



A Union of Professionals

**BUILDING MINDS,
MINDING
BUILDINGS**

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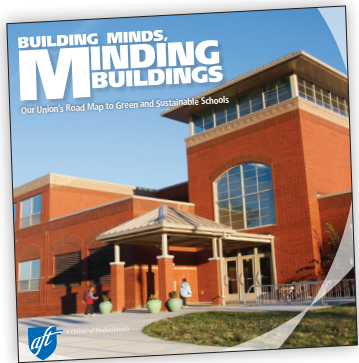
Green Tools for Transforming Existing School Facilities



PREFACE

The American Federation of Teachers has been advocating for decent school conditions for several decades. AFT members understand firsthand that investing in good building conditions is also a crucial investment in student and staff health, and in academic achievement.

The AFT continues to search for promising programs that can serve as models for improving building conditions on the scale that's needed to guarantee a healthy learning environment for every student. In our previous publication, *Building Minds, Minding Buildings: Our Union's Road Map to Green and Sustainable Schools*, we examined how green schools built to "standards" such as the U.S. Green Building Council's LEED for Schools or the Collaborative for High Performance Schools (CHPS) rating system can deliver superior building conditions.




We recognize, however, that the strategy has to be broader. More focus on existing school conditions is essential to accelerating the delivery of environmental benefits to all students. Leadership at the district and school levels is important; just as important is our members' genuine involvement in making and sustaining changes in schools.

For nearly two decades, the AFT has been documenting the shocking condition of many of the nation's 99,000 public school buildings. Tight district budgets and demands for funding in many areas of education have resulted in a backlog of facility maintenance problems that have gone uncorrected for many years. Surveys conducted by the National Center for Education Statistics and others have found a sobering pattern of deferred maintenance of school buildings throughout the country. And as districts have waited to repair deteriorating facilities, the cost of improving them has grown.

- The price tag for bringing school facilities up to modern standards has now skyrocketed in many locations: The cost of repairing schools in New York City is estimated to be \$1.5 billion; the Los Angeles Unified School District faces a staggering \$5 billion in deferred maintenance bills. Even smaller districts have many school buildings in need of work; Portland Ore., for example, estimates that deferred maintenance for its schools totals \$800,000.
- School district spending on maintenance and operations has been declining overall—from 11.31 percent of budgets in 1990 to 8.35 percent in 2008. Though the figure rose to 9.57 percent in 2009, the increase was due largely to the rising cost of utilities.

The price tag for modernizing schools



New York City	\$1.5 billion
Los Angeles	\$5 billion
Portland, Ore.	\$800,000

Over the last decade, various studies have shown that the physical school environment—from indoor air quality to lighting to cleanliness— has a major impact on the health of students, teachers and staff, as well as on student learning and performance. Poor indoor air quality, for example, is often found in schools where ventilation systems are antiquated, too small for current class sizes or poorly maintained. Likewise, leaky roofs and windows or plumbing problems, combined with poorly controlled heat and humidity, lead to mold in indoor air. Outdated ventilation systems recirculate mold, dust, viruses and outdoor air pollution through classroom air, which increases the risk of respiratory illnesses—including asthma— among teachers, staff and students.

- Asthma is the number one cause of absenteeism among schoolchildren, accounting for more than 14 million missed days a year.
- Teachers sickened by indoor air don't want to stay in the classroom. In one survey, over half of the teachers who had respiratory illnesses linked to classroom air thought of moving to another school. Two in five considered giving up teaching entirely.



Even if the indoor school environment doesn't cause illness, deteriorating schools reduce academic performance, increase absenteeism and limit student achievement.

- In a study of fifth-grade classrooms with the poorest ventilation, test scores among students in both reading and math suffered. Scores in better-ventilated rooms were higher.
- A review of 409 classrooms in Idaho and Washington found that in rooms with poor ventilation, student absences jumped by 10 to 20 percent.

Communities and districts often believe that replacing schools is the only way to improve school facilities. But upgrading existing school facilities is the fastest, most cost-effective way to improve schools' indoor environments and enhance learning in the nation's classrooms. Despite the daunting budget challenges ahead, school districts can make significant changes that will improve schools and reduce costs.



There are two national programs aimed at doing just that: (1) The U.S. Green Building Council's LEED for Existing Buildings, Operations and Maintenance (LEED EB); and (2) Energy Star for K-12 Districts, an energy conservation and management program developed by the U.S. Environmental Protection Agency and the Department of Energy.

Both programs are designed to offer districts step-by-step plans for maximizing energy efficiency and reducing costs through simple changes that easily can be incorporated into the existing life of the school. They also are aimed at improving indoor and outdoor air quality; improving lighting; expanding recycling, and in the process, providing opportunities for environmental education that enhances learning.

LEED EB in Philadelphia

The LEED EB program, a point system that leads to certification of existing schools, offers a tool kit and a rating system to use as a yardstick for repairing and upgrading schools. LEED EB incorporates Energy Star's conservation measures, and requires improvements in these areas as well:

- Managing storm water at the school site;
- Reducing water use and cost;
- Incorporating renewable energy sources;
- Switching to nontoxic cleaning products and integrated pest-management practices;
- Using local and sustainable food sources for the school; and
- Incorporating recycling waste, metal containers and paper.

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MICHAEL PAVELSKY,
ARCHITECT AND
SUSTAINABILITY DIRECTOR,
THE SHEWARD PARTNERSHIP

The idea that it takes a lot of money to transform older, deteriorating schools into modern LEED-certified green schools is a myth, says architect Michael Pavelsky, who is sustainability director at the Sheward Partnership. "There are so many opportunities within LEED EB to green the school without really incurring hard construction costs," Pavelsky says. "LEED EB for schools is the perfect tool for dealing with maintenance and renovation issues."

Pavelsky and his firm were hired by the School District of Philadelphia to oversee transformation of Thurgood Marshall Elementary into a green school. The 700-student facility was selected to be the city's first test of using LEED EB to upgrade a school, in part, because the school's principal and a building manager already were committed to energy conservation. Thurgood Marshall is an urban school; its student body is 95 percent minority, and nearly 85 percent are economically disadvantaged. If LEED EB was going to offer urban schools a way to

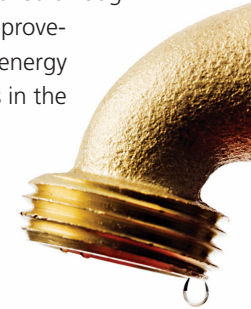
clean up their maintenance backlog and operational problems—while reducing their carbon footprints and saving costs—then LEED EB needed to be successful at Thurgood Marshall.

No hard costs. Like most changes in schools, Thurgood Marshall’s transformation began with meetings, reviewing policies and rewriting procedures. “Once you develop policies and procedures,” says Pavelsky “you are well on your way to having a green building. And those require no hard costs.”

A key factor at Thurgood Marshall was the commitment to the LEED process within the school, coupled with the leadership shown by the principal, teachers, staff and the building engineer. Then-principal Edward Penn, “really stepped up to the plate,” says Pavelsky. “He made the building engineer and a number of teachers available to assist with the process and follow it through.”

Rather than replacing the heating, ventilation and air-conditioning (HVAC) system, the building engineer, with Pavelsky’s help, brought in a contractor to bring the system up to meet its original performance goals. The computer software that runs the HVAC system was upgraded. Energy-saving lighting was already in place in many areas of the school, but was installed throughout—both inside and out. These small improvements turned out to be enough to meet energy conservation and air-quality requirements in the LEED EB plan.

Significant savings. “The only physical things that we bought were low-flow aerators for the faucets and showers,” says Mr. Hutton, the building engineer. According to Pavelsky, this was a \$100 expense in hardware only. “The changeover required no installation costs because it was done by the school maintenance staff,” who are salaried,” he says. “But already, that one change is showing a 25 percent savings in water costs.”



Changing over to low-flow aerators for the school’s showers and faucets is already showing a 25 percent savings in water costs.

The school opted to switch to a 100 percent green housekeeping program. Hutty says the custodial staff tested a number of green cleaning products and found several that worked well. Green cleaning products not only reduce toxics in indoor air but also protect the health of the custodial staff, students and faculty.

Penn says his greatest challenge was making sure that all of the purchases for the transformation “were aligned with the LEED standards. This included our copy paper, furniture, cleaning supplies—making sure we had the documentation, and that we were getting the best, earth-friendly type of products available.”

It was not always an easy task. The district purchased some green cleaning supplies that Hutty and the custodial staff found to be excellent, but then sent no more, leaving Hutty and his staff scrambling for cleaning supplies. Some of the low-flow aerators delivered by the supplier didn’t fit the faucets, and had to be reordered. But in general, the transition went smoothly (if sometimes more slowly) than Penn and Hutty might have wanted. “There was buy-in on all sides,” Penn says.

Nowhere did this become clearer than in putting the recycling program into action—it was the centerpiece of the transition. “For the recycling program, for a school our size, 700-plus, it could have been very difficult to do,” says Penn. “But I had wonderful teachers, and each teacher was instrumental in making the recycling program work.”

A collaborative enterprise. Workshops on recycling were held for kids at each grade level. “We discussed recycling, the signs on the containers for paper



or cans, why recycling is important, and how to make it happen in their school,” says Carol Schanberger, a third-grade teacher and 20-year classroom veteran. “In my room, kids would look at anything they brought in, and we’d put it in a bag and take it down to the blue bins. We had the whole class participating.”

Schanberger was central to the LEED EB transformation right from the start. She’s proud that Thurgood Marshall was chosen to be the first Philadelphia school to seek certification. “I’ve been a teacher here since the school opened,” she says. “And I’d seen a lot of litter. In an inner-city school, there is not a lot of emphasis on the environment. But this is the first step. ... Our school has a direct impact on student thought and family thought, and this process will have an effect throughout the community. Families will begin recycling, where they might not have before, and the awareness of the environment is increased.”

There are plans to expand the recycling program, including asking children to bring in materials from home; staging competitions between classrooms, playing games and more student participation—all will contribute to the transition as it progresses. “The goal of every teacher is to motivate students,” Schanberger adds, “and there is only one way to do that, and that is let them be part of the process. That’s the magic with this. These kids have a chance to be part of this process, and see their world getting better around them.”

Based on the success of the LEED EB process at Thurgood Marshall, the School District of Philadelphia has made a commitment to upgrade 10 more schools leading to certification with LEED EB. “What’s happened in Philadelphia is a real success story,” says Rachel Gutter, director of the U.S. Green Building Council’s Center for Green Schools. “LEED EB offers a greener approach to operating and maintaining schools in your district.”

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CAROL SCHANBERGER, TEACHER,
THURGOOD MARSHALL ELEMENTARY

Energy Star in St. Tammany

Teachers, staff and administrators at the St. Tammany Parish School District, located just north of New Orleans, were reeling from the damage inflicted by Hurricane Katrina in August 2005. The western eye wall of the storm had passed directly over the parish. In some areas, the storm surge was 16 feet, and very few schools were left unscathed. “In the city of Slidell, two schools were completely destroyed; and others had all kinds of damage from water, wind, fallen trees and debris,” remembers John Swang, the school district’s supervisor of administration. “The entire parish was shut down for weeks.”

That’s when the school district decided that to survive the storm—and find funds to rebuild the schools—it needed to commit to an energy-conservation program that

would save dollars to put into the damaged schools. “After Katrina, we had a new perspective,” Swang explains. “As we reopened schools, and renovated schools, there was a sense that we were not going to do things the same way in regard to energy management.”

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JOHN SWANG,
SUPERVISOR OF
ADMINISTRATION,
ST. TAMMANY PARISH
SCHOOL DISTRICT

Low cost, no cost. “Our approach was low cost, or no cost, and that eliminates big projects where you build new construction, such as new LEED-certified schools,” says Swang. “We’re not in a position to spend that money right now. But you can save a good 20 percent up to 30 percent with a no-cost or low-cost program.” Saving more than 30 percent on energy, he adds,

usually requires replacing heating, cooling or ventilation equipment. Given the enormous repairs necessary to the St. Tammany schools, Energy Star was the better immediate option for saving on utilities without making new investments in equipment.

It's all about behavior: "So what we've done is behavioral education, and automation of thermostats, air conditioning, ventilation and lighting," explains Swang. "Half of our schools have been automated now. The rest of our schools use only old-fashioned behavioral change to reduce energy consumption."



St. Tammany schools use a combination of automated thermostats and old-fashioned behavioral change to lower energy consumption.

Over the last four school years, the St. Tammany program has reduced energy use throughout the district by just over 22 percent. With help from the Environmental Protection Agency, and in the first year, a consulting firm called Schools for Energy Efficiency, the district developed manuals, training sessions, posters, stickers and other tools for teaching students, teachers and staff how to conserve energy. Within a year, the district was flying solo, producing its own posters, pamphlets and other materials.

Saving \$1 million a year. The cost of the St. Tammany program is about \$300,000 per year. About half of that is spent on new automation systems for schools that still manually operate their HVAC systems. The remainder goes for staff, new posters, stickers, pamphlets and other educational materials to facilitate behavioral change. "But return is over \$1 million per year," adds Swang. "The first year and a half, we made back the investment, but after that, we started seeing significant financial returns." This money goes into the classrooms. St. Tammany received Energy Star's "top performer" award in 2009 and 2010 for saving more than 20 percent of the energy once used by the district.

Debbie Green, a kindergarten teacher at Florida Avenue Elementary School in Slidell, sees the program as a total win-win for teachers. "Everybody felt it was a good thing. We didn't have to write out any reports. There was no extra work for me, and the kids do the work. I think that's why everybody bought into it. It's not a lot of extra work for the teachers, and the kids love it.

“My school is one of the oldest in the district. It was built during segregation, in the 1950s, and the school had a lot of damage from Katrina,” Green notes. Its HVAC system hasn’t yet been automated. Still, even this older school has realized significant energy savings with Energy Star. Large posters throughout the school advertise the need to save energy. And “turn me off” stickers on light switches, computers and fans help remind everyone to do their jobs.

Green assigns a student every day to check lights, fans and computer monitors, making sure they are off when the class leaves the room. Checking the door and keeping it closed is another job. These jobs rotate among the students. “It’s their job for the day. They always know whose job it is tomorrow, too. It’s an honor.”

Energy patrol. At Florida Avenue Elementary, the fifth-graders have been organized into the “energy police.” They go to each room at a certain time of the day, says Green, and “check to make sure your lights and fans are off, and your computer monitors are off. They hang a sign on your door—either Thumbs Up or Thumbs Down. If you have a Thumbs Down, they let you know what they’ve found—like if you’ve left two monitors on.” The sign stays up until the energy police come through again. A Thumbs Down sign on the door is a significant embarrassment to the room and the class. A Thumbs Up is cause for reward and celebration. “When our class has nothing wrong and we get the Thumbs Up sign, I will give students something fun that doesn’t cost anything—like no-shoes day,” says Green. “They love that. I keep socks in my desk for ‘sock day.’”



At Florida Avenue Elementary, the fifth-graders organized “energy police. They go to each room to make sure lights and fans and computer monitors are off. They hang a sign on your door. A Thumbs Up is cause for reward and celebration.

Energy use is also monitored at the parish level by an energy supervisor who comes to check the temperature setting in the rooms (Florida Avenue isn't automated), the air filters, doors, lights and other ways energy is used (or wasted) in schools. "We also do a lot of recycling," says Green. "Again, kids come by and collect recycling. The little ones buy into it more easily because they are learning everything, and they think it is all important to them. We talk about paper, how we can't just throw paper away. This is just a really positive program for the kids and for our school."

Cheryl Davidson is a classroom paraprofessional for special needs students in grades 2-3 at Covington Elementary School in Covington, La. Like Green, Davidson assigns various tasks to her nine students, such as turning off the monitors and the lights, and closing doors. "They think they are really grown up when you give them a job. They love the responsibility."

Davidson says that Energy Star has made her students eager to understand how this program fits in with what they hear about energy and natural resources. Someone from the school district's energy conservation group came around to give the kids stickers and discuss the program. "We explained we were trying to save electricity." They then discussed natural resources and the fact that many nonrenewable resources may not be available forever. Kids in Louisiana know that "we have had the oil spill. We tell them oil is not only gas for cars, that we also use it for fuel for electricity. And this program is our way to help."

Kids lead the way. That message has been heard by the teachers, staff and students in St. Tammany Parish schools. Not only is the district saving more than \$1

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million each year to put back into educational resources, but after four years the students and their families are integrating these lessons into everyday life. Cheryl Davidson remembers a story she heard recently from the mother of a child in her after-school program. “She said that she had walked out of a room at home and left the light on. To her surprise, her child went in and turned the light off.”

Most school districts will not have to face a rehabilitation task as great as those devastated by Hurricane Katrina. But the unmet maintenance and operational needs in many school facilities are great. Energy Star, like LEED EB, offers a low-cost, step-by-step approach for saving energy, reducing utility costs, educating students about the importance of conservation, and improving facilities and the school environment.

St. Tammany’s John Swang doesn’t know why there still are school districts that haven’t converted to Energy Star: “I like to tell people that if we found the resources to begin this program after the devastation of Hurricane Katrina, then any school district can successfully implement an energy-savings program—and see the rewards.”

What the AFT Can Do

These are only two examples of programs with a track record that can work to:

- Reduce energy costs—savings that can be returned to the classroom; and
- Ensure that students and staff occupy healthy learning environments.

At the national and state levels, the AFT will continue to advocate for policies that create incentives for school districts to adopt good programs.

At the district level, AFT local affiliates can:

- Advocate for school policies that will adopt LEED EB or U.S. EPA Energy Star. The AFT health and safety program can assist in drafting board resolutions and fact sheets; and
- Ensure that AFT teachers, paraprofessionals, custodians and other staff are involved in every step of planning and implementation.

AFT locals also can bargain for effective training programs for members. For more assistance and information on green schools and programs for existing schools, contact the AFT health and safety program at [**healthandsafety@aft.org**](mailto:healthandsafety@aft.org).

RESOURCES

U.S. Green Building Council:
Green Existing Schools Toolkit
[**www.usgbc.org**](http://www.usgbc.org)

Energy Star for K-12 School Districts
[**www.energystar.gov**](http://www.energystar.gov)



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