



# 8 Challenges Facing the Green Building Industry

By Geoff Bilau

**B**arely more than a year ago, we published an award-winning article titled “The Green Building Revolution: A Primer for Plumbing and Mechanical Officials.” It began with a nutshell definition of what exactly “green” means in this day and age and proceeded to walk readers through the nuts, bolts, pipes and ducts of everything green.

You likely don’t need *Official* to tell you what it means any longer. The Green Movement has exploded worldwide, spawning new catchwords and phrases like “sustainability,” “3-R materials” and “green collar jobs.” The Leadership in Energy and Environmental Design (LEED) Green Building Rating System, established in 1998, finally began to receive some mainstream media coverage. And in the midst of this proliferation of new, more environmentally conscious building practices, a clearer picture of the real world challenges and potential pitfalls they present has emerged.

Vijaya Yellamraju, a LEED accredited professional with Green Living, LLC, and a member of the United States Green Building Council (USGBC), boiled it all down to a list of eight challenges/opportunities on which the future of sustainable building rests. These challenges are economic, socio-cultural and design related, according to Yellamraju. And getting them all to mesh cohesively is where things often get tricky.

## **No. 8. Separate Capital and Operating Budgets**

“On the financial end, the critical issue that keeps coming up when dealing with clients is that most have funds appropriated for real estate acquisitions independently from funds for property operations,” Yellamraju says. “This separation creates an accounting scenario where the savings from the operation of green buildings are not used to offset any initial higher construction costs.”

In other words, the long-term benefits of initially more expensive construction are often not fully explored, and this frequently unwitting shortsightedness can ultimately cost a building owner a great deal, according to Yellamraju.

“What is important to understand is that a building’s initial construction costs typically may represent only 20 to 30 percent of the building’s entire costs over its useful life, underscoring the need to consider not just the initial cost of the building, but also the year-to-year operating costs,” she says.

But understanding the life-cycle costs of a building is still a significant challenge. Few tools exist to clearly illustrate the life-cycle analysis to the building owner, though LEED is expected to include it in the next rating system.

## **No. 7. Split Incentives for Owner-Tenant**

A big reason why people continue to calculate these budgets separately is because often the people footing the bill are not the same as those enjoying the benefits, according to Yellamraju.



“A developer may not be interested in paying for green features, such as solar panels, when the benefit will be passed on to the new owners or tenants — unless, of course, he is able recoup the additional cost of green features in the sale price or by charging the tenants more,” she says. “And tenants often don’t want to pay extra for something the owner did as they are usually not aware of the various benefits of the green features, such as energy savings or better indoor air quality.”

The split incentive problem is particularly evident for new homes and condominiums and for non-owner-occupied existing commercial buildings, where because of high turnover rates owners may want short payback periods on energy-saving investments.

“We need newer owner-tenant leasing models to bridge that gap,” Yellamraju says.

Some third-party investors have realized the potential this challenge offers and are coming up with a range of what they call “solar services,” where the third-party company installs its own photovoltaic (PV) panels on rooftop space leased from the owner and sells the power it generates to tenants.

## **No. 6. Lack of Transit Oriented Development**

Green building is booming, but the infrastructure necessary to achieve the greatest efficiency has remained mostly stagnant.

“It appears we are building these green buildings in isolation, without having the community structure or transit system in place to make our efforts worthwhile,” Yellamraju says. Better public transportation systems, bicycle routes and pedestrian oriented development increase the viability of a green building exponentially, she says.

Yellamraju cites a planned sustainable development in Sweden where the first thing constructed was a tramline that linked homes, schools, offices and parks before any of them were built. “In fact, the information manager of the development said that they always wanted to get the public transportation in place early because they knew it would be difficult to get people who were already used to driving to work to change their habits,” she says.

Buildings currently receive LEED points for being close to bus or rail lines, encouraging use of bikes by offering storage and shower facilities and being within walking distance of community services. But not all cities are bike or pedestrian friendly; so much of the benefit is often diminished.

## **No. 5. Limited Post Occupancy Evaluation**

There is little information available showing how buildings designed with sustainability in mind actually perform, according to Yellamraju. Once the building is constructed and the owner settles in, architects rarely perform systematic reviews of their completed project to understand if it is meeting design objectives.

A recent post occupancy study by the New Buildings Institute indicated that some of the LEED certified buildings were actually using less energy than expected while others were using more.

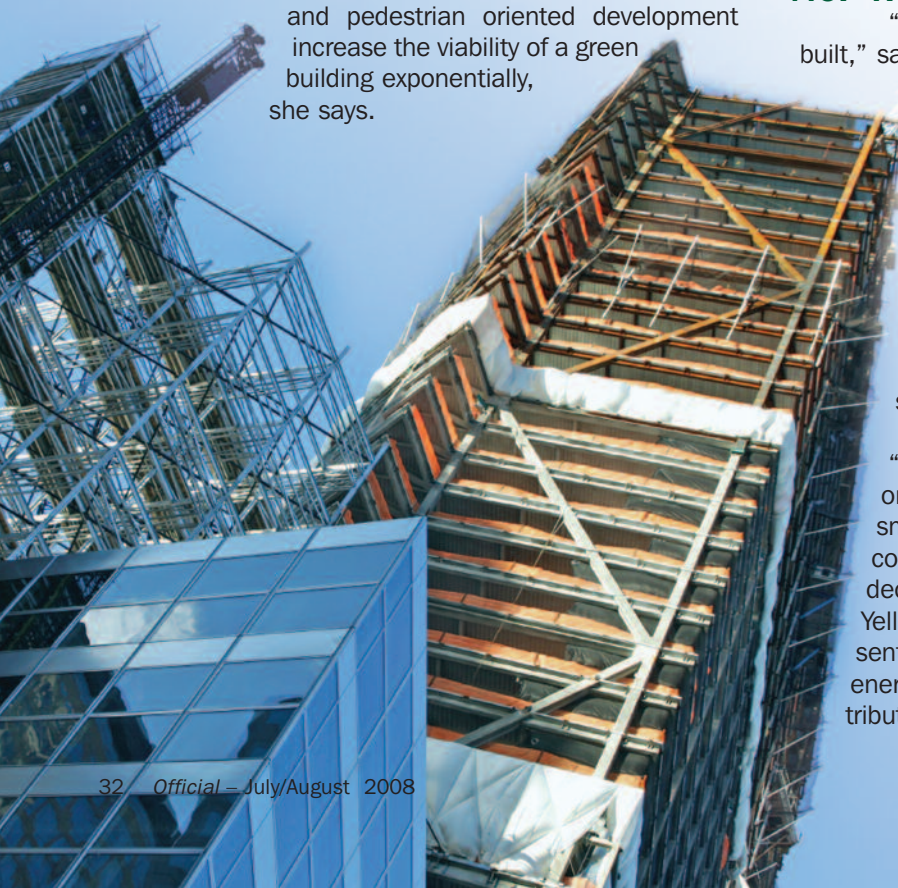
“Having such information and sharing it would help advance sustainable design by helping identify the strategies that work best in actual practice, those that need refinement and those that should not be repeated on future projects,” Yellamraju says.

## **No. 4. Greening Existing Buildings**

“The greenest building is still the one that’s already built,” says Justin Doak of the USGBC. In other words, any new construction is going to be more taxing to the environment than the renovation of an existing structure.

A 2006 study conducted by the USGBC revealed that by retrofitting existing buildings, owners could save, on average, 90 cents per square foot annually in energy and other costs. Furthermore, these savings can earn back the investment in 2 to 2 ½ years, according to the study.

“The focus of our green building movement has been on new construction, but these buildings represent a small fraction of the nation’s estimated 4.5 million commercial properties, many of which were erected decades before sustainable designs became popular,” Yellamraju says. “This vast stock of older buildings presents a much larger opportunity to cut down on the energy consumption and carbon emissions that contribute to the warming of the planet.”



## Vijaya Yellamraju, MS Architecture in Sustainable Design, LEED AP/ Associate Principal

Vijaya Yellamraju is the Associate Principal of Green Living, LLC — a sustainable design, energy efficiency consulting and building commissioning services firm.

Green Living's mission is to help clients succeed by integrating principles of sustainability in their projects. They look beyond the status quo and incorporate the latest ideas and innovations to derive creative solutions for each project, resulting in environmentally responsible development and reduced cost of ownership.

The company fosters effective partnerships with building owners, construction managers, architects, contractors, engineers, developers and green product manufacturers to achieve goals in the rapidly evolving green building market.

Green Living is a multi-national firm with projects all over the world and their team of experienced architects and analysts use an integrated approach to maximize the green quotient for their clients. Services provided include, but are not limited to, sustainable design/LEED consulting and project management, building commissioning, feasibility analysis, eco charrette facilitation, daylighting analysis, IAQ testing and customized workshops and trainings.

For more information visit Green Living's Website at [www.GreenLivingLLC.com](http://www.GreenLivingLLC.com) or contact their toll free number at (877) 261- 8950.

The USGBC accepts some of the responsibility for this as the first version of LEED certification focused mainly on new construction. Future versions will include the greening of existing buildings.

### No. 3. Resistance to Change

"New" means risk and uncertainty. Getting people to open up and embrace change is always a challenge, especially when it involves the investment of their capital. But Yellamraju notes the significant changes in automobiles over the past 100 years and wonders why the building industry hasn't adapted nearly as rapidly.

"I think our culture and mindset play an important role in implementing green practices," she says. "Change is hard. People are used to working in a certain way, building in a certain way, using the same techniques, materials and products with which they're familiar."

Yellamraju recalls a Green Living project where they were talking to the construction manager about tracking of materials and identifying their material cost, recycled content value and their source of origin.

"He just threw his hands up and said it was too much work for him and the subcontractors, and it would be impossible to do it," she says. "It took us more than a few meetings for him to come around and accept that this is the new way to do things."

### No. 2. Green Education

When children grow up in green schools and healthier environments, they naturally develop a sense of environmental responsibility and it becomes part of their way of life, according to Yellamraju. And the same could be true at the university level, she says.

"Our architectural and engineering education lack emphasis on sustainable design," she says. "We need to encourage the development of technical skills such as energy simulation, passive solar and day-lighting design, and make them part of the way we design buildings."

Doing so now will directly lessen the resistance to change moving toward the future, Yellamraju argues.

### No. 1. Lack of Integrated Design

The biggest challenge — and the thing that could provide solutions to all of these challenges if initiated correctly, according to Yellamraju — is integrated design. In other words, much of today's construction still relies upon multiple entities all working independently of each other until forced to work together due only to project overlaps.

Moving forward, Yellamraju insists, all of these entities need to be fully integrated, forming synergistic strategies to create benefits greater than the sum of the individual design decisions.

"Green or LEED cannot be regarded as something that you add on or work your way around to get the maximum points," she says. "If you coordinate and establish certain goals from the beginning, understanding how each side impacts the other, operating costs can come down."

When environmental design issues are tackled on an as-they-come basis, it gives the perception of everything being an additional step. Thus, the cost of greening a building becomes perceived as expensive, Yellamraju says.

She indicated that big firms working on large-scale projects have been more receptive to putting these ideas into practice than smaller developers, who continue to be resistant.

"We're getting there, but still a ways off," she says. "It's better to do these things now, when it is still viewed as an opportunity, rather than later, when it must be done out of dire necessity." 