
What It Means To Be Green Can We Afford Not To?

Posted in: **Region**
By Andrew P. Borgese

All too often I hear people claim that building green costs too much. They would like to build green, but it's just not within their budget. While there are many green building products and technologies that, indeed, are more costly than other conventional or traditional options, a few environmentally conscious architects and builders will be able to show you that green design and building need not cost more than conventional practices and some green features may actually cost less.

When we speak of building cost, we are typically referring to the initial cost, or "first cost" of constructing a building. "Life cycle costs", however, are quite different and include all the costs associated with ownership, occupancy and maintenance of the building. The "first cost" and "life cycle costs" when viewed together represent a much more accurate indicator of a buildings true cost. Green buildings require substantially less energy to operate; they are constructed with more durable materials requiring less maintenance; and they have healthier indoor environments as a result of better ventilation and fewer materials that emit toxic substances into the air. Viewed in this light, the energy savings and cost savings over time, not to mention the value you would place on a healthier environment for yourself, your family, or your co-workers makes it even easier to justify green design features and products.

In this current economy gripped by the rising price of fuel, life cycle costs will become an issue of much greater importance and consideration than ever before when it comes to the design of new and renovated

buildings. Unfortunately, for now, it is this "first cost" that we tend to latch onto exclusively when planning or justifying costs for a building project. That being said, we will look briefly at several design strategies that can contribute to the creation of a green building while actually saving money when compared to conventional design and construction methods.

One such strategy is to consider renovating an existing older building rather than building new. This usually results in a great reduction in sitework, the conservation of a substantial amount of building materials, and extends the lifecycle of the existing building stock. It reduces construction waste and reduces the environmental impacts that would otherwise result from new building construction as they relate to the manufacturing and transportation of materials. This savings in materials and energy is often significant resulting in environmental benefits, reduced project costs and potentially shorter construction time.

The benefits of a good design go well beyond aesthetics. It begins with proper placement of the building on the site to optimize solar orientation. Establishing the long axis of the building in the east-west direction will allow for the placement of most of the windows on the south side to maximize passive heat gain in winter. Properly designed overhangs, or carefully placed shade trees will minimize summer heat gain. Utilizing prevailing breezes and natural convection will assist with cooling during the summer. Minimal glazing on the east and west walls will help prevent overheating from the early morning and late

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afternoon summer sun. Fewer windows will also mean reduced cost.

Integrating the building design is a way to achieve tremendous value. By involving the major team members such as the architect, structural engineer, mechanical engineer, landscape architect, builder, and others early in the process, the design of each of the building systems can be carefully integrated so that they may compliment one another and combine to create a much more efficient building to construct and operate. For instance, the architect's design of a well insulated, tighter building enclosure may enable the mechanical engineer to design or specify a smaller, less expensive and more energy efficient HVAC (heating, ventilating and air conditioning) system. Or perhaps the landscape architect can identify several deciduous trees that are already on the property that could be transplanted to provide summer shading on the south side of the house rather than be cut down and hauled off to the landfill. In the winter, these trees would shed their leaves to allow for passive solar heating.

Even though we may live in the age of "super-sized" luxuries, when it comes to buildings we should really get back to "sizing them right". Smaller buildings tend to be more efficient, they disturb less land, use fewer resources to construct, and less energy to maintain and operate.

I have seen many buildings constructed with excessive amounts of concrete, steel and wood as part of the structural framework. These over-designed structural systems often can and should be avoided. Optimal value engineering (OVE) and advanced framing are strategies that allow for reduced

material use without compromising structural integrity. Fewer materials used means resources are conserved and costs are reduced.

Designing for an open interior layout, where possible, creates possibilities for natural daylight to be distributed throughout the space, minimizes the amount of mechanical ductwork that could be required in a partitioned space, and may reduce the required density of electrical lighting fixtures. Here again, fewer materials used translates to reduced cost.

When deciding on the appropriate site for a green building or development, consider areas that already have an existing infrastructure of roadways, utility system distribution, stormwater management systems and wastewater management systems. Environmental impacts of development are reduced, undeveloped land and habitats may be preserved and the infrastructure costs of development may be drastically reduced or eliminated. (*The March 14th article on Sustainable Sites covers this topic in greater depth.*)

These are just a few of the design strategies that you might want to discuss with your architect and builder if your goal is to create a green building. If you can afford to build your building, then you can probably afford to make it green. There are affordable green developments across the country. Solara is a 56 unit affordable housing development north of San Diego, CA. The Burnham Factory in Westchester County, NY was revitalized into 22 units of sustainable, affordable housing located above a new 10,000 square foot first floor community library. Recently on Martha's

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Vineyard, Jenney Way, a 10 unit green development (9 of which are affordable) was completed with 4 of the units receiving a LEED (Leadership in Energy and Environmental Design) platinum rating. Add to these proven case studies the overwhelming benefits of reduced operating costs, reduced health risks and liability resulting from indoor air quality problems, enormous reductions in energy use and water use, reductions in construction and demolition waste that are diverted to landfills, lower absenteeism rates and increased productivity in green office buildings, higher student scores on tests in green schools, and the preservation of undeveloped land and wildlife habitats. The environmental, economic, social, psychological and physical benefits of green design have already been demonstrated in projects worldwide ranging from single family houses to skyscrapers. As our awareness and knowledge of these issues increases, so does the clarity with which we can pose questions relating to green design. So rather than continue to doubt whether we can afford to build anything green, we should continue to empower ourselves with knowledge and the facts and ask the question “can we afford not to?”

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