



# A Lesson in Energy Economics 101

## The Surprising Upside of Energy Efficiency

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**D**id you budget enough for electricity bills this year? If not, you are not alone. Who could have predicted double-digit increases in fuel costs driving up utility expenses? Unfortunately, crude oil prices continue to trend upward with no apparent end in sight.

The good news is that there is something you can do to control your energy costs. In fact, it might surprise you to know just how valuable energy conservation can be to your company's bottom line.



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Throughout the country, millions of dollars are wasted on inefficient building systems – HVAC, lighting, pumps, and motors — that use more electricity than needed. By replacing old equipment with high efficiency equipment and adding new energy-saving technologies, businesses can often gain operational and financial benefits beyond expectation.

When measured in financial terms, energy-efficiency projects, or energy conservation measures (ECMs), can generate significant returns of 20% to 60% on capital improvement costs. A lighting retrofit project alone might achieve a 50% internal rate of return (IRR). These are numbers that will make any CFO sit up and take notice.

Upon implementing an energy-saving measure, the associated reduction in utility bills represent a cash stream of “usable” or “savable” funds that can either offset other operating costs or enhance operating income. Think of the ECMs as “unrealized” cash streams waiting to be tapped.

Generally speaking, energy-efficiency projects are different than other capital improvement projects because of their cash stream component, and should be evaluated on both opera-

tional and financial merits, apart from typical capital improvements. A good rule is to place energy-efficiency project on a separate list than other capital improvements, and do them first.

Despite excellent cost saving opportunities, many energy-efficiency projects are never accomplished because the cost of the ECM is often greater than the company's capital improvement budget allowance. The conundrum, therefore, is... “How does one benefit from energy saving measures if one cannot afford the measures?”

Interestingly, there is an ideal solution for addressing this aspect of energy projects – equipment leases. While companies frequently use equipment leases in the normal course of their businesses for vehicles, computers and photocopiers, they are often unaware that it is possible to lease almost any fixed asset used in business operations, like HVAC or lighting equipment.

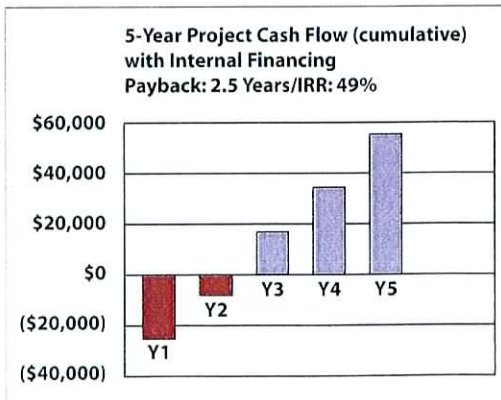
Equipment leasing is a form of financial leveraging that eliminates the large front-end payments in favor of smaller monthly payments over a period of time. This allows for the “matching” of cash inflows (monthly utility savings) and cash outflows (monthly lease rents).

For energy projects, the desired condition occurs when monthly utility bill savings are greater than monthly lease payments. When projects are properly leveraged using equipment leasing programs, they become “sources of cash”

that can be used to fund other expenses. Here is an example:

Assume a lighting project for an office building — say, retrofitting 1,000 fluorescent fixtures with energy efficient components. The project might cost about \$50,000, and reduce utility bills by about \$1,666 per month, or \$20,000 annually. The project will have a “payback” of about 2.5 years on energy savings alone. The calculated internal rate of return (IRR) is 49%.

Now, if this retrofit is procured under an equipment lease program (capital lease) at 8% for 5 years, monthly payments would be approximately \$1,000





per month, or \$12,000 annually. When the monthly lease payments and utility savings are netted together, the result is positive cash flow of approximately \$666 per month, or \$8,000 annually – yes, positive cash flow.

In addition to positive cash flow, the utility company will often provide a rebate check to encourage energy saving, say \$10,000. In total, over a five year period, \$50,000 of “usable” or “savable” cash is made available to the customer, not to mention the operational improvement to the property.

Through the use of leverage, the project IRR increased from 49% to a number that cannot be calculated because there are no periods of cash outflow. As illustrated, this energy project has become a real “source of cash”, not just a “use of cash” like other capital improvements.

To some, this might sound too good to be true, but it is simple math when investment returns are greater than interest rates. It does not take “rocket science” to determine that borrowing at 8% to achieve returns of 49% makes good economic sense.

Financial benefits like this are available to all those who choose to take energy conservation seriously.

Here are some financial tips for the energy-minded:

Don't underestimate the real value of energy efficiency. Find out for yourself, because the results might surprise you.

Consider old inefficient equipment to be unrealized cash streams, waiting to be tapped.

Place energy efficiency projects on a different “to do” list than typical capital improvement projects. They might be sources of cash.

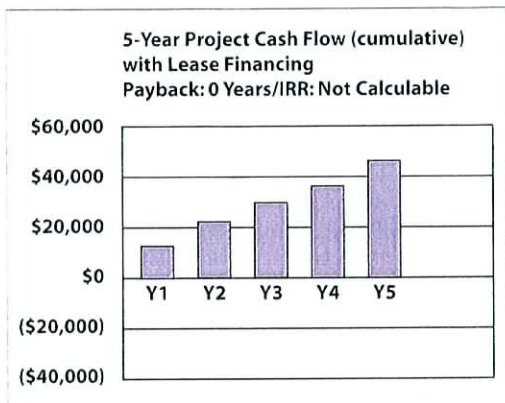
Match your cash inflows and outflows. When possible, use equipment financing to let energy savings pay for projects over time.

If you think you can't afford an energy project, think again. There is definitely a “cost of delay” for energy inefficiency.

In summary, there are two important concepts to understand and remember about ener-

gy-conservation measures. The first is simply that the investment value of an ECM can be excellent, often much better than traditional security investments. The second point is that thoughtful use of financial leverage can make an ECM become a source of cash.

As fuel costs increase and the demand for power grows, expect your electricity bill to grow as well. To all those who have not included energy conservation in their business plans, this will be a wake-up call – don't be caught by surprise!



References for this article can be found at [EarthToys.com](http://EarthToys.com) - Alternative Energy Solutions - eMagazine and Library

## Lighting is a major use of energy

**A**t The Hawaii Prince Hotel Waikiki & Golf Club, 521 guest rooms were retrofitted with compact fluorescent light bulbs, reducing the total wattage by 326,315 watts. The hotel estimates that this change reduced its energy bill by \$92,902 a year, based on the lights being left on six hours a day. The longer bulb life of the compact fluorescents also results in \$10,000 saved in bulb replacement costs and \$4,487 in labor costs to install those replacements. HECO gave the hotel a \$17,475 rebate (or \$5 per energy efficient light bulb) for the switch.

Switching from regular incandescent light bulbs (pictured) to compact fluorescents is one popular method of conserving energy. Compact fluorescents are approximately 75 percent cheaper to power and last about 10 times longer.

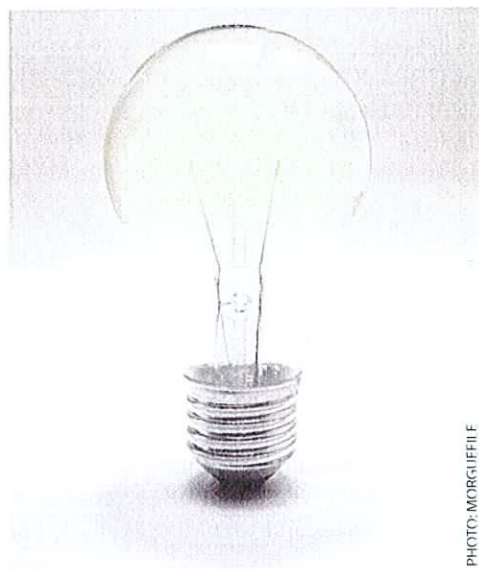


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