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# LIGHTING FACT SHEET



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## EVERY BUSINESS USES LIGHTING AND EVERY BUSINESS CAN SAVE MONEY BY UPGRADING AND MANAGING THEIR LIGHTS BETTER.

Lights do more than just illuminate an area; they are essential for a safe and productive workplace. Further, they determine the aesthetics of a business, which can make a big difference in attracting customers. Reducing lighting operating costs involves assessing existing lighting,

determining the most suitable upgrades and refining light usage and behavioural patterns. Increased lighting efficiency will not only reduce your running costs but will also help the environment by reducing carbon emissions. Below are examples of some easy and cost effective lighting upgrades.

### CURRENT LIGHTS



#### HALOGEN

A very common and inefficient light that come in 12V (two small pin connectors) and 240V (two nail head like connectors). 12V need transformers.

**Wattage** - 50w & Transformers 5w  
**Typical Annual Running Costs** - \$42  
**Lamp Life** - short (2000H - 3000H)



#### T8 FLUORESCENT LAMPS

A common light source that are reasonably efficient with a number of upgrades.

**Wattage** - 36w & magnetic ballast - 6w  
**Typical Annual Running Costs** - \$32  
**Lamp Life** - Moderate (12,000H - 16,000H)



#### HIGH INTENSITY DISCHARGE

Includes metal halide and mercury vapour. Often used in warehouses and factories with high running costs and quick lumen decline.

**Wattage** - 40w to 440w (inc. ballast)  
**Typical Annual Running Costs** - \$335  
**Lamp Life** - Moderate (6000H - 24,000H)



#### METAL HALIDE SHOP LIGHT

A common shop light with high running costs and quick lumen depreciation.

**Wattage** - 150w  
**Typical Annual Running Costs** - \$115  
**Lamp Life** - Moderate (10,000H - 15,000H)

### REPLACE WITH



#### LED (LIGHT EMITTING DIODE)

An increasingly common light that is extremely efficient and long lasting. Has multiple applications and can replace most lights.

**Wattage** - 3w to 20w  
**Typical Annual Running Costs** - \$9  
**Lamp Life** - High (25,000H - 50,000H)



#### T5 FLUORESCENT LAMP

A more efficient fluoro light that is easy to retrofit. Buy with electronic starter to maximise savings.

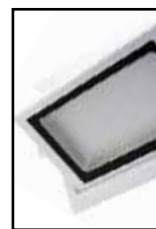
**Wattage** - 28w + 2w for electronic starter  
**Typical Annual Running Costs** - \$23  
**Lamp Life** - Moderate (16,000H - 20,000H)



#### LED HI BAY

A very efficient and long lasting light. Lumen output can vary so ensure lamp brightness suits the work activity.

**Wattage** - 100w to 200w  
**Typical Annual Running Costs** - \$115  
**Lamp Life** - High (50,000H)



#### LED SHOP LIGHT

A very efficient and long lasting light that can quickly recoup retrofit costs.

**Wattage** - 40w  
**Typical Annual Running Costs** - \$30  
**Lamp Life** - High (50,000H)

Annual Costs: 60 hour, 51 weeks @ \$0.25 per kWh.



**Workin Gear** are a small clothes shop is Fyshwick supplying work wear and safety gear.

The store is small and has very little electrical equipment other than lighting, a till, a radio and a sewing machine. It was recommended that the business replace their current lighting with more efficient LED lighting. Their original report estimated that the business could save approximately \$1,600 per year (40% of their annual bill) and reduce associated

CO<sub>2</sub>-e emissions by 5.9 tonnes. Working Gear implemented the lighting upgrade in December 2012. For the 6 months prior to the lighting upgrade the average monthly electricity consumption was 1141 kWh's (=/- 10%). In the 5 months since the lighting upgrade has been completed the average monthly consumption has dropped to 595 kWh's (=/- 15%). The data collected from Workin Gear, if extrapolated, show that the upgrade has exceeded estimates and financial savings for the business will exceed \$1,700 and associated carbon emissions will be reduced by 6.1 tonnes.

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## BEHAVIOURAL CHANGE

**The best lighting solutions look at** both behavioural change and retrofitting. Behavioural change is how the equipment is being used and can offer substantial energy savings with little or no upfront cost. Below are the most common lighting behavioural changes that can save your business money.

**TURN LIGHTS OFF WHEN NOT NEEDED** – Seems simple but should be one of the first things to look at, particularly lights left on at night and in rarely used areas.

**EDUCATION** – Educating and engaging staff on the costs of lights and benefits in reduced usage is an essential step in achieving the greatest savings. Staff may be more familiar with usage and should be involved from the start of the project.

**DE LAMPING** – Simply removing lamps in areas that are over lit. Ensure that Australian standards regarding lumen requirements are met. (see [www.standards.org.au](http://www.standards.org.au))

**CLEANING OF LUMINARIES** – Making sure that lights are clean will increase their lumen output and may allow other lights to be used less frequently

**DAYLIGHT** – Making the most of daylight, maybe as simple as opening blinds during the day.

## LIGHTING CONTROLS

**The most efficient light is the one** that isn't used. Lighting controls allow greater flexibility over lighting use which can generate large savings.

**TIMERS AND TIME DELAY SWITCHES** – Timers automatically turn lights on and off at predetermined times. Time delay switches turn lights off after a set period of time, often used in bathrooms.

**MOTION SENSORS** – Lights turn on when someone enters a room and turn off when they leave. Newer systems are accurate and can be fine tuned for greater effect.

**BUILDING MANAGEMENT SYSTEMS (BMS)** – A centralised digital controller that creates ease of use and flexibility in controlling large lighting systems

**SKYLIGHTS** – Well placed skylights and windows can make a huge difference in a buildings lighting costs.

**DIMMERS** – Light dimmers allows greater flexibility in light usage and running costs.

**SWITCH POSITIONS AND BANK SIZE** – Where light switches are positioned within a building can make a big difference in staff usage patterns. Likewise, having smaller banks of light switches allows greater control over light use.

## GLOSSARY

**BALLAST** – A device that limits the amount of flow in an electrical circuit. Essential in some lights, electronic ballasts are more efficient than magnetic ballasts.

**COLOUR RENDITION INDEX (C.R.I.)** – measures and defines the accuracy of the light onto an object  
**80+** - high detail, often used in art galleries & museums  
**75** – office **60** - industrial

**EFFICACY** – The amount of light obtained by the energy used. Is measured in lumens per watt (lm/W)

**KELVIN (K)** – Unit of measurement for lighting colour variation The lower the number the yellower or 'warmer' the light, the higher the number the cooler or bluer the light.  
**Warm** = 2000K to 3500K  
**Cool white** = 3500K to 7000K  
**Bluish White** = 4500K or more

**LAMP** – the light source, normally mounted inside a luminaire.

**LUMEN (LM)** – Unit of measurement for the amount of light or flow rate emitted by a lamp.

**LUMINAIRE** – A light fitting, including all of its components including: reflectors, diffusers, current regulating devices and mounting hardware

**LUX** – Unit of measurement. The amount of light hitting a surface when calculated equates to lumens per square metre.

## CHECKLIST

**DETERMINE HOW WELL YOUR CURRENT SYSTEM IS PERFORMING** What are the reasons for upgrading and what are you wanting to achieve? Get staff involved.

**AUDIT CURRENT LIGHTS** count how many lights and what kind. Determine usage patterns. Identify which lights to be upgraded and/or which circuits re-wired. Contact ACTSmart for assistance in carrying out lighting audit

**DETERMINE UPGRADE OPTIONS** Rank them based on payback periods. Prepare a business case for upgrading.

**GET QUOTES FOR UPGRADES** Check installer credentials, Legal compliance (see Electricity Safety Act 1971-30; Electricity Safety regulations SL1971-10; [www.legislation.act.gov.au](http://www.legislation.act.gov.au)) and product warranty. Cheapest may not necessarily be best. Check old lights are being disposed of properly. Check product warranties.

**COMPLETE AND CHECK THE OF QUALITY WORK** implement any behavioural change strategies.

**ASSESS EFFECTIVENESS OF UPGRADES** Check your energy bills pre and post retrofit. Where your projections correct?