



## Case Study

### Solar Bud Lighting High Street Northcote

**The Environment Shop has recently designed, supplied and installed a solar powered LED (Light Emitting Diodes) bud-lighting kit, a project by local traders to light the trees in their street. The result is much lower power consumption, longer life and when powered with solar panels, zero greenhouse gas emissions. The use of solar power also means total flexibility in locating the lights, as no 240-volt power is required.**

Bud lighting adds a magical sparkle to trees and buildings in public places. However, of all the forms of public lighting it is by far the most energy inefficient. Those little glowing bulbs are designed for long life rather than efficiency. They are very wasteful producing much more heat than light. In fact conventional bud lighting uses around 5 lumens per watt compared to about 15 lumens per watt for a standard incandescent lamp.



Green Goods and Environmentally Sustainable Living

#### **Number of Trees**

13 medium sized trees were lit. A church façade was profiled in the same area as part of a different project

#### **Bud Lights**

Wide angle, weatherproofed, cool white LEDs Total Length of LED strings approximately 455 meters.

#### **Hours of operation**

Programmable from 6 to 10 hours per night.

#### **Solar Power System**

BP Solar Poly-silicon 12 volt Photovoltaic Panels. Low maintenance sealed lead acid batteries. Regulator, timer and power optimizer.

Recent technological developments have made it possible to use LEDs (Light Emitting Diodes) for this form of public lighting with dramatic energy savings. LEDs are actually very well suited to this kind of application. They are an excellent high intensity point source and have potentially very long life (over 50,000 hours).

There are obstacles, however, to their use as a bud light. LEDs generally have a narrow beam angle whereas a wide beam angle is needed for bud lights. LEDs need about 3 volts to operate whereas conventional bud lights operate on 12 volts. There was also the need to have tough, long life, exterior wiring and connections. The much lower power consumption also made it possible to power these LEDs with from solar panels.

Recently a small group of traders in the Melbourne suburb of Northcote completed a project to light 13 trees using solar powered, LED bud lighting.



The project, which is believed to be the first of its type in Australia was initiated by the Northcote Traders Association supported by Sustainability Victoria, the Darebin City Council and the Environment Shop, who designed and installed the lights.

### **Energy/Greenhouse Details**

One bud light system uses about **40W**.

Each system operates about **10 hrs per day. (400 Wh/day)**

There are **13 trees**, using total **5.2 kWh/day** or **1898 kWh/ year**.

Per year, **2657kg greenhouse gas abated**.

The project had been planned for years but had floundered due to power supply problems. Shop owners were uncomfortable with providing power to run the lights without compensation but putting in separate meter was not viable and running a power cable from inside the shops was difficult. Solar power provided a simple solution. Solar panels, batteries and control equipment could be mounted on the roof of the shop adjacent the trees.

The total cost of the project was \$34,000 with 13 trees being lit. This included the bud lights, solar panels, batteries, regulator, controllers, and the labour in design, construction and

installation. The result was a dramatically improved streetscape using solar LED technology consuming as little as 10% of the energy that would be consumed with the conventional alternative. Plus, because of the use of solar power, electrical supply and wiring problems have been solved. And of course no greenhouse gas emissions at all.



Client: **Northcote Traders and Darebin City Council**  
Location: **High Street, Northcote**  
Project Completion:  
Project Value: \$34,000