



**DEARNESS ENVIRONMENTAL SOCIETY**  
A NOT-FOR-PROFIT ORGANIZATION  
[www.dearness.ca](http://www.dearness.ca)

# DEARNESS CONSERVATION

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## LIGHTS OFF



January 2006



## LIGHTS OUT

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### COMMON MYTHS ABOUT TURNING LIGHTS OFF AND ON.

- Don't switch lights off because it takes more energy to start them up again.
- Extra switching on and off will cause tubes and lamps to fail prematurely.
- It will cost a lot extra.
- High start-up current will set a peak demand charge.
- It is too much extra work.

### THE FACTS ABOUT TURNING LIGHTS OFF AND ON

Fluorescent lamps are designed to operate economically with a normal amount of switching on and off. It is true that lamp life does decrease with more switching, but it is offset by fewer hours of operation for the lamps and ballasts and energy savings.

Figure 1 shows that even switching fluorescent lamps on and off every 3 hours (3 hours/start) will still result in an average lamp life of 20,000 hours; this means switching the lamps on and off almost 3,500 times!

Figure 2 illustrates lamp life and energy cost versus number of hours/start. Extra energy costs to leave lamps on far outweigh the benefits of longer lamp life. For example, a lamp switched every 3 hours has an average lamp life of 20,000 hours, at an every cost of about \$150. A lamp left on continuously would last about 38,000 hours and cost about \$275 for electricity, \$125 more than the lamp switched every 3 hours. In the mean time, an extra tube, plus labour, at a cost of about \$5.00, would have been needed to compensate for the extra switching; yielding a net energy savings of about \$120.

It is also true that instantaneous electrical demand (KW or kVA) does increase about 5 times normal on start-up, but only for less than a second. This is insignificant and has little or no effect on a thermal demand meter. The consumption (kWh) saved from being off for 1 second will cancel the insignificantly amount of extra kWh required for start-up. Figure 3 illustrates an oscilloscope rendering of fluorescent lamp start-up current. **The peak start-up current occurs for only 1/120th of a second or half a cycle!**

Developing a habit of switching off lights when leaving a room takes very minimal effort and pays large dividends in energy savings. It is recommended that fluorescent fixtures be shut-off if not required for 10 minutes or more; 30 minutes for high intensity discharge (HID) lamps. Switching off lights is easy.



NUMBER OF SWITCHES AND LAMP LIFE vs HRS/START  
(40 watt fluorescent)

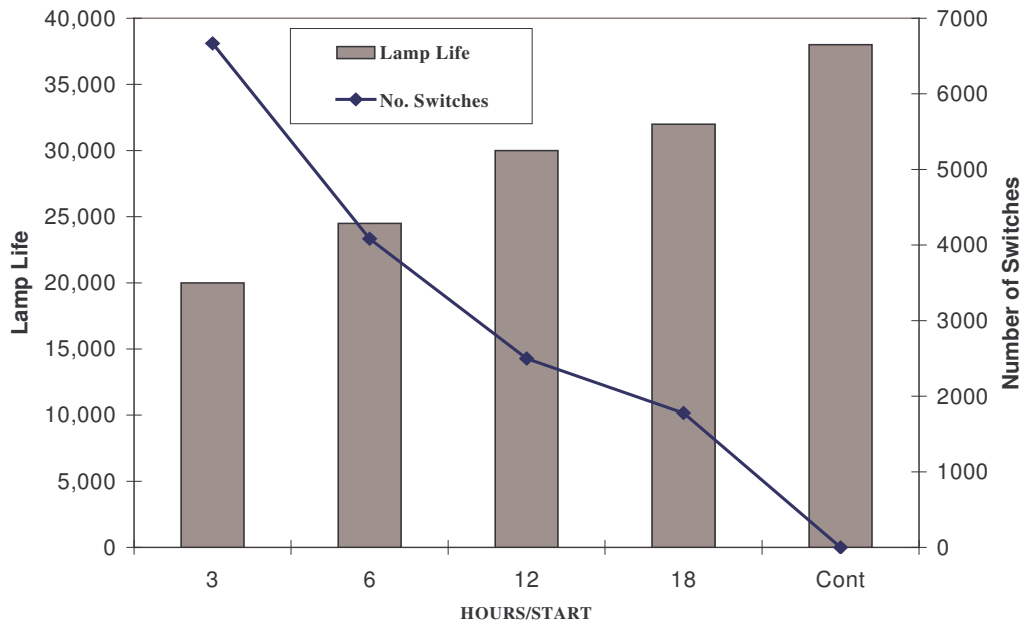


Figure 1

LAMP LIFE AND ENERGY COST  
(2F34T12 Fluorescent @ 9 cents/kWh)

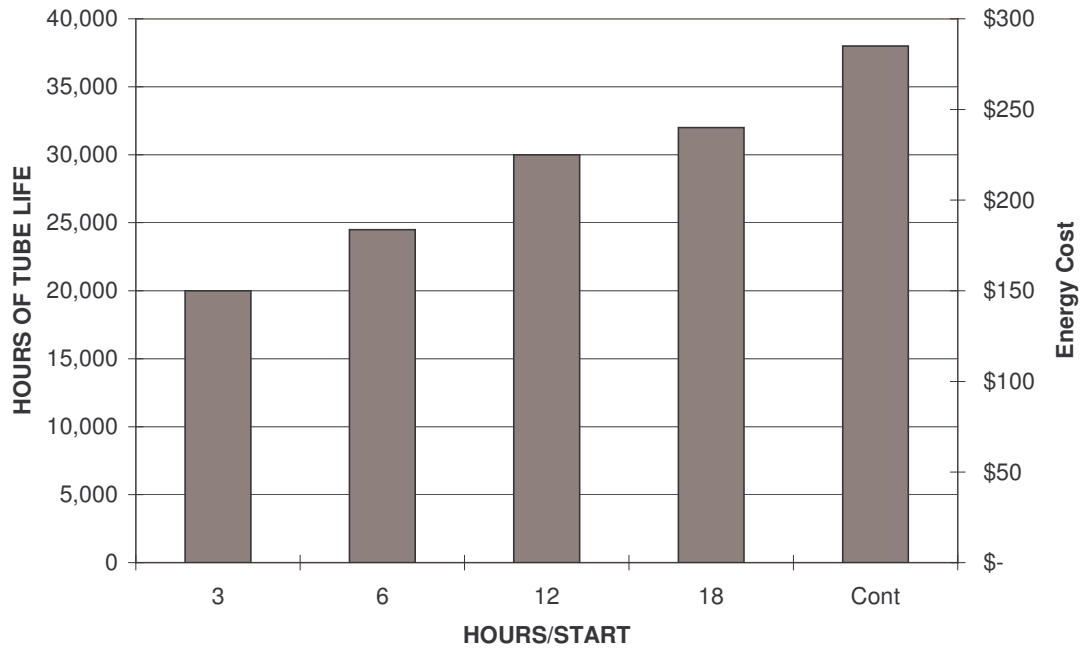


Figure 2



## PEAK START-UP CURRENT FOR A FLUORESCENT LAMP

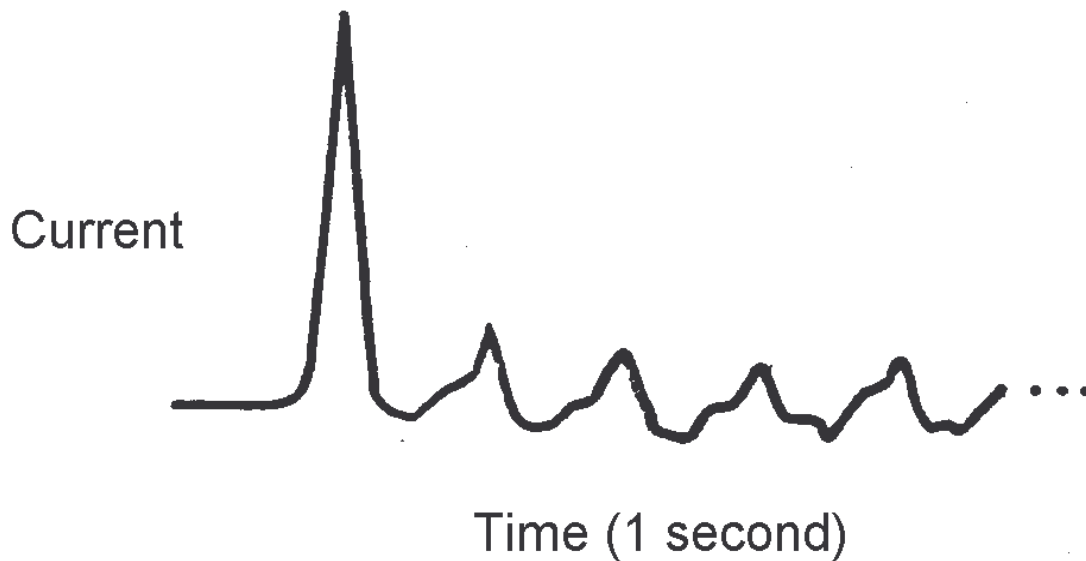


Figure 3

### SAVINGS TIPS

- Optimize natural lighting by effective use of blinds. Specify adjustable blinds whenever possible.
- Shut-off breakers or remove bulbs in appropriate areas and during long hours of daylight (e.g. entrance vestibules).
- Adjust time-clocks and photocells for changing hours of daylight, daylight savings time, or incorrect time.
- Ask the question: When do the lights really need to be on?
- Only turn-on as many lights as are needed for the task.
- Adjust occupancy sensors for ideal sensitivity and time delay.
- Consistently shut-off lights during recess, noon hour, and any other vacant periods (one person can have a big impact).