

THE ENERGY SQUEEZE

Electricity can be measured two ways. The first is by the number of watts, which represents the required generating plant capacity or demand. The second addresses the watt hours, which represents the number of hours the generating plant is required to operate and consume fuel.

Today, we find ourselves in a position where our existing plants cannot meet the present watts demand and the fuels to run the plants are an escalating commodity driven by OPEC, traders, and regulators.

What happened? Shouldn't we have known better? It was only ten years ago when utility companies were offering rebates to owners to convert electric power driven machines to gas or steam. It was believed that through this conversion excess electrical plant capacity would be achieved, and there would be enough electric plant capacity remaining to handle all present and future requirements. The rationale behind the rebate was that it's cheaper to reduce watt usage than to build a new power plant.

Why wasn't this enough? Again common wisdom said that computers are getting more powerful and are getting smaller and will use less energy. Very few anticipated the growth of the internet and the millions of servers required to route and move data. A host server facility may require up to 100 watts per square foot in plant capacity as opposed to 6 watts per square foot for office space prior to the internet.

With electricity requirements rising, few new plants coming on line and higher energy prices, it isn't surprising that we are in a tremendous energy squeeze. So why aren't we alarmed? Ten years ago in New York City, annual office space rentals were \$18.00 a square foot and the cost of electricity per square foot was approximately \$2.00 to \$3.00. This represents approximately 15% in additional cost to monthly rent. Today, with rents as high as \$68.00 per square foot electricity rates would have to be \$10 per square foot. By comparison, the cost of electricity as a percentage of rent has actually gone down.

During the 1973 oil embargo the common wisdom was that oil prices were going to reach a level that would make the use of renewable energy sources economical. Some common sources of fuel included solar, fuel cells, photo voltaics

and wind mills. What we anticipated to be a rise in fuel prices, actually resulted in a decline in cost and the shortages that everyone predicted turned out to be a glut of oil on the market (until recently).

In 2001 history repeats itself, fuel prices are going up and renewable energy sources are back in vogue. Although renewable sources are starting to appear, they are generally still affordable only on a demonstration basis.

Electric rate schedules were established to penalize users when they need electricity the most, which usually occurs in the summertime for air conditioning and during the noon to 3:00 pm hours when most offices and factories are running at peak capacities.

There are two issues to address; on a national basis, it's to our advantage to lower our dependence on fossil fuels and to make sure that we utilize our electricity in the most efficient way. As electric users, our objective is to reduce our costs. Both goals sound mutually supportive; however, (because of the utility rate structures in place) saving costs may not necessarily save energy although this should be the objective.

Many buildings have generators as a result of code requirements and a need for more reliable power. The generators may also be used to reduce peak demands by transferring building and equipment loads to the generators during times of maximum system demand. Peak shaving is another way to reduce plant demand by shutting non-critical loads during the peak requirements.

Is there an answer?

In the short term, we have to work within our current resources. The long term solution is additional fossil fuel production, more efficient use of fossil fuels, the use of alternate sources to generate power, more plant capacity, and improving the efficiency of renewable sources.