Going Green by Building Green

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Green building is a popular topic in the current construction and real estate markets but what exactly does it mean to build green? And why is green building an important concept?

One need not watch the Al Gore movie, "An Inconvenient Truth," to know that the built community has had a profound effect upon the environment at large. While global warming and greenhouse gas emissions are terms that are generally associated with industry and transportation, the buildings where we work, shop, and even live significantly compromise the integrity of our natural resources by the effects of daily heating, cooling, ventilation, and hot water use, all of which require the burning of fossil fuels such as oil, natural gas and coal. According to the federal Environmental Protection Agency (EPA), buildings in the United States account for 39 percent of total energy use, 12 percent of total water consumption, 68 percent of total electricity consumption, and 38 percent of all carbon dioxide emissions. Certainly, these issues cannot be resolved overnight, but building green is a good start.

The EPA has described a green building, also known as a sustainable building, as "a structure that is designed, built, renovated, operated, or reused in an ecological and resource-efficient manner." According to EPA a green building protects occupant health; improves employee productivity; uses energy, water and other resources more

A vegetative roof reduces solar heat gain and improves water quality flowing from the roof of a green office/parking garage in Morristown.

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efficiently; and reduces the overall impact on the environment. The practice of green building also incorporates the use of recycled building materials which reduces the amount of waste sent to landfills; a reduction in the amount of waste sent to landfills results in a reduction in the amount of released methane (a harmful gas) which is caused by landfill decomposition. The environmental benefits of green building are obviously significant but there are other reasons to go green which should not be overlooked.

The overall benefits of green building are generally measured by a life-cycle assessment, or LCA. From a financial perspective, the primary, and most obvious goal of green building is the reduction of operating costs over a building's life cycle. Studies have shown that green buildings result in an energy savings of 30 percent, a water use savings of 35 to 50 percent, and a water cost savings of 50 to 90 percent.

Healther Buildings These financial benefits are tangible in nature but there are other less tangible, although equally meaningful, benefits to be had by building green. A study conducted by Herman Miller, a facilities group which helped fund the start-up of the United States Green Building Council (USGBC), showed an increase in worker productivity of up to 7 percent upon the greening of a particular facility. Another national study, conducted by the Lawrence Berkeley National Laboratory, showed that businesses could save $58 billion in lost employee sick time plus an additional $200 billion in increased worker productivity if improvements were made to indoor air quality alone. Green building plans often incorporate natural ventilation and enhanced natural light, both of which have been shown to improve indoor air quality.

Cost While the goals of green building undoubtedly sound laudable, they often sound expensive. Most people substantially overestimate what has been referred to as the "green premium." Although there is an added cost to building green, on the average, it is a minimal 2 to 5 percent, which generally amounts to $3 to $5 per square foot. The added cost should be viewed as an investment since greening can not only pay for itself over time but also result in an increased real estate value. A report submitted to the California Environmental Protection Agency cited an example of a life cycle cost benefit analysis. In that example, the initial upfront investment for certain green features was $100,000 on a $5 million project. That $100,000 investment had a return of over $1 million, a benefit of $900,000, over the life of the building, which was estimated to be a conservative 20 years. Clearly, green building has a significant potential pay off.

Tax Benefits Additionally, there may be tax benefits for certain green buildings. Some tax professionals have counseled their clients to apply for a federal tax deduction for expenses incurred for making a commercial building more energy-efficient pursuant to the Energy Policy Act of 2005. The deduction is subject to a cap and the project must be certified as "part of a plan designed to reduce the total annual energy and power costs of interior lighting systems, heating, cooling, ventilation, and hot water systems of the building by 50 percent or more…". Partial deductions may also permitted under certain circumstances. State tax benefits may also be a consideration for the future. Under the currently pending Green Building Tax Credit Act, an incentive package of tax credits would be offered to businesses that build green. Additional tax credits of up to 6 percent of allowable costs could also be awarded if the project is LEED certified (Leadership in Energy and Environmental Design) by the USGBC as silver, gold or platinum.

LEED and other Standards Although LEED is undoubtedly the prevailing standard in the industry, it is not the only standard against which a green project may be measured. Indeed, the USGBC is not an "official" government organization as is widely misperceived and its current LEED point schematic may be considered somewhat rigid. By way of example, under the current USGBC LEED point schematic, a building with a bike rack will earn the same one point that will be earned by a building which is both constructed upon a former brownfield and situated next to or near mass transit. Surely, more credit should be awarded for the extensive work involved in coordinating site location and land reuse than for the installation of a bike rack, which requires nothing more than two drill holes. Nevertheless, a particular project may be best suited to the LEED process.

THE ENVIRONMENTAL BENEFITS OF GREEN BUILDING ARE OBVIOUSLY SIGNIFICANT BUT THERE ARE OTHER REASONS TO GO GREEN WHICH SHOULD NOT BE OVERLOOKED.

Our advice? Don't burden a green project with potentially hidden costs, especially in a down economy. Be flexible in your thinking and be open to green certification alternatives, such as Green Globes and now the National Green Building Standard, a rating system recently developed by the National Association of Home Builders in conjunction with the International Code Council especially for multi-family design and construction. In the long run, you may be able to achieve green certification more cost-effectively under these green rating systems, which are just as credible as LEED.

A Green Parking Garage and Office A recent green project that the Green Building Practice Group of Greenbaum, Rowe, Smith & Davis, LLP has guided is the Epstein's redevelopment project in Morristown on behalf of the Morristown Parking Authority, a local parking authority that has embraced green design and policies. An important component of the Epstein's redevelopment project was the construction of a green parking garage and office building

(14 Maple Avenue), which are expected to achieve gold LEED certification, for environmentally sustainable and energy renewable design. The parking facility began operations in the fall of 2008 and the office building was fully occupied as of January 2009.

The office building has the benefit of having The Geraldine R. Dodge Foundation as a major tenant, occupying two of four floors within the structure. The Dodge Foundation, consistent with one of its primary missions, provided support through grants to achieve LEED certification.

The most remarkable green features of the parking garage and office building include the following:

- photovoltaic panels which harness solar energy as a renewable energy source;
- sunshades which are designed to block summertime solar heat gain, commonly referred to as the "heat island effect," and allow solar warmth in wintertime, thereby reducing cooling and heating demands in the respective seasons;
- a vegetative roof which reduces solar heat gain and improves water quality flowing from the roof;
- geothermal wells which serve as the main heating and cooling source designed to consistently maintain comfortable temperatures;
- light shelves which disperse daylight throughout the building more broadly;
- raised floor HVAC distribution which promotes efficiency and improves the quality of ambient air;
- a high performance energy-efficient building envelope; and
- a biowall which purifies indoor air, the largest of its kind in the United States.[1]

It should also be noted that a parking structure, as opposed to surface parking, is in and of itself a sustainable element of design and construction. A multi-floor parking deck compared to paved surface parking dramatically reduces the impervious surface needed to provide the equivalent amount of parking. In addition, by concentrating the parking into a single structure and having appropriate filtering devices for storm water runoff, water quality can also be improved.

The 14 Maple Avenue project was awarded not only the 2007 New Jersey Future Award as part of the overall Epstein's redevelopment project, but also the 2009 New Jersey Smart Growth Award. The Green Building Practice Group's involvement in this project began in June 2004 with a design charrette focusing on creative, sustainable design possibilities. The firm participated in the resolution of design issues, design meetings, and lease negotiations which were impacted by LEED and cost-saving considerations.

Fourteen Maple Avenue proves that green building certification is affordable and at least silver LEED certification can be achieved with a modest 5 percent cost premium. While gold or platinum LEED certification can involve a higher premium in the range of 20 percent of costs, the value of building green is in the reduced operating costs, especially in light of the consistently increasing cost of energy. Paybacks on energy efficient elements can now be seen in approximately 5 to 7 years as opposed to 7 to 9 years. ▲

1 "Welcome to 14 Maple Avenue Office Building & DeHart Street Garage," a pamphlet prepared by Minno & Wasko Architects & Planners.