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## Energy Management for the 21st Century

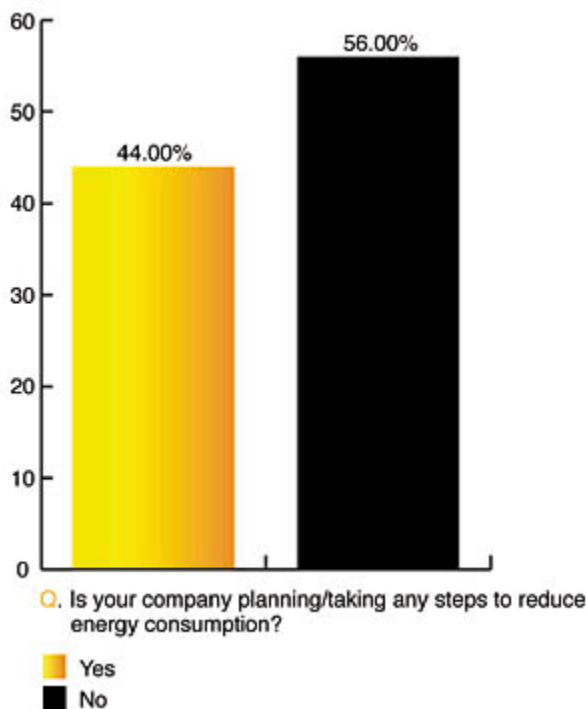
Stan Kosierowski, President & CEO, PSEG Energy Technologies

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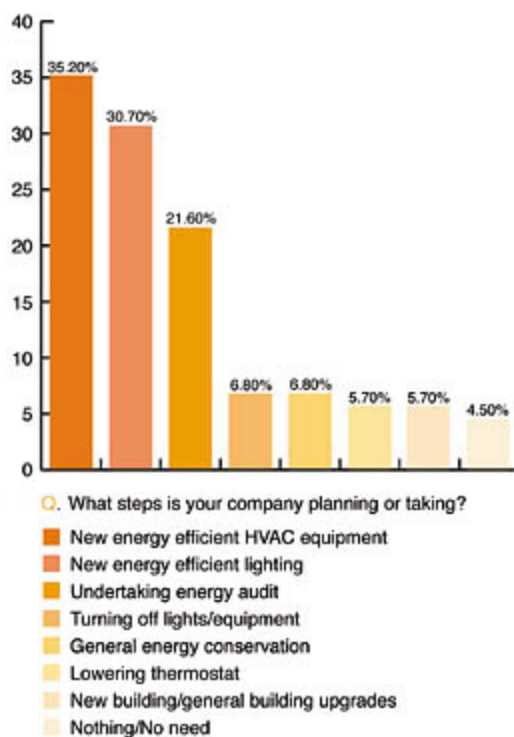


### Moving from the boiler room to the board room

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Changes wrought by energy deregulation-along with continuing volatility in price and supply -are sending a clear call for a fundamental redefinition of the role of energy management, a call to make energy management an integral part of business strategy. In short, there is a need to move energy management from the boiler room to the boardroom.

Energy management as a critical boardroom issue is not overstating the case. This remains true despite the easing of the situation in California. Energy prices are, by their very nature, highly volatile, and ongoing deregulation may begin to expose companies to that volatility. In addition, energy can, and does, have a significant impact on business's financial well being, far beyond its mere cost. For example, a brief power outage caused a South Carolina-based polyester manufacturing facility to shut down for repairs for an extended period of time. During the shutdown, the company lost more than 80 million pounds of production, or about 8% of the site's annual output. The damage was more than material: company officials estimate that lower sales volumes and property damages from the outage will reduce earnings by \$12.5 million, or 25 cents a share.

Until that day, it is likely that few in the company considered the deep impact that energy could have on their business. Without a dependable energy flow, business grinds to a halt. Employees can't work. Companies lose critical production time. And profits turn into losses. Energy management, in a new, more strategic definition, would include selecting alternative and redundant energy sources where appropriate, and might have helped avert or at least mitigate such a disaster.

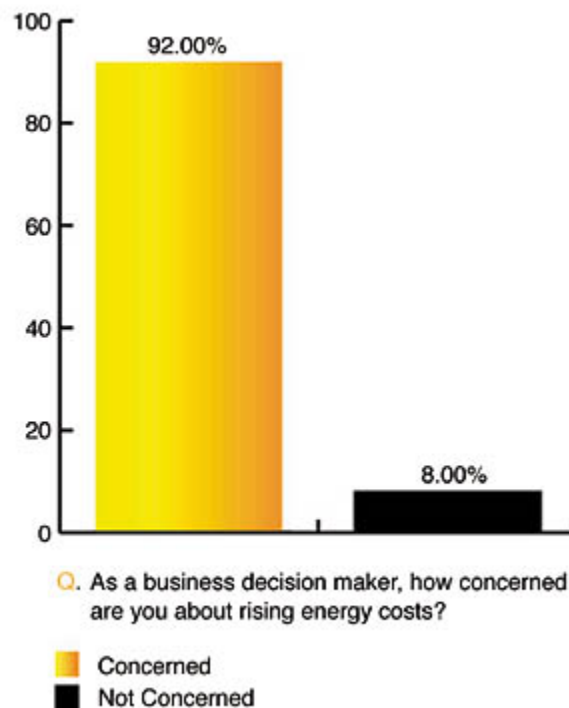
This redefinition of energy management as part of overall business strategy has already taken hold at companies across the country. For example, a metal processing company on the West Coast made more than \$150 million by scaling back production and selling the resulting unused electricity on the wholesale market. The company didn't have generating capacity of its own,

but rather had a contract with its electric supplier that allowed it to sell unused demand on the wholesale market. Someone at the company redefined energy management when they saw that price spikes in electricity on wholesale markets meant that the company could make more reselling electricity than it could processing metal-its core business.

In another case, a manufacturer in Southern California faced a seemingly no-win choice of either having their electric service interrupted or paying sky-high market rates for electricity to keep that service active-both options being a function of the "interruptible" electric service to which they had signed. Again, putting a new spin on energy management, the company determined that a cost-effective option was to switch production from a day shift to night shift when electric costs were lower and they didn't face the specter of interrupted service or higher rates. Higher labor costs on a night shift used to dictate decisions - now, however, labor costs became secondary to energy costs.

In both these examples energy management drove strategic business and financial decisions. They demonstrate that with the modern energy marketplace-crisis or not-energy management must move beyond energy efficiency to broader issues of strategic and organizational efficiency. This, however, can only happen if energy management has the attention of senior management.

### Senior Management Involvement



History shows that innovative thinking has often been met with skepticism. Few believed the Wright brothers' flying machine would become the major form of global transport, and Rex Lambert of *The Listener* wrote in a 1936 editorial, "Television won't matter in your lifetime or mine." So the reluctance of many corporate executives to accept the concept of energy management as anything beyond raising or lowering the thermostat is not surprising.

However, if the primary responsibility of senior management is to increase shareholder value and achieve targets set by owners, then they must understand the benefits associated with making energy management decisions and investments.

### How to Begin



Changing the definition of energy management requires a fundamental change in how one thinks about the topic. Instead of thinking about air balancing, think in terms of balance sheets. Of profit and loss, not just heat loss. Of what matters in the boardroom, not just what happens in the boiler room. In short, think about energy management in terms of the financial impact it can have on an organization.

For example, the first step toward a new energy management program is often a comprehensive audit of a facility's energy infrastructure; heating and cooling equipment, lighting systems, and the like. Typically viewed as a way to determine how a company might reduce its energy costs, the audit might be more appropriately viewed as a tool to generate a prospectus for investments that can and do generate competitive returns on investment and provide long-term dividends that contribute directly to the bottom line.

Let's say the audit reveals that the office lighting in the facility is more than 10-years old and, as a result, is highly inefficient compared to today's lighting technology. Rather than simply requesting the budget for a lighting retrofit because it will reduce energy costs by 60%, developing a financial model that calculates a payback period and projects the long-term savings-the dividends-speaks more to the interests of senior management. In this lighting example, a typical payback would often be two years or less and the long-term contribution to profit through lower costs could run into the hundreds of thousands of dollars-depending upon the size of the facility, of course.

One thing an audit won't show is how dependent a company is on an uninterruptible supply of energy. As one of the previous examples pointed

out, even a short interruption in energy supply can have disastrous long-term financial effects-effects of which senior management should be made aware.

Many facilities have some type of minimal back up system in place, most often to run emergency lighting and allow for an orderly shut down of computer equipment. These minimal systems are low cost, but also ignore the hidden costs of an interruption in energy supply. A loss of power shuts down production in manufacturing plants-and may even damage equipment. In office environments, a loss of power also halts production by shutting down computers, copiers, fax machines and, very often, phone systems.

In developing a comprehensive energy management program, this "dependence factor" should be taken into account. If the factor is high, a financial case can be made for more robust back up systems such as fuel cells, microturbines, or other distributed generation equipment. Such a cost-benefit analysis of distributed generation should also take into account the possibility of using the generation capacity to reduce energy costs by shaving a facility's peak load or even producing revenue by selling electricity to the power grid.

A final more mundane, but perhaps more illustrative, example of new thinking about energy management is routine preventive maintenance of heating and cooling equipment. In tough budget times preventive maintenance is an easy target for cuts. However, a financial analysis of maintenance costs versus reduced system efficiency demonstrates that such cuts tend to be pennywise, but pound foolish. Dirty air filters and cooling coils in an air conditioning system can reduce efficiency by 30 to 40% or more. Every dollar spent on energy for the system will soon increase to \$1.30 or more in the future.

More sophisticated analysis would also factor in the increased probability of system failure resulting from lack of maintenance. And while repair costs could certainly be significantly higher than the money saved through elimination of a maintenance program, indirect costs could be astronomical. For example, failure of an air conditioning system on a hot summer day would certainly reduce productivity as interior temperatures climbed and could even force a complete facility shutdown. Such a failure could also damage temperature sensitive computer and telecommunications equipment and result in the loss of data, both of which could cripple a business.

Bottom line: even such seemingly routine aspects of energy management as HVAC maintenance can have significant impact on a company's ability to meet its financial goals. This is true whether a California-type crisis reappears on the horizon or not. The use of "hedges" to mitigate risk is commonplace in corporate financial planning. A company's dependence on energy exposes it to financial risk that is no less perilous. It is incumbent upon facility and energy managers to recognize this fact and communicate it to senior management.

Stan Kosierowski is president and chief executive officer of PSEG Energy Technologies, an energy-related technologies and services provider and unregulated subsidiary of Public Service Enterprise Group (PSEG).

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