Energy Management at Home and in the Workplace: Basic Principles

Step One

The City is working to reduce its corporate environmental footprint. This “Step One” brochure explores issues of employee “buy-in” within the Corporation. Starting in 2008 we plan to reduce electricity and fuel use by 5% and natural gas use by 3% per year. Results, to be documented annually, will be tracked over a 5-year period. Success however, is more dependant on you than you realize?

What Can I do?

Start by changing a light bulb!

A revolution is occurring in lighting. It has been stimulated by recent high energy prices. Incandescent light bulbs are now passé. Invented over 100 years ago – they are terribly inefficient and have a short life expectancy. Can you think of any other technology that is totally inefficient but is still widely used after 100 years?? The only reason we still use them is because they are so cheap. But even still you probably are wasting your money.

Most of the energy used by an incandescent bulb is lost as heat. Only 5% of the energy is used for light production. They are now being legislated into the history books so that we will stop using them! (Old habits die hard)

Use CFLs, but understand their limitations. Payback is calculated from energy savings. A 13 Watt CFL (replaces a 60 Watt incandescent) has to be on about 2 hours/day to recover its cost in 1 year. Payback should factor in the heating/cooling impacts.

CFLs make most sense for light replacements where lights are regularly used but not frequently turned on and off. They work best at indoor temperature ranges.

Know that CFL life expectancy is significantly reduced if lights are switched on and off frequently; they deliver less light immediately and require a warm up time; numerous manufacturers are in the market and some produce poor quality products (buy brand names that have a 5 year warranty). CFLs ballasts have a narrow operating temperature range and some may not be used with a dimming switch. Those rated for cold weather are only rated to -10 °C. CFLs loose intensity as they age and will likely be replaced before reaching full life expectancy.

On the positive side CFLs last up to 8 times longer and given this long life expectancy – they are a better environmental choice (8 incandescent bulbs have to be produced and disposed of compared to one CFL). While the technology uses a small amount of mercury in the product – the reduced energy consumption lowers mercury released from burning coal. If everyone in Canada changed 1 incandescent bulb to a CFL, gross power production could be reduced by 1600 Megawatts. That’s equal to the gross power produced at the Adam Beck hydro station at Niagara Falls Ontario!
Here are some product options:

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<th>Bare Products</th>
<th>Covered Products</th>
<th>Reflector Products</th>
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<tr>
<td>Mini-Spiral or Twist</td>
<td>Globe G25, G30, G40</td>
<td>Indoor and Outdoor R20, R30, R40, PAR38</td>
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<tr>
<td>Tube or Universal</td>
<td>Candelabra, Post or Bullet Shape</td>
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**Lighting the Way**

Another alternative is converting to solar lighting that is totally off the grid. Solar powered “garden and accent lights” are now a popular way to provide outdoor illumination without running up the hydro bill. However, they may not meet your needs. Like any lighting solutions - solar powered garden lights have pros and cons. Here are a few to consider if this is the right technology for you:

A big advantage of solar power lights is that you don’t need underground wires making them easy to install. This is a good way to create illumination when power is not nearby. Obviously, they have no operating costs and they are relatively maintenance free. There are many brands and styles that are durable and long lasting. They can be aesthetically pleasing and can be used to accent landscaping. It is also easy to move them or store them for the winter.

One disadvantage is a relatively high initial cost compared to traditional fixtures. Consider buying quality product that last (good quality ones should last for more than 5 years of continuous use). The amount of lumens produced is usually low and if they don’t get fully recharged they may not last all night or may not come on at all.

There are more and more options coming to market and you may be surprised to learn that you can now also get solar flood lights, security lights and warehouse lighting.

**A New Inductee**

A new line of light bulbs are available for a narrow range of applications. An induction light bulb uses a magnetic field to excite the gas and phosphor inside a sealed tube but the magnet and bulb are completely separate. These lights are much more expensive; however, they are efficient and have a 100,000 hour life expectancy. These lights are best used in hard to get at places. The savings are from lower power requirements and maintenance costs over extended timeframes.

Your experiences are welcome:

Have any lighting tips you want to share? Let’s have em’!

(Please give these ideas to your boss and they will pass them on to the Green Committee)