

Value Propositions for Green Buildings

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1.0 INTRODUCTION

Proponents of green buildings often resort to rhetoric (“green is good”) when advancing their case. But building owners and developers have very different approaches to valuing green buildings. These “value propositions” can include both measurable and non-measurable benefits, both for the building itself and for the organization. Examples of measurable benefits include the life-cycle savings in energy and water consumption from improved building energy performance and an improved marketing positioning resulting from building a green building; non-measurable benefits include intangibles such as public relations benefits to an organization or the prestige of locating one’s business in a green building.

Green buildings or sustainable construction projects often involve more expense than conventional construction, especially in “soft costs” for additional design, analysis, engineering, energy modeling, commissioning and certification to relevant standards such as the U.S. Green Building Council’s Leadership in Energy and Environmental Design™ (LEED™). These costs may exceed 1% of construction costs for large buildings and 5% of costs for small buildings, depending on the particular measures employed. Higher levels of sustainable building (e.g., the LEED™ “Silver” or “Gold” standard) may involve additional capital costs, based on case studies of buildings in the U.S., as documented in recent studies by the Rocky Mountain Institute (2002) and U.S. Green Building Council (2002).

Justification of such additional costs has traditionally rested on the economic “payback” or return on investment for energy and water conservation measures. Green building standards such as LEED incorporate additional requirements beyond energy and water use, e.g., indoor environmental quality, use of recycled materials and site considerations, so it is increasingly difficult to justify green building investments on the value of such savings alone.

Additional *value propositions* for green buildings are needed to justify the incremental expenses involved. These value propositions may be classified as occurring *inside the building* and *outside the building*. “Inside the building” values may be created by increased productivity of workers, while “outside the building” values may be created by enhanced image of a company or institution. Additional measures of value might include risk management issues, recruitment and retention of key employees, and enhancing the value of real estate investments.

2.0 VALUING GREEN BUILDINGS

2.1 Green Building Rating Systems. Green buildings today have a variety of rating and certification systems available, but in the United States, the *de facto* national rating system is LEED. In certain “vertical market” segments such as secondary schools, modified versions of LEED are being used, for example in California (CHIPS, 2002). These ratings systems are

“point-based” and focus primary on the building itself and the environmental impacts of its construction and operations.

2.2 Benefits of Ratings Systems. Green building rating systems provide some value in the marketplace today, primarily to institutional building owners and developers, such as federal, state and local government; schools and universities; non-profit organizations; hospitals, libraries, etc. These represent >70%, for example, of the first 350 buildings registered under the LEED 2.0 system during its first two years of existence, i.e., through April 12, 2002 (U.S. Green Building Council, 2002). Many private, for-profit building owners have used LEED to evaluate their buildings and to implement policies for sustainability and corporate social responsibility, e.g., American Honda Motor Company’s LEED building in Gresham, Oregon. A small handful of private businesses have built such buildings for the benefit of their employees and/or to secure life-cycle cost savings in operations.

2.3 The Value of Green Buildings. The value of buildings depends on the nature of ownership. For example, a major government agency may construct buildings with a 50-year to 100-year life, whereas a property developer may simply construct buildings for immediate leasing and short-term sales potential. Each of these building owners is pursuing different measures of value, and the task for green building proponents is to recognize this state of affairs and to tailor their approaches to different owners accordingly.

Since marketplace values can shift rapidly, depending on the state of the economy, vacancy rates for properties, interest rates, etc., it is difficult to ascribe exact values for various green building measures. For example, in today’s low interest rate climate in the U.S., where interest rates are at the lowest levels in 40 years, it is easier to justify longer-term investments in energy and water savings, both for government agencies and private building owners; in other words, the acceptable “payback” can be as long as 7 to 10 years, or more.

Buildings also accrue value by having lower operating costs. In a low interest rate climate, the “cap rate” or multiplier of annual savings to get incremental increases in building value may be as high as 12, whereas in higher interest rate environments, it can shrink to 7. So, the same projected annual savings in energy and water costs, or benefits of productivity increases, might be worth 70% more in a low interest rate economy than in a high interest rate economy.

Marketing benefits might also accrue to LEED-rated green buildings, if they become the standard measure of value for commercial and institutional construction. Such buildings might be easier to lease or rent fully, or they might command higher rents or lease rates. At this time, there is little marketplace evidence that this is the case. If it were easier to lease green buildings, then speculative developers might be very interested, because a fully leased building prior to construction is a very valuable commodity. In addition, many commercial lenders want to see >60% committed occupancy prior to releasing funds for construction.

3.0 COSTS OF GREEN BUILDINGS

3.1 Value is Relative to Cost. Each measure in a green building project has a cost, even if it’s just the cost of documenting the LEED rating level. Such professional services, including energy modelling, building commissioning, additional design services and the documentation process, can easily add 0.5% to 1.5% to the project’s cost, according to the U.S. Green Building Council (2002). So, green-building proponents might have to find measures by which to value their projects to overcome the additional costs of such projects. Evidence is

increasing that buildings certified at the LEED “Gold” level might add 5% or more to project cost (Ecotrust, 2002).

3.2 Costs Depend on Many Factors. Many of the green building measures that might give a building its greatest long-term value, e.g., on-site energy production, on-site stormwater management and water recycling, “green roofs”, daylighting, natural ventilation often require a higher capital cost. While it is possible to get a LEED-certified building at no additional cost, as one moves to make a building truly sustainable, cost increments do accrue. Finding out which costs are going to provide the highest value is a primary task of the architect, working in concert with her client, the building owner or developer.

3.3 Classifying the Value of Green Buildings. The author has developed a classification scheme for understanding and using green building value analysis, as shown in Table 1. Almost all discussions today involve only the upper left quadrant. However, many owners and developers value other attributes of green buildings more highly than operating cost savings.

Table 1. Understanding the Benefits of Green Buildings

<i>Type of Benefits/Where They Occur</i>	Measurable	Un-measurable/Intangible
Inside the Building		
<ul style="list-style-type: none"> • Economic • Non-economic 	Energy/Water Savings Increased Employee Well-Being/Productivity	Increase in Building Value Increase in Morale
Outside the Building		
<ul style="list-style-type: none"> • Economic • Non-economic 	Marketing and Sales Retention/Recruitment	Brand Identity Public Relations

4.0 MEASURABLE BENEFITS OF GREEN BUILDINGS

Tables 2 shows a variety of measurable benefits, occurring both inside and outside the building, according to a classification scheme developed by the author.

4.1 Benefits that Accrue to the Building Itself. These costs are fairly easy to measure and include the usual energy and water savings of well-designed buildings, of which there are many examples, such as the 200 cases documented by Rocky Mountain Institute (2002). Other benefits might include resale value, owing to such savings, as discussed above.

4.2 Benefits Related to Building Occupants and Their Behavior. There is a growing body of literature, compiled most recently by Loftness, Ries and Mondazzi (2001) of the very real and measurable benefits of buildings that have enhanced daylighting, natural ventilation and improved indoor air quality. These benefits are found in such areas of concern as enhanced productivity, reduced absenteeism and illness, and improved retail sales.

4.3 Benefits that Accrue to the Organization or Building Owner. Green buildings may also yield benefits to the building owner, for example, through higher rents, better tenants or longer-term leases from quality tenants. These immediate benefits might also translate into a higher resale value, since the resale value will typically be a multiple (the “cap rate”) of the

projected annual cash flow generated by the building. Additional benefits might include sizable tax credits for green buildings that are being offered by several U.S. states.

4.3.1 Reducing Costs for “Churn”. For long-term owner-operators such as government agencies and large corporations with open-plan offices, green buildings measures such as underfloor air distribution systems (raised or access floors) may reduce costs of *churn*, the incessant propensity of such organizations to move people’s work areas, typically at rates of 20% to 30% per year. Savings of up to USD\$2,500 per workstation in moves have been reported at various conferences, or about USD\$25/m², based on an average workstation area of 10 m² per person. If the underfloor system adds a net cost of \$30/m² to the initial cost of the project, then that cost is nearly recovered in the first full set of moves. Meanwhile, the benefits of reduced energy costs and healthier air accrue to the project.

Table 2. Examples of Measurable Economic Benefits Inside the Building

<i>Type of Benefit/ Building Owner</i>	Energy Savings Investments	Water Savings Investments	Productivity Enhancements	Sales Enhancements
Commercial				
<ul style="list-style-type: none"> • Speculative • Owned 	Justify only with higher rents Reduce operating costs	Justify only with higher rents Reduce operating costs	Must add to sales value Add daylighting & views outside	Not likely Add daylighting to retail
Non-commercial or governmental				
<ul style="list-style-type: none"> • Owned • Leased 	Reduce operating costs	Reduce operating costs	Reduce no. of employees	Not applicable

5.0 NON-MEASURABLE OR INTANGIBLE BENEFITS OF GREEN BUILDINGS

5.1 Benefits that Accrue to the Building Itself. Most intangible benefits accrue outside of the building operations. A few of these are shown in Table 3.

5.2 Benefits that Accrue to Building Occupants. Many employees may feel benefited by the enhanced prestige of working in a well-known building, or may have higher morale owing to the better physical and psychological environment. This has always been the goal of architects, but only recently have there been the tools for analysing and simulating daylighting and natural ventilation, for example.

5.3 Benefits that Accrue to the Organization or Building Owner. This area reflects many of the primary benefits of green buildings, and most of the benefits are intangible. Some of these are brand image, public relations, enhanced marketing capability, market positioning, reduced risk of lawsuits, employee loyalty and attractiveness to new employees, fund-raising capability, “doing the right thing,” and the like. While these benefits are “intangible,” they are nonetheless “real,” in the sense that they do have economic or social value.

5.3.1 Brand Image. Large corporations are highly concerned with brand image. Recent green building projects by such large consumer products companies as Ford Motor, Honda America, Gap (clothing) and many regional and national banks, all serve to indicate the importance of brand image and the role that green buildings might play in enhancing it.

5.3.2 Public Relations. Many public agencies have sought to demonstrate their commitment to sustainability through the construction of green buildings, including the U.S. General Services Administration, which owns or operates more than 50 million sq.m. of buildings. Other public agencies with strong green building programs include the State of California and the City of Seattle, Washington, which have each committed more than USD\$400 million to LEED “Silver” certified new building construction in the next few years.

5.3.3 Enhanced Marketing Capability. One local residential remodelling company in Portland, Oregon, has built a new LEED-certified building with a showroom for consumers. In the process, it has garnered considerable publicity for the company and has built a reputation as a place to go for certified wood products in cabinets, according to Kelly (2002).

5.3.4 Market Positioning. The author has worked with a small (2000 student) private university that is considering a green building program. During the course of a green building *charrette*, it became apparent that the university could “re-position” itself in the marketplace for students in its local area, from its current image as a place for teacher training to a much more progressive “sustainability” image, through both building design and a conscious effort to integrate sustainability into the curriculum. The economics of such a re-positioning are attractive: at the margin, each new student paying full tuition generates a gross revenue of USD\$80,000 to USD\$100,000 over a four-year college program, with almost no margin cost for serving that student – the university will hire no new instructors or build any new classrooms for a handful of new students. If enrolment were to grow just 0.5%, i.e., 10 new students, as a result of a LEED-rated building program, revenues would increase by more than USD\$800,000. This revenue gain would support any extra costs of a green building program.

5.3.5 Reduced Risk of Lawsuits. In the litigious climate of the U.S., employers would do well to consider how a documented improvement, according to accepted “best practices”, as exemplified in LEED and related standards, might serve as a defense in a lawsuit, for example, alleging “Sick Building Syndrome” as the cause for an employee’s illness or harm. How much better a defense would this be than merely citing the building code as the rationale for mechanical and building systems design? In addition, it is possible that, over time, this reduced risk of lawsuits, might allow insurance companies to offer lower rates for such buildings. Thus, a risk management approach (intangible benefit) might eventually result in tangible economic benefit.

5.3.6 Employee Loyalty and Attractiveness to New Employees. Many organizations seek to demonstrate their commitment to employee health and welfare through a variety of benefit programs. Companies and agencies are now beginning to view green buildings as a tangible and positive statement of their long-term commitment to employees’ health and well-being. Employees can also be expected to see such benefits as “real,” especially when the employer takes care to communicate what it is doing and how the building is better. One may also conjecture that the prospect of working in a well-known green building might, at the margin, also be a powerful attractant to high-level professional employees. At a current cost of USD\$30,000 to \$150,000 cost to recruit, hire and train a new high-level employee, this intangible benefit might well yield positive results. As another example, with explosive growth in population of secondary students now underway in the U.S., there is a growing teacher shortage. Would it be possible for school districts with new schools offering the best in daylighting, natural ventilation, controllability of classroom environment, etc., to attract better teachers, compared with those schools than can’t offer such amenities?

5.3.7 Fund-Raising Capability. Consider the case of a small private university, cited above, with a limited base of charitable donors, typically limited to local business people and alumni/ae. This university feels that a green building program can help it tap a new base of donors, not only for the buildings, but for the university’s new “sustainability initiative.” This

need to “walk the talk,” creates opportunities for green building advocates to help universities and non-profits such as Ecotrust (2002) to build leading-edge projects, by working with them in the fund-raising arena. An excellent tool would be a fund-raising prospectus highlighting the benefits of the green building and the commitment to sustainability it represents by the organization.

5.3.8 **“Doing the Right Thing.”** The green building literature is replete with examples of projects moving ahead, because the owners or developers realize it’s the “right thing” to do. Unabashed altruism is still present, even in the commercial building industry, and organizations that want to stay on the leading edge of change recognize increasingly that their building programs reflect on their character. In the oft-quoted words of British statesman, Sir Winston Churchill, “we shape our buildings, and then our buildings shape us.”

Table 3. Examples of Typical Intangible Benefits Outside the Building

<i>Type of Building/ Benefit</i>	Public Relations	Public Policy	Marketing and Sales	Company or Organization Brand/Image
Commercial				
<ul style="list-style-type: none"> • Speculative (developer) 	Not very important	Not applicable	May help with loans or leases	Could be useful for developers
<ul style="list-style-type: none"> • Corporate-owned 	Very important	Not applicable	Very important	Very important
Non-commercial or governmental				
<ul style="list-style-type: none"> • Owned 	Very important	Crucial	Not applicable	Very important
<ul style="list-style-type: none"> • Leased 	Very important	Crucial	Not applicable	Very important

7.0 CONCLUSION

In this paper, the author has argued that green building advocates, mostly architects and sustainability mavens, need to learn and use the language of business in order to be more effective at market transformation. This language includes of course, economics and finance, as exemplified in “return on investment,” future value of buildings, productivity, etc. However, the non-economic and intangible language of business, found primarily in marketing, risk management and public relations, needs to be equally emphasized. In fact, it is often the driving force for key business decisions.

8.0 REFERENCES

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