

Service Station and Convenience Store

Automotive Industry Energy Efficiency Project

Service station and convenience stores are one of the biggest energy users when compared to the automotive industry average; with lighting, heating ventilation and air conditioning (HVAC), and commercial fridges being the biggest energy users. An audit of service station and convenience stores in metropolitan and regional areas of Victoria and Tasmania identified that an average service station and convenience store uses 149,353kWh of electricity per year. However, with a number of sites having recently installed solar technology, the average cost of electricity is almost half of the industry's average at just \$11,775.

Despite the considerable difference in electricity costs there are still many energy saving opportunities that can potentially help service station and convenience store businesses achieve further financial savings.

Major energy users

Lighting

All businesses could reduce the amount of electricity being used by making smarter choices on lighting.

There are many improving lighting technologies such as fluorescents and LED lighting that could improve your business' efficiency. Lighting used for security and marketing purposes is often left on throughout the day unnecessarily, wasting both energy and money.

Quick and affordable tips to save energy:

Install sensors – One of the easiest and smartest ways to reduce your energy consumption is to install timers or sensors on your lighting. This will curb the businesses use of artificial lighting and also reduce your electricity bills. For example, an area with ten twin fitting 36W T8 fluorescents controlled with motion sensors can save you up to 1200kWh per year. At the end of the day, low cost timers and sensors is just smart business!

Regularly clean skylights – Having skylights in workshops, showrooms and offices are a bonus many dealerships don't utilise or notice, especially when they are dirty. Clean skylights can provide plenty of natural light throughout the day, particularly during summer, minimising the need for artificial light.

Display switch off signage next to light switches – This is an easy and cheap way to reduce energy consumed by lighting. Displaying signs next to switches will remind everyone to turn off the lights when leaving an area or room. Don't underestimate the simplest of initiatives; as little reminders help people, when trying to change inefficient habits.

Replace inefficient lighting – Assess your current lighting options and replace with more efficient choices that are suitable to your business. The below table outlines the energy savings a service station and convenience store in metropolitan Tasmania achieved, when a few lighting changes were made.

Existing lighting	New lighting	Savings (kWh) / (\$) per year	Pay back period
36W T8 fluorescents	T5 fluorescents	2270kWh / \$570*	4 years
58W and 36W T8 fluorescent tubes in fridges and freezers	LED lighting	22, 270kWh / \$5570*	1.9 years
50W halogen	LED lighting	14, 000kWh / \$3360*	1 year

**Calculated savings (\$) may vary depending on the business' electricity rates*

Heating ventilation and air conditioning (HVAC). Heating and cooling is another big energy user that many businesses use without thinking about the consequences.

Quick and affordable steps to save you energy:

Reset your thermostats – Setting your thermostat to 23°C in summer and between 18°C to 20°C in winter will still give you a comfortable environment to work in and make your business much more energy efficient. Each one degree increase in temperature can increase your HVAC energy consumption by 10%.

Program HVAC controllers to match operating hours – This will prevent heat pumps operating outside of normal hours, and avoid wastage. If there are several controllers controlling a large area, make sure they are all set with the same temperature to avoid HVAC units competing.

Draught proof doors and windows – Draughts can increase your heating and cooling costs by up to 25% by allowing cold air into an area during winter and hot air during summer. Identify your draughts by listening for whistling and rattles; then try to seal the gaps and cracks by blocking or filing them.

Kitchen appliances

There are many quick and affordable ways to reduce the energy consumed by kitchen appliances and commercial fridges and freezers.

Quick and affordable steps to save you energy:

Check temperature settings on fridges and freezers – Freezers should be set between – 18°C and – 20°C; and fridges should be set between 2°C and 4°C. It is also a good idea to keep fridges in a well ventilated area and away from heat sources, such as a heater. This is so that the fridge doesn't work harder than it should to maintain its temperature.

Install a time clock on kitchen appliances – Installing a time clock to switch off kitchen appliances, such as boiling water dispenser or water cooler, at night can save you approximately 150kWh of electricity per year.

Look for the energy star rating when purchasing new kitchen appliances – Appliances such as a fridge generally have a lifespan of 15 years. By taking into consideration the energy star rating, you could save money in the long run by reducing the operating costs.

Retrofit evaporator fan controllers – When fans run, they produce heat that the refrigeration system needs to remove. With an evaporator fan controller the speed of the evaporator's fan

reduces when the fridge or freezer reaches the set temperature. The reduction of the speed means that the refrigeration system doesn't have to work as hard, saving both fan and refrigeration energy.

Energy Efficiency Saving Opportunity	Savings (kWh) / (\$) per year	Pay back period
Install evaporator fan controller	2000kWh / \$500*	1.2 years

*Calculated savings (\$) may vary depending on the business' electricity rates