

“ By installing lighting occupancy sensors, we estimate we have saved about 40% on lighting costs in the first year. And we only put them in the storerooms, toilets and back of house areas. ”



New light through old windows

Did you know?

Office lights that are left on overnight consume enough energy in a year to heat a home for almost 5 months.

That might be OK if you need to keep warm as well, but for a device that's designed for creating light, that's a lot of gratuitous heat. Heat generated by lighting creates an issue relating to the temperature and humidity levels in the display case or gallery environment and this means more energy consumption is then devoted to air conditioning the display environment. Fitting more energy efficient versions instead, including Light-Emitting Diode (LED), compact fluorescent lights (CFL), linear fluorescent and metal halide lights, will reduce your energy use.

Most museums and galleries spend about half of their total electricity consumption on lighting and effective display lighting is fundamental to the visitor experience. Of course, light levels should always be considered from a conservation perspective; to prevent light damage of collection items. To be energy efficient, first consider where natural light falls within your museum or gallery space. Maybe naturally available light can provide enough light for your purposes. Then you can look at where to provide artificial light sources. The character of artificial light is determined by the characteristics of the lamp chosen. To find out the sorts of lamps available view the *Technical Industry Report on Lighting and Air Conditioning* (2011) on Museums & Galleries Queensland website www.magsq.com.au.

Government legislation has been introduced to phase out the inefficient incandescent lighting options previously available to museums and galleries. In parallel with the change in government regulation and driven by it, the recent development of lower energy-consumption lighting technologies to a high quality standard means that there are now some fantastic energy efficient solutions for museum and gallery lighting.

Turning off gallery lights when not in use will reduce consumption and also benefit collections. In storage areas, light levels should be zero when not in use. Think about installing a smart lighting system to make further energy savings, because automating lighting systems make it

easier for everyone (see Positively charged behaviour fact sheet). The key to energy efficient lighting is balancing the initial investment with operational and maintenance costs. For those with existing lighting systems, who do not want to spend on a complete upgrade, there may be many different opportunities for cost-effective retrofits. Make use of sensors and timers. Occupancy detectors, daylight sensors and timer switches are inexpensive and easy to install. These options can be installed stand-alone or as part of a lighting control system.

A Practical Guide for Sustainable Climate Control and Lighting in Museums and Galleries (2014) is a helpful and more detailed resource which can be found in full on Museums & Galleries Queensland website www.magsq.com.au.

Common lamps and their characteristics:

Lamp	Wattage	Efficiency (Lumen/W)	Lamp Life (Hours)	Light distribution	Control	Value
Incandescent	100	15	1,200	Point source	Not very controllable	Becoming unavailable
LED	14	77	50,000	Point source. Versatile and flexible	Highly controllable, dimmable and tuneable	High but reducing
Linear Fluorescent T5	28	75-105	20,000	Diffused source, shadow-free, uniformed	Most T5 lamps can be dimmed smoothly	Reasonably priced
Metal Halide	70	95 -115	12,000	Point source. Good optical control	Not dimmable through electronic means, only filters. Instant on/off not possible.	Reasonably priced
Halogen	52	20	2,000	Highly directional light output Limited range.	Immediate on. Dimmable. Gets very hot.	Reasonably priced
Compact Fluorescent	13-15	54	8,000	Diffused source, shadow-free, uniformed	Not dimmable. Takes time to warm up. Quick on/off reduces lifespan	Reasonably priced

The data in this table is general and is provided as a guide only, as for each lamp there are many variables, including filament type, styles, light colours and wattage.

Quick wins

- Review types of lights and lamp wattages
- Upgrade to efficient versions - LED, Metal Halide, Linear Fluorescent
- Remove dust every day to increase efficiency
- Maximise daylight where appropriate

Long term wins

- Install timers
- Install sensors
- Take a systematic approach to upgrading/replacing your lighting system
- Use a Lux meter to map your lighting levels

More information

For further information on the Energy Efficiency Information Resources for Public Museums and Gallery sector project visit our website at www.clevercustodians.com.au or load the resource provided on the USB Drive.