



REDUCING ENERGY CONSUMPTION IN SCHOOLS:

12 Tips for Tackling an Energy Management Program

K-12 WHITE PAPER

Introduction

In a time when the word “energy” brings to mind rising prices or images of a natural treasure filling up with oil from an offshore disaster, there is a place where energy can be perceived with hope: the nation’s schools. The annual energy bill for America’s primary and secondary schools is \$6 billion— more than is spent on textbooks and computers combined. Less efficient schools spend three times more energy than the best energy performers, so there is ample room for the improvement sound energy management practices can deliver.¹

“Every dollar spent on energy impacts teaching and learning because it takes economic vitality away from the core mission of teaching and learning,” says Roger Young, principal at Roger Young & Associates, an Andover, MA-based consultant to the education industry. “For that reason alone, schools should aggressively pursue strategic energy management planning.”

By being more energy efficient, schools can help prevent greenhouse gas emissions and improve the students’ learning environment. School districts can and have used the savings from improved energy performance to help pay for building improvements and other upgrades that enhance the learning environment.

Some schools are taking action because of the opportunities inherent in energy management, but many have remained passive due to uncertainty about where or how to start.

Getting Started

The fact is you can begin almost anywhere — from retrofits to behavioral programs. But everyone must begin with a baseline. If your school wants to save energy, it's important that the community become aware of the energy consumption that they are responsible for. Simple changes in people's behavior can quickly lead to significant energy savings, but such changes will only happen if the people are aware of the energy consumption that they have the power to control. Education is key. There are numerous programs that can help with these initiatives such as Clear Air - Cool Planet, ENERGYSTAR and Need.org.

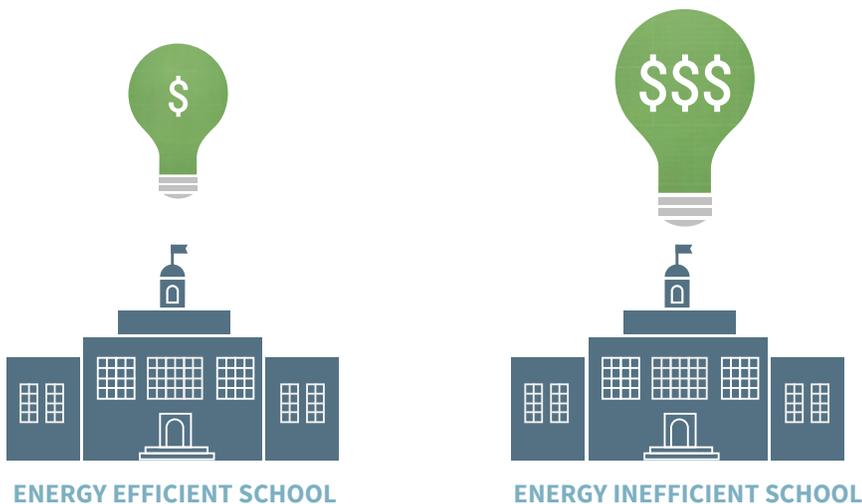
In his book *“Energy Management as a Corporate Strategy”*, author Steven Hanawalt² writes about an excellent way to frame the energy improvement opportunity — begin by asking three simple questions for each energy asset:

- *What Is?*
- *What Should Be?*
- *What Could Be?*

“What Is” means understanding current energy consumption— establishing a baseline to measure improvement against. “What Should Be” means understanding the design level performance of energy assets now on hand. And “What Could Be” defines the optimally run school enterprise.²

While each school district is unique and subject to governmental regulations and policies for energy usage and standards that may differ, the following actions are compiled from best practices for developing and implementing an effective energy conservation program in any educational organization.

EFFICIENT VS INEFFICIENT SCHOOLS



Energy-inefficient schools use up to **three times more energy** than energy-efficient ones.

Twelve Tips for Tackling a Program

1. Appoint an Energy Manager

Energy programs need a strong and official advocate. This person, the Energy Manager, should report directly to the school board or superintendent and provide regular reports to administration. This person should have a global understanding of the school or district, especially the maintenance and operations areas, including ASHRAE standards, air quality standards, etc.

It is the Energy Manager's task to gather, compile, develop, and ultimately "own" accountability for the energy plan. He or she sets goals, tracks progress, and promotes the energy management program.

“With the increasing regulatory landscape around carbon emissions, carbon management and reporting will become mandatory for most organizations.”

Tom Raftery

Lead Analyst, GreenMonk
WA-based Energy & Sustainability Practice

This is not to say that a special staff position needs to be created for the role— many smaller schools will look to science teachers as possible Energy Managers—but the fact is that the profile of this role is clearly rising.

Tom Raftery, lead analyst of GreenMonk, the energy and sustainability practice of Seattle, WA-based industry analyst RedMonk, says that the Energy Manager represents an increasingly prominent role in most organizations.

“I foresee the rise of the Energy Manager,” he says. “With the increasing regulatory landscape around carbon emissions, carbon management and reporting will become mandatory for most organizations. In that environment, having someone specialized in energy management will start to seem like a very good idea.”³

2. Establish Benchmarks

To know “What Is,” a baseline is needed before anything else. When considering your energy data, bear three things in mind:

- a) **Accuracy is critical.** Make certain that all utility bills (i.e., electric, water, gas, phone, propane, etc.) are compiled and input accurately.
- b) **Timeliness is important.** Data should be collected at monthly intervals, allowing reports to be pulled on a granular basis for better visibility and understanding of trends.

- c) Metrics must be comparable.** Think about the metrics you will employ, and be consistent in implementation. Don't compare energy per square foot in one instance and energy per student in another.

With quality benchmark data, schools can draw better conclusions about the path to efficient energy management.

3. Develop the Plan— Establish an Energy Policy

With the establishment of accurate benchmark metrics, energy policies can be developed and conservation plans put into place. New policies may include things like restricting refrigerator or radio use in classrooms. Critical here is establishing awareness among users regarding what these assets cost in terms of energy dollars. Give individuals the knowledge to drive change and empower them to make choices. Perhaps they have the option to pay for an item themselves or to choose between assets. The goal here is to build possible savings into the plan, then “sell” the merits of the plan over time. An energy policy will also include elements such as:

- *Staging guidelines*
- *Appliance and vending machine regulations*
- *Afterhours and weekend policies*
- *Equipment operating procedures*
- *Facility maintenance, upgrade, and renewal recommendations*
- *Utility peak load, usage, and conservation guidelines*

4. Determine Measurable Goals

The goals of an energy plan will depend entirely upon the institution. Successful plans are often implemented in phases, with reasonable goals set for each phase. Keep immediate goals modest: early success will help create and sustain momentum. Be certain that goals are based on measurable metrics— choose a percentage reduction in a simple electrical metric based off current energy bills, or choose a metric that is a direct result of a change in staging policy.

One school district in Arizona set a five-year strategic goal of reducing electric energy consumption by 40%; the first year's was a goal of 10% electric, 10% natural gas, 10% water and 10% solid waste. Its second-year goal was an additional 10% off of electric consumption. This is an example of a phased plan with reasonable and measurable goals.

5. Seek a Line Item in the Budget

Best practice recommendations state that an energy plan must include a budget element.⁴ Sometimes it costs money to save money, as in the case of upgrades or replacement equipment that will reduce consumption. An energy plan without this component will be unable to effect any real change. Making the energy plan a line item in the budget will also raise its profile with the school administration. An energy manager must embrace this fact and be prepared to report on the plan progress on a regular basis.

TWELVE TIPS:

1. Appoint an Energy Manager
2. Establish Benchmarks
3. Develop the Plan & Policy
4. Determine Measurable Goals
5. Seek a Line Item in the Budget
6. Get Buy-In & Exposure
7. Make it Relevant & Transparent
8. Involve Everyone!
9. Focus on Behavioral Changes
10. Implement Quick Fixes
11. Plan for the Long Term
12. Celebrate Success

6. Get Buy-in and Exposure with the School Board and Community at Large

Any successful initiative needs buy-in from above and below. The path to buy-in from executive leadership is by reporting and building the plan from the top down.

However, you must implement the plan from the bottom up. Individuals in the community who must change their behavior need to be educated about the real stakes involved: the environment, money, the quality of education and the school community. By providing choices and the opportunity to get involved, you get everyone to take ownership of the plan.

7. Make the Plan Relevant— and Transparent

What does 10% savings in energy consumption mean to you? Without context—without relevancy— probably not much. But if that 10% is translated into a new custodian or security staff, more after school activities or new training equipment for the athletic teams, that 10% is made real. The community can better rally around these less abstract elements.

One Texas school district’s energy manager described it this way: “If we can get everyone to shut the lights off right when they leave the classroom, or we use afternoon natural light in these east-facing classrooms, that will amount to \$65,000 per year in this one elementary school.” Take it one step further and make it relevant to a teacher’s salary. Doing this can get faculty thinking they could save a friend’s job by simply turning off the lights. Relevancy goes a long way.

8. Involve Everyone— Kids, Teachers, Parents

If students believe in the cause, students will get involved. So will teaching staff, parents and other community members. More people can be drawn into the energy management program through active training and education. Involving everyone affiliated with the school translates to greater achievements.

Reward those involved with recognition, praise, and respect. One school created an energy mascot. It also implemented energy tickets— students were empowered to issue tickets to offending users. The same district sought to reduce solid waste with a recycling program. Totally student-policed, it became so successful it was able to cut a \$250,000 outside contract for this service in half!

9. Focus on Behavioral Changes

Don’t underestimate the power of a simple behavioral audit. Until wasteful behaviors are identified, they can’t be changed. Institutions might consider online utilities where students can see energy consumption of one classroom versus another in real time. Fostering competition and making responsible consumption fun are two keys to changing behavior.



WHAT MIGHT 10% LOOK LIKE?

- + NEW CUSTODIAN
 - + AFTER SCHOOL PROGRAMS
 - + ATHLETIC EQUIPMENT
-

10. Implement the Quick Fixes!

There are many actions that can be taken to yield nearly immediate returns for the plan. These include:

- *Energy policy measures like removing refrigerators from classrooms.*
- *Installation of energy management tools for computers and appliances.*
- *Eliminating phantom loads and removing unused meters.*
- *Replacing lighting with more energy-efficient bulbs.*
- *Eliminating the number of bulbs lit as well as the wattage of each bulb. Test actual lumens in the classrooms before changing the lighting.*
- *In humid climates, consolidating mold-sensitive equipment in one area or wing and controlling the climate in this area discretely.*
- *Regulating temperatures without risk of human tampering (e.g., install thermostats in the ceiling).*
- *Keeping doors and windows closed.*
- *Reviewing maintenance procedures and making efficiency part of maintenance policy.*
- *Removing interior lights on vending machines; scheduling power on/power off cycles.*
- *Installing outdoor lighting sensors.*
- *Replacing exit signs with LEDs.*

11. Plan for the Long Term

Schools should consider performance contracts and design/builds after they have addressed what can be done in-house. Building a comprehensive maintenance program into the plan can save thousands of dollars that otherwise might go to outside contractors. Effective energy plans will include ongoing preventive maintenance and long-range capital planning.

Secondary phases of the energy plan may incorporate long-term investment in new systems or transitional measures for mechanical upgrades or new builds. Be certain to include these planned purchases in capital budget projections, as well as the ongoing maintenance costs of existing and new equipment.

12. Celebrate Your Success, Then Reevaluate Everything

When a school district successfully achieves energy goals, it must look for ways to celebrate the success: broadcast the results proudly. Then take the time to evaluate what has been done. What worked? What didn't work? At this point, the energy manager and others involved should reassess energy metrics, phases, and future goals. The successful process never ends, but is continuous.

One Final Data Point

Throughout the energy management process, one thing should become increasingly clear: the importance of data integrity. Without the establishment of an accurate baseline, and the ongoing precise tracking of metrics, any energy plan is doomed to make assumptions that will limit its potential.

SchoolDude has a tool to ensure that utility data is tracked with precision, maximizing the potential of energy management plans. SchoolDude's UtilityDirect is a powerful, online utility tracking, management, analysis and reporting tool that audits, tracks and analyzes utility consumption and costs to identify utility savings opportunities.

UtilityDirect helps reduce utility bills by identifying waste, cost and meter problems, billing errors and savings opportunities, which can save at least 5% of the annual utility budget, an average of \$10 per student annually.

UtilityDirect has become the standard tool used by educational organizations for managing energy costs and consumption based upon utility bill analysis. In fact, UtilityDirect users represent the largest single database of educational energy consumption information in America! Because effectively managing energy costs starts with utility bill analysis, UtilityDirect provides a solid foundation for any energy management and conservation program.

ABOUT SCHOOLDUDE

Founded in 1999, SchoolDude has served as the market leader in education enterprise asset management for the past 13 years with over 1 million education professionals using our solutions. We deliver cloud-based solutions to help both small and large institutions better manage their facilities, IT and business operations. We help clients save time and money by managing support services effectively and efficiently, allowing institutions to provide a safe teaching and learning environment. Today, we're the #1 platform of cloud solutions for public and private schools, colleges and universities. Visit us at schooldude.com or give us a call at 877-868-3833 to learn more.

For more information on SchoolDude's UtilityDirect, or for more information on how to make utility bill analysis the foundation of a successful energy management program at your school or district, contact: salesrequest@schooldude.com.

NOTES

1. "ENERGY STAR for K-12 School Districts," U.S. Environmental Protection Agency, http://www.energystar.gov/index.cfm?c=k12_schools.bus_schoolsk12
2. "Energy Management as a Corporate Strategy," Steven Hanawalt, OSISOFT, 2009 Uptime Institute Symposium: Lean, Clean, and Green.
3. "The Rise of the Energy Manager Role," Tom Raftery, GreenMonk: the blog, February 9, 2010
4. "Elevate Energy Management to Senior Managers," The U.S. Environmental Protection Agency, http://www.energystar.gov/index.cfm?c=industry.bus_industry_elevating