



UTAH SCHOOLS SAVING ENERGY IMPLEMENTATION GUIDE

Dear Utah Schools and School Districts:

Like Utah's homes and businesses, our schools and school districts are subject to higher energy prices as Utah's electricity demand and summer "peak demand" grow. This translates into higher energy costs for schools, negative impacts on air and water quality, and increased greenhouse gas emissions. Energy efficiency measures offer a rapidly-deployable, inexpensive means to save energy and money while improving our environment for generations to come.

*This **Utah Schools Saving Energy – Implementation Guide** will support you in your efforts to increase energy efficiency in your school district by providing general guidance for energy savings projects and important resources to help you succeed, including energy management tools, and technical and financial resources and partners. Every school and school district can improve energy efficiency, reduce energy consumption, and save energy costs, while reducing the impact we all have on Utah's environment. As each school and school district is different, all of the steps presented below may not apply to your situation, but will equip you with the ideas, tools and resources to get started. Good luck!*

A handwritten signature in blue ink that reads "Kevin Emerson".

*Kevin Emerson, Energy Efficiency Program Associate
Utah Clean Energy – www.utahcleanenergy.org*

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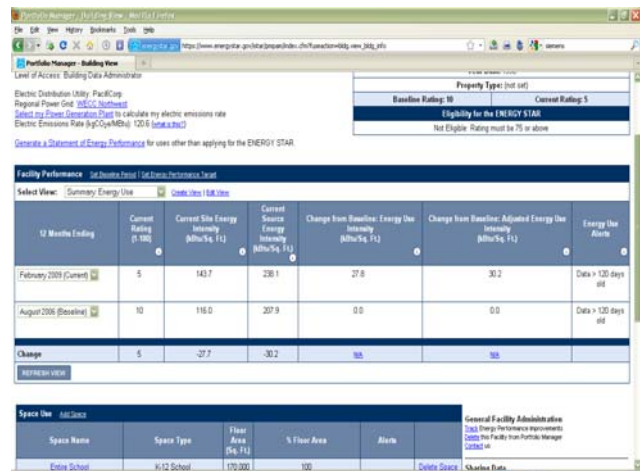
Step #1: Make a Commitment to Saving Energy

Convene a meeting of the right people from your school or school district to create and commit to a vision of improving energy efficiency. This group should include the: buildings/utilities/facilities manager, principal or superintendent, science teacher(s), and school board member. Once finalized, share your vision and commitment with the entire school community and provide regular updates via newsletter, website, staff meetings and assemblies.

Step #2: Document your School's Energy Baseline

Before jumping into retrofit and recommissioning projects, a critical first step to help you realize potential energy savings is to collect energy consumption and cost data and develop an energy baseline for your facilities. This enables building and financial managers to know where you're starting from, and what buildings are not performing well (and therefore need priority attention); after all **you can't manage what you don't measure!** A free online tool that is widely used by schools and other public and private sector building

managers is the **ENERGY STAR® Portfolio Manager**. This tool allows facility or utility managers to track and monitor weather-normalized energy and water consumption and costs for all their buildings, and identify buildings that demonstrate a need for attention. On a scale from 1 to 100 (1 being the least efficient and 100 being the most), Portfolio Manager provides a rating for building performance. For example, buildings that receive a score below 50 use energy at a level that is at or below 50% of the least efficient similar schools across the country – revealing a great opportunity for improvement. Other data presented in Portfolio Manager includes energy use per square foot, cost per square foot, total energy use, and total cost. Buildings that receive a score of 75 or above are eligible to receive the ENERGY STAR label from the U.S. EPA's ENERGY STAR Program. In addition, by reducing energy consumption by 10%, 20%, or 30% schools are eligible for recognition as an Energy Star Leader.



The screenshot displays the ENERGY STAR Portfolio Manager interface. At the top, it shows the 'Facility Performance' section for a building. A table lists performance metrics for two periods: February 2009 (Current) and August 2008 (Baseline). The table includes columns for Current Rating, Current Site Energy Intensity, Current Source Energy Intensity, Change from Baseline: Energy Use Intensity, Change from Baseline: Adjusted Energy Use Intensity, and Energy Use Alerts. Below this, there is a 'Space Use' table with columns for Space Name, Space Type, Floor Area, % Floor Area, and Alerts. The 'Energy School' is listed with a floor area of 170,000 and a % Floor Area of 100. A 'General Facility Administration' section is also visible on the right side of the interface.

12 Months Ending	Current Rating (1-100)	Current Site Energy Intensity (kBtu/Sq. Ft.)	Current Source Energy Intensity (kBtu/Sq. Ft.)	Change from Baseline: Energy Use Intensity (kBtu/Sq. Ft.)	Change from Baseline: Adjusted Energy Use Intensity (kBtu/Sq. Ft.)	Energy Use Alerts
February 2009 (Current)	5	143.7	238.1	27.6	30.2	Data > 120 days old
August 2008 (Baseline)	10	116.0	207.9	0.0	0.0	Data > 120 days old
Change	5	-27.7	-30.2	NA	NA	

Space Name	Space Type	Floor Area (Sq. Ft.)	% Floor Area	Alerts
Energy School	K-12 School	170,000	100	Details Source: Climate Pledge



More information about ENERGY STAR Portfolio Manager:

http://www.energystar.gov/index.cfm?c=evaluate_performance.bus_portfoliomanager

Step #3: Set an Energy Savings Goal

Utilizing your energy baseline set a challenging, yet obtainable energy savings goal. This goal may be a percent reduction in your district’s total consumption of energy, electricity, natural gas, or other fuel(s), improvement in a number of specific buildings or receiving the ENERGY STAR Label for a certain number of school buildings. Primary internal partners should fully support the goal and, like the commitment, the goal should be shared with the larger community through a public statement and in newsletters, websites and perhaps and press release.

Step #4: Consider Creating an Energy Management Plan

After creating a baseline and setting your goal, consider formalizing your energy savings initiative by creating an Energy Management Plan (see Figure 1). An Energy Management Plan, which begins with a formal commitment (see Step 1), can be thought of as a “guiding framework” that keeps a school or school district on track to meet its goals, helping to plan the implementation of relevant energy improvements, and evaluate the degree to which goals are being met, therefore providing an avenue for continual improvement. Extra time spent planning and creating an Energy Management Plan in the beginning can help pay off in the future.

Figure 1: Energy Management Plan

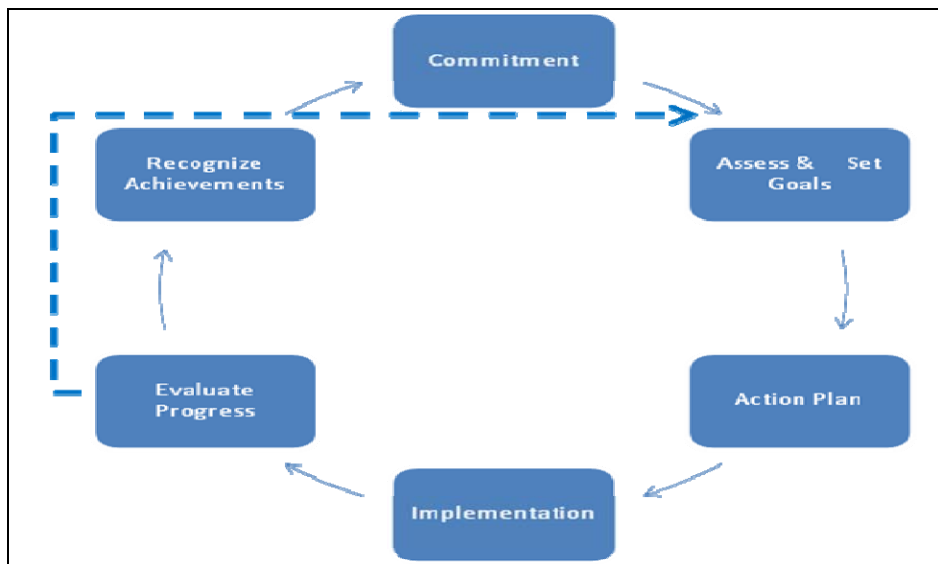


Figure modified from ENERGY STAR, 2009



More information about energy management plans from ENERGY STAR:

http://www.energystar.gov/index.cfm?c=guidelines.guidelines_index

Step #5: Identify Project Lead(s) and Support

Many school districts have dedicated staff to oversee utility billing, monitoring, and tracking, energy retrofit projects, behavioral programs, etc. If this is the case for your school or district, you're lucky. If not, you will need to identify staff, teachers, and administrators who can take the lead for this project, perhaps in the form of an Energy Saving Committee.

Staff could include facilities and janitorial employees; teachers to consider working with could include those who are enthusiastic about, or who are involved in science or energy curriculum; and administrators to involve could include the superintendent, finance and budgeting staff, and member(s) of the school board. This Energy Saving Committee will also need to work closely with external partners who can bring technical, financial and other resources to your project.

Step #6: Identify External Partners and Resources

Identify external partners and request their participation and support. External partners will be important in helping your school or school district achieve its energy savings goals by providing technical and financial resources, as well as information about best practices. These partners and resources may include:

Utility companies – Utah's primary utility companies are Rocky Mountain Power and Questar Gas Company. Your school's account representatives from these companies should be able to refer you to resources for their energy efficiency and demand side-management (DSM) programs. Some municipal or co-operative power providers across Utah are now developing or offering energy efficiency programs and services as well. Utility energy efficiency and DSM programs can take different forms:

- Case-by-case incentives that may be able to be negotiated with your power provider if you can demonstrate significant energy (and demand) savings.
- Programs that offer technical support and financial incentives for energy efficiency retrofits and new construction or building recommissioning.



More information about utility energy efficiency and DSM programs for schools:

- **Rocky Mountain Power Energy Efficiency (electricity):**
<http://www.rockymountainpower.net/Navigation/Navigation921.html>, 1-800-222-4335 or call your School/District Customer Account Manager
- **Questar Gas ThermWise Program (natural gas):**
<http://thermwise.com/business/BusinessRebates.html>, (800) 567-3460 or call your School/District Customer Account Manager
- **Logan City Light & Power Conservation Department (electricity):**
<http://www.loganutah.org/Light%20and%20Power/Conservation/index.cfm>, (435)716-9792
- **St. George Energy Services Department (electricity):**
<http://www.sgcity.org/energyservices/>, (435) 627-4800

State of Utah – Utah’s State Energy Program (USEP) is the state agency responsible for supporting “partnerships that promote and improve energy efficiency and turn renewable energy resources into viable alternatives to fossil fuels.” The USEP administers the “Utah Public School Energy Efficiency Fund Zero-Interest Loan Program”, which offers zero-interest loans of between \$5,000 and \$250,000 for retrofit or new construction projects that are intended to save energy.



More information about the Utah State Energy Program School District Loan Fund:

http://geology.utah.gov/sep/energy_efficiency/efficient_schools.htm, (801) 537-3300

Federal programs – Numerous national and Federal programs are available to support school and school district efforts to improve energy efficiency. Programs include recently established bond programs for local governments (that includes a 0% interest rate), guides to using ENERGY STAR Portfolio Manager, resources for school planning and construction, tools for teachers, and educational programs for students. A great way to get your local community involved in your school or district’s energy savings initiative is to join the ‘Change the World, Start with ENERGY STAR’ program. This program encourages parents, families, nearby businesses, and

others to take small, individual steps to improve energy efficiency (see link in the box below for more information).



More information about Federal and national programs for school energy efficiency:

Community:

- **Change the World, Start with ENERGY STAR:**

<http://www.energystar.gov/index.cfm?fuseaction=globalwarming.showPledgeHome>

Facility and Financial Managers:

- **Federal Loan Program – Qualified Energy Conservation Bonds (QECBs)**

http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=US51F&e=0&ee=1

- **ENERGY STAR Resources for K-12 Schools:**

http://www.energystar.gov/index.cfm?c=k12_schools.bus_schoolsk12

- **Energy Smart Schools from U.S. Department of Energy:**

<http://www1.eere.energy.gov/buildings/energysmartschools/index.html>

- **School Operation and Maintenance: Best Practices for Controlling Energy Costs (2004):**

http://ase.org/uploaded_files/greenschools/School%20Energy%20Guidebook_9-04.pdf

- **National Energy Foundation – “Energy Action in Schools” behavioral change program:**

www.nef1.org, 1-800-616-8326

Teachers:

- **“Get Smart about Energy” program for teachers (includes energy lesson plans):**

<http://www.eere.energy.gov/education/lessonplans>

- **National Energy Foundation – Lessons plans about energy efficiency:** www.nef1.org, 1-800-616-8326

Students:

- **“Loose your Excuse” program for students (U.S. Department of Energy):**

<http://www.loseyourexcuse.gov/>

School case studies – Why reinvent the wheel when you can learn best practices from other schools? Numerous schools and school districts have experience undertaking energy saving projects, utilizing alternative financing models and receiving the ENERGY STAR label.



More information about K-12 case studies for school energy efficiency:

- **ENERGY STAR school case studies (scroll down half the page):**
http://www.energystar.gov/index.cfm?c=k12_schools.bus_schoolsk12
- **Energy Smart Schools case studies:**
http://www1.eere.energy.gov/buildings/energysmartschools/case_studies.html

Step #7: Energy Savings Projects to Consider

Opportunities for saving energy exist in every corner of your school. Keep in mind that improved energy efficiency in schools can be best accomplished by viewing the building as a system rather than implementing projects one by one. Below are some of the most common areas of energy savings to consider when seeking to reduce energy consumption and save money in your school:

Lighting systems: Likely the “lowest hanging fruit” after behavioral changes, lighting retrofit projects have a high return on investment and often result in notable energy and cost savings. Several utility incentive programs exist in Utah to support lighting retrofit programs in schools.

Building controls systems: more complex than lighting retrofits, building control systems are central to the proper operation of a school’s heating and cooling systems, and can provide notable energy and financial savings when problems are corrected.

Computer power management: Power management programs automatically set computer monitors and CPU’s to a low power mode automatically based on pre-programmed settings, and can also be set up for computer networks without interfering with scheduled computer or network software updates.

Behavioral change programs: These programs have played a fundamental role in helping schools maximize energy savings. For example, Jordan School District, in partnership with the National Energy Foundation, saved about 10% on energy costs through behavioral changes alone. Students and custodial staff played a

key role in achieving these savings and a financial incentive was provided to schools that successfully saved energy.

Energy management software – Many schools that successfully manage energy consumption and costs also utilize an energy management software program which tracks energy consumption, costs, and may have the capability to interface with building controls systems, enabling an energy manager to respond quickly to energy performance and consumption problems remotely. Some of these programs also work in concert with ENERGY STAR Portfolio Manager.

Automated benchmarking – Though this is not yet available in Utah, ENERGY STAR is working with utility companies in some states to make utility data available in electronic format for more convenient entry into energy management software and ENERGY STAR Portfolio Manager. This process can save schools and school districts time (and therefore money!).



More information about resources for energy efficiency projects:

- **Free computer power management software from ENERGY STAR:**
http://www.energystar.gov/index.cfm?c=power_mgt.pr_power_management
- **Behavioral Change Program: National Energy Foundation – “Energy Action in Schools”:** www.nef1.org, 1-800-616-8326

Step #8: Don't wait to implement Projects – Positive Cash Flow is Right around the Corner

When it comes to energy efficiency, time not dedicated to project financing and implementation equals energy not saved and lost financial savings, or “lost opportunity costs”. When choosing an implementation and financing model it is important to evaluate the financial impacts of immediate implementation (and the associated energy and cost savings) compared to the lost opportunity costs of waiting to implement projects. Each month that an energy efficiency upgrade is delayed results in unnecessary energy costs and lost cost savings that could have been dedicated other school or district needs. The ENERGY STAR Cash Flow Opportunity (CFO) Calculator is a free online tool to help school and school district decision-makers determine the cash flow opportunity of implementing an energy efficiency project immediately and the and lost opportunity cost of waiting for a lower interest rate.



More information about calculating potential cash flow and lost opportunity costs:

http://www.energystar.gov/index.cfm?c=assess_value.financial_tools

Step #9: Research and Choose an Implementation Model

When deciding how to implement and finance energy efficiency projects (i.e. self-managing, hiring an energy consultant, contracting with an energy services company (ESCO), or some iteration of these options) consider whether or not your school or district has the staff, staff-time, and experience with the technical and administrative aspects of the project to ensure it can be accomplished effectively. Can you manage the project in-house in a timely manner or would projects be completed more rapidly by contracting the project out to an independent company? Hiring an energy consultant can provide you with the energy expertise that you may lack in-house, but generally provides no guarantee of energy savings. Hiring an ESCO may produce more rapid results and energy savings (which are generally guaranteed), but ESCO contracts generally requires that the ESCO receives all or part of the cost savings as payment over a period of time, therefore reducing the financial benefit to the school.



More information about energy consultants and ESCOs:

- **Energy Services Coalition (including model energy performance contracts and RFP):**
<http://www.energyservicescoalition.org/resources/whatis.htm>
- **List of energy consultants and energy service providers from ENERGY STAR:**
http://www.energystar.gov/index.cfm?fuseaction=spp_activity.showSPPActivity&letter=ALL&activity=0¤t_sort_column=BENCHMARKS¤t_sort_order=DESC&start_num=1&resultsperpage=20

Step #10: Share your Progress and Celebrate Successes!

Create a shared energy savings ethic in your school or school district and throughout the community by sharing your successes and progress widely. Examples to consider include: press release, regular announcements and updates on your school or district website, in your school newsletters, at assemblies, to your Parent Teachers Association, and to your school board.