



UNIVERSITY OF
FLORIDA

Florida Cooperative Extension Service

Fact Sheet EES-27



Saving Energy Dollars in Your Condominium Through Cost Avoidance¹

Ronald E. Jarnigan²

One of the unfortunate consequences of rapidly rising energy prices is that even though energy efficiency efforts may reduce overall energy usage, the total energy bill may continue to increase. Frequent rate increases, coupled with higher fuel adjustment costs, have resulted in many condominium managers asking, "Why should I make the effort to conserve energy when my bill is going to go up anyway?" The answer to this question lies in looking at energy efficiency as a method of cost avoidance. Any steps taken now to avoid paying additional costs for energy will result in money savings in the future.

To illustrate this point, assume that a condominium is considering an energy conservation measure (ECM) that will yield a modest 5% average annual reduction in electrical energy usage for the property. Using data obtained from a South Florida high-rise condominium with central heat and air, it is found that the energy usage before the implementation of the energy conservation measure was approximately 3,800,000 kilowatt hours (kwh) per year. With the expected 5% energy reduction, the average energy usage would be 3,610,000 kwh per year. The amounts of yearly dollar savings for various existing electric utility rates are shown in Table 1.

Table 1. Yearly Dollar Savings for Various Electric Utility Rates.

Electric Utility Rate (¢/kwh)	Yearly Electrical Cost Before ECM (\$)	Yearly Electrical Cost After ECM (\$)	Yearly Savings (\$)
5	190,000	180,500	9,500
5 1/2	209,000	198,550	10,450
6	228,000	216,600	11,400
6 1/2	247,000	234,650	12,350
7	266,000	252,700	13,300
7 1/2	285,000	270,750	14,250
8	304,000	288,800	15,200
8 1/2	323,000	306,850	16,150
9	342,000	324,900	17,100

Table 1 illustrates an important point about energy conservation investments: the higher the

1. This document is Fact Sheet EES-27, a series of the Florida Energy Extension Service, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida.
2. Ronald E. Jarnigan, Mechanical Engineering Specialist, Florida Energy Extension Service, Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, Gainesville FL 32611.

The Florida Energy Extension Service receives funding from the Florida Energy Office, Department of Community Affairs and is operated by the University of Florida's Institute of Food and Agricultural Sciences through the Cooperative Extension Service. The information contained herein is the product of the Florida Energy Extension Service and does not necessarily reflect the views of the Florida Energy Office.

The Institute of Food and Agricultural Sciences is an equal opportunity/affirmative action employer authorized to provide research, educational information and other services only to individuals and institutions that function without regard to race, color, sex, age, handicap, or national origin. For information on obtaining other extension publications, contact your county Cooperative Extension Service office.
Florida Cooperative Extension Service / Institute of Food and Agricultural Sciences / University of Florida / Christine Taylor Stephens, Dean

utility rate, the more cost-effective a given expenditure becomes. If, in the example, the cost of the ECM was \$20,000, then the yearly return on investment at 6 cts/kwh would be 57% while the assumed figures, the condominium would achieve a return at 8 cts/kwh would be 76%. Using these simple payback of 1.8 years at 6 cts/kwh and 1.3 years at 8 cts/kwh. Even if the energy conservation measure had cost \$100,000, the return on investment would still range from yearly figures of 11% to 15%. While this simple analysis does not consider the time value of money, it does point out the attractive rates of return offered by energy conservation investments.

EFFECTS WITH ANNUAL RATE INCREASES

This same energy conservation measure should be considered in light of annually escalating utility rates. It is again assumed that the same annual energy usage rates will apply, and the expected energy savings will be 5%. Next, the rate of energy cost increase must be projected. For comparison purposes, the example considers three rates of increase: low, 6%/year; moderate, 8%/year; and high 10%/year. To simplify matters further, an existing utility rate of 6 cts/kwh (as a typical value) is assumed. Using these assumptions, Table 2 compares the yearly energy costs before and after implementation of the ECM.

Table 2 clearly illustrates the problem under discussion. When inflation occurs, and yearly energy costs are compared before and after implementation of the ECM, it is found that the total energy bill has risen. For example, at an assumed energy inflation rate of 8% per year, the second year energy costs are \$233,928 after implementation of the ECM. All too frequently the conclusion is drawn that the expenditure for the ECM was worthless, since energy bills increased by \$5928 (i.e., \$233,928 minus \$228,000) after implementing the ECM.

The error in the logic should be apparent, however, by looking more closely at the table. Had the ECM not been instituted, energy bills would have risen by \$18,240 -- from a yearly figure of \$2228,000 to a yearly figure of \$246,240. This rise would have occurred from the normal inflation of energy prices. However, by instituting the suggested ECM, the condominium saved \$4400 in the first year -- the difference between \$228,000 and \$216,000.

Table 2. Effect of Inflation on Yearly Energy Costs.

Annual Energy Inflation Rate (%)	Yearly Energy Cost at 6 cts/kwh(\$) (in thousands)				
	1	2	3	4	5
0					
Before ECM	228	228	228	228	228
After ECM	217	217	217	217	217
6					
Before ECM	228	242	256	272	288
After ECM	217	230	243	258	273
8					
Before ECM	228	246	266	287	310
After ECM	217	234	253	273	295
10					
Before ECM	228	251	276	303	334
After ECM	217	238	262	288	317

For the five-year period shown, the total savings achieved by the ECM at the assumed 8% inflation rate would be the difference between \$1,337,584 and \$1,270,704, or \$66,880. Again, these savings do not take into account the time value of money, but are substantial nonetheless. The savings achieved by cost avoidance could be used by the condominium manager to hold the line on monthly maintenance fee increases, or to provide additional services to the residents. In either case, the residents of the association would derive the benefits.

In summary, energy costs will continue to rise over time. Investments in energy conservation measures will save money on the energy bill. The prudent condominium manager will realize that despite increases in total bills real savings can be achieved through cost avoidance. Armed with the facts, managers will be able to make the smart financial decisions that affect the future of their condominium buildings.