

Energy Audits

The first step in reviving a tired infrastructure

By MICHAEL FISCHETTE

In an economic climate that severely inhibits financing school infrastructure improvements, New Jersey has expanded upon existing legislation to help school districts improve their buildings without adding to their debt limits. By utilizing the Local Government Energy Audit (LGEA) program along with financing through the Energy Savings Improvement Program (ESIP), local governments can capitalize the energy and operations savings to implement capital improvement projects today. When combined with other state and federal incentives (such as those from New Jersey Board of Public Utilities' (BPU) Direct Install, Pay for Performance and federal American Recovery and Reinvestment Act (ARRA) programs), ESIPs provide a mechanism to "package" these programs and apply them without the need for state aid or increases in local taxes. But school districts need to beware that implementing any of these programs individually could risk losing the borrowing leverage that ESIPs generate. (See story, page 23.)

In many American schools, students and teachers find themselves in a physical environment that adversely affects their morale, and, in some cases, their health. Studies also indicate that when a school building is in disrepair, student achievement suffers. School systems often reluctantly postpone repairs and delay construction of new facilities to save money during periods of financial austerity. Making cuts in these areas, while unpalatable, is considered less devastating than slashing academic programs. The fallout of such decisions, however, is that the condition of school facilities in the U.S. is rapidly failing.



Deferred maintenance can create an environment of peeling paint, crumbling plaster, nonfunctioning toilets, poor lighting, inadequate ventilation, and inoperative heating and cooling systems. This, of course, affects both the health and the morale of staff and students. New Jersey schools are no exception. Many suffer from

an aging building infrastructure that is inefficient and many times contributes to an unacceptable learning environment.

A tired and neglected infrastructure has been among the biggest challenges for schools during our economic crisis, as big projects that include major



SPECIAL SECTION: GREEN SCHOOLS

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renovations and new construction have typically fared less than favorably with voters. Overall, 2010 was not a very good year for school construction projects, with only half of 34 proposals winning voters' approval. With this deep recession, voters continue to be reluctant to spend or borrow for big ticket items.

School business administrators are sharpening their pencils, trying to figure out how to maintain services while keeping tax levies within 2 percent of last year's numbers. With real estate taxes being the prime funding source for schools and local governments, business administrators are paying close attention to this measure, which also cut the number of exemptions from 14 to just four. One exemption that didn't make the cut was the "capital outlay spending adjustment." In the past, this exemption provided for necessary infrastructure improvements. Without it, many fear that upgrades of mechanical systems, for example, will be put on the backburner and continued deterioration will ensue.

Helping Districts Help Themselves Though most municipalities across the Garden State are experiencing painful budget crunches, New Jersey continues to set aside funds for projects intended to save money in the long run. While \$147 million in stimulus money has been allocated to New Jersey for energy efficiency and conservation, word is just starting to spread about programs that school districts must

implement if they are truly concerned about preserving infrastructure and saving taxpayer dollars.

Alternative financing through energy efficiency savings is not new in New Jersey. In fact, energy performance contracting has been in place since the early 1990s, and was a popular means of aid to school districts with no other way to finance badly needed improvements in heating, air conditioning, ventilation and lighting systems. Additionally, building code changes requiring greater ventilation rates for education facilities necessitated using more expensive and sophisticated equipment and controls.

Old legislation allowed school districts to use energy savings to finance infrastructure projects over a 10-year period. Initially, this was accomplished by engaging an Energy Service Company (ESCO), which would implement the entire project as a design-build contractor and would guarantee the savings. It should be noted that financing was almost always assigned to a third party leasing company, not from the ESCO.

New legislation provides for several changes to protect local governments and provide flexibility in implementing these projects. Some significant changes are:

- Projects can be capitalized over a 15-year period
- An energy audit must be performed and must be independent from an ESCO

- The local government can self-perform the ESIP without an ESCO
- The installation must be publicly bid even if an ESCO is used
- An independent firm must verify the savings

Using Money to Save Money The New Jersey Board of Public Utilities' (NJBPUB) Clean Energy Program (www.njcleanenergy.com) funds 100 percent of the energy audit up to a \$100,000 per year limit as part of the Local Government Energy Audit (LGEA) program. This incentive is extended to government agencies (including public schools), non-profits, and state colleges and universities, and no longer requires that measures equal to at least 25 percent of the cost of the audit be implemented by participants. According to the NJBPUB, the first round of 485 completed audits has a cumulative projected savings of 66,540,955 kWh and 2,162,592 therms. Improving energy efficiency in public buildings helps lower taxes, reduces the community's carbon footprint and sets an example for the private sector. However, only a small percentage of public schools have taken advantage of this program to date. School officials should consider a game plan while funding is still available.

The audit maximizes cost-effectiveness in several ways by providing participants with a detailed prioritization of energy-saving measures that demonstrate the greatest return on investment. Participants supply applications to the program, including information about the buildings to be audited. LGEA program representatives help participants develop a request for proposal template, decide if each building should be audited, and assist in evaluating proposals from one of five pre-selected auditing firms. Upon approval,

the auditing firm performs the energy audit and produces a comprehensive report. The report is submitted to the NJ Clean Energy Program, which reviews and approves the audit before providing the incentive payment to the program participant.

Specifically, an energy audit measures and establishes a baseline of where and how energy is consumed at a facility and identifies opportunities to lower energy consumption and costs. The audit provides applicants with valuable information about the efficiency of their current equipment and makes recommendations on cost-effective Energy Conservation Measures.

During the audit, engineers examine energy usage patterns and inspect all systems inside and outside of the facility. Systems examined include:

- All lighting systems inside and outside the facility
- Domestic hot water heating and distribution systems
- HVAC systems
- Plug loads (the energy consumed by plug-in devices and appliances)
- Windows and doors
- Building insulation

With school budgets so tight and accountability so important, conducting an energy audit allows districts to make purchasing decisions armed with the most current information about facilities' energy usage and cost savings potential. Renewable energy alternatives (i.e. solar, wind) are also included in the audit, as well as financing resources that are available to assist in the implementation of identified conservation measures. School districts can immediately reduce operating expenses by combining the power of the audit with an ESIP to finance energy savings projects over 15 years. Once completed, the audit allows schools to implement more essential projects, funded from the savings they produce. As energy conservation measures are implemented, other benefits including reductions in maintenance and operations costs are also realized.

A Case to Copy One example of an energy audit at its best is Jackson Township's Board of Education District-Wide Energy Conservation Project. An ongoing construction project at seven schools began with an energy audit. It later evolved into a 10-year performance contract that, with additional funding of \$286,000 from the NJBPU's SmartStart Buildings Program,

resulted in estimated annual energy savings of \$550,000. Additionally, it should be noted that this savings continues for the life of the equipment. Once the energy audit identified necessary conservation measures and was implemented through an ESIP, new lighting retrofits, geothermal heating and cooling systems and other sustainable solutions could be installed.

Common Sense Education With the ongoing mandate for schools to adopt sustainable energy programs and cut costs at the same time, conducting an energy audit is a short-term answer that translates into long-term decisions. ESIPs give school districts an attractive alternative to standard referendum-based capital projects. When the need to restructure education is discussed, there is often no mention of improving the physical site of learning. This need for commitment at local, state and federal levels to upgrade school facilities is paramount as we strive for the "advancement of public education."

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