

'Green' building is much more than a trend in Va.

GREEN' IS THE LATEST buzzword throughout the nation, but as the popularity of going green continues to grow, the green building movement is showing that it has staying power in Virginia. The success of green building is due largely to the Leadership in Energy and Environmental Design (LEED) Green Building Rating System, which has helped designers and their clients realize the importance of going green with their new projects. As counties and cities throughout the state realize the economic, social, and environmental benefits of going green, the number of LEED registered projects in Virginia is expected to keep growing.

Green building

The goal of green building is to improve the environmental and economic performance of buildings. By reducing or eliminating the environmental impacts of standard design and construction practices, green building provides facilities that are not only better for environmental health, but for human health as well. Green buildings are typically characterized by significant reductions in energy and water use, which equated to significant reductions in operating costs.

Central to green building is an integrated, whole-building approach to the design process. The standard design process is linear; the design is passed from architect to engineer and on down the line without any thought as to how the architectural and engineering systems of the building can be coordinated to create a higher quality, more energy-efficient building. An integrated approach requires that architects and engineers coordinate their ideas early in design,

resulting in a building that is aesthetically pleasing, functional, and an efficient use of space and energy.



By Bryna Dunn

LEED Green Building Rating System

LEED is the most well known and widely accepted program for promoting and standardizing green building design. The LEED Green Building Rating System, which was created by the nonprofit organization known as the U.S. Green Building Council, addresses all aspects of a building's design and construction, including site, water use, energy use, materials, and indoor air quality.

Within each of these categories are a certain number of credits, and points may be earned for each credit achieved through an element or elements of the building's design and construction. For example recycling at least 50 percent of construction waste earns a point under the Construction Waste Management credit. A building is awarded LEED Certification based on the number of points earned according to the rating system, and there are four levels of LEED Certification: Certified, Silver, Gold, and Platinum.

Costs of going green

Those who are not familiar with green building and LEED often cite cost as a barrier to going green, but green building does not necessarily cost more than designing and constructing a traditional building. According to *Greening America's Schools: Costs and Benefits*, a national review of 30 green schools by Greg Kats, green schools cost less than 2 percent more than conventional schools. This equates to approximately \$3 per square foot. In his previous study, *The Costs and Benefits of Green Building*, Kats found that the average cost premium for green buildings is 2 percent. This premium addresses improvements commonly associated with a green building, including a more energy efficient HVAC system, more efficient plumbing fixtures, environmentally preferable materials, commissioning, and improved construction practices.

Most projects can recoup the cost of going green within a few years through reduced operating and maintenance costs. Green buildings are typically 25 to 30 percent more energy efficient than their traditional counterparts. They are also approximately 30 percent more water efficient. Considering the many benefits associated with green schools, including lower energy and water costs, improved teacher retention, and lowered health costs, the savings accumulated by green schools equate to about \$12 per square foot. This is an approximate total savings of \$71



The LEED Green Building Rating System was used as a design guide for the Hermitage Elementary School in Virginia Beach.

per square foot. For other building types, the lower energy and water costs, improved employee retention, and decreased health costs add up to savings of \$50 to \$65 per square foot. This is the total financial benefit minus the cost of building green.

Benefits of going green

In addition to the operations and maintenance savings associated with green building, there are many other practical reasons for going green, including resource conservation, and the health and well-being of building occupants.

Traditional building methods can be very wasteful in terms of the use of materials and resources. According to the U.S. Energy Information Administration, buildings are responsible for 48 percent of the nation's total energy consumption, compared to 27 percent for transportation and 25 percent for industry. Buildings also consume 76 percent of the nation's total electricity, most of which is still supplied by coal power plants. The Worldwatch Institute reports that buildings use 40 percent of raw materials, which equates to 3 billion tons annually. In 1997, 136 million tons of building-related construction and demolition debris was generated in the U.S. according to the EPA.


Unlike traditional building design and construction, building green requires the wise use of available materials and resources through energy and water efficiency strategies, the recycling of waste, and the use of recycled materials. Energy use is reduced through strategies such as low-e glazing, thicker insulation, energy recovery, demand-controlled ventilation, more efficient mechanical equipment, and the use of renewable energy. Low-flow plumbing fixtures that use less water than traditional plumbing fixtures help to reduce water use. Recycled materials are used in lieu of materials manufactured using virgin raw materials. Instead of being sent to a landfill, construction and demolition waste such as concrete, metal, and

wood is sent to a recycling facility.

The focus on indoor air quality that is characteristic of green buildings also contributes to the benefits of going green. Studies have shown correlations between green buildings and better health, increased productivity, and, among students, higher test scores. The use of non-toxic, low-emitting materials, such as carpet, composite wood, and paint, has been linked to fewer illnesses among building occupants. Access to daylight and views contribute to higher levels of employee satisfaction with their working environment, resulting in increased retention and productivity.

Virginia projects going green

As the excitement surrounding green building spreads throughout the state, several Virginia cities and counties aren't wasting any time in improving their new facilities by incorporating environmentally sound design principles and practices. A number of projects have already pursued and earned LEED certification, and many more are registered to go through the certification process.

Among the certified projects in the state are Hermitage Elementary School in Virginia Beach and the Chesterfield Community Development Customer Service Center, both of which earned LEED Certified ratings, as well as Kersey Creek Elementary School in Hanover County, which earned LEED Silver. Hampton and Henrico County have registered two schools each. In addition to these, Orange County Middle School, the Shenandoah County District Courts Building, and the Isle of Wight County Courts Facility have all registered for LEED Certification. All of these projects were designed by Moseley Architects in Richmond. 

About the author

Bryna Dunn is a vice president at Moseley Architects who serves as director of environmental planning and research.



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