

# Car Park Lighting Fact Sheet

The City of Melbourne's Sustainable Living in the City (SLIC) pilot project assessed four high rise apartment buildings and used low cost retrofits and behaviour change workshops to reduce the water, waste, and energy used in the buildings.

Savings were achieved at apartment level and at building level, with particular success in reducing energy used for lighting and hot water.

There are many things you can do to reduce energy use in your building's car park.

The SLIC program trialed sensors and voltage reduction to reduce the energy use in the car parks of three apartment blocks with impressive results.



The Southbank Towers car park is significantly brighter and uses 25 per cent less energy since voltage reduction units and low mercury globes were installed

## What is a voltage reduction unit?

Most fluorescent lights need the normal mains power level to start up but require a lower level of power once they are on. A voltage reduction unit is a microprocessor that provides the normal mains power for start up and then reduces power flow for ongoing operation.

The drop in current is dependent on the age and type of the fluorescent fittings. Cases documented show consistent savings in excess of 25 per cent, with many over 30 per cent.

Voltage reduction is not affected by the switching on or off of adjacent banks.

## Can you apply voltage reduction and/or sensors in your building?

**YES.** If the car park has sensors

Voltage reduction is definitely the best option for car parks with sensors because T5 retrofits will not work in car parks with sensors.

**YES.** If the car park does not have sensors

Think about whether the lights need to be on 24 hours a day. If the car park has periods of low use you will get greatest results from installing voltage reduction and sensors.

You may decide to retrofit with either sensors or voltage reduction but greatest results come from installing both voltage reduction and sensors. It is more cost effective to install both treatments at the one time rather than having an electrician come for two visits.

**NO.** If you have T5 lamps

Neither voltage reduction nor sensors are an option with T5 tubes because they can make the T5's burn out. T5 tubes are already the lowest energy tube on the market. Most car parks are too cool for T5s to function effectively so most Australian car parks have T8 tubes.

**YES.** If you have T8 lamps

Car parks with T8 tubes benefit from voltage reduction and from sensors.

## How do you know if your car park lighting has T5 tubes or T8 tubes?

The terms T5 and T8 refer to the width of the tube. The number refers to how many eighths of an inch in the tubes diameter.

A T5 is 5/8ths of an inch and a T8 is 8/8ths of an inch (or 1 inch). Most older fluorescent tubes are T8s.



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## Are you concerned about light levels in your carpark?

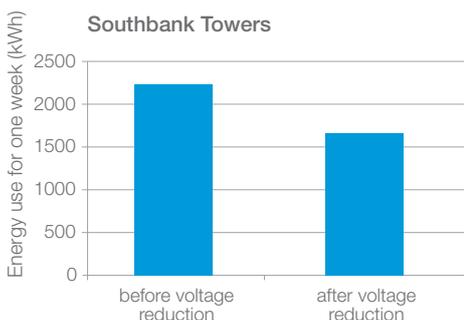
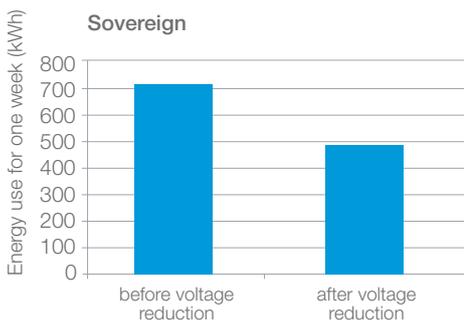
Voltage reduction systems do result in a slight reduction in light levels (lux). This can be a concern because many car parks are already under-lit. In many cases this is because fluorescent tubes lose luminescence over time.

If this is the case, talk to your electrician about upgrading to low mercury tubes. Low mercury tubes are not only better for the environment, they also maintain good light levels for the life of the lamp.

Extensive lux metering of the three buildings that were fitted with Light Eco units showed that the Spring St Towers car park's light levels were slightly reduced. However, the difference was not visible to the naked eye.

Light levels in Southbank Towers, and the Sovereign, which had low mercury tubes installed, were significantly increased - up to 32 per cent in some areas.

Graphs of one week of energy usage in each car park before and after installation:



## What will the payback period be?

Payback periods will vary from building to building. The main factors to consider are:

- 1) the cost of installation - large car parks tend to have lower payback periods because the installation cost per unit is reduced.
- 2) hours of use - voltage reduction units will give the highest savings in buildings that have long hours of lighting, sensors will give greatest savings in car parks that are unused for long periods.

All three car parks retrofitted through the SLIC program had payback periods in the range of 1.5 to 3 years.

“After the voltage reduction device was installed and the whole car park was re-tubed, we have found our maintenance has reduced and the overall light levels across the car park have improved. Also, all residents have responded positively to our efforts with energy reduction.”

*Wayne, Southbank Towers*



Six voltage reduction units

*The City of Melbourne thanks Bone Electrical, EcoBright Energy Solutions, and Melbourne Inner City Management for their assistance in developing this fact sheet.*