

**APPROACHING COMMERCIAL SECTOR
MARKET TRANSFORMATION BY MARKET SEGMENT:
OPPORTUNITIES IN SCHOOLS**

Jennifer Thorne

August 2000

Report Number A005

**©American Council for an Energy-Efficient Economy
1001 Connecticut Avenue, NW, Suite 801, Washington, DC 20036
(202) 429-8873 phone, (202) 429-2248 fax, <http://www.aceee.org>**

ABSTRACT

This report is intended to provide background on the opportunities for market transformation initiatives targeting schools, specifically K-12. First, we characterize the schools segment according to size, energy use, and savings opportunities. Second, we describe the key decision-makers, decision processes, and market barriers influencing energy use in new and existing school buildings. Third, we examine new market transformation approaches addressing schools. Finally, we discuss recommendations for new initiatives.

WHAT IS THE SCHOOL SEGMENT?

Market Size

The U.S. primary and secondary education sector consists of approximately 309,000 buildings occupying more than 7.7 billion square feet or 7 percent of commercial buildings and 13 percent of floor space. The average school building contains 10,000 square feet of floor space. Table 1 provides a breakdown of schools by building size. More than 75 percent of the approximately 110,000 K-12 schools in the United States are public schools. Elementary schools account for 70 percent of public K-12 schools, but only 21 percent of school floor space; middle schools occupy 34 percent of floor space and high schools the remaining 45 percent.

Table 1: Educational Space by Building Size

Building Size (square foot)	Percent of Educational Space (square foot)	Percent of Educational Buildings
1001 - 5000	3.2%	32.4%
5001 - 10,000	5.2%	19.4%
10,001 - 25,000	13.5%	20.1%
25,001 - 50,000	23.6%	15.9%
50,001 - 100,000	22.6%	8.4%
100,001 - 200,000	15.9%	2.9%
200,001 - 500,000	12.7%	1.0%
> 500,000	0.0%	0.0%

Source: EIA 1998.

Energy Use and Savings Opportunities

Educational buildings consume approximately 0.6 quads of site energy (over 1.0 quad of primary energy), accounting for 11.5 percent of direct commercial sector energy consumption

and 10 percent of commercial sector carbon emissions. Table 2 summarizes energy use and intensity by building size. Overall, site energy intensity for schools averages 79,300 British thermal units per square foot (Btu/sf) (primary energy intensity is 136,800 Btu/sf), electric intensity averages 28,700 Btu/sf, and natural gas intensity averages 42,300 Btu/sf. Electricity accounts for more than 60 percent of total educational energy use. Approximately one-third of school buildings — including 25 percent of sector floor space — lack access to natural gas (EIA 1998).

Table 2: School Energy Use and Intensity by Building Size

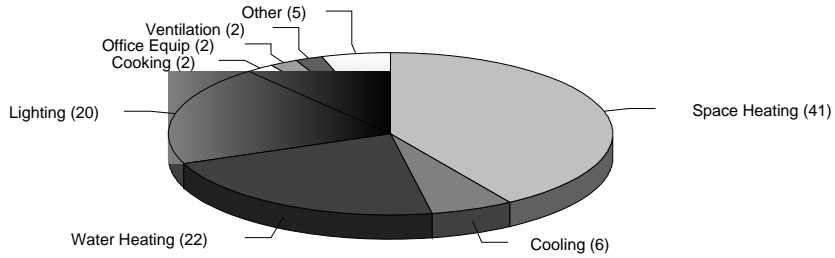
Building Size	Percent of Educational Space	Percent of School Energy Consumption	Energy Intensity	
			electric (kWh/sf)	natural gas (cf/sf)
1001 - 10,000	8.4%	11.6%	13.1	62.1
10,001 - 100,000	59.7%	57.3%	7.8	41.9
> 100,000	28.6%	31.1%	8.3	35.5

Source: EIA 1998.

U.S. schools spend approximately \$6 billion annually on energy with energy expenditures averaging \$0.92/sf or an annual cost of \$23,100 per building. At an average of \$0.67/sf, electricity accounts for almost 75 percent of energy spending (EIA 1998). Energy costs in many schools are second only to salaries and account for approximately 29 percent of facilities operation and maintenance costs (Agron 2000; EREN 2000). The largest energy end-uses in schools are space heating (41 percent), water heating (22 percent), and lighting (20 percent) (EIA 1998). Figure 1 provides a breakdown of energy consumption by end-use.

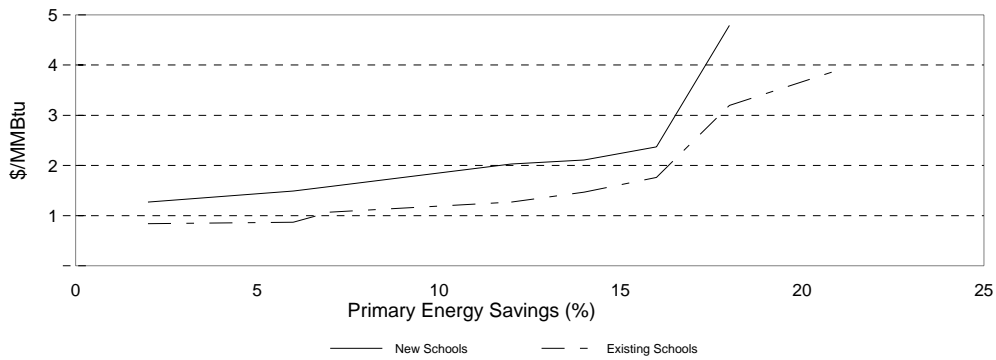
Significant energy savings in new and existing schools can be realized through installation of improved windows and other building shell measures and upgrading of heating, ventilating, and air conditioning (HVAC) and lighting systems. Figure 2 provides a cost of saved energy (CSE) curve showing the average CSE for common efficiency upgrades. In addition to the measures list above, additional cost-effective energy savings can be achieved with improved office and kitchen equipment. The U.S. Department of Energy (DOE) estimates that smarter energy management in schools could reduce energy consumption by as much as 25 percent and cut school energy costs by more than \$1 billion each year (EREN 2000).

Figure 1: School Energy Consumption by End-Use (Percentage)



Source: EIA 1998.

Figure 2: Average Cost of Saved Energy from Common Energy Savings Measures
Includes improved windows and insulation and HVAC, lighting, and boiler upgrades.



Source: Nadel et al. 1997.

HOW DOES THE MARKET FOR SCHOOL BUILDINGS WORK?

Typically, public schools are centrally managed by the local school district. In 1998, there were 14,400 school districts in the United States serving 52 million students. The average school district consists of six schools, but the number varies widely from only one or two facilities in some rural districts to more than 1000 schools in the New York City public school system. In general, district-level administration is responsible for making decisions regarding investments in the construction and upgrade of school facilities. As chief administrator of the schools, the superintendent oversees all major investment decisions. Energy management generally falls to the facilities manager within the district's business management office.

Although local school districts maintain responsibility for construction, renovation, and maintenance of school facilities, state governments provide varying levels of funding, information, guidance, and oversight of activities related to facilities and construction. For example, state financial assistance for school facilities ranges from \$6 to more than \$2,000 per student (GAO 1995b). Levels of technical assistance and review for compliance with building codes and other state requirements may be non-existent or part of a comprehensive facilities program, such as those established by 13 states.¹ A few of these states have developed statewide guidelines and require state approval of all school building plans.

State participation in school facilities issues has increased over the years in response to growing enrollments and greater recognition of the states' roles in addressing the disparities between rich and poor school districts in raising funds for school construction and maintenance. By the early 1990s, about 20 percent of public school construction funding was provided by state governments (GAO 2000). While several mechanisms are available to provide state funding to local districts to help finance school construction and renovation, most states do not provide financial assistance for routine or preventive maintenance other than occasional, major projects (e.g., roof replacements).

A finite number of architecture and engineering (A&E) firms around the country specialize in school construction. Many of these firms are involved in building projects in several states at the same time. While these major A&E firms are not the only ones involved in school design and construction, they are responsible for the majority of new school buildings around the country.

¹According to the GAO (1995b), Alabama, Alaska, Florida, Georgia, Hawaii, Kentucky, Maryland, Massachusetts, Minnesota, North Carolina, Ohio, South Carolina, and West Virginia have comprehensive facilities programs, defined as "a program framework in place that provided ongoing funding, conducted a variety of technical assistance and compliance review activities, maintained current information on the condition of school buildings statewide, and had one or more [full-time equivalent] staff working on facilities matters."

Opportunities to Improve Energy Efficiency in New and Existing Schools

The education sector is experiencing a tremendous level of new building construction as well as significant building additions and renovations. School construction expenditures will increase from \$14 billion in 1994 to an estimated \$20.2 billion in 2001, an increase of 44 percent (Lyons 1999). Table 3 summarizes spending on K-12 school construction projects in 1998. This activity is being spurred on by concerns over the poor state of school facilities after years of neglect and deferred maintenance, soaring enrollments, and the need to incorporate new technology (e.g., computers and telecommunications) into the classroom. By 2003, the U.S. Department of Education estimates that 2,400 new schools will be required to meet rising enrollments (GAO 2000).

Table 3: School Construction Completed in 1998 (K-12)

New buildings	\$7.9 billion
Additions	\$3.9 billion
Retrofits	\$3.7 billion
TOTAL	\$15.5 billion

Source: School Planning and Management 1999

According to a U.S. General Accounting Office study (1995a) on the condition of U.S. school facilities, one-third of schools are in need of extensive repair or replacement and as much as \$112 billion will be required to bring all schools into overall good condition. More recent studies estimate that infrastructure improvements could require investments of \$268 billion (NEA 2000). More than 70 percent of schools were built prior to 1960. As many as 28,000 have insufficient heating, cooling, and ventilation systems while more than 21,000 have faulty roofs. Deferred maintenance is cited as the leading cause of the poor condition of existing school buildings.

Growing concern over indoor air quality (IAQ) problems in schools buildings in general and in portable/modular classrooms in particular is also driving interest and investment in school facilities upgrades.² Issues of IAQ intersect with energy consumption in schools because most indoor air quality problems in schools are associated with improper HVAC operations and maintenance procedures (GAO 1995a). Furthermore, parents and educators are beginning to question in greater depth the relationship between school conditions and student achievement.³ This heightened interest may provide opportunities to pursue a range of building efficiency

² For more information on IAQ in portable classrooms, see Ross and Walker (1999).

³ For more information on the impact of school facilities on the learning environment, the U.S. Department of Education has posted information and a list of references on its Web site at <http://ed.gov/inits/construction/impact2.html>.

improvements that have been tied to improved student performance, such as lighting upgrades and improved thermal comfort control.

Market Barriers

A number of informational/technical, financial, and regulatory barriers impede greater school investment in energy efficiency projects.

Information/Technical Barriers

- ▶ In many schools, facilities departments are understaffed and lack the expertise to assess energy performance and identify energy efficiency improvements. Awareness of the range of energy efficiency options available may be limited or non-existent.
- ▶ Even when operations and maintenance (O&M) staff are aware of problems and potential solutions, they often lack the time to address the issues and the expertise to secure management buy-in for efficiency projects.
- ▶ Administrators and facilities staff alike may believe that efficiency improvements require installation and maintenance of sophisticated equipment, which they are unprepared to take on.

Financial Barriers

- ▶ Schools face unique financial constraints that may impede their ability to invest in efficiency measures with a higher initial cost. Financial requirements may limit access to investment capital or require short payback periods for capital expenditures.
- ▶ Efficiency projects must compete with a range of other important educational needs including school supplies, improved computer and communications equipment, added staff resources, etc.
- ▶ Staff may be unaware of the project financing opportunities provided by performance contracting or may lack the skills to identify opportunities to work with energy service companies (ESCOs) and to negotiate effective energy performance contracts.

Regulatory and Bureaucratic Barriers

- ▶ Complex regulatory requirements and bureaucratic processes can discourage facilities staff and administrators from pursuing unconventional projects or purchases. Contractors, energy service providers, A&E firms, and others may be reluctant to propose new approaches to school facilities issues in light of these hurdles.

WHAT APPROACHES ARE BEING TRIED?

Schools have been a popular target for energy efficiency programs and the range of activities directed at the schools market continues to grow. Over the years, school energy efficiency programs have evolved from traditional efficiency programs relying on grants and rebates to help finance one-time efficiency upgrades and retrofits to market transformation initiatives designed to fundamentally alter the market for energy-efficient school buildings by creating sustained demand throughout the school community (i.e., administrators, school boards, facilities staff, teachers, parents, and students). This section describes several ongoing programs that apply a market transformation approach to improving energy efficiency in schools and summarizes results to date, where available. In addition, some promising new initiatives are discussed.

National Initiatives

ENERGY STAR Buildings™ Program

The ENERGY STAR Buildings™ program provides school administrators and staff with resources and tools to identify and implement energy efficiency upgrades in their facilities. The Environmental Protection Agency offers technical assistance to participants through a series of upgrade manuals, workshops, and other technical publications. Participants are also provided with information on available financing options as well as a directory of product and service providers. The centerpiece of the ENERGY STAR Buildings™ program is a set of software tools for assessing building performance, planning and scheduling building upgrades, and analyzing the financial implications of various upgrade options.

ENERGY STAR provides schools with a web-based benchmarking tool enabling schools to rate their buildings' performance relative to other schools in their geographic region. Schools scoring 75 or above on the 0-100 scale earn the ENERGY STAR label. Program participants also receive a Statement of Energy Performance with detailed information on building energy use, energy costs, atmospheric emissions, and more. The benchmarking tool was first made available on the web in January 2000. As of April 2000, more than 90 schools in seven states had qualified for the ENERGY STAR schools label (EPA 2000).

Department of Energy: EnergySmart Schools

In 1998, under the auspices of the Rebuild America program, DOE launched the EnergySmart Schools campaign. The primary goals of the program are to reduce energy consumption and costs in K-12 schools, help schools to reinvest the savings from energy improvements, enhance the learning environment in schools by increasing the use of daylighting and improving indoor air quality and occupant comfort, and raising the school community's awareness of energy and energy-related issues.

The EnergySmart Schools campaign is structured around a program of training workshops, publications, direct technical assistance, financing options, and a network of private and public sector partners including architects, contractors, ESCOs, financial institutions, and non-profit organizations. Key focus areas for training and assistance efforts include:

- ▶ planning and implementing energy projects in existing buildings, including identifying and obtaining financing;
- ▶ planning and implementing energy-efficient new school design and construction;
- ▶ improving building O&M and the use of commissioning; and
- ▶ education on energy-efficient and renewable building technology.

EnergySmart staff also help schools to assess their performance under the ENERGY STAR rating program. School energy success stories are compiled and disseminated to give recognition and motivate others by demonstrating achievable energy improvements. To meet its educational goals, the campaign has produced and distributed teaching materials (some developed by independent sources) on a broad range of energy-related issues. DOE is working to expand the program through the following activities:

- ▶ developing and supporting incentives packages for energy improvements;
- ▶ developing design guidelines for new schools;
- ▶ encouraging businesses and manufacturers to offer more products and services for schools; and
- ▶ working with national, state, and local governments to eliminate some of the regulatory and policy barriers to school energy improvements.

Through Rebuild America's 265 community partnerships, the EnergySmart Schools program is working with more than 2,000 schools as of May 2000 (EREN 2000).

Regional, State, and Local Initiatives

Resource Conservation Managers

To address staffing and funding shortages, utilities and government agencies in several states have worked with school districts to establish Resource Conservation Manager (RCM) programs.

An individual RCM (usually trained by the program sponsor) is hired by the school district to work with school administrators, facilities managers, maintenance staff, and teachers to identify energy, water, and waste reduction opportunities and to implement activities to achieve resource savings. The resulting cost savings are used to fund the program, including the RCM's salary and benefits. Typically, the utility or organization originating the program guarantees that conservation savings will cover project costs in the first one to two years after project startup. If not, the school district is reimbursed for the difference between project costs and the

associated savings. Once the RCM program is established and self-sustaining, it is turned over to the school district for ongoing project administration.

Effective RCM programs work to establish ongoing energy accounting and improved O&M practices in addition to equipment upgrades and other efficiency measures. By demonstrating the potential for energy and resource savings to administrators and working with facilities staff to develop plans for improving energy performance, the RCM can ensure that efficiency investments are made and that the savings are maintained over time.

Experience to date indicates several criteria for successful RCM programs. In general, school districts should have between 25 and 40 buildings or at least one million square feet of space and consume more than 75,000 Btus/sf or have at least a \$1 million utility budget in order to support an RCM position (SMUD 1999; Watson, Coleman, and Bingold 1994). Furthermore, high level support from the school board or district-level administrators, buy-in from facilities managers, established policy guidelines for building operating conditions (e.g., heating and cooling temperatures, operating hours, etc.) and energy accounting procedures are needed (OOE 2000).

RCM programs have been established in California, Idaho, North Carolina, Ohio, Oregon, Pennsylvania, Texas, and Washington. On average, these programs provide annual utility savings of 10-20 percent, thereby recouping the program costs and generating additional funds to meet other facilities or educational needs (SMUD 1999). Experience in Oregon has shown that savings during the first year of the program can usually cover the RCM salary and benefits and that, by the end of the second year, savings approach two to three times the overall cost of the RCM program (OOE 2000).

Wisconsin Energy Initiative-2 (WEI-2)

In 1995, the Wisconsin Energy Bureau established the WEI-2 as a comprehensive energy efficiency program for schools and local governments. WEI-2 was created as a follow-on to the Institutional Conservation Program (ICP) (which operated solely as a grants program for schools and hospitals) to provide technical support and access to financing for energy efficiency improvements, rather than grant funding. The vast majority of projects completed to date (more than 90 percent) have been in public and private school buildings (WEB 2000). The state provides funding for the program and statewide implementation is carried out by Cooperative Educational Service Agency (CESA) advisors working with 12 regional non-profit CESAs throughout Wisconsin. The program seeks to build demand for energy-efficient technologies by educating building professionals (e.g., architects, engineers, and contractors), educational decision-makers (e.g., state and local educational administrators and school boards) and end-users while also addressing the financial, technical, and informational barriers to efficiency improvements.

New construction projects and existing building renovations and retrofits qualify for WEI-2 assistance. In existing schools, the advisors work to educate school administrators and other decision-makers about the benefits of energy efficiency improvements and identify the appropriate technical and financial options available. Advisors employ an energy use survey to demonstrate to administrators and facilities personnel how their schools' energy performance compares to other school buildings in Wisconsin. WEI-2 conducts building energy audits and recommends improvements. The school decides whether to hire an outside contractor or work with WEI-2 and its network of energy service providers to implement the recommendations. Building O&M training is also provided to facilities personnel at all levels including superintendents, buildings and ground managers and staff, and custodians. WEI-2 has set a program goal of 20 percent energy reduction in all of the state's existing K-12 schools.

WEI-2 is also working with school administrators, architects, engineers, and contractors on new school construction projects. Working with architects, designers, and other organizations (e.g., the Energy Center of Wisconsin), WEI-2 is advocating the use of daylighting and other energy-efficient building designs to produce new schools that use 60 percent less energy than the current state code.

Like many states, Wisconsin sets a revenue cap for schools and requires passage of a voter referendum for any increase in property taxes to support additional school funding. By providing access to project funding through the use of lease purchase agreements, performance contracts, and short-term, interest-free financing for project initiation costs, the WEI-2 program allows schools to fund energy efficiency projects outside of the referendum process.

To date, the CESAs have assisted 110 public and private schools through the WEI-2 program. Energy cost savings range from 5-50 percent depending on the type and extent of measures implemented, with average savings per school of 15 percent (Pease 2000). Approximately 14.4 million square feet of space has been retrofit through implementation of energy efficiency improvements of more than \$16 million. Annual energy savings total nearly 12 million kWh and 1.7 million therms, translating into operating cost reductions of more than \$1.4 million annually (WEI-2 2000).⁴

NYSERDA's School EnVest Program: Energy Performance Contracting Assistance

In addition to providing technical assistance, incentives, and education and training to schools, the New York State Energy Research and Development Authority (NYSERDA) offers a range of services to help schools develop the skills necessary to negotiate effective energy performance contracts. NYSERDA has developed a package of materials designed to help schools through the performance contracting process, including:

⁴ Space, cost, and savings are totals for the WEI-2 program and include both school and local government projects. School projects account for more than 90 percent of WEI-2 program activities to date. Data on implementation costs is more complete, while additional monitoring and verification of energy and cost savings is needed.

- ▶ a model RFP;
- ▶ an overview of performance-contracting issues for public schools;
- ▶ evaluation templates for proposals, interviews, and contractor references; and
- ▶ a list of performance-contracting firms operating in New York.

Through the program, schools are also eligible for hands-on assistance in developing RFPs, reviewing and evaluating proposals, negotiating contract terms and conditions, and locating and securing project financing. In addition, through the Institutional Energy Performance Contracting Assistance Program, schools (along with health care, higher education, and municipal institutions) are eligible for financial assistance to cover the cost of a comprehensive energy audit — used to identify recommended efficiency measures and their associated costs and savings — and other expenses incurred in the development of an energy performance contract. As of April 2000, two rounds of program funding have been completed with K-12 schools representing 42 percent (19 out of a total of 45) of funding recipients (NYSERDA 2000). Results on program implementation and energy savings are not yet available.

PG&E's Premium Efficiency Relocatable Classroom Program

In addition to its participation in statewide efforts to improve the business and regulatory climate affecting the energy efficiency of schools, the Pacific Gas and Electric Company (PG&E) has developed a program designed to improve the efficiency of portable classrooms within its service territory. Through the Premium Efficiency Relocatable Classroom (PERC) program, PG&E works to educate manufacturers and school districts about the benefits of energy-efficient portable classrooms. Potential program impacts are substantial because California now requires that 30 percent of new construction funds be spent on portable classrooms, which are less expensive to purchase than permanent facilities and can rapidly meet the need for new classrooms as enrollments expand and schools struggle to comply with mandates to reduce class sizes.

PG&E provides manufacturers with economic and marketing analyses to demonstrate how energy-efficient products can increase their market share and improve their bottom line. The company then works with interested manufacturers to design and develop modular classrooms that use 30-60 percent less energy than standard models. Improvements include the use of skylights, evaporative cooling, improved insulation, and radiant heat barriers as well as lighting and HVAC upgrades.

To date, three school districts have purchased classrooms designed through the PERC program. These classrooms are being monitored to demonstrate their energy performance relative to standard classroom models. Now that manufacturers are making the upgraded modular classrooms available, PG&E is shifting its focus to education, marketing, and advertising efforts targeted to schools as a way to build demand for the improved classrooms

(Stevens 2000). Education and marketing materials highlight the improved comfort and productivity these units offer in addition to their energy and cost savings.

Northeast Energy Efficiency Partnership

The Northeast Energy Efficiency Partnership (NEEP) is planning to coordinate a multi-state working group to develop improved efficiency guidelines and training for new school construction and extensive school renovation projects. NEEP hopes to leverage its experience with ongoing projects in commercial lighting design, commercial unitary HVAC equipment and services, and building O&M certification to improve the energy efficiency of school buildings. To this end, NEEP will undertake a pilot project that plans to:

- ▶ facilitate an ongoing forum that brings together school design and construction decision-makers to guide development of technical assistance, training, and policy support for “high performance schools;”
- ▶ provide customized training for A&E firms specializing in school design in the Northeast; and
- ▶ develop and provide technical assistance and tools as identified by the regional forum (e.g., design guidelines, studies on lighting design and student performance, and research to meet specific needs of states or large school districts).

Preliminary research and project development tasks include:

- ▶ research on technical guidelines and training;
- ▶ exploring ways to communicate the benefits of energy efficiency and improved guidelines and other tools to school administrators;
- ▶ investigating opportunities to provide training to A&E firms providing school design services;
- ▶ sponsoring a workshop to educate players in the school market about potential energy savings, the benefits of improved energy performance, and strategies for achieving energy savings; and
- ▶ investigating ways to sell energy efficiency to school administrators based on the additional amenities that efficiency provides including improved comfort, productivity, and IAQ.

NEEP plans to kick-off the project in Summer 2000 (NEEP 2000).

RECOMMENDATIONS

Schools are the target of many existing efficiency programs at the national, regional, state, and local level. Energy service companies, state and national government agencies, utilities, regional market transformation organizations, and others are working with schools to improve the condition and energy efficiency of school facilities. On such a crowded playing field, new

players must carefully consider how they can contribute without replicating existing activities or creating further confusion. Despite these concerns, there is a role for initiatives that incorporate the key elements of a strategy for market transformation in schools as outlined below.

Step 1: Motivate School Boards, Administrators, and Other Decision-Makers

School decision-makers must be motivated to incorporate energy efficiency into planned construction and renovation projects and to invest the necessary time and resources to improve energy performance as a part of ongoing facilities management. Demonstrating the ways that energy efficiency can help address a range of facilities issues (e.g., lower operating costs, improved occupant comfort, reduced IAQ problems, etc.), involve students through projects that advance educational goals, and serve broader objectives (e.g., enhanced staff and student productivity, improved student performance, etc.) can help provide this motivation. The ENERGY STAR Schools program builds on the recognition of the ENERGY STAR label and can serve as an effective tool for marketing energy efficiency to schools. Using the ENERGY STAR benchmarking tool, local and regional players can demonstrate to schools the potential for energy savings in their facilities. The growing number of case studies showing how schools around the country have successfully financed and implemented energy efficiency projects — as well as the associated benefits and community recognition they have accrued in the process — can help to convince decision-makers that efficiency upgrades are worthwhile and achievable.

Step 2: Provide Solutions to Meet the Specific Needs of Schools

Once key school decision-makers are interested in exploring ways to improve the energy performance of their facilities, they should be provided with information and tools for effectively planning and implementing energy improvements. Examples include:

- ▶ Standardized design guidelines or best practices — These products can be used to coordinate and specify projects when working with A&E firms, other contractors, and facilities staff.
- ▶ Technical assistance on benchmarking and project identification — Schools can benefit from help in assessing energy performance and identifying energy-saving opportunities.
- ▶ Financing packages and options — Technical assistance on performance contracting and other financing arrangements can help schools find alternatives to scarce local or state funds and avoid the associated regulatory and bureaucratic hurdles.
- ▶ Resource Conservation Manager programs — Provide a trained RCM with program cost guarantees.

Step 3: Provide for Ongoing Feedback and Maintenance of Energy Savings

After work is completed to improve the energy performance of existing schools or to incorporate efficiency into the construction of new and renovated facilities, it is important to

keep track of building energy use to maintain energy savings over time and to identify and address problems as they develop. As a result, establishing energy accounting and tracking programs and providing for a system of ongoing monitoring and troubleshooting are important elements of a market transformation strategy for schools.

Opportunities for National Coordination and Support

National organizations can provide a range of research, product development, and promotion, and coordination services in support of regional programs.

Research

- ▶ to test and evaluate new tools. For example, benchmarking systems, design guidelines, and financing schemes for new and existing schools have been developed. The effectiveness, accessibility, and market acceptance of these tools should be evaluated and documented.
- ▶ to document non-energy benefits. For example, further research should be conducted on the impact of energy-efficient schools on faculty, staff, and students and (in particular) on student academic performance.
- ▶ to evaluate new approaches and programs to assess their effectiveness and potential for transfer to other regions.

Product Development, Promotion, and Dissemination

- ▶ of standardized design guidelines or best practices for school construction and renovation projects.
- ▶ of RCM programs including a model program policy, implementation plan, and training program.
- ▶ of technical assistance packages for performance contracting, benchmarking, and energy accounting.

Coordination

- ▶ of national, state, regional, and local efforts to develop and promote accessible marketing messages and packaging for products and tools.
- ▶ of information, ideas, and lessons learned between local and regional programs.
- ▶ of efforts to transfer or expand successful local and regional programs to other regions.

ACKNOWLEDGMENT

This work was made possible through support from the U.S. Environmental Protection Agency.

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