Green School Construction

“Green” has become the code word for many different agendas, from clean fuels to cleaning products. The mere pairing of “green” with many other words also connotes, to some, “healthy.” When it comes to green buildings (or “high-performance construction,” as it is termed by the industry), green is linked to energy efficiency, reduced waste, and health benefits to building occupants. This Policy Update looks at green school construction and renovation, particularly legislation and regulation around the construction of green schools, what goes into building a “green” or “high performance” school, the benefits of such construction, and the certifying organizations. Finally, while not providing a formal cost/benefit analysis, the brief presents policy options that may result in long-term cost savings.

At the federal level, the House of Representatives approved the 21st Century Green High-Performing Public School Facilities Act (H.R. 2187) in 2009. The bill would provide federal grants for school construction, improvement, and renovation. Proposed in the legislation are billions of dollars for school building and renovation projects that create “healthier, safer, and more energy-efficient” facilities. In addition, all funding would have to be used for projects that meet green building standards, as well as reporting and administration mandates. This may be a moot point, however, as the bill has stalled in committee in the Senate. Sources on the Hill have indicated that it will not likely get out of committee as a stand-alone measure because of federal wage laws, but its provisions could come up during discussion of the Elementary and Secondary Education Act reauthorization.

Standards for Green Construction

At the state level, California approved some of the most stringent standards for commercial and institutional construction in the world early this year, but the demands it has posted are not typical of most states (not surprising, given the state’s history as a leader in environmental protection laws). The Calgreen standards, which take effect in January 2011, require the installation of plumbing that uses less water, the use of low-pollutant paints, carpets, and flooring, and assurances that half of construction waste gets recycled rather than sent to a landfill. Localities are allowed to adopt standards more stringent than the state’s.

More common is the avenue taken by Ohio and other states that have opened high-performance schools in recent years. Ohio’s School Facilities Commission (OSFC) uses a set of standards drafted not by any legislature, but by the nonprofit U.S. Green Building Council. Its Leadership in Energy and Environmental Design (LEED) standards are the benchmark for green schools or any other building being erected. Without that certification, the consensus is that it is not a green building. In general, LEED-certified buildings are designed to have lower operating costs, conserve energy and water, be healthier for occupants, and have reduced greenhouse gas emissions. Commercial buildings are eligible for LEED certification, and among the subcategories is LEED for Schools. Using that as its guide, the OSFC has overseen the opening of one certified school and has another 230 in the certification process.

In the last decade, 18 states, the District of Columbia and Puerto Rico have passed laws or accepted gubernatorial executive orders that require publicly owned or financed buildings (including schools) to incorporate LEED building standards into their construction and design. The financing threshold to fall under these mandates varies by state, as do the minimum square-footage requirements. Other states have issued resolutions that support such construction, but do not mandate high performance design.

In addition to having standards for new construction, there are LEED tools and standards to guide the renovation and retrofitting of existing schools. In short, improving school building performance can be done when there is funding and will at the state or local level. To help address the funding, the National Clearinghouse for Educational Facilities at the National Institute of Building Sciences offers a list of 12 links to different federal agencies and departments that have stimulus funding available for school improvement (see resources). They feature another five listings for federal bond issues and guides.
Where the will exists along with the funding, multiple sources point to the planning stage as the best time to determine whether the renovation or new construction will be for a high-performance facility. While LEED provides the most widely known standards for green building, there is another standards-based organization for high-performance school construction. The Collaborative for High Performance Schools (CHPS) is a San Francisco-based nonprofit that was started in 1999 by power utilities trying to increase energy efficiency in schools.

Both rating systems have similar goals and both tout the benefits of high performance schools: healthier, more productive learning environments; short- and long-term financial savings to districts; environmentally friendly construction and operation; advanced educational features in design and practice, among others. Financial savings come from two areas. First, while initial material and capital expenses may be greater than in traditional school construction, the organizations tout post-construction savings in energy costs through the life of the school. The second savings is generated through a healthier environment, as schools are more cost efficient when fewer educators/staff and students stay home because of illness.

### Policy Considerations for High-Performance Construction

Another overview of what should be considered when developing a high-performance school can be found in Growing Greener Schools, a workbook developed by the Media & Policy Council to go with a program of the same name broadcast on PBS. The book was designed with curriculum modules for students to explore the steps involved and benefits of high-performance school development, but it can also serve as a guide for policymakers. Throughout, the handbook draws on the experience of experts in different specialties. Featured are a series of recommendations for local policymakers from multiple organizations (including CHPS and LEED) that have the potential to be taken up or encouraged by state boards of education for broader impact. They include:

**Design:**
- Seek government and industry grants and low-interest loans for green building and remodeling initiatives.
- Use insulation, use fiberboard panels and rubber flooring made from recycled materials.
- Emphasize both local and recycled building materials.

**Lighting:**
- Specify high-performance glazing that offers the best combination of insulating value, daylight transmittance, and solar heat gain coefficient for specific building applications.

**Solar:**
- Create a task force to determine feasibility of installing solar panels in schools statewide.
- Seek public and private grants and reimbursements for installing solar panels.
- Explore “purchase power” agreements, allowing suppliers to finance, install, own, and maintain solar PV systems on school roofs—then purchase the electricity at a competitive rate.

**Electricity Conservation:**
- Seek grants and financing for Energy-Star compliant fixtures and appliances from government and industry programs.
- Undertake surveys to determine how many and what type of lights are currently in use, and determine if usage can be reduced.

**Water Conservation:**
- Research and pursue rebates and credits for purchase of water-efficient fixtures.
- Pursue grants for landscaping with native and drought-tolerant plants that create wildlife habitat while conserving water usage.

**Heat Flow:**
- Use high mass materials, like concrete or brick, to store heat and temper heat transfer, increasing heat storage capacity.
- Control solar heat gain by using reflective roofing materials, exterior shading, and reflective shading on windows.

Following all of these examples will not make a state’s schools “green,” per se, but all may provide the benefits of being environmentally and monetarily effective.

### Resources


Media & Policy Center: Growing Greener Schools, growinggreenerschools.org/.
