

BEST PRACTICES, Physical Plant - Utilities

Title: Energy Management System

287

Source: Elizabethtown College

Co Area:

Addl Info: http://www.bmpcoe.org/bestpractices/internal/etown/etown_1.html

Abstract: Prior to 1996, Elizabethtown College used an energy management system which featured early-1980 technology, energy management controls, and direct digital control in a few of the buildings. However, the outdated system lacked flexibility, was difficult to maintain, and could not provide the level of control required by the College. Repairs and replacement parts were also becoming expensive due to the systems age. A new system was required which could provide the flexibility to grow and expand with the constantly changing needs of the College. In 1996, Elizabethtown College installed the state-of-the-art Landis & Staefa System 600 Energy Management System (EMS).

Elizabethtown College chose the automated and centralized EMS as part of the Performance Contract for energy management. This campus-wide management system provides comprehensive energy management; automatic temperature control strategies; facility management reports; and improved response times to facility problems. The system is PC-based and runs in a Windows environment. Sensory and control system inputs are received by EMS from all over the campus. Energy use is monitored through individual meters in every building. Additional sensors monitor switches, pumps, water usage, valves, fans, building temperatures, and other key points throughout the campus. Most heating/cooling and critical EMSs can be controlled centrally from Elizabethtown Colleges Department of Plant Operations.

The new EMS was funded as part of the \$1.8 million Performance Contract with Landis & Staefa which guarantees an annual savings of \$247,000. By utilizing this state-of-the-art technology, Elizabethtown College reduced energy costs substantially; decreased response times; increased comfort levels and customer satisfaction; and improved facility management reporting.

Also see http://www.bmpcoe.org/bestpractices/internal/etown/etown_4.html

BEST PRACTICES, Physical Plant - Utilities

Title: Lighting Efficiency # 288

Source: Elizabethtown College **Co Area:**

Addl Info: http://www.bmpcoe.org/bestpractices/internal/etown/etown_2.html

Abstract: Elizabethtown College has been a participant in the Environmental Protection Agency's (EPAs) Green Lights program since 1993. Green Lights is a voluntary pollution prevention program that encourages participants to use energy efficient lighting technologies to improve lighting quality and reduce environmental emissions in their facilities. Partners in the Green Lights program sign a Memorandum of Understanding (MOU) whereby they agree to conduct lighting surveys of their facilities, identify areas where existing lighting can be upgraded, and complete all lighting upgrades that are financially advantageous to their organization.

Elizabethtown Colleges Department of Plant Operations conducted detailed lighting audits and/or surveys of 681,000 square feet of classroom, office, laboratory, assembly, and dining service space. As of April 1997, 554,000 square feet of this space (85% of the total campus) had been upgraded. These efforts included replacing mercury vapor lighting with metal halide; upgrading all indoor fluorescent fixtures to T-8 fluorescent lamps with electronic ballasts; and using high-pressure sodium fixtures for outdoor lighting. Plant Operations replaced 9,000 lighting fixtures across the entire campus, and installed motion sensors where applicable.

Title: Performance Contract # 289

Source: Elizabethtown College **Co Area:**

Addl Info: http://www.bmpcoe.org/bestpractices/internal/etown/etown_3.html

Abstract: Funded through the Department of Energy's Institutional Conservation program, Elizabethtown College conducted energy audits of all campus facilities. The audits identified potential improvements that could save the College up to \$300,000 annually in energy costs. However, capital investment to implement the projects was estimated at \$1.3 million. Since the Department of Plant Operations successfully demonstrated credibility and cost reductions through several small-scale energy projects, Elizabethtown College was confident that the additional \$300,000 in savings was attainable if sufficient resources could be allocated to the effort. As a result, Elizabethtown College negotiated an energy-saving Performance Contract which enabled the College to complete \$1.8 million in energy efficiency improvements and maintenance projects, and receive a guaranteed energy cost savings of \$181,000 per year.

The Performance Contract is not a shared savings agreement. Instead, savings are guaranteed at a level substantiated by Elizabethtown Colleges energy audit reports. Financing for the project is provided through a bond issue with a 5% interest rate, and all savings are applied toward the debt. The College controls the selection of subcontractors; determines the energy management system (EMS) installed under the contract; and defines the comfort levels of all buildings managed by the system. Plant Operations can add control points and adjust set points within EMS, and informs the contractor of any actions. Ongoing consulting services and incorporated fees were also negotiated to ensure that technical support from the contractor provided a meaningful impact on the effectiveness of operations.

BEST PRACTICES, Physical Plant - Utilities

Title: Energy: Efficiency Measures **#** 369

Source: Colby College **Co Area:** Office of Information Technolo

Addl Info: <http://www.colby.edu/green/documents/GrnComputing.doc>

Abstract: Steps taken to reduce energy: purchasing energy efficient computers and peripherals, configuring energy management options on all machines, and raising environmental awareness by producing instructional pamphlets and online resources, which offer green computing guidelines for students, faculty, and staff. Additionally, we worked to reduce the environmental impact of our paper use by distributing printers capable of duplex printing, and purchasing 100% recycled paper. Colby also donates usable older computers, while unusable equipment is properly disposed of in environmentally responsible ways. These initiatives have been successful in reducing electricity demand and resource waste.

The EPA has estimated that using the 'sleep mode' on computers nationwide would reduce their energy use by 60% to 70%. This could save enough electricity each year to power Vermont, New Hampshire and Maine, cut electric bills by \$2 billion, and reduce CO2 emissions by the equivalent of five million cars. We felt that if the Colby community turned its printers and computers off overnight and on weekends, over \$42,000 could be saved annually

Title: UCI Utilities Deficit Reduction Plan **#** 442

Source: University of California Irvine **Co Area:**

Addl Info: <http://www.abs.uci.edu/UtilitiesDeficit2005.doc>

Abstract: The campus' utilities budget purchases electricity, natural gas, water, and sewage disposal for State-maintained space. In 2005-06, the allocated utilities budget will be \$13.6 million. The actual cost of utilities for State-maintained space is projected to be \$16.3 million, resulting in a deficit of \$2.7 million. This deficit is driven by two major factors:

- Utilities allocations have not recognized price increases over the last five years, exacerbated by...
- the opening of energy-intensive research buildings with greater-than-budgeted utilities consumption

This plan is organized into six sections:

1. Causes, scale, and intractability of the utilities deficit.
2. Measures that can be enacted within two months (including actions already implemented).
3. Measures that can be enacted within one year (including a number of measures that will require a capital investment by the campus in order to realize needed savings).
4. Measures that can be completed within two years (all require a capital investment, of which the majority has already been approved by the campus).
5. Risk factors that could improve or reduce deficit relief.
6. A summary comparing all planned and proposed actions against projected deficits.

BEST PRACTICES, Physical Plant - Utilities

Title: Statewide Energy Management Program # 448

Source: California's Community Colleges **Co Area:**

Addl Info: <http://www.deanza.edu/es/energymgmt.html>

Abstract: Working with its California community college (CCC) customers, the Statewide Energy Management Program (SEMP) will spearhead the formidable task of reducing total energy use by the CCC System and its 107 campuses statewide. Its mission will be to reduce the cost of CCC operations and education by advancing energy efficiency, resource conservation, and the use of solar and other renewable energy resources. SEMP will contribute to the welfare of the State by providing economic and technical resources to achieve efficiency in energy use, diversity of energy sources, and a more productive and competitive CCC workforce.

CCCs have the infrastructure in place to reach every region of California through distance learning, satellite and cable networks. Through this extensive network of educational delivery methods, SEMP will provide accessible public education on energy efficiency and resource conservation strategies, all in an effort to promote sustainability policies and standards for California's schools, colleges and universities that exceed current state guidelines and meet the objectives of the Governor's Executive Orders. With SEMP leading the way, CCCs will have the skills, the means, and the initiative to undertake projects that save energy, resources, and money. SEMP will also set an example for the State by transferring best practices to other institutions of higher learning, the state public school system and ultimately to the private sector.

Title: Center for Sustainable Energy # 468

Source: Bronx Community College **Co Area:**

Addl Info: <http://www.bcc.cuny.edu/CSE/>

Abstract: The mission of the Center for Sustainable Energy at Bronx Community College is to promote the use of renewable and efficient energy technologies in urban communities through education, training, workforce development, research, and project facilitation. The Center supports clean energy development and energy conservation as the means to protect the environment, enhance public health, and position New York City to capture emerging economic development opportunities in the energy sector.

*Serve as a clearinghouse of information on energy conservation and renewable energy through its website and newsletter.

*Coordinate conferences, workshops, seminars and meetings for businesses, government representatives and consumers to advance energy conservation and renewable energy development.

This is a large site with LOTS of energy related links.

BEST PRACTICES, Physical Plant - Utilities

Title: Energy Efficiency **#** 491

Source: State University of New York **Co Area:**

Addl Info: <http://www.suny.edu/SUNYNews/efficiency.cfm>

Abstract: From the above site, scroll down to Energy Efficiency

SUNY's energy conservation program began in 1972, when the Oil Embargo inspired increased energy efficiency worldwide. Since then, SUNY has reduced its energy use by 36 percent and saved more than \$1 billion in cost avoidance measures through FY 04-05. The methods used to reduce energy use and achieve these savings have ranged from shutting off lights and heating, ventilation, and air conditioning (HVAC) systems when not needed to using energy savings to pay for over \$100 million in upgrades to more efficient lighting and HVAC systems.

Continues to <http://www.suny.edu/sunynews/efficiency2.cfm>

Title: Energy Efficiency Best Practices Project **#** 493

Source: Pacific Gas and Electric Company **Co Area:**

Addl Info: <http://www.eebestpractices.com/index.asp>

Abstract: Energy efficiency programs have been implemented by various organizations for over twenty-five years. Programs have evolved and improved by taking advantage of both formal and informal communication of program features and lessons learned. The Energy Efficiency Best Practices Project seeks to build off this experience and knowledge by establishing a structure for analyzing and communicating best practices to help meet today's complex energy challenges.

The purpose of this best practices project is to develop and communicate excellent practices nationwide in order to enhance the design, implementation, and evaluation of energy efficiency programs. The project uses a benchmarking methodology to identify best practices for a wide variety of program types.

A number of products have been developed through this best practices project.

BEST PRACTICES, Physical Plant - Utilities

Title: School Operations and Maintenance: Best Practices for Controlling Energy Costs # 598

Source: State of Arizona

Co Area:

Addl Info: <http://www.azdeq.gov/function/about/download/greenguide2.pdf>

Abstract: Operations and maintenance (O&M) offers not only strategies for maintaining facilities, but also opportunities for reducing energy costs and increasing energy efficiency at existing schools, regardless of age. This Guidebook provides detailed and practical guidance on how K-12 school districts can plan and implement enhancements to their current O&M programs that can successfully maintain their facilities while also reducing energy costs up to 20%. Most of the energy management strategies detailed in the Guidebook entail limited capital costs and produce rapid paybacks, in most cases, of less than two years.

This Guidebook is intended for school district facilities management staff and school business staff (including Superintendents and School Board Members) who have the authority to implement such a program. School-based maintenance and custodial managers may also use this resource to help them identify and understand program details and to see the contribution they can make to the new O&M effort.

Title: O&M Best Practices - A Guide to Achieving Operational Efficiency # 599

Source: State of Arkansas

Co Area:

Addl Info: <http://arkansasenergy.org/search.aspx?search=best+practices>

Abstract: Original URL no longer valid

This Operations and Maintenance (O&M) Best Practices Guide was developed under the direction of the U.S. Department of Energy's Federal Energy Management Program (FEMP). The mission of FEMP is to reduce the cost and environmental impact of the federal government by advancing energy efficiency and water conservation, promoting the use of distributed and renewable energy, and improving utility management decisions at federal sites. Each of these activities is directly related to achieving requirements set forth in the Energy Policy Act of 1992 and the goals that have been established in Executive Order 13123 (June 1999), but also those that are inherent in sound management of federal financial and personnel resources.

Release 2.0 of this guide highlights O&M programs targeting energy efficiency that are estimated to save 5% to 20% on energy bills without a significant capital investment. Depending on the federal site, these savings can represent thousands to hundreds-of-thousands dollars each year, and many can be achieved with minimal cash outlays.

BEST PRACTICES, Physical Plant - Utilities

Title: Worst Practices - Guide for Energy and Environmental Management # 644

Source: Government Office for the South West of England **Co Area:**

Addl Info: http://www.energystar.gov/index.cfm?c=healthcare.ashe_jan_feb_2005

Abstract: To err is human. We all make mistakes but the most successful companies learn from them. This 'worst practice' guide is intended to help you learn from the mistakes that others have made, so that you can identify and avoid them. Alternatively, you could follow all the guidance and really mess up!

Worst practice is the synergistic combination of many elements of bad practice. Having just one or two elements of bad practice doesn't lead to worst practice status. What you need to have is a range of bad practices that can 'support' and 'multiply' each other. For example, sometimes doing nothing is worse than doing the wrong thing! It can be argued that often the reason for doing nothing is a failure to identify the risks and opportunities facing the organization. A good measure of ignorance is always helpful if you are seeking to attain worst practice status, but to be really bad you need to work at it! Many organizations can recover from the odd element of bad practice. To achieve legendary worst practice status you need to exceed expectation in a number of areas!

Title: ENERGY STAR for Higher Education # 649

Source: Environmental Protection Agency **Co Area:**

Addl Info: http://www.energystar.gov/index.cfm?c=higher_ed.bus_highereducation

Abstract: Colleges and universities spend close to \$2 billion each year on energy

Adopting a strategic approach to energy management can lower your energy bills by 30% or more. ENERGY STAR brings you a proven energy management strategy to distinguish your institution as an environmental leader and save money for repair and renovation, hiring of new faculty, new construction, and other core activities.

BEST PRACTICES, Physical Plant - Utilities

Title: Best Practices to Save Energy Costs # 774

Source: California Green Solutions **Co Area:**

Addl Info: <http://www.californiagreensolutions.com/cgi-bin/gt/tpl.h.content=225>

Abstract: Companies have diverse facilities and operations, so "best practices" need to reflect those diverse solutions. Here is a list of some options that have been applied by companies recognized by California's Department of Energy for their "Best Practices" success.

Set standards and specifications that optimize energy efficiency in equipment, operations and physical plant investments.

Design buildings and processes to minimize use of energy.

See above site for complete list. To review complete "Best Practices" by each corporation recognized by the Department of Commerce, click link at bottom of the page.

Title: Energy Program # 832

Source: Baylor University **Co Area:**

Addl Info: <http://www.nacubo.org/documents/about/BaylorSubmission.pdf>

Abstract: 2007 NACUBO Innovation Award Winner
Baylor University in Waco, Texas entered into an innovative electrical procurement contract that will save over \$2 million annually, provide a predictable expenditure pattern, and support the development of wind generation farms.

Title: Building Energy Conservation Program # 896

Source: University of Georgia **Co Area:**

Addl Info: <http://www.sacubo.org/awards/bestpractices/archive/2009bp/>

Abstract: The University of Georgia (UGA) has implemented a building energy conservation program which entails the auditing of buildings to identify items that can be implemented at a reasonable cost using internal funding and personnel. The program began strictly as an energy cost-saving mechanism in response to large, unanticipated (and unbudgeted for) energy cost increases. However, as the program evolved and continued, the collateral benefits for the environment in terms of reduced carbon dioxide emissions and other areas also were recognized as positive outcomes from this program.

The UGA energy audit program now is being used as a model for developing similar programs at universities and colleges across the University System of Georgia.

BEST PRACTICES, Physical Plant - Utilities

Title: Best Practices Review: Reducing Energy Costs in Local Government # 918

Source: State of Minnesota - Office of the State Auditor **Co Area:** University Wide

Addl Info: http://www.auditor.state.mn.us/reports/gid/2008/bestpractices/bestpractices_08_report.pdf

Abstract: In 2004, the Minnesota State Legislature gave the Office of the State Auditor the responsibility of conducting best practices reviews that “examine the procedures and practices used to deliver local government services, determine the methods of local government service delivery, identify variations in cost and effectiveness, and identify practices to save money or provide more effective service delivery.” The best practices reviews are to include recommendations to “improve the cost-effectiveness of services.”

Table of Contents covers:

Survey Responses

Summary of Survey Responses

Recommendations

Recommendations

Case Studies - Introduction

Synopsis of Case Studies

Lighting Retrofit Projects

Geothermal Systems

Passive Solar Energy Systems

Active Solar Energy Systems

Wind Energy Systems

Displacement Ventilation Systems

Leadership in Energy and Environmental Design (LEED)

Energy Performance Contracts

Resources for Local Governments

Appendices

Appendix 1: Best Practices in Reducing Energy Costs Survey.

Appendix 2: City of Minnetonka Energy Audit

BEST PRACTICES, Physical Plant - Utilities

Title: OSU-OKC saves \$1 million through energy conservation efforts # 921

Source: Oklahoma State University **Co Area:**

Addl Info: <http://www.okstate.edu/energy/>

Abstract: OSU-Oklahoma City has saved more than \$1 million through its energy conservation efforts over the last five years. The entire OSU System has saved over \$20 million. These figures are the estimated savings through July 2012.

The OSU System launched its energy conservation program in 2007 through a partnership with Energy Education, founded and owned by OSU alumnus Bill Spears. Since July 2007, OSU has saved nearly \$20.4 million in energy costs. The savings figure includes all five campuses in the OSU system.

Title: People-Oriented Energy Conservation # 969

Source: Oklahoma State University **Co Area:**

Addl Info: <http://www.sacubo.org/awards/bestpractices/archive/2009bp/>

Abstract: In an era of ever-increasing budget needs and concern for preservation of natural resources, OSU determined to take a leadership position in higher education energy conservation by opting to initiate a behaviorally-based energy conservation program for all campuses in the OSU System. This people-oriented initiative requires no capital investment, and is not only self-funding from the start, but preserves funds for educational purposes. With the firm belief that “buildings don’t use energy people do,” university leadership opted to implement a customized version of a people-oriented, non capital investment, behavioral-based energy conservation program that would involve participation and buy-in from every person at every OSU campus. Goals -

1. Eliminate energy waste and significantly reduce the university’s carbon footprint, which will result in net savings to the OSU System of \$22 million over seven years.
2. Maintain comfort and safety in occupied areas with customized and dynamic building operational plans for each campus.
3. Ensure a desirable/optimal educational and research environment, developing a partnership with the campus community.
4. Establish a sustainable conservation program, to maximize the economic, environmental and social benefits of energy conservation.

BEST PRACTICES, Physical Plant - Utilities

Title: Every Drop Counts: Implementing Effective and Sustainable Water Conservation # 975

Source: University of Georgia **Co Area:**

Addl Info: <http://www.sacubo.org/awards/bestpractices/archive/2009bp/>

Abstract: The success of the “Every Drop Counts” campaign is largely due to two factors: 1) the implementation of operational changes by the Physical Plant, including the installation of water-saving devices; and 2) the effectiveness of an awareness campaign to change the habits of faculty, staff and students. This combination yielded impressive benefits that continue today: water savings of more than \$250,000 and a 28 percent reduction in consumption (18 percent more than the reductions mandated by the Governor). Much of the savings have resulted in the research arena, where faculty members have collaborated with the Physical Plant staff to identify and implement solutions to water-wasting practices. True to its mission as a land-grant and sea-grant institution, the University of Georgia continues to serve as a role model by not only reducing its own water consumption but also by demonstrating to the citizens of the state through teaching, research and service how water conservation can be improved statewide.

Title: Water System Best Management Practice Guideline # 1054

Source: Florida State University **Co Area:**

Addl Info: <http://www.sacubo.org/docs/bestpractices/2010/Guideline.pdf>

Abstract: As State appropriations have been considerably reduced in relation to the current economic conditions, additional pressures are placed on each cost center within the university to reduce expenses. With utility expenses being a major cost, additional focus has been given to explore where additional savings are available.

Florida State University strives to enable this type of behavior at all organizational levels. In many cases, savings generated require little or no capital, but have proven financial results. As a result of this effort, the Florida State University Utilities Department generated over \$80,000 in proven, hard savings during the past 12 months. In addition, information collected is being used to develop a comprehensive water system management best practices guide to allow implementation campus wide. Future savings will be used to help the university meet its short and long term financial goals.

Title: Every Drop Counts # 1153

Source: University of Georgia **Co Area:** Environmental Health & Safety

Addl Info: <http://www.sacubo.org/docs/bestpractices/2010/Conservation.pdf>

Abstract: The University of Georgia (UGA) experienced a wake-up call when the local Athens area, like much of the state of Georgia, plunged into a drought of historic proportions. The task force’s charge was three-pronged: 1) to develop practical recommendations for significantly reducing UGA’s water consumption in the short term by as much as 25 percent without seriously affecting the University’s mission; 2) to develop recommendations for sustained water conservation; and 3) to generate proposals for potentially increasing the University’s water supply, both now and in the future. The time frame for its work was short: six weeks.

BEST PRACTICES, Physical Plant - Utilities

Title: Kaizen with a Purpose: An Accumulation of Small Changes with Big Benefits # 1180

Source: University of South Carolina Aiken **Co Area:**

Addl Info: <http://www.sacubo.org/docs/bestpractices/2011/KaizenwithPurpose.pdf>

Abstract: The University of South Carolina Aiken has adopted an energy management plan that at its core incorporates the principles of Kaizen. Breaking down this many facetted program into manageable pieces will help all employees become “energy heroes” challenged to conserve energy on our way to “carbon neutral.” USCA has become a role model for small universities and is providing leadership as a member of the Implementation Liaisons steering committee of the American College and Universities Presidents Climate Commitment (ACUPCC) to achieve “climate neutrality.”

Title: Peeling Back the Sustainability Onion # 1221

Source: Valencia College **Co Area:**

Addl Info: <http://www.sacubo.org/docs/bestpractices/2012/EnergySavings.pdf>

Abstract: As part of a broad sustainability program, Valencia College contracted with Siemens to help provide energy savings, including the design and construction of a new chiller plant. The HVAC Energy Manager then began his own research to find additional savings to benefit the college including finding a new process for treating the water. We are taking what we have learned and are currently installing this process on another large campus, where similar savings should be attainable. We will also include this process on a somewhat smaller campus, where a new chiller plant is being added this year.