

## Making the Business Case for Energy Efficiency

**Energy-efficient technologies in facilities have resulted in tangible and intangible benefits, from improved reliability, to reduced utility expense, to improved employee productivity.**

Whether you are responsible for energy management in a manufacturing plant, oil refinery, retail center or office building, you will need to evaluate and present the financial benefits of energy-efficient projects. This article reviews various barriers, accounting methods, taxation and other issues involved in getting to the bottom-line value of making your energy management program more sustainable.

The benefits of energy-efficient technology in facilities are well documented. Technology introduced over the last two decades has resulted in improved reliability, higher productivity, reduced utility expense, optimized operations, less pollution – all of which are competitive advantages in any marketplace. Additionally, there are intangible benefits to employees, the corporate brand and ultimately your shareholders when you bring to bear efficient energy using systems.

### Organizational Barriers

In developing the business case, you will want to first consider the barriers that are inherent in many corporations. Below is a list of the most common issues:

- While energy costs often represent a major portion of corporate expense, it is often viewed as a fixed cost and paid for out of accounting coffers, leaving little incentive for engineers and managers to specify higher initial cost equipment with long-term savings potential.
- There is limited capital investment opportunity. Any energy efficient project, and rate of return, would be compared to other projects vying for the same dollars. And these internally competitive projects could possibly develop revenue, as opposed to manage expenses.
- There is typically a lack of organizational commitment to sustainable energy.
- It is difficult to research and estimate the information required to apply various valuation techniques. You should be aware of the common practices within your company – an adviser in the accounting department is a strong ally.
- Knowledge of energy efficiency technology is limited to experts and not well understood by corporate decision-makers.



**Saving Energy. It's a Way of Life.**

## **Valuation Techniques**

### **Simple Payback**

A highly simplified form of cost/benefit analysis is called simple payback. This calculation determines the amount of time it will take to return the value of the investment. It is easy to calculate and best used for general discussions and evaluation of small projects. In this method, the total first cost of the improvement is divided by the first-year energy cost savings produced by the improvement. This method yields the number of years required for the improvement to pay for itself. For new construction, it can be used to evaluate conventional construction to energy-efficient design alternatives.

### **Annualized Savings**

In this technique, the capital costs of an efficiency project are converted to annual equivalent over the expected life of the equipment. This annual cost is then added to the annual operating costs of the equipment and compared with the annual savings.

### **Standardized Payback Equations**

You can take advantage of a building energy measurement and verification guideline, called the International Performance Measure Measurement and Verification Protocol ([http://www.fypower.com/pdf/RES171256\\_ipmvp.pdf](http://www.fypower.com/pdf/RES171256_ipmvp.pdf) -- PDF 647K), that standardizes procedures for quantifying energy savings from energy efficiency projects. The Protocol reduces risk and standardizes paperwork. It also enables loans to be bundled together and sold on a secondary market, like mortgages.

### **Life-Cycle Cost Analysis**

Life-cycle costing (LCC) is an analysis of the total cost of a system, device, building or other capital equipment or facility over its anticipated useful life. LCC analyses allow a comprehensive assessment of anticipated costs associated with a design alternative. Factors commonly considered in LCC analyses are initial capital cost, operating costs, maintenance costs, financing costs, the expected useful life of equipment and future equipment salvage values. The result of the LCC analysis is generally expressed as the value of initial and future costs in today's dollars as reflected by an appropriate discount rate. The Rebuild America Life-Cycle Cost Calculator (<http://www.rebuild.org/solutioncenter/lifecyclecostexn.asp>) helps you to calculate the net present value of two alternatives and compare them using this cost-benefit method.

### **Internal Rate of Return**

The Internal Rate of Return (IRR) is probably the most universally applicable method for the financial evaluation of a company's investment. This technique, difficult to define for any non-accountant, is the rate of return that would make the present value of future cash flows plus the final market value of an investment equal the current market price of the investment.

### **Profits, Depreciation and Taxes**

Depreciation and taxation issues should be taken into account when considering the whole business case of an energy efficiency project. Taxes, to be obvious, are applied to the profits of your company. An energy



## Saving Energy. It's a Way of Life.

efficient project's positive impact on the profits of a business should be properly assessed through the offset of depreciation costs, thereby reducing the tax payable. There are also considerations in taxation when offering early retirement of old equipment. You should contact your company accountant for guidance on these issues.

### Other Benefits and Intangibles

The business case for energy efficiency should also clearly state the non-financial and indirect financial benefits of investment, such as:

- Improved employee productivity
- Optimized operations
- Regulatory compliance
- Strategic maintenance planning
- Reliability and reduced downtime
- Public relations and shareholder value

### Utility, State and Federal Financing Assistance

Rebates, grants, audits, zero-interest loans and other financial incentives for the installation of energy-efficient systems and equipment may be available. The Flex Your Power website (<http://www.fypower.com>) maintains a comprehensive database of utility, state, federal and private sector third-party programs offering educational, financial and technical assistance. You should also check with your company's utility provider, as well as the U.S. Department of Energy and the California Energy Commission.