

Implementing a Strategic Energy Management Plan for Health Care

Ron Tolleson—PeaceHealth St. John Medical Center, Longview, WA

Scott Dorough—PeaceHealth St. Joseph Hospital, Bellingham, WA

Cynthia Putnam—Putnam Price Group, Seattle, WA

ABSTRACT

Adopting a strategic energy management plan (SEMP) has positioned PeaceHealth to proactively manage energy use for:

1. Operational cost savings,
2. Improved environmental comfort and performance,
3. Effective stewardship of resources.

This plan was developed collectively by PeaceHealth facilities personnel to establish a set of guiding principles for energy management system wide. The PeaceHealth network includes regional healthcare facilities in Bellingham and Longview, Washington; Eugene, Cottage Grove and Florence, Oregon; and Ketchikan, Alaska. Corporate offices are in Bellevue, Washington. Valuable assistance was provided by the BetterBricks organization. BetterBricks is the commercial sector initiative of the Northwest Energy Efficiency Alliance.

This document establishes our guiding principles for energy management. Action plans have been developed that are specific to the needs and resources of the hospital and medical office facilities in each region.

RATIONALE FOR THE PLAN

Energy, in cost and resource stewardship, is a significant economic and public policy issue. Hospital facilities are among the most energy intensive buildings in the United States.

Minimize Risk Associated with Price Volatility

Both nationally and regionally, the impact of our dependence on unstable, imported sources of petroleum, coupled with current limits on domestic supplies, have pushed all energy prices higher in real dollars. This trend of cost escalation and volatility is projected to continue for some time.

Examples of this impact were experienced three years ago by two regional PeaceHealth campuses in Bellingham and Longview, WA. These two areas saw record high monthly cost increases of over 30 percent during winter 2005.

Energy Costs—The Most Controllable Facility Operating Costs

PeaceHealth's energy costs in FY2005 were \$8.3M, representing approximately 30 percent of the total facility operating budget.

Energy commodity prices are largely beyond institutional control; however, hospitals can control the way they consume energy through energy management programs.

Even without a dedicated plan, energy management projects completed in PeaceHealth facilities since 1996 are controlling energy costs by \$1,000,000 annually while garnering \$1.2 million in rebate incentives from serving electric utilities. Attractive returns on those investments continue to accrue.

Energy Cost Reductions Improve Operating Margins

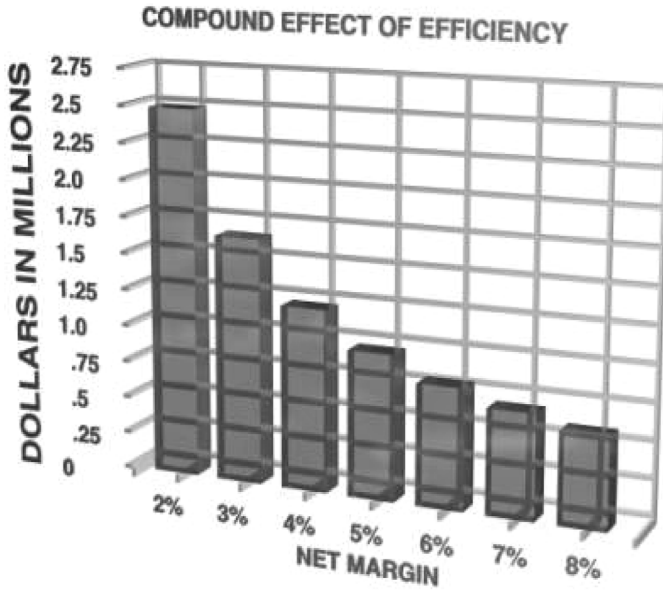
Energy cost reductions can be evaluated in terms of equivalent new hospital revenues. At PeaceHealth's operating margin of 3.5 percent, annual energy savings of \$500,000 are equivalent to more than \$14M of new gross revenue.

**Energy and Environmental Performance
Viewed as a Strong Proxy for Management Quality**

The financial disclosure and reporting requirements of Sarbanes-Oxley require that systems be in place to monitor the operational risks that could materially affect a company's financial performance. Organizations that track and manage energy costs score well in this analysis.

Energy performance improvements provide an opportunity to satisfy joint commission performance goals in the utility management plan.

REVENUE EQUIVALENT OF \$50,000 OPERATING COST
REDUCTIONS THROUGH ENERGY MANAGEMENT



ENERGY MANAGEMENT ACCOMPLISHMENTS
IN PEACEHEALTH REGIONS

Prior to this SEMP, every PeaceHealth region implemented a number of business practices to manage energy costs.

Energy Benchmarking

St. John Medical Center in Longview is performing in the top 25 percent of hospital peers and has earned the U.S. Environmental Protection Agency’s ENERGY STAR® program. St. Joseph Hospital in Bellingham is working toward that goal, with current energy performance ranking in the top one-third.

Building O&M Scoping

Two assessments of operational efficiency opportunities were completed in summer 2006 in the Oregon and Whatcom regions. The assessments showed energy saving opportunities of 10-30 percent through low-cost operational improvements at each facility. If implemented, the return on investment to PeaceHealth exceeds 150 percent.

Engineering and Maintenance Staff Training in Operational Efficiency

Five PeaceHealth building engineers have earned a building operator certification (BOC) credential in energy efficiency. Ten building engineers from Longview and five from Whatcom are currently participating in the BOC program.

Employee Awareness

St. Joseph Hospital implements an employee awareness campaign through its participation in Puget Sound Energy's Resource Conservation Management program. This campaign is aimed at encouraging staff to exercise no-cost energy and solid waste reductions that benefit the community and save the hospital money.

Design Team Capability in Energy Efficiency

St. John Medical Center has undergone a major tower remodel that incorporates a number of new energy efficient lighting, ventilation, and HVAC technologies. The Oregon Region's new Riverbend Project is utilizing the services of a construction design team comprised of firms with national recognition in sustainable green building techniques.

Facilities Counterpart Leadership Role

Facilities management personnel in all regions are collectively advancing energy management at the system level through information sharing among peers, policy and procedure improvements, and adoption of guiding principles.

ENERGY MANAGEMENT TRENDS IN HEALTHCARE

A number of national and regional trends point to heightened awareness of the value of energy management for the healthcare industry.

In July 2006, the *American Society for Healthcare Engineering (ASHE)* of the American Hospital Association (AHA) joined with the EPA to meet the ENERGY STAR Challenge of improving energy efficiency by 10 percent. ASHE is launching a two-year campaign, E2C, to educate its members about the environmental and financial benefits

of pursuing energy efficiency improvements in healthcare facilities. ASHE estimates that in the first year of the campaign, members will save more than \$65 million on energy costs while helping to protect our environment by reducing nearly three million pounds of air pollutants.

2005 marked the launch of the *Green Guide for Health Care*[™], the healthcare sector's first quantifiable sustainable design toolkit integrating enhanced environmental and health principles and practices into the planning, design, construction, operations and maintenance of their facilities. This guide provides the healthcare sector with a voluntary, self-certifying metric toolkit of best practices that designers, owners, and operators can use to guide and evaluate their progress towards high performance healing environments.

Other Healthcare Organizations in the Region Are Taking Action

A number of leading healthcare organizations in the northwest are adopting energy management initiatives and integrating energy management into business practice.

Providence Health and Services, which operates approximately 20 facilities in the northwest, adopted an energy management initiative in 2002 to reduce energy costs system wide an additional 10 percent over five years. In 2004, the system was named ENERGY STAR[®] Partner of the Year for the results achieved through this initiative.

Catholic Health Initiatives (CHI), which operates 55 hospitals nationally, adopted an energy efficiency initiative in 2004. Its Mercy Medical Center in Roseburg, OR, embarked on a central plant improvement program which is saving the institution nearly \$72,000 annually for the next ten years.

Providence Newburg Medical Center, a new hospital completed in the fall of 2006, incorporated design strategies and energy efficiency measures that are expected to reduce energy costs by \$117,000 annually for the life of the building.

ENERGY MANAGEMENT VISION

Integrate energy management into PeaceHealth organizational policies, business practices, and institutional culture to ensure the most efficient use of energy in our facilities.

GUIDING PRINCIPLES

This plan is formed with three overarching principles. A commitment to the principles in this plan will help ensure that PeaceHealth facilities improve energy performance over time.

1. There is an executive and organizational commitment in PeaceHealth to effective energy management.
2. Energy management criteria will be incorporated into policies and practices in all regions.
3. All regions will develop and maintain energy performance benchmarks for hospital and MOB facilities. The benchmarks will be used to evaluate and monitor ongoing energy management performance.

BUSINESS PROPOSITION—OPPORTUNITIES FOR PEACEHEALTH

PeaceHealth has the opportunity to obtain greater value from its energy management activities by establishing energy performance improvement goals and making a financial commitment to invest in cost-effective projects that support the goal.

- *Conduct energy cost control opportunity assessments on PeaceHealth facilities system wide.*

Initial assessments are expected to identify cost effective energy efficiency projects and estimate the implementation cost and return on investment to PeaceHealth.

- *Establish an energy consumption reduction goal of 10 percent system wide.*

Facilities management believes a goal of 10 percent energy consumption reduction system wide over a three-year period is achievable.

- *Establish a consistent financial decision guideline and investment hurdle rate for energy management projects.*

Energy savings will be accomplished through low-cost operational and maintenance improvements, life-cycle cost sensitive procure-

ment policies, and cost-effective investments in facility upgrades.

For energy management projects requiring capital investment, the FCC recommends using a non-discounted 15 percent savings to investment hurdle rate or equivalent discounted internal rate of return. PeaceHealth customarily uses a 15 percent rate for low risk projects and something higher for riskier investments such as physician clinics. Energy management projects are inherently low risk investments.

- *Make a financial commitment of up to \$1.5 million annually to fund cost-effective energy management projects system wide.*

The reduction in energy costs to the PeaceHealth System from achievement of the energy performance goal in year 1 is estimated to be \$500,000. At the system's net operating income of 3.5 percent, this is equivalent to new annual gross revenues of over \$14M.

Each region will be responsible for developing an implementation plan, budget, and timeline to achieve the energy performance goal.

- *Reinvest revenue from energy savings into cost-effective energy management projects.*

Facilities management recommends that half of all energy dollar savings will be reinvested in cost-effective efficiency improvements. The other half will be reinvested in the mission-critical functions of the institution.

- *Recognize top performers and most improved facilities annually.*

Facilities management recommends annual recognition of achievements towards the energy reduction goal.

ENERGY MANAGEMENT GOALS

Goal 1

Obtain executive involvement and approval.

Objective

Approval of this plan at the PeaceHealth Executive Team (PHET) and approval of hospital specific implementation plans by individual hospital executive teams.

Goal 2

Establish the facilities counterpart group (FCG) as the “Energy Champion” for the PeaceHealth system.

Objective

Identify key stakeholders in each region with responsibility and accountability to achieve the goals of the plan.

- Identify a stakeholder within each region to develop a specific implementation plan unique to each facility that follows the goals and objectives of this strategy, monitors the plans progress, and reports status to the FCG lead.
- Establish a schedule for communicating progress to the PHET.
- Integrate energy performance improvements into the utility management plan for JCAHO in each of the region.

Goal 3

Establish financial decision methodology.

Objective

Use life-cycle cost financial analysis methods for investment decision criteria for energy-related investments.

- Align energy investment criteria with organizational procedures for investment analysis.
- Establish a hospital-specific investment hurdle rate for energy investments using one of the following investment analysis methods.
 - Savings to investment ratio (SIR)—the ratio of the first year annual savings to the first cost.
 - Internal rate of return (IRR)—the discount rate that equates future net benefits to initial investment cost.
- Utilize available financial evaluation tools for conducting life cycle cost analysis when making energy-related investments.

Goal 4

Establish procurement standards.

Objective

Recommend refinements to procurement standards with key stakeholders to include energy performance criteria.

Objective

Develop purchasing policies consistent with life cycle cost analysis

criteria.

- Routinely purchase ENERGY STAR® qualified products such as computers, faxes, copiers, monitors, printers, and other office equipment.
- Routinely consider energy-efficient equipment at the time of replacement of commercial laundry and food service equipment, lighting, and heating and cooling equipment.
- Work with the system director of materials management to identify energy saving procurement opportunities and to specify energy efficient products in purchase contracts.
- Obtain available utility rebates and incentives for energy efficient product and equipment purchases.

Objective

Use group purchasing for commodity natural gas where applicable and advantageous.

- Coordinate and communicate gas purchase information through the FCG.

Goal 5

Enhance facility operating performance.

Objective

Benchmark all PeaceHealth hospitals and medical office buildings for energy performance.

- Establish a lead in each region responsible for tracking and reporting energy benchmarks to the region's director of facilities and facilities team.
- Use results to establish energy performance targets.

Objective

- Establish peer exchange opportunities between facilities managers in each region through the FCC.
- Share best practices and identify special expertise.
- Assess staff training needs to support improvements to operational performance.
- Use free and low-cost educational opportunities from vendors, service providers and utilities.
- Assess staff credentialing through the building operator certification (BOC) program.

Objective

Conduct facility energy assessments.

- Utilize facility staff peers, electric and gas utility resources, and other energy organization support to assess building operations.
- Identify operational improvement opportunities and implement tune up, calibration, turn-down, and turn-off measures.
- Make investments in low-cost measures that improve building system controls, system operations, and /or system capabilities.

Objective

Examine O&M practices and incorporate changes to optimize building system performance.

- Utilize facility staff, utility resources, and other energy organizations support to review O&M practices.
- Implement identified improved O&M practices.
- Establish an effective preventive maintenance program.

Objective

Review service contracts to ensure enhanced level of energy performance.

- Review existing contracts for technical capabilities and requirements for energy performance.
- Include requirements for such in new or revised contracts.

Objective

Involve building occupants in achieving energy goals.

- Communicate value proposition.
- Engage their participation.
- Share results and rewards.

Goal 6

Collaborate on implementation of facility construction and upgrades.

Objective

Utilize facility staff peers and utility resources to assess equipment retrofit opportunities.

- Establish priorities for investments and seek funding approval for projects meeting financial hurdle rates.

- Implement projects where life cycle cost analysis justifies the investment.
- Seek all available financial incentives for retrofit project opportunities from the serving utilities.

Objective

Maximize construction knowledge and share “best practices” between regions.

Goal 7

Conduct monitoring and tracking.

Objective

Conduct energy tracking and reporting.

- Monitor energy use and cost each month.
- Use reports to troubleshoot building performance issues.
- Explore use of metering technology to manage electrical demand, pinpoint control problems, and monitor the effectiveness of energy efficiency measures.

Objective

Maintain ENERGY STAR® Portfolio Manager benchmarking.

- Assess facility performance score annually.
- Join ENERGY STAR® as a partner to access additional free resources.
- Apply periodically for ENERGY STAR® label or for ENERGY STAR® Challenge Award (10 percent improvement).

Objective

Maintain Utility Manager Pro database for energy and water utility tracking, trending, troubleshooting, and budgeting.

Objective

Communicate success to the hospital and external community.

- Provide progress reports through internal media and communication channels.
- Recognize contributions of departments, medical, and administrative staff.
- Communicate success to external community.

CONCLUSION

While PeaceHealth has done much to reduce energy consumption over the past few years, that work has been carried out with little long-term direction. Such measures were taken largely out of convenience as technology and opportunity presented. As energy costs escalate and the environmental implications grow, it becomes imperative that energy management take a more prominent and integrated role—at PeaceHealth specifically and in the energy-intensive health care industry as a whole.

We encourage all health care facility managers to regard this as an essential long-term commitment and conduct the planning necessary to make such an endeavor successful. There is much left to do and an energy management view to the future is needed to optimize the benefits.

APPENDIX

ENERGY STAR® Benchmarking Overview

There are a number of tools available to accomplish the task of ongoing monitoring and tracking of energy performance. While the plan does not prescribe a particular tool, PeaceHealth regions have adopted ENERGY STAR® Portfolio Manager for use in their benchmarking activity. ENERGY STAR® Portfolio Manager is a nationally recognized benchmark for energy performance in hospitals, and the tool is available at no charge. The figure below illustrates how the rating system provides an objective, standardized metric for measuring the efficiency of a building or building portfolio on a scale of 1 to 100. The distribution of performance is a modified bell curve.

Other Resources

BetterBricks

www.betterbricks.com

ENERGY STAR® Portfolio Manager

www.energystar.gov

Green Guide for Healthcare

<http://www.gghc.org/>

State and Utility Incentives for Energy Efficiency & Renewables

<http://www.dsireusa.org/>

National Building Operator Certification—BOC®

www.theBOC.info

ABOUT THE AUTHORS

Ronald Tolleson

Director of facilities—PeaceHealth—St. John Medical Center, Longview, WA (2006—Present). Facility manager—Queen’s Medical Center, Honolulu, HI (1996-2005). Over twenty years experience in facility management. Winner, Hawaiian Electric Energy Efficiency Award—Institutional Division 2000, 2001, 2002. Winner, Hawaiian Electric Energy Efficiency Project of the Year, 2002. Member, American Society of Healthcare Engineering. ASHE Certified Healthcare Facility Manager (CHFM) Designation. ASHE Senior of American Society of Healthcare Engineering Association (SASHE) Designation. BA, University of Hawaii 1983 MBA Hawaii Pacific University 1997.

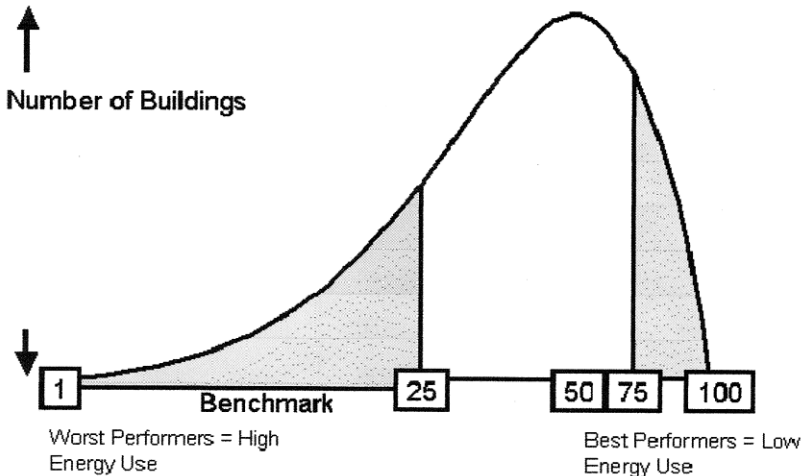
Email: rtolleson@peacehealth.org

ENERGY STAR® Benchmark Scale

ENERGY STAR® Benchmark Scale

1 to 100 Benchmark Scale

The benchmark overlays a 1 to 100 scale on the energy performance curve which gives relative meaning to energy use.



R. Scott Dorough

Resource conservation manager—PeaceHealth—St. Joseph Hospital, Bellingham, WA (2007-present). Independent energy management consultant—11 years. Energy management engineer—Puget Sound Energy, 10 years. ICC certified energy code plans examiner & inspector. Certified Energy Manager—1991. Member AEE—Facility Managers Institute of AEE. Energy Manager of the Year award—Assoc of Professional Energy Managers, 1994 (Chemistry Building, Western Washington University). BS Texas Tech University 1977; ATA Energy Management 1983.

Email: sdorough@peacehealth.org

Cynthia Putnam

Principal, Putnam Price Group. Project director, National Building Operator Certification (BOC®) (1996 to present). Manager, Washington State Energy Office (1988-95). Instructor, National Sustainable Building Advisor Program (NaSBA) (2002 to present). Speaker, ACEEE Summer Study, IFMA World Workplace, and National Conference on Building Commissioning (2002, 2004, 2006). Certificate in Learning Design, American Society for Training & Development (2006). Master Composter, City of Seattle (1986). MPA, Seattle University (1989). BA, Cornell University (1978).

Email: Cynthia@PutnamPrice.Com