking requirements, waive property taxes, and, in exchange, create a facility for top-level scientists from around the world that messaged both health and quality of life. Spaulding opted for the former Boston Naval Yard site to gain a waterfront location that supports its aquatic programs and partnered with the City of Boston and other public authorities to facilitate zoning changes and site remediation.

Dell Children’s was motivated to shift its campus from a suburban, greenfield site to a downtown site with the City of Austin’s incentive to put the project on a fast track. “We came back downtown when the city council indicated that they would work collaboratively with us and try to speed up the process that would allow us to acquire the downtown parcel” (Dell Children’s, Bell).

The list goes on. The most significant aspect is summed up well by Dollard’s statement, whose goal was to create a facility on a site that once contained an industrial operation: “We had a good partnership with Governor [George] Pataki’s office and the health department. We all were convinced it might be really beneficial to create a green building. All the while, I felt I needed to convince my board that this was the right thing to do. Or actually, they never need to be convinced. I needed to work hard with my board to find a way to help fund this” (Discovery, Dollard).

The health benefits of a sustainable facility are immediately understood. But for many organizations, garnering board support still requires the chief executive officer to make a compelling financial case for the sustainable building. Increasingly, that financial justification can be bolstered by the economic bottom-line benefits that accrue from healthy building and environmental stewardship.

For others, sustainable building is seen as a market differentiator—a way to separate healthcare organizations in an often-crowded marketplace. “The marketing people are taking companies that might want to join Kaiser through the facility and talking about how the design answers the mission statement. There was a local small company that had always said there wasn’t enough market differentiation between Kaiser and our competition—after the visit to Modesto, they signed up on the spot. Another broker reported that the initiatives were really going to resonate with their business customers” (Kaiser, Kouletsis).

Palomar is using sustainable design as a featured selling point and, more importantly, as a tool for broad organizational alignment. “It takes about eighteen months to get our plans through the state here, and we’ll have the plans to them in the fall. Then it will be another eighteen months before we can even get started. ... It’s a \$987 million project that, because of a Kresge planning grant, was able to host a community charrette. We decided it would be a great opportunity for us to bring in some of the potential community partners who might help us think more broadly because of their expertise. [These partners

included people representing energy and water utilities, pollution control, and future-oriented businesses.] There were some good practical recommendations. The question becomes, How do we start working with it now in terms of our renovation projects?" (Palomar, Covert).

### **On fund raising and development**

*Summary Statement 16: Insofar as healthcare relies on public support and private philanthropy for its capital projects, sustainable design will continue to drive and invigorate the process.*

Few Tier 3 organizations tied their early funding and development campaigns to the quest for a sustainable facility. But for those that did, dollars tied to green building positioned them ahead of the curve. One of these pioneers is Dollard, who, because of his agency's nonmedical purpose as, essentially, a residential campus and school, immediately searched for supplemental funding sources. "From day one we needed to be alert to the budget. ... It was and continues to be a challenge to build green." He explains that receiving a Kresge Foundation grant became a "major boost, because it validated to my board that this was a good thing to do."

The same is true for the Children's-Pittsburgh. Very early in the fund-raising process, leaders were able to obtain a state grant \$5 million toward the greening of the hospital. 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. "I haven't had to go through that same justification process that some of the others have done," says Oxendale (Children's-Pittsburgh).

Collaborations such as these are truly a hallmark of the pioneering process Tier 3 organizations use to manifest their vision. The Arkansas CPH received a large sum of money through the nationwide tobacco lawsuit settlement. CPH administration, together with the Colleges of Medicine and Nursing Deans and Department of Health officials, agreed to direct the settlement funds to construct the school at a time when others were opting for roads and airports. "When we started the project, it was absolutely based on the idea that what we needed was a process and an enlightened view of public health" (Arkansas CPH, Gehring).

For Tier 3 healthcare organizations, reliance on a healthcare mission as the singular justification for green building is often not enough. "Locally, even nationally, we're blessed to have a very progressive environmental community" (Providence, Glass). Providence operates in five western states from Alaska to California. The system includes twenty-seven acute-care facilities and employs 46,000 people. The Providence Newberg Medical Center in Newberg, Oregon, is the first medical facility to receive LEED gold certification. "Our employees and our community really had tapped into the idea of a sustainable building in healthcare being a more healing place" (Providence, Beam).

Indeed, for many, having a sound business model in place is essential. "We had available to us about \$195,000 in business energy tax credits, but we didn't have the tax burden to take advantage of it," remarks Providence's Beam. With the foundation, he pulled together a philanthropic venture, a public-private sector partnership of sorts, whereby a privately owned company in Newberg was able to take the \$195,000 in tax credits and return, in exchange value, \$143,000 for the construction of energy conservation features that were budgeted into the hospital and later built.

Numerous other instances of creative financing and structuring of a business case exist. Dell Children's received a \$25 million gift to support construction of a replacement facility. Even with those unanticipated funds in hands, the project team was tasked with delivering a project that was financially compelling. In working with Austin Energy on an on-site combined heat and power plant, Dell Children's was able to reinvest about \$6 million that otherwise would have been part of the capital cost of providing a central plant. "Since they built our central plant, and we're paying for it over the years through our utility costs, we were able to roll back the savings into the project for other green features" (Dell Children's, Bell).



The hospital is expecting to set precedent with a LEED platinum rating. “We’re less than 1 percent of the overall number of hospitals in the United States, but we train over half of all pediatric specialists. So people look at children’s hospitals and expect them to be leaders” (Dell Children’s, Bonar).

Similarly, The Lacks Center was primarily funded through philanthropy. Richard S. Lacks Sr. provided the lead gift and had approached the hospital after both his father and grandfather had died of cancer. His primary focus was that any family should not have to be inconvenienced by traveling out of state for care, as his family had done. But, in addition to the lead gift, Peter Wege, a local environmentalist and major benefactor throughout the process, made his gift contingent upon sustainable design. “We have had lots of requests from press to talk about the LEED factor. But remember, it’s a cancer center that’s LEED-certified, not a LEED-certified building that happens to be a cancer center” (The Lacks Center, Benz).

For those who entered the design process without a firm commitment to sustainable building, they were transformed by what they learned and are moving forward with a firm resolve that green building fundamentally resonates with mission. “Frankly, we’re getting used to doing it this way. ... So we have another building coming up, a major building, a cancer hospital, and we’re going to do it again,” (Hackensack-Gabrellian, Ferguson).

Hackensack University Medical Center, like others, will continue to aggressively seek financial assistance to pursue this agenda. “There’s a real sense out there that if we could just find that capital, that incremental capital to make better choices about how we build and operate facilities, we should do that. And I think there’s a demand out there for it” (Providence, Beam).

### **On certified performance**

*Summary Statement 17: Tier 3 organizations are increasingly using green building rating tools. Their use accelerates market transformation, normalizes sustainable design practice, and aggregates benefits.*

Since the release of the U.S. Green Building Council’s LEED in 1999 and the *Green Guide for Health Care* in 2003, green building initiatives have benefited from common frameworks and accessible methodologies to guide design, construction, and operations decisions. “It’s certainly a very efficient, environmentally friendly building that we delivered, using the LEED standards as a tool for figuring out how we can deliver a better building” (Arkansas CPH, Gehring).

With thousands of projects now engaged nationwide in virtually every market segment, these tools establish thresholds, measure performance, and generate market signals to shift toward a bill of materials, products, and equipment informed by a life-cycle view of environmental impacts.

“Using the Green Guide, we developed a checklist—Category 1 points are items incorporated in our Kaiser standards—these become the minimum requirements for our project teams. Category 2 are items that are reasonably simple to implement with a modest amount of research by us or our project teams. Strategies that teams are looking at include operable windows, renewable energy, or hybrid chiller plants, or innovative materials. We believe the process will produce a stronger base of better, smarter buildings for Kaiser, based on a standard, while responsive to local community and individual team vision” (Kaiser, Cooper).

Indeed, in mid-2006, there are six LEED-certified healthcare facilities, with dozens more in the pipeline, and more than one hundred *Green Guide* pilot projects. Collectively, these represent more than 40 million square feet of healthcare construction. Projects registered with LEED are seeking independent, third-party certification, and those in the *Green Guide* pilot are using a voluntary, self-certifying toolkit of best practices for design, construction, and operations.

Interview participants include the first in the healthcare sector to achieve LEED certification (BC Cancer, Boulder, Discovery, The Lacks Center, Providence ), a signifier of Tier 3 leadership.

Others are LEED-registered and are pursuing LEED certification, to be awarded at completion of construction. These include Children's-Pittsburgh, Dell Children's, and Hackensack-Gabrellian. Virtually all of these used the *Green Guide* informally, or as a registered pilot, as a source of healthcare-specific guidance and for internal baselining and benchmarking to support continuous improvement.

"There's a wonderful trend among people who are very interested in the environment, including those who set up the criteria for certification, and for planners in healthcare to look at the criteria and then make them more appropriate for our needs. The *Green Guide for Health Care* is one of those wonderful happenings right now" (U-M Mott, Kelch).

## Part III: Closing

Lawrence (2000) sums it up this way: "Just as we have responsibility for providing quality patient care, just as we have responsibility for keeping our facilities and technology up to date, we have a responsibility for providing leadership in the area of the environment. The stakes are extraordinarily high. We have to keep folding these questions and these considerations back into our leadership. We have to incorporate them into our incentives, into what it is we're held accountable to do, how we measure our impact. We all know the old saw, 'No margin, no mission.' But as a colleague said, 'Without the mission I don't want to get up in the morning.' Competing effectively is a need that we all have, but it isn't what healthcare is about. It's about improving the health of the communities we serve."

The Tier 3 leaders interviewed for this paper demonstrate that the industry is responding to Lawrence's challenge. All these institutions demonstrate that sustainable values are embedded in their mission and vision, and, as market awareness, tools, and incentives evolve, this massive industry is rising to realize its fundamental objective to improve the health of the communities it serves. This recognition builds environmental leadership and awareness of the linkages between human health and the environment. Out of this awareness, a comprehensive vision of improved performance is emerging—one that unites construction and operation to yield triple bottom-line benefits—economic, social, and environmental.

Recognition for these activities builds leadership. When the *Green Guide* was developed, it was based on the assumption that health-based green building standards—standards grounded on the idea of protecting occupant, community, and global health—would resonate with leading healthcare organizations and that those organizations would move forward to actualize better buildings that respond to this mission. What was less apparent then, but is now becoming clear, is how this goal of improved performance would resonate with the communities surrounding these institutions—and how these healthcare leaders would move past sustainable strategies that deliver operational improvements to seek a broader, more meaningful set of health benefits—or, in the legal parlance of community benefit, promoting health for the benefit of the community.

"Life-cycle cost assessment is thoroughly embraced, because we understand that it's about the total cost of ownership—not only the first cost. We are a healthcare company and it permeates throughout the system—that the benefits you get from best practice, efficient operations accrue to the system."

— Tom Cooper

These organizations are connecting to their communities in new ways. Sustainable building demonstrates, in bricks and mortar, that healthcare organizations can reflect the values of the communities they serve—in environmentally progressive communities, their environmental leadership is considered essential to maintaining and increasing market share.

These leaders are advocating for Smart Growth policies, economic development, and remediating environmentally damaged sites. They are modeling healthier lifestyle choices to their patients and staff, through initiatives ranging from transportation alternatives to housing relocation incentives,

organic food to open stairs that encourage walking behaviors. As this century unfolds, they are recognizing that their buildings are in the service of humans, rather than simply receptors of the latest medical technology. And finally, these leaders recognize the high cost of inaction on matters of the environment on the health of our families, neighbors, and communities at hand and globally.

As they begin to understand the benefits, Tier 3 leaders recognize that sustainable building and operation has the capacity to keep generating benefits, from the inception of design through occupancy and beyond. Many already report positively around recruitment and retention. A high degree of occupant satisfaction—often associated with choice, control, and the ability to live one’s values—accompanies the completed projects. Financial benefits, ranging from reduced operating expenses associated with energy and water reduction to lower staff turnover—are proudly recounted.

For the most part, leaders report that there are modest first-cost increases attributable to their sustainable building initiatives—but there are varying approaches to dealing with those challenges and successfully overcoming them. As Providence’s Beam so succinctly framed it: “There’s a real sense out there that if we could just find that capital, that incremental capital to make better choices about how we build and operate facilities, we should do that. And I think there’s a demand out there for it.”

How do these Tier 3 organizations emerge from their Tier 2 counterparts? For some, it’s the connection to an expressed stewardship mission. For others, its visionary leadership, either from the chief executive officer or board level. For still others, it’s the opportunity that a private philanthropic gift presents, tied to a broader vision of health and the environment. However it occurs, once these leaders come forward, they continue to move forward through multiple projects and operational improvement initiatives. Without exception, they find that their leadership vision inspires and transforms their organizations. No one emerges from the process unchanged.

Throughout history, there are traceable, identifiable moments when, upon reflection, a critical mass is in place that creates conditions for transformation. Such a moment—healthcare’s tipping point—is approaching. The resurgence of healthcare institutions as definers of community wellness and public health reinforces their civic leadership stature. The opportunity to rekindle healthcare’s values-driven legacy to “First, do no harm” deserves the environmental health community’s full acknowledgement and support.

## Author Biographies

**Robin Guenther, FAIA**, is principal of Guenther 5 Architects, a twenty-person New York City firm with extensive experience in healthcare design. Her work has been published nationally and internationally in magazines such as *The Architectural Review*, *Interior Design*, *Contract*, *Architectural Record*, and *Healthcare Design*.

Last year, Guenther was awarded The Center for Health Design’s Changemaker Award for her efforts to continuously improve and support change in the healing environment. She is a co-coordinator of the *Green Guide for Health Care* and serves on the LEED for Healthcare Committee. She is currently co-authoring (with Gail Vittori) her first book, *Sustainable Architecture for Health*, to be released in 2007 by Wiley and Sons.

**Gail Vittori** is co-director of the Center for Maximum Potential Building Systems, a nonprofit sustainable planning and design firm established in 1975, located in Austin, Texas. Since 2000, Vittori has been engaged in numerous green healthcare initiatives and currently is a co-coordinator of the *Green Guide for Health Care* and chair of the U.S. Green Building Council’s LEED for Healthcare Committee.

Vittori was a Loeb Fellow at Harvard University’s Graduate School of Design from 1998-1999 and serves as secretary of the U.S. Green Building Council’s board of directors. She is co-author (with Robin Guenther) of *Sustainable Architecture for Health*, to be released in 2007 by Wiley and Sons.

**Cynthia Atwood** is a designer and special projects coordinator who directs much of the creative and communications activity of New York City-based Guenther 5 Architects. In addition, Atwood is an adjunct professor with Pratt Institute's Interior Design Department in Brooklyn, New York.

## Notes

- <sup>1</sup> A recent study by PricewaterhouseCoopers' Health Research Institute estimates that the total tax benefit of exemption (federal, state, and local) for a 300-bed average community hospital equals about \$6.5 million annually.

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## Appendix: Table of Interview Subjects

**BC Cancer Agency  
Research Centre  
[BC Cancer]  
Vancouver, BC**  
Operated by the  
BC Cancer Agency  
**Mary McNeil,  
President & CEO**  
BC Cancer Foundation  
(Owner)

### DESIGN FACTS

- LEED gold (CaGBC) clinical research laboratory facility owned by the foundation
- Completed one day ahead of schedule and \$6 million under budget
- 42% energy reduction with no use of HCFCs and 43% water use reduction, including waterless urinals
- Diverted 98.5% of the construction waste from the landfill; 24% recycled construction and finishing materials

### ANECDOTES

- A concerned citizens' group established the British Columbia Cancer Foundation over 70 years ago at a point when the cancer survival rate in B.C. was the lowest in Canada
- The first recorded donation to the foundation was \$50 from the Native Daughters of BC, Post 1, in 1935

### SCOPE

\$95 million/230,000 sf with an expected Phase II 160,000 sf facility adjacent  
Open: 2005  
Accommodates 60 principal scientists and up to 600 scientific and medical personnel

**Boulder Community  
Foothills Hospital  
[Boulder]  
Boulder, CO**  
**Kai Abelkis,  
Environmental  
Coordinator**  
Boulder Community  
Hospital

### DESIGN FACTS

- ASHE Vista Sustainable Design Award 2005
- LEED silver community acute-care hospital, the first hospital in the nation to receive USGBC third-party LEED certification
- Cost of achieving LEED estimated at 2% of construction cost
- Central Utility Plant expected payback of 7 years
- 2006 Environmental Leadership Award from Hospitals for a Healthy Environment (H2E)

### ANECDOTES

- Has an active reduce, recycle, reuse program since 1990 that has saved 4,524,300 gallons of water, 2,848,400 kilowatt hours of electricity, and more
- Central utility plant supplies energy efficiently with an expected savings at \$95,000 year and at 30% lower use than ASHRAE standards
- 32 acres of the 49-acre site have been dedicated back to the city as permanent open space; the site was an unincorporated parcel, formerly used to graze cattle; portions lie within a federally designated floodplain

### SCOPE

Three-story 60-bed, 154,000 sf facility includes a 24-hour emergency department  
Complemented by a new 67,000 sf outpatient services building  
49-acre site is master planned for 400,000 sf and will occupy 17 ac of the site  
Cost: \$52 million  
Operational since 2003



**Children's Hospital of  
Pittsburgh of UPMC  
[Children's-Pittsburgh]  
Lawrenceville, PA**

**Roger A. Oxendale,  
President & CEO**  
Children's Hospital  
of Pittsburgh

**DESIGN FACTS**

- Project employs the principles of sustainable design and construction (seeking LEED), using innovative practices such as off-site parking and shuttle services for construction crews due to the site's location in a densely populated residential area
- The new Clinical Services Building will tie into the 330,000 sf of existing space in the south wing of the former St. Francis Medical Center it is scheduled to replace
- Relocation to an expanded and renovated prior hospital site in central Pittsburgh

**ANECDOTES**

- Recipient of a Heinz endowment grant
- UPMC has a Center for Environmental Oncology that is working to transform building operations to greener, safer modalities
- Creating a comprehensive green healthcare system in partnership with the City of Pittsburgh

**SCOPE**

\$425 million, 1.287 million sf complex includes an 883,000 sf nine-story hospital and ambulatory-care facility (Clinical Services Building)

Project includes an eight-story 174,000 sf research facility, parking for 1,400 vehicles, and 200,000 sf combined for faculty and administrative offices

40,000 employees (UPMC), the largest employer in the region

Last year it provided \$175 million to academic programs and \$200 million in uncompensated care and community services

Scheduled to complete in 2007

**C.S. Mott Children's &  
Women's Hospitals  
[U-M Mott]  
Ann Arbor, MI**

**Robert Kelch, MD,  
CEO, U-M Executive  
Vice President for  
Medical Affairs  
+ Patricia Warner, MPH,  
Associate Hospital  
Director, Children's &  
Women's Services**  
University of Michigan  
Health System

**DESIGN FACTS**

- The Children's & Women's project is registered through LEED and is part of a 3 million sf master plan across three locations in Ann Arbor owned by the university
- Project received a \$25 million contribution from the C.S. Mott Foundation
- Project will replace the facility that currently houses the Mott and Women's Hospitals; both hospitals have grown outdated since their respective 1969 and 1950 openings and are unable to meet the current demand

**ANECDOTES**

- UMHS has raised \$48 million toward the hospital, including a portion through the sale of blue rubber wristbands (that allow community members to participate)
- Kelch oversees all three components of UMHS: the hospitals and health centers, with more than 11,000 employees and a 2003 operating budget of \$1 billion; the medical school, which has more than 2,100 faculty and 1,500 students and trainees and received more than \$290 million in research awards for fiscal 2002; and the M-CARE managed-care organization, which has 203,000 members

**SCOPE**

264-private bed, \$523 million facility

Planned 1.1 million sf facility includes a nine-story clinic tower and a twelve-story inpatient tower

855,000 sf are designated for in-patient space, 245,000 sf for clinic and office space, 180,000 sf shell space to accommodate growth

Groundbreaking scheduled for fall 2006, with a scheduled completion by early 2011

**Dell Children's Medical  
Center of Central Texas  
[Dell Children's]  
Austin, TX**

**Robert Bonar,  
President & CEO**  
Children's Hospital of  
Austin  
**+ Alan Bell, Director of  
Design & Construction**  
Seton Family of  
Hospitals

**DESIGN FACTS**

- Anchors the redevelopment of the former Robert Mueller International Airport brown-field site in central Austin and replaces the current Children's Hospital of Austin upon completion
- Seeking LEED platinum certification for innovative and comprehensive sustainable strategies; project is a registered pilot of the *Green Guide for Health Care*
- Recipient of a \$25 million gift from the Michael and Susan Dell Family Foundation

**ANECDOTES**

- The construction site has reduced the use of Portland cement by 31% and has also diverted two-thirds of its construction debris
- Seton Family of Hospitals collaborating with the City of Austin and Austin Energy to build a district energy plant on site
- Chose location to conform to Austin's Smart Growth initiative
- Catalyst for adoption of sustainable design and construction strategies in other new Seton facilities

**SCOPE**

\$110 million, 169-bed, 455,000 bgsf hospital to serve 46 counties  
Includes a 35,500 bgsf combined heat and power plant (CHP) at a cost of \$18 million  
Open: June 2007

**Dublin Methodist  
Hospital [Dublin  
Methodist]  
Dublin, OH**

**Cheryl L. Herbert, RN,  
President**  
Dublin Methodist  
Hospital, OhioHealth

**DESIGN FACTS**

- A Pebble Project of The Center for Health Design
- Located just outside Columbus, OH, and in a projected growth market for the OhioHealth System, the new community hospital will provide care to community residents and support the practice of evidence-based design in the construction of its facility

**ANECDOTES**

- Achieves daylighting in 90% of all occupied spaces in the building
- Utilized a team process based on the slogan "Run until apprehended" to invigorate and inspire design innovation and contractor diligence

**SCOPE**

\$150 million, 94-bed facility with expansion capacity to 300 beds  
300,000 sf facility on an 89-acre campus  
Scheduled to open late 2007

**Kaiser Permanente  
Templated Hospital  
[Kaiser]  
Modesto, CA**  
**John Kouletsis, AIA,  
National Director,  
Planning & Design  
Services  
+ Tom Cooper,  
Manager, Strategic  
Sourcing & Technology**  
Kaiser Permanente

#### DESIGN FACTS

- Kaiser Permanente's Templated Hospital Project will guide construction and renovations of more than 20 Kaiser healthcare facilities by 2013
- The Kaiser Permanente Modesto Medical Center is one of four templated hospitals currently under construction whose designs were based on the *Green Guide for Health Care's* principles of environmentally friendly, sustainable design

#### ANECDOTES

- Kaiser's Modesto Medical Center is part of a greater than \$20 billion capital spending program that includes 27 new or replacement hospitals over a 12-year plan; in 2006 alone, Kaiser Permanente plans to spend more than \$3 billion
- The Templated Hospital Project helps to ensure hospitals are built for the future; emphasize patient, staff, and environmental safety; and contribute to improved workflow and patient outcomes

#### SCOPE

##### **Kaiser Permanente Modesto Medical Center**

Anticipated completion:  
early 2008

670,000 sf on 50 acres, including a 386,000 sf five-story hospital with two nursing towers, a 254,000 sf medical office-ancillary services building with ambulatory surgery, and a 29,000 sf central utility plant

**Palomar Medical  
Center West [Palomar]  
Escondido, CA**  
**Michael Covert, CEO  
+ Carrie Frederick,  
Director, Performance  
Excellence**  
Palomar Pomerado  
Health

#### DESIGN FACTS

- Registered as both a *Green Guide for Health Care* pilot project and as one of The Center for Health Design's Pebble projects
- Received a Kresge Foundation Planning Grant to conduct a pre-planning ecocharrette
- The planned new facility is scheduled for 35 acres at the Escondido Research and Technology Center business park, west of Interstate 15

#### ANECDOTES

- Both city and hospital district officials will work together on the design and have proposed forming a citizen's committee from each to advise during the design phase
- The new medical center is the cornerstone of a 10-year, \$1 billion master plan for the public hospital district and is the largest such undertaking in its history

#### SCOPE

A planned 453-bed, 1.2 million sf flagship medical center

Anticipated cost: \$690 million

Anticipated groundbreaking: 2007  
with a planned opening date in  
2010

**Providence Health & Services [Providence] Northwest USA, including Newberg, OR, and Olympia, WA**

**John Koster, MD, CEO,**  
Providence Health & Services

**Richard Beam,**  
Director, Energy Management Services,  
Office of Supply Chain Management,  
Providence Health & Services

**+ Geoffrey Glass, PE,**  
Director, Facility and Technology Services  
Providence St. Peter Hospital

**DESIGN FACTS**

- LEED gold — Providence Newberg Medical Center, nation's first
- ASHE Vista Award for 2005, Renovation Category – Providence St. Peter
- Piloted sustainable design principles in the expansion/ renovation of St. Peter

**ANECDOTES**

- 2004 US EPA Energy Star Partner of the Year for Leadership in Energy Management
- Financial support for PNMC included business energy tax credits through the Oregon Office of Energy, grants through the Energy Trust of Oregon's Building Efficiency Program, and funding approval through PGE's Earth Advantage Program for a combined 14-month return on investment
- Updated, expanded, and new facilities and programs are part of a \$1.2 billion investment over 3 years

**SCOPE**

**Providence Newberg Medical Center** (PNMC) is a 56-acre, 41-bed, 143,000 sf licensed hospital + 44,000 sf medical office building

Cost: \$70 million

Open since June 2006

**Providence St. Peter Campus Renewal Project** (PSPH)

105,000 sf project;

cost: \$43.3 million

133 acre campus, 390-bed regional medical center (Olympia, WA)

Open since August 2004

**San Juan Regional Medical Center [San Juan Regional] Farmington, NM**

**Doug Frary, Vice President of Support Services**

San Juan Regional Medical Center

**DESIGN FACTS**

- A major level III trauma center expansion with associated renovation work
- Implemented sustainable design strategies using the conceptual framework of the LEED Green Building Rating System and Experience Economy 'storytelling' techniques

**ANECDOTES**

- SJRMC is a privately owned, community-governed nonprofit hospital and is one of the largest employers in the state
- House Bill 266 created a \$4.7 million trauma fund to support existing and incentivize new trauma facilities to join the state's system
- Steve Altmiller, CEO, honored as New Mexico Grassroots Champion by the New Mexico Hospitals and Health Systems Association

**SCOPE**

Multilevel 156,000 sf addition and major renovation project

Existing 168-bed acute-care hospital with a \$55 million renovation and expansion

Phase 1 occupancy: August 2006

**Spaulding  
Rehabilitation  
Hospital [Spaulding]  
Boston, MA**

**Judith Waterston,  
President**

Spaulding Rehabilitation Hospital Network, a member of Partners HealthCare System and a teaching affiliate of Harvard Medical School

**DESIGN FACTS**

- Project is registered as a pilot of the *Green Guide for Health Care* after having been introduced to this document and other sustainable design principles at the Boston Design for Health Summit
- The new facility will replace the current Spaulding facility on Nashua Street and will join a growing neighborhood of preeminent biotech and life-sciences companies in the Charlestown community
- Working in partnership with City of Boston, Mayor Thomas Menino, and the Boston Redevelopment Authority to locate the \$100 million facility into the former Charlestown Navy Yard brownfield site

**SCOPE**

Preliminary plans: \$100 million, 150-private room facility with indoor aquatics, conferencing, a public green space, and underground parking

Planned opening: 2011

**The Discovery Health  
Center [Discovery]  
Harris, NY**

**Patrick H. Dollard, CEO**  
Center for Discovery

**DESIGN FACTS**

- ASHE Vista Sustainable Design Award 2004
- LEED v2.0 Certified; *Green Guide for Health Care*
- The first Department of Health licensed medical facility in New York State to implement green standards; first LEED-certified diagnostic and treatment facility
- Awarded grants through the New York State Energy & Research Development Authority and the Kresge Foundation

**ANECDOTES**

- 42% additional energy savings over base model comparison using ground source heating and cooling (geothermal)
- Material selection based upon low-emitting and healthier materials for improved indoor air quality

**SCOPE**

\$6 million, 28,000 bgsf specialized diagnostic and treatment facility

Open: 2003

Located on a 350-acre campus that includes residential services for more than 250 medically fragile and developmentally disabled adults and children  
1,000 employees; largest employer in Sullivan County



**The Lacks Cancer Center at St. Mary's Health Care [The Lacks Center] Grand Rapids, MI**

**Philip H. McCorkle Jr., President & CEO**  
**+ David Hathaway, Manager of Construction Projects**  
**+ Micki Benz, Vice President for Development**  
St. Mary's Health Care

**DESIGN FACTS**

- Certified LEED 2.0 silver facility, making it the second hospital and fourth healthcare facility in the nation
- Site selection: new comprehensive cancer center on an existing medical center campus
- A \$10 million donation by the family of Richard S. Lacks Sr. jumpstarted the campaign

**ANECDOTES**

- Peter Wege, a Grand Rapids philanthropist and environmentalist set the goal for St. Mary's Health Care to create a green building and become a steward of health with construction of this facility
- The project received points from LEED because food cooked to order uses less energy and results in less waste than the traditional cafeteria model
- Self-cleaning windows not only save energy and human resources, but result in a healthier, cleaner environment for patients

**SCOPE**

175,000 sf facility  
42 private rooms, four surgical suites, a chapel, a rooftop garden, and the Warren Reynolds Patient Information library  
Open: January 2005

**The Sarkis and Siran Gabrellian Women's and Children's Pavilion at Hackensack University Medical Center [Hackensack-Gabrellian] Hackensack, NJ**

**John Ferguson, President & CEO**  
**+ Deirdre Imus, Founder, Deirdre Imus Environmental Center for Pediatric Oncology**  
**+ Suzen Heeley, Director of Design & Construction**  
**+ Anne Marie Campbell, Chief Public Affairs Officer/Director, Public Relations**  
Hackensack University Medical Center

**DESIGN FACTS**

- Seeking LEED certification and registered as a pilot of the *Green Guide for Health Care*
- Project awarded a \$1 million Kresge Foundation challenge grant used toward the construction of the Pavilion
- Project includes The Joseph M. Sanzari Children's Hospital, The Women's Hospital, and The Mark Messier Skyway for Tomorrow's Children

**ANECDOTES**

- The Environmental Oncology Center has made significant strides in raising awareness among lawmakers about the potential hazards of environmental toxins; Imus has helped them sign into law several related bills
- HUMC adopted the use of environmentally friendly cleaning products throughout by implementing the Deirdre Imus Environmental Center Greening the Cleaning environmental protocols

**SCOPE**

**HUMC** is a 781-bed facility and is Bergen County's largest employer (workforce: 7,100)  
**Hackensack-Gabrellian** is a 300,000 sf facility with two separate and distinct lobbies for each of the hospitals  
192 private rooms  
Cost: \$117 million  
Operational since 2005

**UAMS College of  
Public Health  
[Arkansas CPH]  
Little Rock, AK**

**Leo M. Gehring, CHFM,  
SASHE  
Vice Chancellor for  
Campus Operations**  
University of Arkansas  
for Medical Sciences

#### **DESIGN FACTS**

- ASHE Vista Team Award 2005
- Academic educational facility used principles of sustainable design throughout to improve health of building occupants: healthier materials, reduced energy demand, and modeling of health behaviors
- Built a facility to represent a statewide stance on public and environmental health

#### **ANECDOTES**

- Facility recently named for the late Dr. Fay Boozman, director, Arkansas Department of Health [Fay W. Boozman College of Public Health for Arkansas]
- Boozman played a key role in steering millions of dollars to this and other health-related causes
- The college is responsible for developing programs that reach into the communities and make Arkansas a healthier state

#### **SCOPE**

120,000 sf, partially funded by \$15 million from the state's tobacco settlement money

Operational since 2002

9,000 employees (UAMS), the largest public employer in the state

Economic impact: \$4.3 billion per year (UAMS + affiliates)

Occupancy: 2,220 students + 660 residents