

# Environmental Purchasing Checklist

## Task lighting/desk lamps

This checklist suggests environmental criteria for use by Australian Government departments and agencies in purchasing task lighting. These environmental criteria would generally be considered together with price, quality and other purchasing criteria, in accordance with the [Commonwealth Procurement Guidelines and Best Practice Guidance](#). The checklist also provides tips for purchasers and users and links to further information. Purchasers may choose to amend the criteria and specifications to meet their own requirements.

### WHAT ARE THE ENVIRONMENTAL ISSUES?

All products or services have some impact on the environment, which may occur at any or all stages of the product's life cycle – raw material acquisition, manufacture, distribution, use and disposal. This checklist focuses on the environmental impacts that may be relevant to purchasers of task lighting.

Energy used for lighting is responsible for more than a quarter of the greenhouse gas emissions from commercial buildings, even without counting the emissions associated with air conditioning to remove the heat created by the lights. Energy production also results in air and water pollution.

Task lighting is not a substitute for a well-planned office lighting system. It is useful when individual staff members want more light in their offices, but the situation does not warrant an overall upgrade of office lighting. It can also be used in circumstances where a decision is made to provide lower background lighting levels than required on working surfaces. Under Australian Standard AS 1680, background lighting could be set to a level of 240 lux, and task lighting is used to provide higher lighting levels on working surfaces.

Many opportunities exist for improving the efficiency and reducing the cost and environmental impacts of lighting. Providing good and efficient task lighting can significantly reduce overall lighting demands by effectively putting light where it is needed and reducing overhead lighting requirements. Task lighting involves use of a localised light source in a person's work area directed on some activity or task, eg an adjustable-arm desk lamp. Poor lighting, eyestrain and glare are among the most frequent complaints about working conditions. Providing staff with greater control over their lighting reduces problems of glare and eyestrain.

### KEY AUSTRALIAN GOVERNMENT POLICIES

The [Commonwealth Procurement Guidelines and Best Practice Guidance](#) state that the core principle governing Australian Government procurement is value for money, a concept evaluated on a whole of life basis for the goods or services being procured. Officials buying goods and services need to be satisfied that the best possible outcome has been achieved, taking into account all relevant costs and benefits over the whole of the procurement cycle.

According to the [Commonwealth Procurement Guidelines and Best Practice Guidance](#), “officials should be aware of any relevant environmental legislation and targets set by the Commonwealth, and ensure they take into account matters affecting the environment ... when formulating requirements. They should include relevant environmental criteria in specifications and requests for tender.”

The [Australian Government Energy Policy](#) “Measures for Improving Energy Efficiency in Commonwealth Operations” requires: tenant’s light and power use in office buildings to achieve a target of 10,000 MJ per person per year by 2002.

## SUGGESTED ENVIRONMENTAL PURCHASING CRITERIA FOR TASK LIGHTING

Give consideration to task lighting products ...	Comments
... using an energy efficient light source.	<p>A 15-watt compact fluorescent globe provides slightly more light than a 60-watt standard incandescent globe or a 50-watt halogen globe (halogen globes are just another form of incandescent globe).</p> <p>Standard incandescent and halogens waste energy because about 90% of the electricity they use is turned into heat, not light. That makes them uncomfortably hot to be near and increases the amount of energy used for air conditioning.</p> <p>The compact fluorescent will last about 10,000 hours, compared to about 1000 hours for an incandescent, and 2000 hours for a halogen globe, so one compact fluorescent will last as long as 10 incandescent globes or 5 halogen globes</p> <p><a href="#">(see whole of life comparison for globes)</a></p>
... with ballasts that will not cause electronic interference with telephones or other office equipment.	<p>If compact fluorescents will make up a large part of the electricity used in the office, specify that you want compact fluorescents with low harmonic distortion.</p>
... with a Power Factor of .9 or above	<p>The Power Factor tells you how much power is going back into the supply during the 50-hertz operating cycle of the appliance. A higher Power Factor is more energy efficient because it reduces losses in electricity distribution systems. It also saves money because it minimises demand charges for electricity.</p>

... involving desk lamps with flexible arm.	Flexible lamps allow users to direct light where they want it and away from eyes and computer monitors.
... that can be used flexibly, such as with a clamp to attach the lamp to desk or bookshelf, and a swing arm (as in architect lamps) to permit easy redirection of light.	Clamping lamps to a bookshelf above the desk or to a corner of the desk will provide a better spread of light across the work surface than if a light sits near the user on the desk.
... with low environmental impact packaging.	See <a href="#">Packaging</a> checklist.
... from companies that document additional environmental benefits of their products or superior environmental performance of their companies.	Documentation for products could include external verification of claims, e.g., certification of the product through a reputable environmental labelling program. (Imported products may be certified under an overseas program.) Documentation for companies could include environmental management systems certified to ISO 14001, public environmental reporting, Design for Environment (DfE) policy etc.

## WHOLE OF LIFE COST COMPARISON – LIGHTING TYPES

Lamps for task lighting are available for use with compact fluorescent, halogen and standard incandescent globes. A comparison of costs for these globe types is shown below:

Swing arm (architect) desk lamps that use the different globe types cost about the same so this comparison only looks at the globes themselves.

### *For 10,000 hours of use*

	<b>Compact fluorescent (15 watt)</b>	<b>Halogen (50 watt)</b>	<b>Standard incandescent (60 watt)</b>
number needed	1	5	10
cost per globe*	\$15	\$7	\$1
total globe cost	\$15	\$35	\$10
energy used (watt-hours)	15 X 10,000	50 X 10,000	60 X 10,000
energy used (kwh)	150	500	600
energy cost (@.15c/kwh)	\$22.50	\$75	\$90
<b>Total cost</b>	<b>\$37.50</b>	<b>\$105</b>	<b>\$100</b>

\*Prices of globes can be adjusted to reflect local costs at the time of purchase. Please note that these are indicative costings only, and energy prices vary.

## **TIPS FOR PURCHASERS**

To gain maximum energy savings from use of task lighting, consider whether light output from ceiling lights above work areas can be reduced by delamping or other means without detrimentally affecting the quality of light in the area. Also investigate whether lighting in different areas can be switched off separately. If not, consider the installation of additional switches.

Make sure that the request for task lighting is not a result of poor office lighting that causes discomfort or glare. This will not be corrected by the task lighting unless changes are made to the ambient lighting, or ceiling lights can be turned off in the area (this may require installation of additional switching to divide an office into smaller areas). If poor quality lighting conditions exist, it is important to correct them, not just provide desk lamps.

Long-life incandescent globes are not appropriate for task lighting because in energy terms, they are actually even more inefficient than standard incandescents. A 75-watt long-life globe puts out only as much light as a 60-watt standard incandescent, so to achieve similar light levels will cost about 25% more. Long-life globes make sense only when incandescents must be used in difficult to reach places; then the reduced cost of labour outweighs the extra energy cost.

You can require suppliers to include the take back of all packaging in their bids and specify how they dispose of that material.

You can request that suppliers specify what, if any, recycled content is used in the equipment.

When tubes and lamps are being changed over, you should enquire about how the old tubes will be disposed of. It is now possible to recycle fluorescent and High Intensity Discharge (HID) lamps in Australia, diverting mercury from landfill and risk of environmental release.

## **TIPS FOR USERS**

Lamp placement - Place lamps a bit away from the spot where you will read or do other tasks. This will spread the light over a larger area and avoid sharp contrasts between areas lit by the lamp and other areas.

It is worthwhile to run training to increase staff awareness about new lighting, including the best ways to operate the new systems.

## **SUCCESS STORIES**

The Department of the Environment and Heritage has committed to the ongoing recycling of fluorescent tubes from its operations. This ensures that the mercury contained in the tubes is diverted from landfill. This commitment includes compact fluorescent tubes from task lighting.

Further success stories can be found at the [Greening of Government website](#).

## LINKS TO FURTHER INFORMATION

The **Greening of Government** website provides the policy framework for Greening of Government, as well as a range of Green Procurement Tools and other useful information.

<http://www.ea.gov.au/industry/sustainable/greening-govt/index.html>

**Energy efficient lighting website:** Covers energy and cost aspects of efficient lighting and provides links to a selected group of energy and lighting websites (This is a U.S. site, but much of the information is equally applicable to Australia.) <http://www.lightsite.net/>

**Working Energy** website of the AGO includes a training and resource kit for energy/property managers and a building energy evaluation methodology. It has been designed to provide a simple and structured solution for ensuring the more efficient use of energy in Australian Government operations and achievement of energy performance targets through development of best practice.

[http://www.greenhouse.gov.au/government\\_op/workingenergy/index.html](http://www.greenhouse.gov.au/government_op/workingenergy/index.html)

**Tenant Energy Management Handbook** is a step-by-step guide to assist commercial tenants and building managers in using energy more efficiency. Hard copy available from SEDA, Level 6, 45 Clarence Street, Sydney, NSW 2000, or offices of the [Property Council of Australia](#).

**Design for Environment** - Reducing environmental impacts through better design (such as using less toxic components, or making the product easier to disassemble and recycle or reuse) is referred to as Design for Environment or DfE. Many manufacturers, suppliers and industry associations may be able to provide information on their DfE activities. The Department of the Environment and Heritage has an introduction to DfE in business available at <http://www.ea.gov.au/industry/finance/publications/producer.html>

## Environmental specification

# Task lighting/desk lamps

Purchasers should request information from potential suppliers at the time of requesting a quotation. This environmental specification is intended to provide assistance in obtaining environmental data from suppliers. The information that would be requested from suppliers is shown in the Information required column. Items in this specification are based on criteria in the Environmental Purchasing Checklist for Task lighting.

Consideration will be given to task lighting...	Information required from companies	Weighting (total= 100%)
... using an energy efficient light source.	Identify the light source to be used in the lamp, including: <ul style="list-style-type: none"> <li>• type</li> <li>• light output (lumens) (purchaser may choose to specify required light output)</li> <li>• wattage</li> <li>• energy consumption of lamp (including any transformers)</li> </ul>	30-40%
... with ballasts that will not cause electronic interference with telephones or other office equipment.	For fluorescents only: identify the total harmonic distortion of the ballasts. Maximum THD shall not exceed 20%	5-15%
... with a Power Factor of at least .9	Specify the power factor of the lamp. Maximum Power Factor shall be at least .9.	5-15%
... involving desk lamps with articulated arm.	Provide details of the design of the lamp, including the range of movement provided by articulated arm and evidence of balancing of head and arms	10-20%
... that provide for flexibility of use, eg providing a clamp to attach the lamp to desk or bookshelf	Provide details of clamp for attaching lamp to a desk or bookshelf or other bracket or weighting of lamp base	5-15%
... with low environmental impact packaging (this criterion to be used only where packaging is significant) .	List the types of packaging used in delivering your product, including bulk delivery packaging. Specify:	5-15%
	the total weight per unit product,	
	the proportion of recycled material used, and	
	whether the packaging can be recycled locally.	

	<p>State whether you will take back the packaging for reuse or recycling after delivery.</p>	
	<p>Describe any disposal advice provided on your product packaging, including the size, location and colour of the advice notice.</p>	
	<p>Specify whether your packaging includes any loose fill material.</p>	
	<p>Specify whether your company is a signatory to the <a href="http://www.ea.gov.au/industry/waste/covenant/signatories.html">National Packaging Covenant</a>. See <a href="http://www.ea.gov.au/industry/waste/covenant/signatories.html">http://www.ea.gov.au/industry/waste/covenant/signatories.html</a></p>	
<p>... from companies that document additional environmental benefits of their products or superior environmental performance of their companies.</p>	<p>Provide appropriate documentation to support any environmental claims made</p>	<p>5-15%</p>