



GETTING TO “YES” FOR ENERGY EFFICIENCY



CASE STUDY: **ANNE ARUNDEL MEDICAL CENTER**



A Leading Maryland Hospital Invests in Energy and Conservation to Improve Facilities, Manage Costs, and Set an Example for Facilities in Health Care and Other Industries

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INTRODUCTION

Anne Arundel Medical Center (AAMC) is one of Maryland’s largest community hospitals, serving a regional population of about one million in Annapolis and surrounding areas. Its main facilities, including a 385-bed hospital, are located on a 57-acre campus in the State’s capital city. Over 5,000 medical professionals, staff, and volunteers work at AAMC and provide care and support to patients of all ages. Among the many accolades received over the years for quality health care, AAMC also been recognized for its commitment to conservation,

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sustainability, and energy efficiency. Motivated by cost reduction incentives and leadership philosophy, AAMC has realized impressive energy and operational savings, improved its facilities, and demonstrated leadership in sustainability for the benefit of its personnel, patients, and community.

AAMC's recent investments in energy efficiency began after Engineering Director Anthony Kuzawinski assumed his job in 2010. Two of the eight Annapolis campus central chillers were failing to meet temperatures, shutting down without notice, and creating problems in part of the hospital. Worse, the circa-1989 chillers were costing between \$60,000 and \$100,000 annually just to create temporary "Band-Aid" fixes with service repairs.

When Mr. Kuzawinski decided to replace the standard efficiency chillers the next year and issued a solicitation, one bidder responded by asking if he had considered a high-efficiency replacement. The contractor explained that the higher installed cost for high-efficiency chillers would be offset in part by rebates from the local electric utility, Baltimore Gas & Electric Company (BGE). So Mr. Kuzawinski expanded the solicitation to invite proposals for both the standard- and high-efficiency models. Despite the \$140,000 premium for high-efficiency equipment from one of the bidders, it was selected. The combination of BGE rebates and lower electricity bills saved AAMC the incremental cost difference in just two years.

Soon after arranging for the energy efficient chiller replacements, Mr. Kuzawinski learned that he had a key ally for AAMC's journey in energy efficiency, cost reductions, and award-earning: Sustainability Coordinator Charlotte Wallace. Individually, both Ms. Wallace and Mr. Kuzawinski meet the definition of energy efficiency "champion." Together, with support from their Sustainability Committee and AAMC executives, Ms. Wallace and Mr. Kuzawinski led initiatives to incorporate energy efficiency into many of the major capital equipment upgrades and building expansions undertaken in the past three years.

PREPARING FOR SUCCESS

Build a Team

Champions, even those as motivated and experienced as Ms. Wallace and Mr. Kuzawinski, need support to implement energy efficiency projects. Sometimes that support comes from internal stakeholders. AAMC's Sustainability Committee, established in 2007, has been a critical source of support from across the hospital system because it has a formal mission and sanctioned purpose. The Sustainability Committee itself faced some skepticism about those conservation initiatives that were perceived to affect behavior or comfort. Over time, as project after project has moved forward with high-profile energy efficiency elements, the culture of skepticism changed dramatically. Overall awareness and commitment to making AAMC a "green" hospital campus has grown, from the executive leadership down through the ranks of medical and maintenance staff.

Other times, champions seek support from sources external to the organization. Contractors educated Mr. Kuzawinski about resources available to BGE customers and ways to manage the incremental costs of high-efficiency chillers. BGE provided financial support with rebates and technical support via AAMC's account manager. The Maryland Hospitals for a Healthy Environment (MD H2E) organization has been a very useful source of information, networking, and inspiration. The final source of support has been the community-at-large, which has helped sustain the momentum built by the earliest projects by instilling a sense of pride in AAMC's commitment to sustainability.

Language of Audience

Ms. Wallace was trained first as a nurse, which meant that she was able to relate energy efficiency in terms that would resonate with other medical professionals. Mr. Kuzawinski hailed from the world of facility managers and engineers, versed in the language of energy (kilowatt-hours, therms, etc.). This diversity of champions has been helpful, but both needed to learn to discuss energy efficiency in a way that was important to AAMC's administrators and translate it into financial terms such as "dollars" and "cents."

More challenging than talking about energy efficiency was compiling the data needed to support claims and answer questions. AAMC's chief financial officer (CFO) and other executives were open to ideas about energy efficiency. But only so long as Ms. Wallace and Mr. Kuzawinski were able to support their arguments with data to prove savings.

Cost of Delay

Hospitals face cost-reduction pressures from all sides in an increasingly competitive environment. In Maryland, this pressure also comes from the State regulatory agency, which sets rates for hospital services. The downward pressure on costs competes against a need to install the latest technology equipment for diagnosis and treatment of patients and to expand space to treat an ever growing population.

Facing an annual utility bill of \$4.5 million (the Engineering Department's greatest expense) AAMC had a sizable opportunity to reduce its cost burden. So to better focus their limited budgets and time, AAMC set a goal to reduce annual energy costs by six percent. AAMC calculated an annual reduction of \$760,000 that resulted from efforts over the past three years through smart purchasing and reduction efforts. With this targeted approach to expense reduction AAMC has been able to maintain the same high quality of care and service and preserve valuable engineering resources.

Project-Process Alignment

The new AAMC Hospital Pavilion South tower provided a high-profile opportunity integrate energy efficiency and conservation practices into the planning, budgeting, and construction processes. AAMC's chief executive officer (CEO), chief financial officer (CFO), and varied department directors contributed input throughout the new building's design and construction. The new tower's design incorporated high-performance windows, light-emitting diode (LED) lighting, "green" roof space, high-efficiency heating and cooling systems, and advanced controls. With the completion of the tower, AAMC became Maryland's first hospital to earn Leadership in Energy and Environmental Design (LEED) Gold certification for sustainability.

AAMC staff are so impressed with the Hospital Pavilion South Tower—and patients so enjoy it, too—that it's commonly known as the "Happy Tower" and a source of pride across the organization. Mr. Kuzawinski and the engineering team had demonstrated success and results from energy efficiency and compiled enough data to convince executives of its benefits. The South Tower has set a stronger precedent for incorporating energy efficiency and sustainability into future AAMC capital projects.

CLEARING THE HURDLES

Some hurdles are more imposing and difficult to overcome than others. And different organizations—contrasting small businesses with those as large as AAMC—will have different means to meet the challenges of

implementing energy efficiency projects. For Ms. Wallace and Mr. Kuzawinski, the key hurdles were related to the allocating of staff necessary to complete the project, linking sustainability and energy efficiency to the business of managing a large hospital, and evaluating the benefits of energy efficiency so executives can make wise decisions.



“Who’s Going to Do This?”

Champions and a support team can make an energy efficiency project happen, no matter an organization’s size or line of business.

UNDERSTANDING THE HURDLE

Even the most talented champion will need support from others from around the organization over the course of a project. Larger organizations require more diverse support. This demands champions to initiate interaction with peers in far-removed departments or over distances. In the case of AAMC, Ms. Wallace and Engineering Director Mr. Kuzawinski, joined forces and combined agendas. These two champions then tackled the challenge of a large and diverse organization by convening representatives of nursing, facilities management, capital budgeting and planning, finance, clinical medicine, and other departments around the hospital.

PREPARING FOR THE RACE

A champion can come from any part of an organization. With responsibility across the AAMC campus for maintenance, repairs, and system reliability, Mr. Kuzawinski was a ready-made champion with the technical and operational experience and training needed to implement energy efficiency projects. Ms. Wallace, however, made a transition from a pediatric nurse into her new role energy efficiency champion. She leveraged the clinical training she received to become a registered nurse to focus on creating a healthy environment to help prevent disease and sickness in the first place.

Ms. Wallace’s Sustainability Committee provided a forum for her and Mr. Kuzawinski to generate interest and support from within for AAMC’s energy efficiency projects. They also looked to external sources of support. Local utility BGE provided financial support from rebate programs that helped offset the higher up-front costs of high-efficiency equipment. The Maryland Hospital Association (MHA) and MD H2E afforded opportunities to share best-practices and learn from other progressive hospitals and clinics. Reciprocally, AAMC’s story and success have inspired emerging champions in other hospitals to take steps and build support for energy efficiency within their own organizations.

STRATEGIES AND TOOLS

Challenge: Unempowered Internal Champion

- Identify relevant industry and market trend data for a competitive analysis

Challenge: No Extra Staff Capacity

- Ask your utility about the availability of turnkey projects
- Contact an energy services company

Common Strategies and Tools

- Collaborate with colleagues who want to reduce costs and operate more efficiently



“This Isn’t a Core Competency”

A commitment to energy efficiency and sustainability helps make a positive difference in an organization’s community.

UNDERSTANDING THE HURDLE

Many core hospital functions and state-of-the-art medical technologies are heavily energy intensive, which should result in energy efficiency having a relatively high priority. But when an investment in energy efficiency is compared with one in advanced imaging and scanning machines, for example, the decision is not so competitive. Many hospitals that have not experienced the benefits of energy efficiency decide to invest in the latest medical technology without regard to returns or overall competitiveness. Indeed, the cost reductions sustained from efficiency investments eases budgetary pressures which in turn make the case for purchasing new medical equipment more persuasive.

A different perspective is being taken by more and more hospitals. Sustainability can effectively demonstrate a hospital’s commitment to patients and healthy living and provide an improved setting to give and receive care. Energy efficiency is a cost-effective way for a hospital to “think big” about health care while providing a more comfortable and productive space for doctors, nurses, and support staff to contribute to the organization’s core competency.

PREPARING FOR THE RACE

Ms. Wallace and Mr. Kuzawinski related energy efficiency to AAMC’s core competency in health care in different ways. For Ms. Wallace, it was about patient care and the environment. Mr. Kuzawinski framed the issue around energy and operational savings. Each was effective, but together the two perspectives formed an irresistible link to the hospitals’ core competency.

As cost-effective energy efficiency measures were implemented, hospital personnel and patients took notice. Surgeons preferred working in updated operating rooms because directional LED fixtures generated no excess heat and cast fewer shadows. Mr. Kuzawinski’s maintenance personnel identified additional operational efficiencies that few noticed except those paying electricity and water bills. Visitors to AAMC quickly began to appreciate the hospital’s commitment to sustainability and feel the benefits of an energy-efficient interior environment. The LEED Gold South Tower’s lobby was fitted with a wall-length exhibit that describes each of AAMC’s many environment initiatives and the positive effects being realized across the hospital campus. The building “felt” healthier, which was not lost on staff and visitors according to hospital surveys and feedback from the community.

STRATEGIES AND TOOLS

Challenge: Unclear Benefits

- | | |
|---|---|
| <input checked="" type="checkbox"/> Use terminology associated with your mission and daily operations | <input checked="" type="checkbox"/> Explain that efficiency is improving existing systems |
| <input checked="" type="checkbox"/> Quantify the potential for energy savings | |

Challenge: Not Important to Occupants

- | | |
|--|---|
| <input checked="" type="checkbox"/> Research green building certifications | <input checked="" type="checkbox"/> Collaborate with colleagues who want to reduce costs and operate more efficiently |
| <input checked="" type="checkbox"/> Identify relevant market trend data for a competitive analysis | |

- ☑ Quantify decreased operations and maintenance costs
- ☑ Tell potential occupants about energy efficiency measures
- ☑ Create a baseline of your energy use

Common Strategies and Tools

- ☑ Prepare a proof-of-concept argument with case studies
- ☑ Frame the savings in a way that boosts your bottom line



“Other Projects Offer Better Returns.”

Champions may intuitively know that energy efficiency is a sound investment, but executives must have the data they need to make wise decisions.

UNDERSTANDING THE HURDLE

Relating energy efficiency and conservation to an organization’s core competency is a separate—but often prerequisite—task from ensuring that executives properly evaluate the resultant energy- and cost-saving benefits. Champions should appreciate an organization’s CFO perspective and understand how financial decision-making happens in an environment of scarce resources and intensely competitive priorities. CFOs likely already have the tools to evaluate energy efficiency, but they also likely do not have all the information about the relative benefits and costs to make optimal decisions.

PREPARING FOR THE RACE

Conceptually, AAMC executives were receptive to energy efficiency and sustainability. As a matter of justifying investments over other priorities, however, Ms. Wallace and Mr. Kuzawinski needed hard data. Without data, there was no case to be made; it was irrelevant that energy efficiency and sustainability might generate goodwill or recognition.

AAMC’s overall cost-savings goals did not isolate facility utility bills or energy efficiency from other expenses. This meant that energy efficiency could be harnessed to generate savings while making otherwise critical investments with scarce capital budget resources. Ms. Wallace and Mr. Kuzawinski were able to present a substantive case to invest in energy efficiency and sustainability and then reinvest savings in other capital budget priorities. Over time, as savings accrued and benefits materialized, energy efficiency became a critical component of AAMC’s Engineering Department’s long-term capital budget planning. BGE incentives were included in the analysis to convey the actual (i.e., net-rebate) costs of energy efficiency.

The hard data gathered and distilled by Ms. Wallace and Mr. Kuzawinski were critical to helping AAMC incorporate energy efficiency into its longer-term investment plans. AAMC embedded systems controls, extensive LED retrofits, motor replacements, and domestic hot water equipment improvements in its then-current five year capital budget plan. AAMC has made implementing a cost-effective measurement and verification process a priority of Mr. Kuzawinski’s Engineering Department to justify future decisions. Mr. Kuzawinski argued that the availability of end-use specific usage data will be his strongest ally with AAMC management in defending future decisions to invest in additional energy efficiency measures.

STRATEGIES AND TOOLS

Challenge: Evaluating Returns

- Use life-cycle cost analysis
 - Frame energy efficiency and improved cash flow as a competitive advantage
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Challenge: Capital Budget Constraints

- Use capital funds set aside for equipment replacement
 - Bundle with other capital improvement projects
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Challenge: Competing Priorities

- Demonstrate the low risk of investing in energy efficiency
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Common Strategies and Tools

- Use cash-flow analysis rather than IRR and ROI
 - Focus project on short-term measures with immediate or near-term positive cash flow
 - Limit evaluation to the additional cost of the more efficient equipment
 - Identify potential rebates and subsidies
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ENERGY AND COST BENEFITS FROM IMPROVEMENTS

AAMC's chiller replacement project realizes annual energy savings worth \$25,000. In addition, over the span of just two years, Mr. Kuzawinski's engineering department has reduced maintenance costs by a whopping \$150,000. These savings have already "paid back" the added incremental cost of the higher-efficient systems, which were also eligible for utility rebates from BGE.

While AAMC's energy and cost savings to date are impressive, Ms. Wallace and Mr. Kuzawinski are quick to cite the less tangible benefits from the new chillers and the commitment to sustainability that the replacement project represents. The success of the champion support team convened by Ms. Wallace and Mr. Kuzawinski has created a positive feedback loop that inspires stakeholders to continuously identify additional projects and ways to save energy and improve AAMC's facilities.

One benefit is the network of valuable (professionally and monetarily) relationships that AAMC now enjoys with BGE and other energy offices, including the Maryland Energy Administration (MEA). AAMC is better positioned today to capitalize on BGE's latest rebates and technical assistance offerings and state financial incentives administered by MEA.

Another key benefit is the overall better environment for staff and patients alike. In spaces improved directly by the chiller replacement project, temperatures are more comfortable and less subject to fluctuations caused by breakdowns and unscheduled maintenance. Improvements in heating and cooling, lighting, and controls in other buildings are currently being implemented and will soon be generating savings.

LESSONS FOR OTHER CHAMPIONS

Ms. Wallace, Mr. Kuzawinski, and their support team from throughout AAMC have accomplished what few other health care facilities have ever attempted. The commitment to sustainability is palpable when visiting AAMC's campus and visitors to the Annapolis facilities can feel the benefits of energy efficiency. It takes a lot of work to

achieve success on par with AAMC's level to date. But it is possible to follow AAMC's example—it all starts with a Champion. Some lessons from the experience of AAMC for other aspiring energy efficiency Champions:

- *Gather quality data from the outset.*
- *Have a plan for incorporating quality data into financial decision-making and quantifying benefits.*
- *Educate stakeholders and communicate success as widely as possible; seek recognition.*
- *Convey energy efficiency and savings as a path to wiser investments.*
- *Make a clear connection between engineering, facilities management, finance, and sustainability.*
- *Listen to colleagues and other stakeholders for ideas.*

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