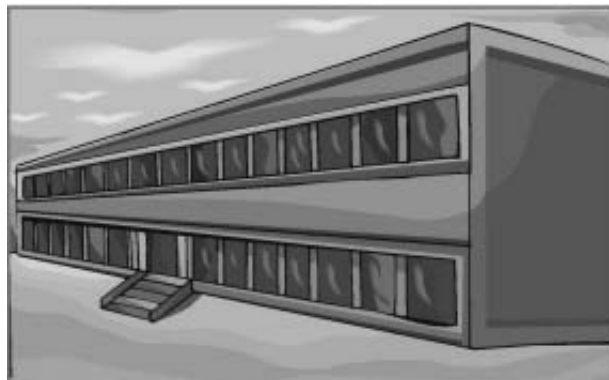


Commercial Building Performance

Schools (K-12)



Sector Fact Sheet

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Commercial Building Performance

Schools (K-12)

CEE members have indicated increased interest in sector-specific commercial building programs (e.g., hospitals, schools, etc.). To help members make a strong case for energy efficiency in the Schools Market sector, CEE has compiled market intelligence from various sources.

This information describes the opportunity, some of the key decision-makers, challenges, potential program strategies and resources.

Energy Use and Savings Potential

Public schools in the U.S. spend approximately \$6 billion on direct energy costs. National mean energy expenditures per student in FY00 were \$137, and increased 22 percent the following year to \$166.

Most public school budgets include more utility expenditures than any other single line item, aside from salaries and benefits.

Current inefficiencies mean that up to 25 percent of energy used in a typical school building is wasted – largely due to poorly designed or operated systems and procedures.

The U.S. Department of Energy estimates that schools could save up to 50 percent of their energy costs by incorporating energy-saving measures into building upgrades and renovations.

If the nation's schools cut energy costs by even 25 percent, the resultant savings (\$1.5 billion) could pay for 30,000 new teachers or 40 million new textbooks each year.

Market Size and Growth

- In 2000-2001, there were 93,273 public schools managed by 14,514 different school districts in the United States.
- There has been a 19 percent increase in total enrollment (public and private schools) between 1988 and 2001, and another 5 percent increase is expected between 2001 and 2013.
- Between 2001 and 2003, U.S. school districts will spend \$41.4 billion on new buildings, \$33 billion on improvements to existing buildings and \$9.9 billion on additions. Spending on school construction spending reached an all-time peak in 2001, and had its second-highest year ever in 2002.

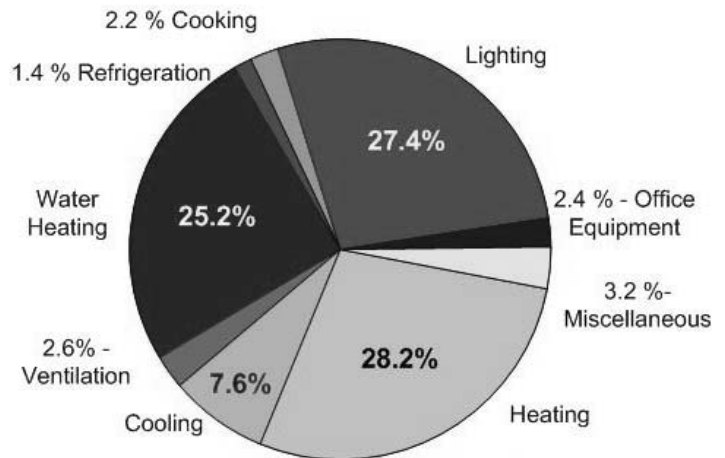
School Financing and Decision-makers

Funding processes vary widely, and it is vitally important to understand the decision-making process in your area.

In general, traditional funding for school construction and operation comes from local sources such as bonds and property taxes, but this is increasingly being supplemented by state funds.

Energy Use in Schools

(averaged across climate zones)



Source: *Managing Energy Costs in Schools: Energy Consumption Data*. Platts, 2004

Some of the actors include:

State legislatures and governors

These parties are responsible for generating both educational policies and operational budgets. They are also responsible for dictating standards for school construction, renovation and management.

State administrative departments

These departments maintain responsibility for reviewing performance and determining if schools meet state standards for efficiency and/or construction.

Local-level actors

These include local school boards, who perform on-the-ground facility operation and maintenance, as well as conduct local fund-raising for construction or renovation through bonds or levies. This group also includes specialized contractor firms who deal exclusively with schools.

Market Trends Potentially Affecting Energy Use

- Longer school hours, year-round attendance and/or increased after-hours use by the community
- Altered usage patterns of resources and space, including class size reductions, "schools within a school" and use of modular classrooms
- Increasing number of computers
- High schools are getting larger on average
- Increased interest in daylighting

Market Barriers

- State and local budget restrictions and severe capital restraints
- Separate operating and capital investment budgets can disconnect reductions in operation costs due to capital investments in efficiency
- Perception that first costs are too high for efficiency measures
- Inconsistent implementation of energy-efficient practices among and within school districts
- Short timelines for building or renovating schools
- Difficulty in identifying and targeting appropriate decision-makers during early stages of planning

Promotional Strategies

Financial Benefits

Energy efficiency is one of the only ways that schools can cut costs and not adversely affect educational quality.

Some states, such as New Jersey, have tied state funding requirements to high-performance standards.

Improved heating, ventilation and cooling efficiency (through installation, operation, and maintenance) can cut back on incidences of sickness and asthma. This increases the Average Daily Attendance percentages, thereby increasing the school budget.

Logistical Benefits

Technological advances make energy-efficiency retrofits easier and more cost-effective than before.

Other Benefits

According to published reports, natural lighting and improved air quality can have significant positive impacts on student performance, including test scores.

PROGRAM RESOURCES

NEW CONSTRUCTION

Collaborative for High Performance Schools (CHPS)

This rating system – developed by a partnership of utilities, government, and non-profit organizations – encourages green building and energy efficiency within school designs. www.chps.net

Leadership in Energy and Environmental Design (LEED) Green Building Rating System®

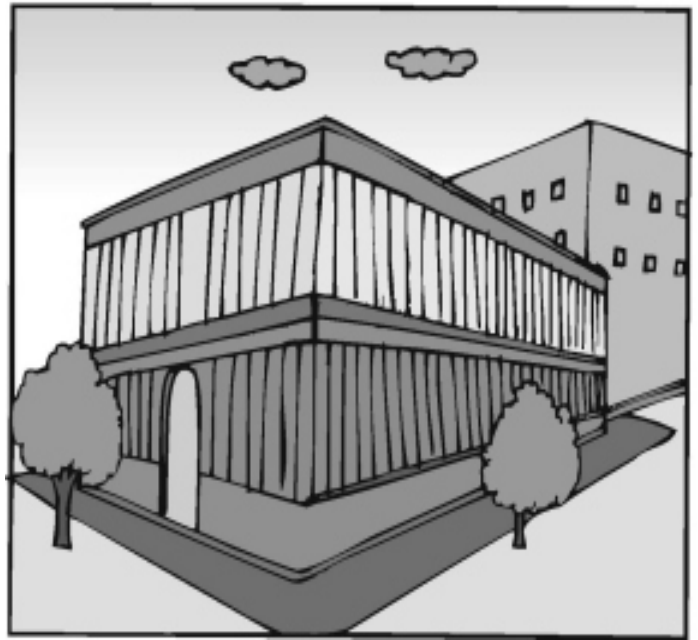
LEED provides a national performance rating system, developed by members of the United States Green Building Council.

This point system encourages use of many aspects of environmental design. The energy-efficiency section contains the greatest number of potential points.

www.usgbc.org/LEED/publications.asp

Advanced Buildings (New Buildings Institute)

This organization provides a roadmap to achieve a high-performance building. The Benchmark tool “provides



designers with the resources to incorporate integrated design strategies ... to reduce energy usage and improve indoor environmental quality.”

www.poweryourdesign.com

EXISTING CONSTRUCTION

EnergySmart Schools (DOE)

EnergySmart Schools is a campaign of the Department of Energy and its Rebuild America program.

EnergySmart Schools offers schools training workshops, publications, recognition, direct technical assistance, financing options, and a host of other resources that can help make school facilities more energy efficient.

ENERGY STAR Program

EPA has developed a variety of tools to illustrate the impact of energy savings, including the Financial Value Calculator, benchmarking tools and other resources.

ENERGY STAR Schools provides case studies, guidelines and tools for benchmarking, design, and analysis.

www.energystar.gov

www.energystar.gov/index.cfm?c=k12_schools.bus_schoolsk12

Building Operator Certification (BOC)

BOC is a certification program for facilities operations and maintenance staff. Training focuses on maintaining and operating of building systems at peak efficiency.

www.theboc.info

LEED – EB

Developed under the LEED umbrella (see below left, this ranking system addresses building issues, retrofits, and upgrades where “the majority of interior or exterior surfaces remain unchanged.”

www.usgbc.org/LEED/existing/leed_existing.asp

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Resources available on the Web site include step-by-step guidance for making schools more energy efficient, classroom materials and activities, and information about school buses.

www.eere.energy.gov/buildings/info/schools/index.html

MARKETING RESOURCES

Council of Educational Facility Planners, International

This professional organization, organized in regional chapters, is geared toward improving school facilities through advocacy on design, dissemination of planning and other informational resources, and by providing professional development opportunities.

www.cefpi.org

Association of School Business Officials, International

This professional organization, which includes statewide affiliates, is dedicated to promoting high standards of school business management practices, professional growth and the effective use of educational resources.

<http://asbointl.org/index.asp>

TECHNICAL RESOURCES

CEE and ENERGY STAR both publish specification lists for various types of commercial equipment.

CEE: www.cee1.org

ENERGY STAR:

www.energystar.gov/index.cfm?fuseaction=find_a_product

Federal Energy Management Program (FEMP)

While this program is focused primarily on saving energy within the federal government, it offers software tools, publications, videos, and other resources for a wide range of energy managers.

www.eere.energy.gov/femp/about/about.cfm

For additional information, references, or text excerpts from this document:

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