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SCHOOL

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The Green Issue

HIGH-PERFORMANCE SCHOOLS

BUILDINGS SERVE
AS LEARNING TOOLS

TECH GOES GREEN

SAVING MONEY AND ENERGY

PROTOTYPE FOR CONSERVATION

CREATING SMALLER
FOOTPRINT SCHOOLS

AND MORE...

STUDENTS AND SCHOOL SAFETY

STUDENTS COUNT
IN SAFETY INITIATIVES

FEDERAL DOLLARS FOR SCHOOLS

ISSUING BONDS UNDER ARRA

Follow the Roadmap

Creating a plan to go green, start to finish. By Daniel J. Bacik, P.E., CEM and Lloyd Lambert



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In the Green Lane. Identifying where you are and where you want to go are steps in determining your district's or school's energy goals — leading to implementing energy conservation measures.

Making a building green can actually lead to better student grades. A recent national report of K-12 schools, *Greening America's Schools*, concluded that green schools could raise academic performance while improving the health, well-being and productivity of all who learn and work there.

While the benefits of going green are clear, where do you start? Creating a strategic, objective-driven energy

conservation plan should be the first step in such an effort. This "roadmap" outlines a systematic, disciplined method for determining a district's or a school's energy goals and then identifying and implementing energy conservation measures (ECMs) that meet those goals.



Create a Dedicated Team

To achieve your school's or your district's goals, start by organizing a dedicated team committed to creating and

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The team should include representatives of outside stakeholder groups such as parents as well as hands-on staff. Make sure to round out your team with other top administrators, key educators and important departmental stakeholders. Consider also including school board, PTO/PTA and community representatives.

In your first meeting with the team, clearly communicate your energy conservation goals so that they understand the overall objective. While you will delegate much of the tactical effort, remain at the helm to ensure that the team makes regular and steady progress. In return, your presence and passion for the project will demonstrate the importance of this project to the team and the school community.

Identify Where You Are, Where You Are Going

To determine the objectives of your energy conservation plan, start by identifying current circumstances and challenges you are facing. The team should create a baseline by developing a 12-month average using utility costs from the past 24 to 36 months. Allow at least 60 to 90 days to complete this process. Be sure to include all sources, including water, electric, natural gas and, if appropriate, propane or fuel oil.

From the average, the team can create a utility profile incorporating the utility rate structure with unit price per square foot, per hour and per month. From that profile, the team can identify opportunities — and in a larger district, specific schools — for improvement. For example, if the district has three high schools and one is using 25 percent more energy, the resource-

depleting school can be brought in line with the other more energy-efficient schools.

At this point, the team can start setting goals. They may be able to set a realistic per-square-foot energy cost and a timeframe in which this can be achieved. As the team's leader, you will drive the timeframe based on the school year (keep in mind that significant work, such as replacing a boiler, may need to be completed during the summer months or at least during the holiday break).

Now is also the time for the team to launch "quick win" improvements for immediate in-house implementation. Consider easily implemented changes such as establishing a standard district-wide thermostat policy, turning off lights and other behavior changes.

As part of the plan, evaluate operations

and maintenance costs. If you opt to select new systems, consider whether it makes sense to commit to a long-term service and maintenance contract. Evaluate the risk and cost of potential repairs against the cost of a service contract to determine whether the district will come out ahead by signing such a contract.

Collaborate With Experienced Experts

Once goals have been established, consider hiring experienced external resources to help the team define the plan's scope and tactics.

In most cases, the cost of hiring an external expert, such as an energy services company (ESCO), will be recouped in the energy savings generated by the

TOP TIPS FOR DEVELOPING AN ENERGY CONSERVATION PLAN WITH EASE

1. Establish a regular meeting schedule with your team. If you cannot attend all meetings yourself, appoint a strong secondary leader who can keep the process moving and keep you informed.
2. Work with an experienced ESCO with a proven record. Ask them for information about previous projects, so you can see examples of their successes.
3. Communicate, communicate, communicate: Make sure that you are in constant contact about your progress with the people who run your schools — both your administrators and the people running the building.
4. So that you can ask intelligent questions of your consultants, keep aware of what is going on in the energy world, both globally and in the United States.
5. Consider joining an association or making some phone calls, so you can talk with your peers to find out what they are doing. (After all, they share the same goal of providing the best environment for students.)
6. Know the rebate, incentive and financing options available in your state/region.
7. Consider educating students and teachers about the improvements you are planning and why the improvements matter, so students and teachers can support your work through behavior modification, such as turning off lights and conserving water.
8. Make sure to review your energy conservation plan and measures every two to three years as energy costs fluctuate.



Team Players. Organizing a dedicated team, including representatives of outside stakeholder groups, helps generate district-wide consensus for improvements and incorporate multiple perspectives.

new systems. In addition to assisting with selection and implementation of ECMs, an ESCO can also help the team navigate the maze of funding options and the funding application process.

An ESCO can also help identify incentives, flexibility in financing or rebates that may be available to schools making energy efficiency improvements from a state or local utility.

In 2008, Daniel Boone School District in Birdsboro, Penn., leveraged Pennsylvania's Guaranteed Energy Savings Act to engage in a performance contract to upgrade the Daniel Boone High School Annex. The act provides school districts flexibility in remodeling and upgrading existing buildings without requiring an upfront budget allocation. It offers a means for Pennsylvania's K-12 schools to offset the project costs over the life of the contract, which can be for up to 15 years.

The district renovated a vacant middle school into a cost-effective, energy-saving annex to accommodate growth. Improvements included the addition of advanced

building control systems, new ultra-efficient heating, ventilation and air conditioning (HVAC) systems, doors, windows and lighting. More than \$126,000 in annual energy and operational savings is promised for each year of the 15-year contract.

An ESCO can also help walk you through whether a performance contract fits your needs. A performance contract is a model that allows building owners to use future energy and operational savings to finance infrastructure improvement projects. It is an option for funding energy-saving improvements in buildings that provides measurable business results.

Shelby County Schools, the seventh largest system in Alabama, used a multi-phase performance contracting effort to implement approximately \$8.8 million in capital improvements to aging infrastructure systems. The improvements yielded direct energy savings that delivered on promised results. The improvements included lighting and control systems, new boilers and heat pumps and other state-of-the-art equipment. Because improvements

were phased in over more than 10 years, careful planning allowed the administrators to ensure that the improvements really paid for themselves.

An ESCO will serve as a project manager once improvements are underway, managing to the end result and providing a single point of contact for the team. Most importantly, the ESCO will identify ECMs that help meet your energy goals, implement those ECMs and then ensure that they meet the specified goals.

How to Find an Experienced ESCO

How do you find an experienced ESCO? Soliciting referrals can be one of the best ways to identify seasoned experts. Talk to peers who may have completed infrastructure upgrades, or solicit recommendations by turning to organizations such as your state department of education, or local or national chapters of associations such as the National School Boards Association, the U.S. Green Building Council or the National Association of Energy Services Companies (NAESCO).

Look for industry experience, in this case, an ESCO that has worked with school districts before — as well as solid technical experience. Given that the improvement effort is an ongoing endeavor that may be funded with a seven- to 20-year performance contract, it is also important to select a firm with enough longevity that they will be available throughout the process.

Identify Roles and Responsibilities

Once you have hired an ESCO, you will collaborate with them to confirm respective roles. While the breakdown varies, the school district team may be responsible for tasks such as communicating goals and the timeframe, providing access to the facility, collecting historical maintenance and operations data and providing the energy history to the ESCO.

The ESCO may handle defining the scope of work, securing pricing, securing financing, identifying grants, utility rebates and reviewing feasibility of the various ECMs. Typically, you will work together with an ESCO on selecting ECMs that meet your goals and objectives. Once they are selected, you will need to create an action plan for implementation.

Implement an Action Plan

The majority of the improvements will be implemented in existing buildings that are already occupied. Work with your ESCO to develop an action plan that will meet the designated timeframe without disrupting the educational process. Careful planning, scheduling, ongoing communication and the ESCO's experience in handling retrofit situations such as this will help the team and the ESCO effectively move the process forward with minimal disruption to teachers, students and administrators.

Measure, Share, Recognize

Once ECMs are implemented, it is crucial to measure your results to demonstrate the benefits and show that you have met the designated target. While there is often a

small cost associated with gathering utility costs or other measurements, it is still useful to measure results on at least a quarterly basis. This allows for improvements or small system adjustments, if needed. Ongoing measurements may uncover additional opportunities to cut costs even further.

When you have met your goals, be sure to inform and recognize the stakeholders who were key to the process. Let them know that their efforts are paying off.

Remember to Involve the Students

Remember to include the students in the process. Consider incorporating an interactive Web-based tool or an energy-efficiency-based educational curriculum that uses school buildings as a teaching tool. These tools can help engage students and involve them in the improvement process. Even a simple bulletin board can be used to highlight kilowatt hours saved. Tools such as these create ownership for student behavior such as turning off lights, recognize the students' roles and educate them about the importance of energy-efficient improvements.

After all, it's ultimately all about the

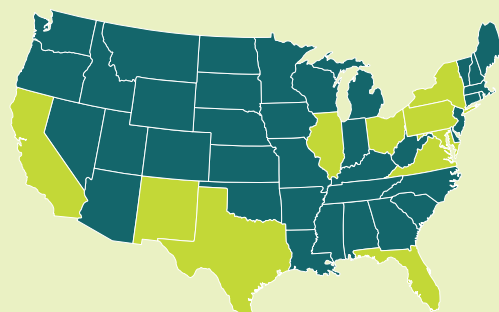
students and about creating the optimal education environment: to provide them with the best possible education. [SPM](#)

>> Based in St. Paul, Minn., **Daniel J. Bacik, P.E., CEM**, is an energy engineer for the Trane commercial systems business. He has more than 22 years of experience in the HVAC industry and has served various markets including education (K-12 and higher education), hospital and institutional, industrial, federal and local government. Bacik is past president of the Cleveland, Ohio, Chapter of ASHRAE, the American Society of Heating, Refrigeration and Air Conditioning Engineers; a senior member of the Association of Energy Engineers; and a member of the American Society of Mechanical Engineers. He holds a Bachelor of Science – Mechanical Engineering degree from Carnegie-Mellon University. **Lloyd (Chip) Lambert** is a business development regional manager with the Americas Service and Contracting group for Trane in St. Paul, Minn. Lambert has over 32 years experience in the HVAC industry with mechanical contractors and major controls companies. His experience includes project management, sales, sales management and district management. In his current role, he serves program manager for Trane's CSTOP executive sales training program and provides field office support for the company's the K-12 Environment of Learning Program.

TOP 10 STATES WITH THE MOST LEED-REGISTERED K-12 PROJECTS

Aided by green building legislation and passionate green school advocates, these states are leading the movement forward by working to ensure that every child in America attends a green school within a generation.

1. Ohio — 184
2. California — 106
3. Pennsylvania — 92
4. Texas — 73
5. Illinois — 71
6. Maryland & Virginia — 59
7. New York — 56



8. Florida — 55
9. New Mexico — 51
10. Washington, DC — 43