

5.7 Lighting and Lighting Systems

5.7.1 Lights

An Overview

With the use of energy efficient lighting products, such as fluorescent lamps and energy efficient ballasts, electric lighting costs can be reduced by as much as 60%. Newer lamps and ballasts are more energy efficient, generate less heat than older models and last longer. Savings are also incurred in lower labour costs for maintenance as well as lower air conditioning costs for removal of lamp and ballast-generated heat.

Newer developments include these and other features:

- Electronic ballasts contain no PCBs, but disposal of old PCB ballasts is a concern
- Instant start ballasts consume less energy than rapid start ballasts. Soft start technology gives the tubes a longer lifespan
- Electronic ballasts consume substantially less energy when operating at very high frequencies, they hum less and do not flicker
- Used in combination with T8 lamps, electronic ballasts consume 36 per cent less energy than conventional ballasts with T12 lamps
- T8 lamps use 20 per cent less energy to provide the same amount of light as conventional fluorescents. They also offer better colour rendering
- Parabolic louvers control glare while maintaining a level of light efficiency that exceeds IES and ASHRAE standards.

Potential Environmental Impacts

- Higher energy costs with inefficient lighting fixtures or inefficient lighting design.
- End of use disposal problems.

Things to Consider If You Write Your Own Specifications

This is an opportunity to add clauses in lighting specifications to address desirability of:

- Use energy efficient lighting systems wherever possible, i.e. low wattage, reflective fluorescent
- Ballasts not containing PCBs
- Office design to optimize natural light as well as efficient placement of lighting systems
- Task lighting to minimize need for overhead lighting. Use of T-8 lamps, compact fluorescents are preferred.

Specifications from Other Agencies and Seals of Approval

Environmental Choice program guideline ECP-19
(details at www.environmentalchoice.com/guidelines/pdfs/ecp-19.pdf)

Case Study: Energy Efficient Lighting

The lighting in Richmond's Thompson Community Centre main gym left much to be desired. The HID (high intensity discharge) lighting system was expensive, could not be instantly switched on and off to save electricity and did not provide the desired illumination.

BC Hydro reviewed the existing lighting and made recommendations for a re-design that meets the City of Richmond's primary objectives of reducing energy costs, increasing illumination and providing increased flexibility to switch off lights when not in use.

The new lighting system, installed in Spring 2000, uses compact fluorescent sources in high-bay luminaries. This solution combines the benefits of smaller point sources with the flexibility of switching control. This energy efficient approach is expected to provide approximately \$13,000 in energy savings annually and a two year pay-back on investment from the operating cost savings.

Source: BC Hydro.