



Lighting can account for up to 50% of energy for businesses, depending on the nature of the business and type of lighting used.

Lighting design can be key to creating a productive environment for your staff and a pleasant experience for your guests. Efficient lighting can also reduce costs.

This factsheet covers:

- Benefits of energy efficient lighting
- Where to start
- Lighting improvement options
- Reducing usage
- Changing lighting types
- Lighting controls and natural lighting.

ENERGY EFFICIENT LIGHTING

Energy efficient lighting is one of the simplest and most cost-effective ways to reduce energy consumption without compromising on quality. Replacing old lighting systems with energy efficient lights such as LEDs, can reduce your electricity bill by hundreds of dollars each year. With a broad range of lighting solutions available, it is important to balance cost with environmental considerations.

BENEFITS OF ENERGY EFFICIENT LIGHTING

Switching to energy efficient lighting creates several benefits for your business. They include:



- Cost saving through reduced energy usage.
- Reduced maintenance requirements.
- Improved light quality through the building, leading to improved productivity and safety.
- Lower carbon footprint.

WHERE TO START

Switching to energy-efficient lighting is one of the fastest ways to cut your energy bills, however it is important to consider the following:



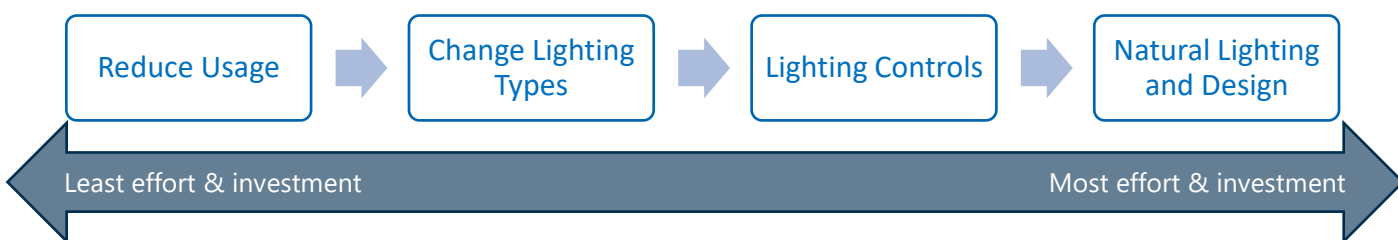
- ❑ Where do you need lighting and how much lighting is required?
- ❑ What are the lighting needs for different parts of the business?
- ❑ Are there any workplace health and safety requirements to consider?
- ❑ Does the lighting design affect aesthetics and guest comfort?
- ❑ Are there any building regulations for electrical components?
- ❑ What are the costs associated including initial investment, replacement costs and replacement frequency?

An audit or site survey will help you to document the current lighting conditions and determine where energy saving changes can be made. Consult with the appropriate people such as building managers, electricians, procurement officers and maintenance staff to identify the number of lights, operating hours, lighting levels, wattage and requirements for different areas.

LIGHTING IMPROVEMENT OPTIONS

After conducting a site survey and consulting with relevant people in your operation, consider alternatives for more efficient lighting solutions.

There are four key steps for lighting improvements shown below. The levels do not imply any preferred opportunities, but rather the level of investment and effort required for implementation.



REDUCING USAGE

The first step to take when increasing the efficiency of your lighting system should be to reduce the number of lights and operating hours of lighting.



- ❑ **Establish standard procedures for lighting operations** - consider using staff meetings and visual reminders such as signs near light switches to remind staff and guests to switch off lights when not in use.
- ❑ **Optimise lighting** -many efficiencies can be easily implemented with little or no capital investment or need to redesign the system. This includes turning off lighting manually or automatically when not in use or removing excess lights from over-lit areas. Operational hours of night lighting should be reduced when these lights are not directed at a surface.

CHANGING LIGHTING TYPES

Old-style incandescent (including halogen) bulbs are inefficient, burning most of the energy they use as wasted heat - this can also make them a fire risk.

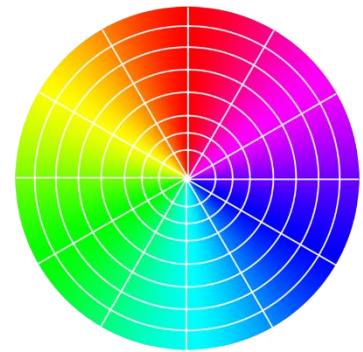
After identifying opportunities to reduce the number of lights and operating hours, light replacements should be investigated. For example, replace old bulbs with reduced wattage bulbs, substitute light fittings and lamps to optimise lighting layout and add more circuits and switches for greater control and automation.

There are many different types of lighting available including halogen incandescent lights, compact fluorescent lamps (CFL) and light emitting diodes (LEDs). Each of these types deliver a variety of wattages, light spectrums, and size. Your existing infrastructure may influence replacement opportunities.

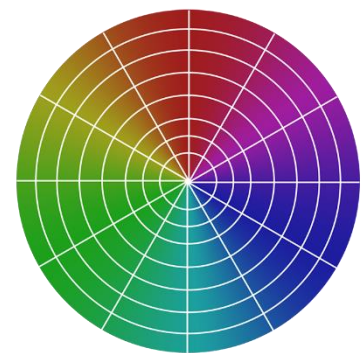
Light output is measured in lumens while the efficiency of lighting is measured as a ratio of lumens to watts. This measure gives an indication of how effective the system is at producing light per watt of power.

A Colour Rendering Index (CRI) can be used to determine the appropriateness of lighting to specific spaces and tasks. CRI differentiates lighting based on the appearance of standard colours subject to lighting conditions. A CRI of 100 will not significantly affect colour rendering, however as the CRI decreases, colour distortion increases.

Similarly, colour temperature refers to the 'feel' of the light with standard incandescent lights providing a warm yellow feel whereas lighting with higher colour temperatures produce a cool blue light.



CRI value 90



CRI value 70

LIGHTING CONTROLS AND NATURAL LIGHTING

Automatic control of lighting systems may be a more feasible option than trying to encourage staff and guests to actively manage lighting. Automated lighting controls include:

- Timers – can be used to turn lights on and off at specified times or to limit the duration a light stays on.
- Occupancy detectors – sensors that automatically switch lighting on when occupants are detected in the room.
- Photosensors – senses the availability of light and adjusts the lighting levels according to predetermined requirements.
- Room key card switches – power is switched off when the key card is removed.
- Building Management System (BMS) – central control of lighting and other electronics.
- Power reducers – reduce the overall power supply to a compatible lighting system.

Use of natural lighting can have significant benefits in terms of reduced consumption and enhanced comfort. Opportunities for improving natural light include skylights, open roofs, absorbent windows that transmit visible light and sunlight transportation devices used in conjunction with solar panels.

CASE STUDY



PARK HYATT MELBOURNE

Overlooking St. Patrick's Cathedral, Fitzroy Gardens, and the cosmopolitan mix of Victorian and modern architecture, Park Hyatt Melbourne offers exclusive, luxury accommodation in the heart of the city.

The beautifully appointed 5 star hotel is centrally located in Melbourne's CBD, offering the city's largest 245 guestrooms and suites. A warm ambience, exceptional levels of personalised service and luxurious amenities with exquisite surrounds - provides guests a private haven in the heart of the city.

Working through Melbourne's Green Building Fund, the Park Hyatt received grant funding to conduct an analysis of and develop business cases for ways to maximise energy savings to improve efficiencies for the hotel's operations.

As part of the energy efficiency initiatives the following actions were taken:

- ✓ Dichroic down lamps and fluorescent lamps replaced with LED lamps.
- ✓ Coloured LEDs utilised to enhance the visual appeal of the hotel.

In testing of the new lights, the results suggest that downlight energy consumption will be reduced by 75% and fluorescent energy consumption reduced by 60%.

Maintenance will also be reduced across the property with increased life expectancy of the new lights from 2,000-10,000 hours to 50,000 hours for the new LED lights.