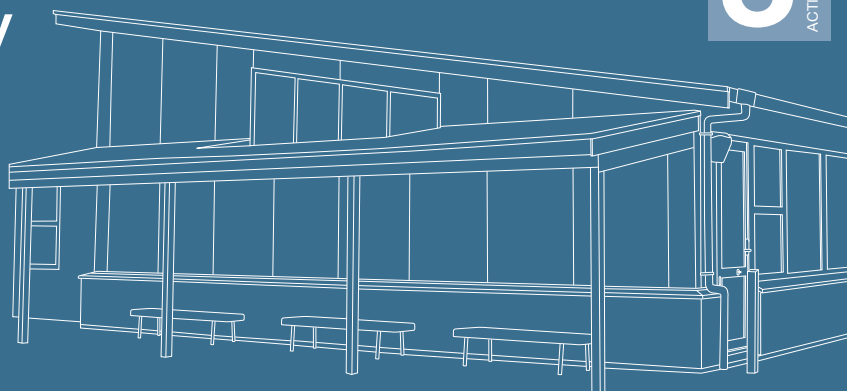


# Saving energy in schools: lighting



Lighting is one of the most intensive uses of energy in schools, typically making up around 30% of a school's electricity use (and up to 80% if electricity is not the main heating source).<sup>1</sup> One of the cheapest ways to reduce energy use is to encourage staff and students to switch off.

## Switch it off

Use stickers and posters to remind people to turn off lights after use. If this isn't practical (for example, when community groups use rooms after hours) it may be worth investing in occupancy sensors or timers.

For larger schools it may be economical to have a centralised lighting control system which means lights can be automatically scheduled to turn off at the end of each spell. These systems (also known as a Building Management System, or BMS) allow lights to be turned on or off from a central PC and can also be used to control electric heating or heat pumps.



## Natural is best



The best lighting solutions maximise natural light, and use artificial light that is as energy efficient as possible. Cost benefits aside, studies have shown that daylight enhances students' performance and attendance<sup>2</sup>. Relying on natural rather than artificial lighting also helps keep classrooms cool and comfortable in summer.

In general, windows located above eye level allow daylight to reach the deepest part of the room while minimising glare and overheating from direct sunlight. If your school is planning a new building or renovations, our *Saving energy in schools - new building projects* action sheet has more tips on good lighting design.

<sup>1</sup> Based on an energy audit of 20 secondary schools around NZ

<sup>2</sup> Day lighting in Schools An Investigation into the Relationship Between Day Lighting and Human Performance - Heschong Mahone Group 1999

## Action checklist

Agree with staff on a process for turning lights off at the end of the day, at the end of the week, and for school holidays.
Ensure windows are cleaned regularly and trim overhanging trees and plants.
Clean lights and fittings annually. As lighting systems age, lighting levels can drop by over 50%.
Paint walls and ceilings high gloss white to reflect daylight around the room.
Ensure the level of lighting is appropriate for each area in use. Around 240 lux is recommended as the minimum for the working plane (i.e. desks) in classrooms, but other tasks or learning areas may need more light. See <a href="http://www.rightlight.govt.nz">www.rightlight.govt.nz</a> for a guide or for specific technical guidance, see the standard AS1680.
Look for over-lit areas and carry out selective 'de-lamping' where possible, concentrating on areas near windows and doors, corners, skylights, over computers and televisions, and corridors.
Rather than waiting for individual fluorescent lamps to fail, replace every lamp in your school at the same time (called 'bulk re-lamping'). Put aside an extra 7% and use these up as lights fail.
Your school may also still have the old 'blackboard lights', which are no longer useful and create glare on whiteboards. Disconnect these.
Install lighting controls to take advantage of daylight. This can be as simple as rewiring banks of light switches to enable staff to turn off lights in areas of the classroom that have good access to daylight.
Consider installing light fittings with electronic dimmers. This means that as natural daylight increases, the lights automatically dim to maintain constant light levels.
Install occupancy sensors in offices and other areas that are often empty. This ensures the lights are off when the room is un-used but automatically turn on when someone enters.
Consider installing timers that turn lights turn off at the end of each class. Occupants then manually switch lights back on if they are needed for the next class.
Replace traditional incandescent lamps with compact fluorescent lights (CFLs) in small spaces and with linear fluorescent tubes in larger spaces. T5s are thinner fluorescent tubes that use less energy than the standard T8s. Talk to your supplier about the right lamp for your needs.
Consider installing LEDs in lights that must be on continuously such as exit signs. While the upfront cost is higher than ordinary bulbs, they will last much longer, saving on maintenance costs.
Install efficient outdoor lighting. Where possible use fluorescent fittings. Sodium lamp fittings are generally the most efficient but may an issue where colour rendition is important for security cameras.
Install a single daylight sensor to control all outdoor lighting - this means only one sensor needs to be maintained.

### For more information:

For more information on reducing your lighting energy needs, including a lighting assessment tool to guide your choice of energy efficient lamps, visit [www.rightlight.co.nz](http://www.rightlight.co.nz)

The Ministry of Education has information on classroom lighting in the property management section of its website at [www.minedu.govt.nz](http://www.minedu.govt.nz)

To find out more about saving energy at school, check out the other action sheets in this series or visit [www.eecabusiness.govt.nz/how-to-be-energy-efficient/schools](http://www.eecabusiness.govt.nz/how-to-be-energy-efficient/schools)