

# The Business Case for Energy Performance Upgrades

**S**eventy-five percent of senior corporate decision-makers see electric energy costs as the least controllable category of business costs, according to CFO Magazine.

So when your CFO has finished looking high and low for ways to improve your bottom line, tell him to take a look at your energy bill. Chances are, there will be significant opportunities for low-risk/high return investments. And the benefits of controlling energy don't stop there. For organizations that develop a systematic approach, continuous energy management reduces exposure to future price hikes, increases labor productivity, and provides a foundation for creating a corporate-wide social and environmental policy. Few other investments can promise as much. What does it take to make the strongest case for energy performance investments? It takes a strategy that includes communicating what energy performance is worth to your hospital — in language your CFO understands — along with the strategic and environmental benefits.

## Evaluating Project Investments

Evaluating investments in a long-term building project requires an organization to consider cash flow over the life of a project and account for the time value of money. Simple payback, although frequently used in the energy management industry, is not a good indicator of profitability because it does not consider returns beyond the payback period and ignores the time value of money. The most common tools to evaluate



**Money Isn't All You're Saving**

investments are internal rate of return (IRR) and net present value (NPV).

IRR is used to compare a project's return against a hurdle rate to determine whether it meets financial criteria to be worth pursuing.\* NPV is useful for comparing and prioritizing amongst competing projects. Together, they provide a comprehensive evaluation of a project's contribution

to the bottom line.

For example, suppose you have the option of controlling lighting with a Central Time clock or individual occupancy sensors. Table 1 illustrates that the time clock has a higher IRR and a quicker payback; is this the investment to recommend to your CFO? Not if you want to maximize the net worth of your hospital. NPV analysis suggests that occupancy sensors would increase energy savings and net worth of your hospital even more. Similarly, NPV can be used to prioritize and rank the value of options within a package of upgrades.

What about options that are considered marginally profitable, but can still contribute to maximizing the energy efficiency of a project? In Table 2, improving office task lighting, when evaluated individually, does not meet the required hurdle rate. However, when task lighting is packaged with other more profitable aspects of lighting upgrades, the combined project IRR still exceeds the hurdle rate. By bundling upgrades, the task lighting can be included in the upgrade package and still meet investment criteria.

## Communicate Financial Value

*In addition to evaluating investment returns,*

communicating the value of energy performance is equally crucial. Senior level management in non-profit healthcare institutions think in terms of new revenues; those in for-profit institutions think about earnings-per-share. Speaking in these terms will help you present a compelling case to secure management support for energy efficiency upgrades - but how can the link be made? EPA analyzed how energy performance projects can improve an organization's net income and corporate value. We found that each dollar saved in energy performance is equivalent to generating new revenues of \$20 for non-profit hospitals and \$10 for non-profit medical offices or nursing homes. So an upgrade project with an NPV of \$23,091 is equivalent to generating \$461,820 in new revenues per year in a hospital over the lifetime of the equipment. Likewise, we found energy performance investments in for-profit institutions that generate a 5% reduction in energy costs can increase earnings-per-share by one penny for hospitals and one penny for medical offices or nursing homes. Valuing the incremental earnings that result from improved energy performance is a way to capture the true worth to your organization.

## Energy Security

Energy upgrades can also be positioned as a strategic investment that enables hospitals to reduce risk associated with potential future energy shortages. As the 2001 California power supply crisis illustrates, in times of severe shortages, utility companies may not be able to guarantee that all hospitals will be exempt from rolling blackouts. At least nine hospitals were affected by rolling blackouts in the state, even though most believed they were protected because they provided essential services.

While all hospitals are required to have emergency backup electrical systems for just this instance, many backup generators only supply 30 percent to 40 percent of a hospital's electrical needs, mainly for critical services such as surgery, emergency rooms and intensive care units. Offices, x-ray facilities, food preparation areas, and air conditioning are of secondary importance during rolling blackouts but still critical to the quality of patient care. A long-term energy management strategy could increase the capacity of existing backup generators or reduce the size (and expenditure) of future replacements, all of which help minimize disruption to these vital support services.

Energy performance investments can reduce another risk associated with energy shortages - price volatility. Long-term energy contracts that provide cheaper power may not insulate hospitals from higher prices. Many contain clauses that require the hospital to pay penalties

### Table 1

Comparing the Profitability of Upgrade Options

	Upgrade Option 1A		Upgrade Option 1B	
	Occupancy Sensors		Central Timeclock	
Year	Initial Cost	Savings Generated	Initial Cost	Savings Generated
0	\$42,000	\$0	\$9,000	\$0
1	0	\$12,200	0	\$3,550
2	0	\$12,200	0	\$3,550
3	0	\$12,200	0	\$3,550
4	0	\$12,200	0	\$3,550
5	0	\$12,200	0	\$3,550
6	0	\$12,200	0	\$3,550
7	0	\$12,200	0	\$3,550
8	0	\$12,200	0	\$3,550
9	0	\$12,200	0	\$3,550
10	0	\$12,200	0	\$3,550
<b>Over Ten Years</b>		\$122,00	0	\$35,500
<b>Simple Payback</b>		3.4 years		2.5 years
<b>IRR</b>		26%		38%
<b>NPV</b>		\$7,623		\$4,903

Source: Energy Star Building Manual, pg 7

### Table 2

Assemble a Profitable Package

	Lighting Options	NPV	First IRR	Annual	Cash Flow Net Cost
1a	Occupancy Sensors	\$7,623	26%	\$42,000	\$12,200
1b	Central Timeclock	\$4,902	38%	\$9,000	\$3,550
2	LED Exit Signs	\$5,606	73%	\$3,250	\$2,380
3	Upgrade Corridor Lighting	\$5,106	38%	\$9,490	\$3,725
4	Upgrade Office Lighting	\$4,751	23%	\$57,605	\$15,100
5	Improve Task Lighting	(\$929)	16%	\$9,500	\$2,000
6	Daylight Dimming Controls	(\$26,524)	2%	\$59,080	\$6,500
	Options 1a-4	\$23,091	27%	\$112,345	\$33,405
	Options 1a-5	\$22,161	26%	\$121,845	\$35,405
	Options 1a-6	(\$4,363)	19%	\$180,925	\$39,905

Source: Energy Star Building Manual, pg 8

for electricity it uses when available power supply dips below a certain level. Under such agreements, hospitals that normally pay 6.5 cents to 9 cents per kilowatt hour pay as much as \$9 a kilowatt hour. The best-positioned hospitals in these cases will be the top energy performers; those that use about 30 percent less energy than their competitors.

### Corporate Social Responsibility

With the guiding principle, "First do no harm", there is perhaps no other sector better suited for environmental leadership than healthcare. Hospitals heal; it makes sense then that these very institutions minimize health hazards to the communities they serve.

Motivated by business reasons or principle, many hospitals have begun to reduce their environmental impacts beyond regulatory requirements. Some have begun to reduce mercury and other hazardous wastes through efforts like Hospitals for a Healthy Environment, a joint partnership between EPA and the AHA. Others are designing green hospitals by participating in the U.S. Green Building Council's Leadership in Energy and Environmental Design program. And yes, many are upgrading the energy performance of existing facilities by joining EPA's voluntary Energy Star program, too. But on the whole, most hospitals still have not realized how a strong environmental policy can enhance their reputation.

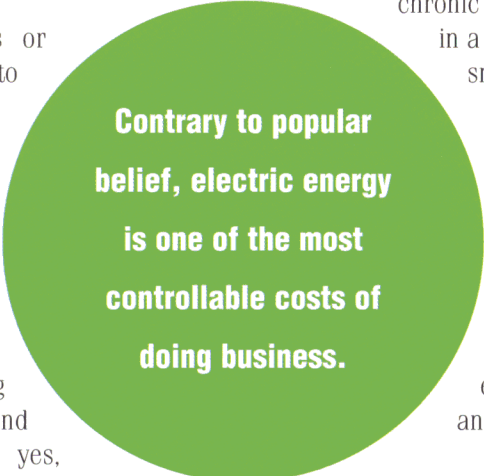
Part of the problem is that a green reputation is hard to quantify, especially for hospitals. Patients often have little choice in the hospitals they choose, and those that do have not indicated that environmental reputation plays a significant part in the decision. Nevertheless, a recent study by the financial research firm Innovest Strategic Value Advisors found that environmental performance is a strong proxy for management quality, something that patients are interested in. Innovest found in nearly every sector that companies with above average environmental performance, taken as a group, outperform below average environmental performers by 3 to 30 percentage points per year in the stock market.

How are the two connected? Innovest writes, "Effective environmental management is one of the most complex challenges facing management. There are high levels of technical, regulatory, and market uncertainty as well as many stakeholders and complex issues to address. It is implied that companies dealing well with this high level of complexity have the sophistication to succeed in other parts of the business and thereby gain superior returns. Energy management is an important

aspect of environmental performance which also poses a complex challenge to management. As a result, it is likely that energy management is also a strong indicator of management quality and stock market potential."

With the recent commitment by the U.S. hospital industry to establish a system that will let consumers judge an individual hospital's performance — and compare it directly to others — it may be a matter of time before management quality indicators such as environmental performance are added.


Strong environmental policies and a reputation to match may help attract and retain employees as well. In a sector with high employee turnover rates and chronic nursing shortages, maintaining morale in a high stress work environment is no small job. Partners in Energy Star tell us that caring for the environment is something employees want to do but they need a message from the very top to legitimize it. A well-structured environmental policy that engages employees at all levels to reduce energy use, solid waste, and hazardous waste can motivate employees to live up to their ideals and achieve greater satisfaction at work.



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### Labor Productivity Gains

Improvements in energy performance and employee comfort can significantly increase worker productivity in upgraded buildings. Studies are showing that occupants of upgraded buildings are more productive, attentive, and learn faster than their counterparts in conventional buildings. How? By simply improving worker comfort from either energy optimization projects involving air conditioning or by improving lighting quality to reduce eye strain, vision-related errors, and associated absenteeism. In fact, revenue generated from increased productivity can be 10 times as high as the energy cost savings received from performing the upgrades.

Contrary to popular belief, electric energy is one of the most controllable costs of doing business. But don't just do the numbers to make your case. Position energy performance investments for what they really are — opportunities to increase competitiveness by enhancing your hospital's energy security, employee retention, productivity, and environmental reputation. It's an investment that will show healthy dividends on many fronts. 

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