

'Greening' the Little Red Schoolhouse

**How environmental upgrades can stimulate
the economy and benefit your schools**

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Introduction

This report explores some key issues that state and local education officials may encounter as they consider the feasibility and desirability of embarking on green school projects. This report is brought to you as part of your subscription to Schoolgrants2009.com.

Schoolgrants2009.com, in anticipation of the expected surge of national activity related to green schools stemming from enactment of the American Recovery and Reinvestment Act (ARRA), explored key issues that state and local education officials are expected to encounter as they consider embarking on their own green school projects. This report touches on:

1. Key Considerations for State and Local Education Agencies (Page 3)
2. Green Building Standard and Certification Programs (Page 8)
3. Lessons Learned from Green School Facilities (Page 14)

Where possible, we list additional resources, websites, and contacts. Our work — based on interviews with experts in the field, document and Internet research, public and legislative records, and other sources — synthesizes knowledge that already exists in the green school field with the aim of helping school administrators and elected officials make practical, informed decisions for students and communities.

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Chapter 1. Considerations for State and Local Education Agencies

The little red schoolhouse may soon turn “green.”

With the United States in an economic crisis, national leaders view the concept of “green schools” as a potential way to create jobs and stimulate the economy.

Green schools generally are considered to be facilities that are constructed, renovated or retrofitted in ways that save energy, resources and money, and contribute to healthy learning environments for students.¹ Many states already promote the concept on its own merits.

But now it appears that implementing green school principles on a national scale may serve to counteract the national recession. At least that is the reason President Barack Obama proposed including school modernization in his economic stimulus package.

The \$787 billion “American Recovery and Reinvestment Act” was signed into law Feb. 17, 2009. It provides billions of dollars for education and allows some of the money to be used to modernize schools in ways that reduce the buildings’ impact on the environment.

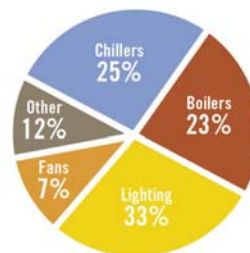
The law creates a state stabilization fund totaling \$53.6 billion that sets aside about \$40 billion — 81.8 percent of the overall allocation — for elementary, secondary and postsecondary education expenses to be distributed according to the funding formulas normally used to allocate state aid to education. Another \$8.8 billion from the \$53.6 billion may be used at the governor’s discretion for public safety and other government services, including education.

Local educational agencies that receive stabilization money may use it for school modernization, renovation and repair consistent with a recognized green building rating system (common rating systems are reviewed in the second report in this series; a final report will review best practices learned from the “greening” of America’s schools).

Money is the primary reason America’s schools have not already gone green: Green construction costs more than conventional construction. Sometimes referred to as the “green premium,” added costs are the “result of more expensive materials, more efficient mechanical systems ... better design, modeling and integration, and other high-performance features.”²

In contrast, conventional buildings that are designed to meet only basic building codes require less capital up front. But conventional buildings cost more to operate in the long term, while the opposite is true of green buildings.³

Understanding Energy Use in Schools



This will vary depending on your climate region.

How much does your school spend each year on energy?

Elementary School:
\$70,000 to \$150,000

Middle School:
\$100,000 to 200,000

High School:
\$200,000 to \$650,000

Source: U.S. Green Building Council

¹ U.S. Green Building Council. *Green Schools 101*. <http://www.buildgreenschools.org/gs101>. Accessed Jan. 6, 2009.

² Kats, G. *Greening America’s Schools: Costs and Benefits*. Capital E, a national clean energy technology and green building firm. Washington, D.C., October 2006, p. 3.

³ *Ibid.*, p. 3.

'Greening' the Little Red Schoolhouse

The dearth of green schools also may result from a tendency to focus on urgent priorities, like leaky pipes and falling ceilings. Many schools — particularly in high-poverty areas — are not only unhealthy and inefficient, they're practically crumbling. In a 2008 report, the American Federation of Teachers (AFT) estimated that across the 50 states, school infrastructure needs total \$254.6 billion, with an average state need of \$5.1 billion.⁴

The nation's schools serve approximately 55 million students in a given school year. Yet, according to a report prepared last year by the Economic Policy Institute (EPI) in cooperation with the 21st Century School Fund, there is no national inventory of basic facility information, such as "size, age, condition, or capacity."⁵ A true needs assessment also would factor in school land, roads, energy use and municipal environmental impact, among other costs.

While states and local communities may have spent as much as \$500 billion in K-12 building improvements from 1995 to 2004, EPI says that "many of the nation's schools face the combined challenges of deteriorating conditions, out-of-date design, and changing utilization pressures."⁶

Why Green Schools?

Notwithstanding the immediate pressures to meet health and safety codes, green experts urge school districts to pay attention to the long-term costs of maintaining and operating the buildings. Moreover, there is growing government commitment — most evident at the state and local level, but now bubbling up to the federal government — to the idea that public investments should support basic environmental goals by reducing energy demand and greenhouse gas emissions.

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Green building expert Gregory Kats's extensive research on the financial costs and benefits of green schools — a national review of 30 green school demonstration projects — found that green school design saves about \$12 per square foot per school (over 20 years) in lower energy and water costs, improved teacher retention and lowered health costs. This is four times the extra cost (\$3/ft²) of green design in new construction, a premium of around 2 percent over the average national cost of \$150/ft² for a new building.⁷

The U.S. Green Building Council, which created Leadership in Energy and Environmental Design (LEED), a voluntary, consensus-based national rating system for developing high-performance, sustainable buildings,⁸ maintains that if "all new school construction and school renovations went green starting today, energy savings alone would total \$20 billion over the next 10 years."⁹

Union support for green schools is strong as well; the American Federation of Teachers (AFT) passed a resolution at its July 2008 convention directing schools and school construction toward a "green school" model.¹⁰

⁴ Crampton, F.E. and D.C. Thompson, *Building Minds, Minding Buildings*. American Federation of Teachers, Washington, D.C., December 2008, p. 4.

http://www.aft.org/topics/building-conditions/downloads/BMMB_Funding.pdf.

⁵ Filardo, M. *Good Buildings, Better Schools: An economic stimulus opportunity with long-term benefits*. Economic Policy Institute, April 2008, p. 2.

⁶ *Ibid.*, p. 1.

⁷ Kats, G., *Greening America's Schools*, p. 6.

⁸ U.S. Green Building Council. *What We Do*. <http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1499&>. Accessed Jan. 6, 2009.

⁹ U.S. Green Building Council. *Green Schools 101*. <http://www.buildgreenschools.org/gs101/save.html>. Accessed Jan. 6, 2009.

¹⁰ Spake, A., et al. *Building Minds, Minding Buildings: Our Union's Road Map to Green and Sustainable Schools*. American Federation of Teachers, Washington, D.C., December 2008, p. 4.

'Greening' the Little Red Schoolhouse

Retrofits and Renovations

The greatest savings are realized when green design is incorporated into a building from the start. But even more modest retrofits or renovations — such as more efficient heating systems or a “green roof” covered with plants — can result in direct savings from lower heating and water bills. Given the vast inventory of existing school buildings in the U.S. — roughly 97,000 facilities¹¹ — relatively small fixes to schools could generate huge savings nationally.

Schools can use criteria from LEED, Collaborative for High Performance Schools (CHPS), ENERGY STAR — a joint program of the U.S. Environmental Protection Agency and the U.S. Department of Energy — and other certification programs as guides for making energy-efficient repairs and retrofits. Any public or private organization can partner with ENERGY STAR, for instance, to improve facilities by committing to measure, track and improve energy performance. The program also offers tools for developing an energy management strategy, demonstrating a commitment to efficiency, measuring energy efficiency and training staff on ENERGY STAR tools and resources.¹²

Retro-commissioning, used in California, Illinois, Oregon and other states, is another way to improve existing building performance without first shelling out millions of dollars. The process — sometimes referred to as building “tune ups” — focuses on low-cost ways to boost indoor air quality, comfort, controls, and energy and resource efficiency.¹³ Oregon employed retro-commissioning to upgrade the performance of a new school that had high energy and usage costs, saving an estimated \$15,000 in annual energy costs.¹⁴ Upon request, the state energy office will provide schools with technical services to bolster energy efficiency, including improved lighting and boiler systems.¹⁵

Top 10 No-Cost Ways To Lower Your School's Utility Bills

1. Establish and communicate a policy
2. Benchmark your school
3. Assign responsibility for common areas
4. Establish a recognition program
5. Control classroom thermostats
6. Use building automation systems (BAS)
7. Turn off outside lighting
8. Establish a plug load plan
9. Keep doors and windows closed
10. Control exhaust fans

Source: U.S. Green Building Council

School facility spending — for green construction or general repairs or rebuilds — is financed largely by state and local revenues and bonds; in fact, other than a school renovation grant program funded in 2001, the federal government in recent years largely has shied away from providing money for school construction or major renovations.¹⁶

But this could be changing. Congress has signaled a renewed interest for funding school facility improvements with environmental outcome goals. House Reps. Jim Matheson, D-Utah, Darlene Hooley, D-Ore., and Michael McCaul, R-Texas, even formed the bipartisan Green Schools Caucus in December 2007 to tout the concept.

¹¹ Filardo, M, *Good Buildings, Better Schools*, p.1

¹² ENERGY STAR. *Menu of ENERGY STAR® Offerings for the Public Sector*.

http://www.energystar.gov/ia/business/government/Menu_of_Offerings.pdf. Accessed Jan. 12, 2008.

¹³ California Department of General Services. *Commissioning and Retro-Commissioning Buildings*.

<http://www.green.ca.gov/CommissioningGuidelines/default.htm>. Accessed Jan. 12, 2008.

¹⁴ Oregon Department of Energy. *Case Study: Retro-commissioning*.

<http://www.oregon.gov/ENERGY/CONS/BUS/comm/docs/Silverton.PDF>. Accessed Jan. 12, 2008.

¹⁵ Oregon Department of Energy. *Energy Services for Schools*. <http://www.oregon.gov/ENERGY/CONS/school/schlhm.shtml>. Accessed Jan. 12, 2008.

¹⁶ The main federal aid programs for school construction or renovation are the Impact Aid construction program for school districts serving federally “impacted” areas, primarily Indian reservations and military bases; the Qualified Zone Construction Bond (QZAB) program, which provides tax credits for purchasers of bonds to finance school construction and renovation in high-poverty areas; the Credit Enhancement for Charter School Facilities program, which provides grants to nonprofits to leverage other funds to help charter schools acquire, build, renovate or lease facilities; and the State Charter Schools Facilities Incentive Grants program, which makes five-year matching grants on a sliding scale to encourage states to include charter schools in per-capita facility fee programs.