

Savings Analysis Worksheet

Life Cycle Costing of Equipment

Businesses frequently purchase equipment based solely on an item's price tag—its initial cost. While this decision may make sense at the time of purchase, it may not be the least expensive option in the long term. In many cases, an energy efficient piece of equipment will turn out to be far less costly over its lifetime, even though it may have a higher sticker price. The initial cost of an air compressor is only about 5 percent of the cost of the energy to run that compressor for 15 years. Both initial purchase price and lifetime operating costs—known as life cycle costing—should be considered to make a truly well informed purchase decision.

Example

The following compares the life cycle cost analysis of two light bulbs: a 15-watt compact fluorescent bulb and a 60-watt incandescent. Assuming each light operates 1,400 hours per year (about four hours per day):

	Compact Fluorescent Bulb	Incandescent Bulb
Initial cost	\$7.00	\$0.25
Annual operation	\$1.68	\$8.71
7-year life cost*	\$10.58	\$54.87
Life cycle cost	\$17.58	\$63.58

*taking inflation into account

In spite of the incandescent bulb's drastically lower initial cost, the compact fluorescent will cost \$46.00 less when operating costs are taken into account. The annual operating cost of the incandescent bulb includes material replacement cost of \$0.32 (based on the fact that it would need to be replaced at least nine times in the seven year period), labor replacement cost of \$1.67 (assuming five minutes of labor) and energy cost of \$5.04.

Calculate Your Savings

Use the worksheet on the back of this page to calculate and compare life cycle costs for equipment with different energy efficiencies. If you don't know the annual energy cost, you can estimate it for some equipment using other Savings Analysis Worksheets¹ that are available from Focus on Energy.

More Information

Computer programs are available that can more quickly calculate life cycle costs. For more information about this and other ways to make smart purchasing decisions, call Focus on Energy at 800.762.7077, or visit our Web site at focusonenergy.com.

¹ Savings Analysis Worksheets are available for LED Exit Lights, HVAC Roof Top Units, Water Heating, Fluorescent Lamps and Space Heating.

Estimate Your Savings

- A. Enter the purchase price of the standard efficiency option.
- B. Enter the annual operating cost of the standard option (energy and maintenance costs). Maintenance should include replacement cost if the standard option is shorter than the efficient option.
- C. Enter the expected life of the equipment. (If unsure, use Table 1 as a guide. Please note, this value needs to be the same as field H.)
- D. Enter discount factor from Table 2. (This takes into account that money today is worth more than money years from today. Please note this value needs to be the same as field I based on longer life.)
- E. Calculate the life cycle cost of the standard option: A added to the product of B, C and D.
- F. Enter the purchase price of the high efficiency option.
- G. Enter the annual operating cost of the efficient option (energy and maintenance costs).
- H. Enter the expected life of the equipment (same as C).
- I. Enter discount factor from Table 2 (same as D).
- J. Calculate the life cycle cost of the efficient option: F added to the product of G, H and I.
- K. Calculate the life cycle cost savings of the efficient option compared to the standard option.

Life Cycle Cost of Standard Equipment								
A. Initial cost (\$)		B. Annual operating cost (\$)		C. Expected life of equipment (years) Same as H.		D. Discount factor Same as I.		E. Calculated cost of standard equipment
	x		x		x		=	
Life Cycle Cost of Efficient Equipment								
F. Initial cost (\$)		G. Annual energy cost (\$)		H. Expected life of equipment (years)		I. Discount factor		J. Calculated cost of efficient equipment
	x		x		x		=	

K. Life cycle savings of efficient equipment = E _____ – J _____

Table 1

Equipment Type	Average Life (years)	Comments
Chiller	25	—
Boiler	25	—
Water heater	7	—
<20 HP motor	12	If 2,500 hrs. per year
	6	If 5,000 hrs. per year
>20 HP motor	20	If 2,500 hrs. per year
	10	If 5,000 hrs. per year
Fluorescent bulb	7	If 4 hrs per day
	3	If 8 hrs per day

Table 2*

Average Life (years)	Discount Factor
3	0.95
5	0.93
7	0.90
10	0.87
15	0.82
20	0.78
25	0.74

*Assumes a 5 percent discount rate and 2 percent energy cost inflation.