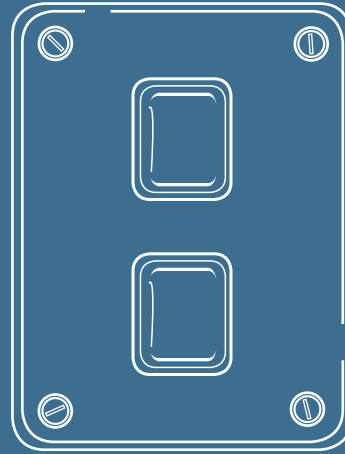


Saving energy in business: lighting



Many businesses could shave up to 40% off their lighting costs.

In a typical office building, about a quarter of the energy used goes on lighting. If you lease office space and pay for 'tenant energy' only, lighting can make up more than half of your energy bills. There are a number of ways to reduce the energy used for lighting – and many of these cost little or nothing.

Turn them off

The simplest action, it's the most effective – and often overlooked. If a space will be unoccupied for a few minutes or more, lights should be switched off. Staff's daily habits make all the difference. Make it someone's job to turn off the lights in each area at the end of the day. Stickers on switches or posters around the office are a good reminder.

Maintain and 'de-lamp'

As lighting systems age, light levels can drop by over 50%. Loss of output from the lamps and dirty fittings both contribute to this. To avoid light loss, ensure fittings are cleaned regularly and that lamps and starters remain in good condition.

Sometimes non-work areas such as hallways and foyers have more lighting than they need. Light energy savings of up to 40% can be made by selectively removing lamps. Use a light meter to check that light levels are adequate. It's a good idea to mark 'de-lamped' fittings with stickers to stop maintenance staff replacing them.

Bulk re-lamping can reduce replacement costs by up to 60% - and the fittings get cleaned at the same time.



Do 'bulk re-lamping'

If you only change lamps as needed ('spot' re-lamping) it can cost up to \$70 to get one lamp changed. Bulk re-lamping can reduce replacement costs by up to 60% - and the fittings get cleaned at the same time. A good rule is to put aside an extra 7% of your lamp needs at the time of bulk re-lamping, and use this stock up as lights start to fail. By the time you've worked your way through them, it will be time to re-lamp in bulk again.

The RightLight website has the most comprehensive range of advice available on choosing lighting for your business. It includes an assessment tool to help you see where you could make changes to the lamps you use, to save energy and money.

Choose the most efficient lamp for your needs

For most offices, the standard fluorescent tube is still the most efficient choice. It has high efficiency, long life, good colour and switches on instantly. T5s are thinner fluorescent tubes that use less energy than the standard T8, and suit some workplaces.

Other types of light are available for accent and amenity lighting such as halogen, compact fluorescent lamps (CFLs), metal halide and more recently, efficient light emitting diodes (LEDs). When choosing lamps ask about energy costs, replacement costs and lamp life.

Visit [Rightlight.govt.nz](http://www.rightlight.govt.nz)

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- Visit www.rightlight.govt.nz/business/lighting-assessment to use the lighting assessment tool
- Visit www.rightlight.govt.nz/business/efficient-lighting-for-your-business/solutions-for-my-business to see detailed advice for different sectors.

Design with lighting in mind

The easiest time to make lighting energy-efficient is during the design or fit-out of a new space. The key issues to consider are ideal light levels, the type and layout of light fittings (making sure there aren't too many), what switches and controls you need, and where these should be placed.

Efficient lighting design can be as simple as wiring lights in convenient, individually switched zones so they can be easily turned off. Banks of switches should be labelled so staff know exactly which areas they relate to.

Install timers or sensors

Timers may be a good option in open plan offices or large conference rooms where it's difficult to make one person responsible for turning off lights. They can also be useful for areas used periodically, such as storage rooms.

Occupancy sensors are triggered by motion to ensure lights are only on when people are using a space. Used well, they can save a substantial amount of light energy. They include a time out function so that lights switch off if there's no movement for a set period.

Daylight sensors can also be used to make sure artificial lights aren't on when there is good natural light.

Good quality sensors can start from \$150. Typically, the larger the circuit (i.e. the more lights they control) the more cost effective they will be. And they will save more in situations where people often don't switch lights off manually. To work out whether sensors are a cost-effective option, you should first get an idea of your current lighting costs.

From the good ideas file

When labelling banks of light switches, give them different coloured dots and put the same coloured dot next to the light. That way staff can see at a glance which zone they're turning off or on.

Work environments	Ideal lighting levels
Offices	Most small and open plan offices should be lit to around 320 lux over the entire floor area, though spaces for specific work may need more light.
Retail	Ambient light can vary from 150 lux in top-end retail to 800 lux in basic retail. Accent lighting from 750-1,000 lux may also be used in higher end retail stores.
Industrial	Industrial needs can vary from 40 lux for general areas up to 800 lux and higher for jobs needing close focus.
Education	Classroom and study areas should be lit to around 240 lux minimum

Source: www.rightlight.govt.nz. For specific technical guidance, the standard AS1680 should be referred to.

Case study

A large office-based organisation with around 800 lights, was spending \$18,000 a year on spot-relamping (changing tubes as they failed). They undertook a bulk-relamping exercise which cost \$21,000 and will last over three years before re-lamping is needed again.

Lighting cost calculation - sample

A single fluorescent tube may cost around \$23 per year in electricity if it's on only during work hours. If an office has 120 light fittings with three tubes in each fitting, the energy costs per year are \$8,200. If the time that lights are on can be reduced by 20%, that's an annual saving of \$1,650 – even before any other energy-saving changes such as de-lamping.

Sensor type	How it works	Good for...
Infrared	Senses movement perpendicular to or across the sensor	Enclosed spaces such as meeting rooms, store rooms
Ultrasonic	Senses movement towards or away from the sensor	Large open spaces and corridors
Dual technology	Combines Infrared and ultrasonic sensors	Useful where very reliable sensing is needed
Flush box mounted sensors	Infrared or ultrasonic sensors that replace standard light switches	A low-cost option for small rooms such as meeting and store rooms

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Use daylight

Make the most of natural light by placing desks near windows, making sure windows are clean and blinds opened. Research is starting to show that people are more productive and learn better in naturally-lit environments. People working in daylight should be able to switch off lights near their work area.

Fact – office lighting

Some people think it's more efficient to leave fluorescents on, because it takes a burst of energy to re-start them. In fact, the power used to start the lamp is equal to less than a second of lighting time – so it saves energy to switch them off when not needed, even if only for a few minutes.

Action checklist: office lighting

	Make it someone's job to turn off lights in specific areas at the end of the day
	Ask staff if they're happy with the lighting around their work area, or if they've noticed areas that are over-lit or with lights commonly left on
	Mount an internal campaign to encourage staff to switch off lights when not needed. Download stickers and posters from the EECA Business website as a reminder
	Check all work areas for over-lighting – use a light meter. As a rough guide, offices should be around 320 – 400 lux
	Walk around your workplace after-hours to see where lights are being left on
	Make sure external lights are off during the day
	If you're already using timers or sensors, check that they're being used correctly. For example, make sure timers on outside lights are set for daylight saving hours
	Put labels on banks of switches so it's clear to staff which zones they relate to
	Make the most of natural light by putting work areas by windows and ensuring windows and skylights are clear and cleaned regularly
	Make sure there is a schedule for light fittings' regular cleaning and maintenance
	Do bulk re-lamping, putting aside 7% of your lamp needs for changes before the next round of re-lamping (typically every 3 - 4 years)
	Do some selective 'de-lamping'. Put stickers on the fittings to remind staff not to replace lamps that aren't needed
	Install task lighting for contained work areas wherever possible
	Consider installing skylights or solar tubes if possible
	Paint interior walls light colours to boost the illumination levels
	Install timers or occupancy sensors in areas that don't need constant lighting
	If you use incandescent bulbs, replace these with compact fluorescents
	Ensure the lamps you're using are the most efficient ones for your needs - visit www.rightlight.govt.nz
	Consult a lighting technician or eco-electrician about your options, including which types of lamp best suit your workspace
	Review your choice of lamp periodically, balancing the up-front cost of replacement with the lamp life and energy cost over time

For more information

The Electrical Contractors Association of New Zealand (ECANZ) runs the EcoSmart Electricians programme. To find an Ecosmart electrician in your area, visit www.ecosmartelectricians.org.nz

