



LIFE CYCLE COST – WHAT DOES IT MEAN TO YOU?

For your benefit, EWEB staff has prepared a **life cycle cost analysis** of the energy conservation measures proposed for your building. The Life cycle cost analysis provides several pieces of information about a package of energy conservation measures (ECMs).

- The project cost, EWEB incentive, tax impact of the business energy tax credit, and up-front customer costs are shown.
- The cash flow totals for the measure life include projected annual electric, fuel, and maintenance savings.

Cash flow of savings totals are shown both on a nominal or simple basis and a discounted or present value basis. The simple basis is just the addition of cash flows over the ECM life. The discounted value accounts for the time value of money. This concept recognizes that a dollar in the hand today is worth more than a dollar five years from now. So future cash flows are **discounted** to the equivalent of today's dollars and added up over the life of a measure to arrive at the total benefit. This allows future benefits of an investment to be compared with the initial investment cost.

For cost-effectiveness indicators are calculated, and each provides a particular view of the investment. These indicators are calculated on the non-loan cash flow, since they are used in some cases to determine if it makes sense to take out a loan.

- **Benefit to cost ratio.** This indicator is the discounted benefits divided by the investment cost. If the benefits are more than the cost, the benefit to cost ratio is greater than one. If the benefit to cost ratio is greater than one, then investing in the project is recommended.
- **Rate of return.** This indicator looks at the project return on investment. In calculating the rate of return, net benefits are assumed to be reinvested at the discount rate. If the rate of return is higher than the cost of money (loan interest rate) then the investment makes sense.
- **Simple payback** is the net project cost divided by the annual savings. The simple payback tells how long it takes for the savings to pay off the investment. If it is shorter than the ECM life a project is recommended.
- The **net present value of savings** is the total discounted cash flow of savings from the project less the initial investment cost. This indicates the magnitude of benefit that will accrue. This number should be positive for an investment to be attractive.

Additional indirect benefits beyond those included in the life cycle cost analysis should be considered. The life cycle cost indicators are developed using engineering economics, which considers investment, operation, maintenance, and energy costs. Indirect benefits such as occupancy productivity and increased rental value are not considered. While these benefits are somewhat difficult to quantify, many times an energy project will improve lighting quality or occupant comfort. A comparison of typical building indicators will show that these indirect benefits can be many times greater than the items included in the life cycle cost analysis. For example, the costs of building office space per square foot per year are:

- The **energy cost** of most buildings is in the range of \$0.50 to \$1.20 per square foot per year.
- The **rental value** of office space can range from \$12 to \$20 per square foot per year. In a typical office the **staff cost** based on 100 square feet per person and a \$0,000 per year salary is \$300 per square foot per year.

It is clear from the relative value of these numbers that if the project will improve productivity or rental value even a small amount, this will be much more than the value of the energy savings. In a retail sales or service environment, the value of goods or services sold per square foot should also be considered.