Alternative Energy versus Conservation

This comparison is unfair in many respects. Alternative energy is showy. It's got our attention in ways that dowdy conservation can never achieve, even after Al Gore's popular movie, An Inconvenient Truth, tried to balance both approaches. However, as we shall see in these examples, conservation is cheaper and easier and provides much better monetary returns.

It's also unfair because we can and should mine alternative sources of energy, such as wind and solar at our businesses and our homes. (I have solar hot water systems for my home my small apartment house.) These have lower adverse environmental effects than traditional sources, such as coal. However, since these sources are diffuse and intermittent, they require large and costly components, such as solar collectors and storage tanks. They are therefore costly to buy and install and have limited energy capacity. Alternative energy projects can provide a significant fraction of our needs only when we carefully monitor and conserve that limited energy.

For example, we can buy a 14-watt Compact Fluorescent Lamp (CFL) for $2 to replace a 60-watt incandescent lamp. Assuming the lamp is used 8 hours per day and electricity costs 17 cents per kWh, we would break even after about one month of using that bulb; after that we just save! The savings over one year would be over $22 or a 1,100% annual return on investment.

A small photovoltaic system is a good and common alternative energy project. Affordable-solar sells a 50-watt solar panel for $354. This analysis ignores costs for other needed components, such an inverter, and for system installation. Given that the sun only shines during the day and overcast days will have less sunlight, we can project that the system would provide the equivalent of 4 hours at its full 50-watt output per day or 200 watt-hours per day. This provides a daily payback of $0.034 per day or $12.41 per year. This works out to an annual ROI of 3.5%.

Although the same could be demonstrated with less extreme examples, conservation investments almost always pay off more quickly than alternative energy projects. It makes lots of sense to employ conservation without alternative energy, but never the other way around.