

Becoming an energy efficient business



Understand, improve and save

Understanding how your business uses energy – and identifying the measures you can take to reduce this usage – can lower your energy bills and lessen the environmental impact of your organisation.

This booklet provides small to medium sized businesses the information they need to better understand and manage their energy use and start saving today.

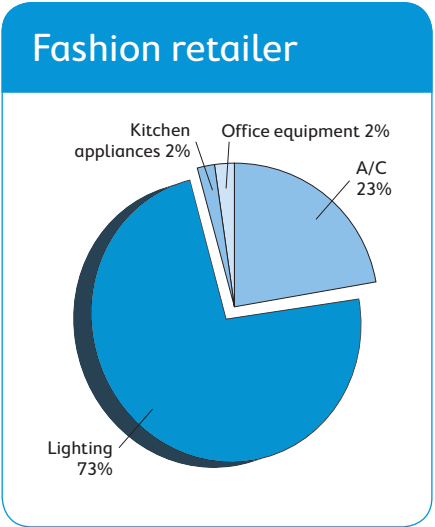
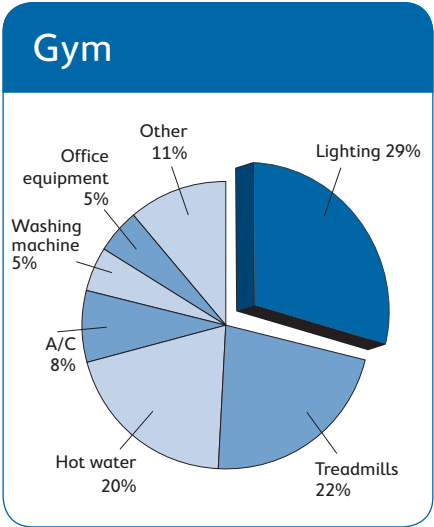
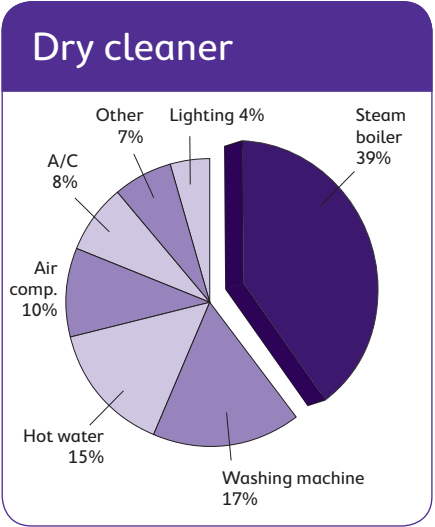
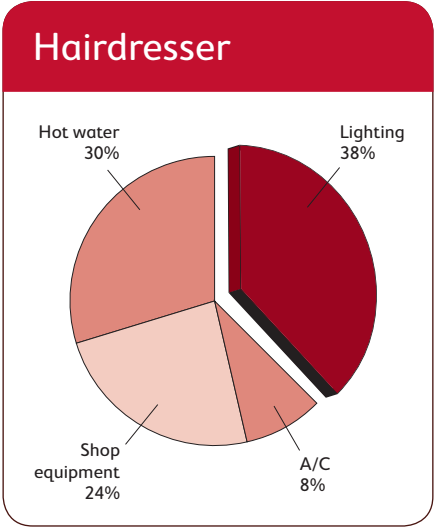
Energy usage and your business

Where is your energy used?

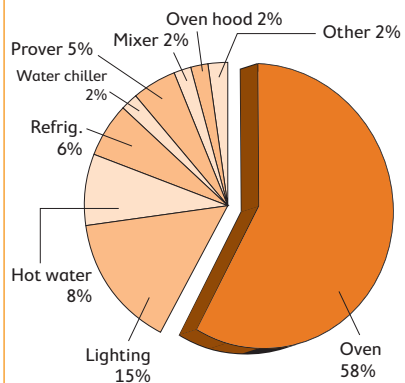
Industry type, equipment, operating hours, size of premises... there are a wide variety of factors that influence the amount of energy your business uses.

Understanding where your energy goes is the first step in identifying how to reduce your usage.

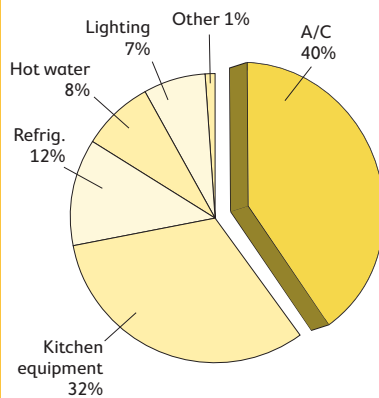
Take a look at the charts opposite to see how some different types of business we have audited use their energy.



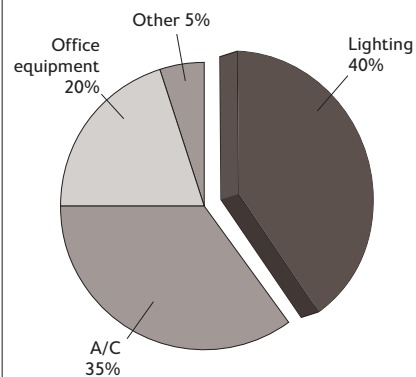
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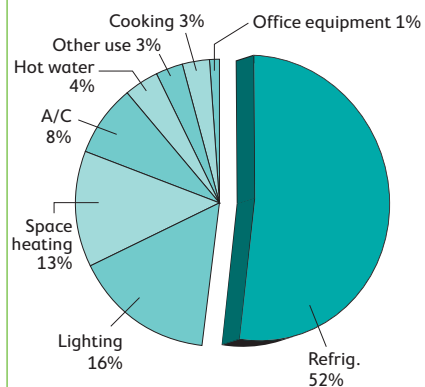
Cafe



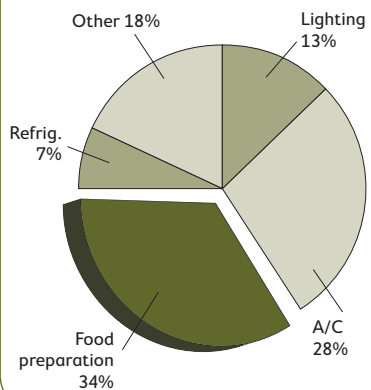
Real estate agent



Fruit market



Restaurant

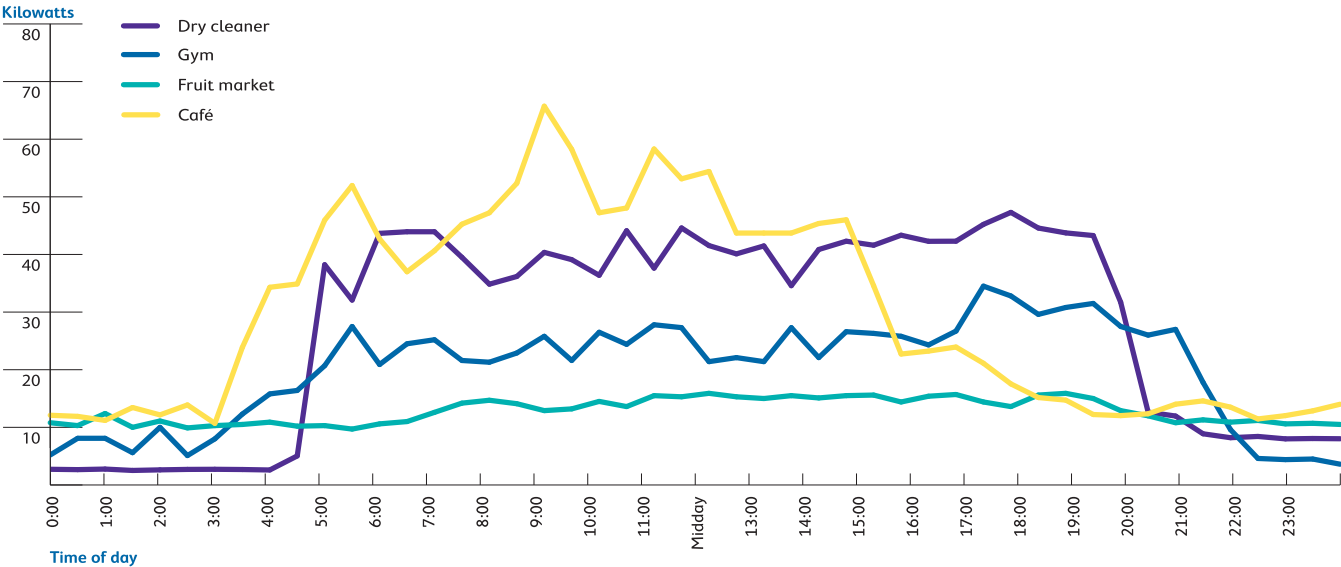


Your energy costs can be impacted by both how much energy you use, as well as when you use it. If you have time-based pricing and/or a capacity charge (which is based on your peak electricity demand), the time of your energy usage will also influence your overall energy costs.

Load profiles show you how much energy your business uses throughout the day, usually measured at half-hour intervals. The chart below shows examples of load profiles for different types of businesses.



Understanding your energy usage throughout the day (load profiles)



Checklists and audits

To find out exactly where your business is using energy, you can undertake an energy audit. An energy audit will assess the energy consumption of your business and help you identify ways in which you can reduce both your energy usage and the resulting impact on the environment.

There are three different audit levels in the Australian Standard for Energy Audits (3598:2000).

Level 1 Energy Audit

This basic energy audit is an introductory assessment of your energy use and the ways you can reduce your usage. A Level 1 Audit can cost as little as \$500 for a simple site. A Level 1 Audit is recommended for businesses with energy costs less than \$20,000 per year or where you are looking for a quick energy efficiency check-up.

Level 2 Energy Audit

A Level 2 Audit involves a more detailed on-site investigation, energy measurement and monitoring. It is recommended if your energy costs are greater than \$20,000 per year and you are seeking a detailed action plan for saving energy and reducing your costs. A Level 2 Audit can cost from around \$5,000 for a simple site.

A Level 2 Audit will:

- Examine energy use data from your bills and on-site measurement.
- Consider occupancy, site use, site services, controls, building fabric and major energy using processes.
- Analyse energy performance in relation to the size of the site and your business activities.
- Provide a breakdown of your energy use based on the specific equipment or processes.
- Identify and recommend ways you can save, including estimated savings and implementation costs.

Level 3 Energy Audit

Described often as an 'investment grade' assessment of the energy use at your business premises, a Level 3 Energy Audit is the most detailed energy audit available.

A Level 3 Audit costs a minimum of \$15,000 and is recommended when you are seeking highly accurate financial estimates ($\pm 10\%$). For specific processes or plant which uses substantial amounts of energy, a Level 3 Audit can be invaluable in extracting important efficiency gains for your business.

The Office of Environment and Heritage (OEH) provides initiatives that can help reduce the costs of conducting an energy audit. See the 'efficiency programs for business' section on page 20 for details.

Meters and pricing

Metering

Your electricity meter connects power to your business and measures how much electricity you consume in kilowatt hours (kWh).

Older style mechanical electricity meters only keep track of how much electricity is used in total. These types of meters often have a dial or odometer-style display on the face.

Businesses with this type of meter are commonly billed using an 'inclining block' tariff. With this tariff you are charged the same amount for the electricity you use regardless of when you use it.

The new advanced meters (also known as interval meters, time of use meters, or smart meters) record how much electricity you use in 30 minute intervals. This means that you can have different rates for usage at different times of day. See the 'tariff' section on page four for details.

Interval meters calculate your electricity usage in half-hour blocks and can be read manually (by plugging in a probe) or remotely through a communication link to the electricity distributor. These meters usually have a digital display and are billed using a 'time of use' tariff. Where the meter has a remote communication link to transfer



Dial display



Odometer-style display



Interval meter



Smart meter

the usage information, businesses can receive detailed electricity usage information through online data services. Ask your retailer for information on how you can view your electricity use online.

Smart meters (also referred to as advanced meters) are electronic meters that have two-way communications and are seen as the future for electricity metering.

There are many potential benefits of smart meters, including:

- More detailed information on your electricity use, provided in real-time.
- The opportunity for more advanced, time-

based tariffs and incentives from electricity companies to reduce usage in peak times and help customers cut costs.

- Remote meter readings, so limited site access is not an issue and estimates for bill calculation are not required.
- More accurate fault detection, with the ability to repair faults sooner, which makes your electricity supply more reliable.

Trials to determine the costs and benefits of smart meters are underway, with smart meters expected to be installed in many businesses within the next five years.

Tariffs and demand/capacity charges

Your electricity tariff is a pricing structure which determines how much you pay for the electricity your business consumes.

Tariffs are normally based on the measurement of kilowatt hours of energy used and are made up of a **retail component** and a **network component**. The retail component relates mainly to the cost of generating electricity, and the network component relates to the cost of distributing (or transporting) the electricity from the source of generation to your business.

Some tariffs are '**inclining block**', meaning a higher price is charged for energy consumption above a specified consumption threshold, while others may be **time-based** and charge a different rate for energy used during peak, shoulder and off peak times.

Business tariffs often also include a **capacity charge** – sometimes known as a 'demand' or 'system' charge – which is typically based on the maximum (or peak) amount of electricity used during peak periods in the previous year. This is measured in kilowatts (kW) or kilovolt ampere (kVA). For some businesses, the capacity charge can be a significant part of your energy bill.

Electricity tariffs are influenced by factors such as generation costs, distributor costs,

retailer costs, network costs and green schemes. To ensure fair trading standards, the Independent Pricing and Regulatory Tribunal (IPART) regulates retail electricity prices for small business users and residential customers on standard contracts, as well as regularly reviewing wholesale prices to take into account the cost of purchasing electricity from generators.

Network charges (covering aspects such as electricity poles and wires) are also included in the final price of electricity (determined by IPART) and are regulated by the Australian Energy Regulator (AER), a national independent body.



Business tariffs

Most business customers in Ausgrid's network area have interval meters operating on time of use prices. However, a number of smaller business customers are still on an 'inclining block' tariff – check your electricity bill to find out which type of tariff you are on.

Inclining block:

This is the default tariff for all business customers with an older mechanical style or non-time of use meter.

Time of use (less than) 40 MWh:

This is the default tariff for all business customers with an advanced (electronic) meter and electricity use less than 40,000 kWh per year. All new and existing installations which undergo a meter upgrade and which use less than 40,000 kWh per year will be placed on this network tariff.

Time of use 40-160 MWh:

This is the default network tariff for all business customers with an advanced (electronic) meter and electricity use of 40,000-160,000 kWh per year. All new and existing installations which undergo a meter upgrade and which use 40,000-160,000 kWh per year will be placed on one of these tariffs. These tariffs include a capacity charge based upon the maximum half hourly kW reading over the 12 months prior to each bill.

Time of use 160-750 MWh:

All business customers using 16,000 - 75,000 kWh per year must have an advanced (electronic) meter. All new and existing installations which undergo a meter upgrade and which use 160,000-750,000 kWh per year must negotiate a time of use tariff. That includes a capacity charge based upon the maximum half hourly kVA reading over the 12 months prior to each bill.



The first step to becoming energy efficient, is to understand your energy use

The layout of your electricity bill will depend on your retailer; however, here are some elements you would expect to find on all electricity bills.

Energy Used & Costs

METER ID	THIS READING	LAST READING	ENERGY USED	RATE	COST
Shoulder Energy Rate (01/05/11 - 31/05/11)	2,074.5	0.0	2,074.5 kWh	16.8000c	\$348.52
3133964/C27					
Peak Energy Rate - Contract (01/05/11 - 31/05/11)	2,030.8	0.0	2,030.8 kWh	28.8000c	\$584.86
3133964/C26					
Off Peak Energy Rate (01/05/11 - 31/05/11)	1,749.7	0.0	1,749.7 kWh	8.6000c	\$150.48
3133964/C28					
Electricity Service Availability Charge			31 Days	\$1.2200/Day	\$37.82
			Total	5805.0 kWh	
Peak Capacity kW (01/05/11 - 31/05/11)			29.0 kW	13.9125c/kWh/day	\$125.08
Total Electricity before GST					\$1,246.76

NMI XXXXXXXXXX

Energy usage information and other charges

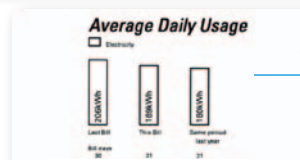
Detailed breakdown of all electricity usage and other charges for current billing period; including the price you pay for electricity, the network charges, and metering charges.

If you have opted for GreenPower, these charges will be listed here.

If you have a time of use tariff, you can determine your load profile by looking at the percentage of electricity used during peak, shoulder and off peak. This information is useful in making energy efficiency decisions.

NMI code

Used to identify the electricity connection point that measures your consumption.



Average daily use

Graph of your consumption pattern compared to same time last year and average cost per day.

Total greenhouse gas (GHG) emitted to produce your energy this period = 6206.3kg of CO₂

www.greenhousegases.gov.au

Greenhouse gas emissions

May include a summary of the amount of greenhouse gas emissions attributable to your electricity consumption for the billing period.

Sample Pty Ltd
Sample Street
SYDNEY NSW 2000

Customer information

Confirm that your account name and billing address details are correct.

Due by
25 July 2012

Amount Payable
\$1,309.75

Payment due by

The due date for your account payment.

Total amount payable

Total new charges and amount payable for the billing period.

Since 2002, all electricity and gas customers in NSW have been able to choose which retailer they buy their energy from.

Switching retailers will not change your electricity network operator (distributor). By entering into a contract, you are only changing retailers. The network infrastructure including the poles, wires and metering equipment, remains owned and operated by your distributor.

Electricity supply



Cogeneration at 101 Miller Street, North Sydney.

Sources of electricity

Electricity in NSW is generated from a wide range of fuel sources, including black coal, natural gas and renewable energy sources. About 6% of the state's total electricity usage is provided from renewable energy sources, such as hydro, wind, biomass and solar.

Distributed generation

In some cases, businesses generate their own power on a small-scale to meet their own requirements, either as an alternative or a supplement to power from the grid. This is called **distributed generation** or on-site generation.

This may be due to practical reasons, such as a site located far from the electricity grid. In Ausgrid's network area, distributed generation typically applies to supplementary sources of generation that reduce the environmental impact of the energy used.

For a small to medium sized business, distributed generation may include solar PV systems, small scale wind turbines, gas fuel cells, diesel generators and cogeneration (which provides heat as well).

Demand management

Demand management involves reducing electricity consumption from the grid during periods of high energy demand. Business customers may receive some form of compensation in exchange for reducing their energy usage when required.

Demand Management can take several forms, including:

- An agreement with the energy user to interrupt or reduce some loads during peak periods.
- The use of generators or cogenerators* on the energy user's site.
- The installation of equipment which uses energy more efficiently, such as energy efficient lighting.

- Arranging for electricity use to occur outside peak periods, for example off peak water heating.
- Switching certain electrical loads to alternative fuels, including natural gas.

Demand management options may be used along with traditional supply side solutions to ensure that the grid has sufficient capacity to meet the electricity needs of the community. The right solution benefits both energy customers – by reducing overall electricity charges – and Ausgrid, which may be able to reduce or defer costly capital investment.

* Cogenerators simultaneously generate heat and electricity for businesses that require both, resulting in a more efficient alternative to generating heat and power separately.

GreenPower

Going green

'Green' energy refers to electricity sourced from renewable resources – such as the sun, wind, water and waste – which helps reduce greenhouse gas emissions.

GreenPower is a government accredited program for the voluntary purchase of renewable energy, helping to reduce the environmental impact of electricity use. The extra you pay on your electricity bill is invested in the renewable energy sector.

GreenPower is delivered to your premises in the same way as your existing electricity. There is no special equipment required. Contact your electricity retailer and ask about their GreenPower options. GreenPower usually costs more than standard electricity generated from burning coal. How much more depends on a number of factors, including your energy provider and what percentage of GreenPower you buy.

Look for the GreenPower tick

An accredited GreenPower product will always carry the 'tick' label, which is supported and managed by different state government jurisdictions throughout Australia. If you decide to purchase renewable energy, always look for the accredited GreenPower 'tick' labels.



These labels tell you the amount of accredited GreenPower your energy retailer is purchasing on your behalf, as a percentage (10% – 100%) of your business' electricity consumption. 100% means that your energy retailer purchases renewable energy from accredited GreenPower sources to the amount equal to all of your business' electricity consumption.

Visit the Australian Government's GreenPower website
www.greenpower.gov.au
for a list of accredited providers.



Energy efficiency in premises, appliances and equipment

How good is your power factor?

Do you use more than 160,000 kWh per year and are on a kVA demand tariff? If so, then you need to know about your power factor.

All electrical equipment and appliances used by your business draw energy from the electricity network. Some of this is 'active' power (measured in kilowatts) and some is 'reactive' power (measured in kVAR). These power types are combined to determine your total demand for electricity (measured in kVA).

Power factor is the proportion of active power you have in your total demand for electricity. It is essentially a measure of how efficiently you are using the electricity you are being supplied. Certain pieces of

equipment and appliances are known to contribute to poor power factor, including lifts, motors, induction heaters, air conditioners, refrigerators and dryers. If your business uses a lot of these types of devices, you may have poor power factor.

Perfect power factor is 1. If you are using electricity effectively, you should have a power factor greater than 0.9, which is the power factor required by the NSW Service and Installation Rules. Poor power factor is typically between 0.5 and 0.8.



Businesses with a poor power factor will typically increase their electricity bills by up to 10%.

Improving your power factor

With the installation of a power factor correction unit, businesses can reduce their reactive power which improves their power factor and, in turn, reduces energy costs. It can also increase the available power should you wish to expand your site or require greater capacity on your electrical switchboard for new equipment. Power factor correction is often cost effective with less than a two to three year payback for many businesses, especially those with bills greater than \$75,000 per year.

Power factor correction is suitable for businesses that:

- Have a kVA capacity charge included in their tariff (not those with a kW capacity charge, as power factor correction will not reduce energy bills).
- Use more than 160MWh of electricity each year and have a power factor of less than 0.8, and
- Have a suitable site for installation close to their meter board (around the size of an average household fridge).

Appliances and equipment

Case study

Since adopting time of use pricing, Sydney based Royal Motor Yacht Club has saved around \$60,000 each year on their energy bills.



A simple Energy Review by Ausgrid revealed further potential savings of \$11,500 a year through energy efficiency measures. These included installing a power factor correction unit, energy efficient lighting including electronic transformers and infra-red coated halogen lamps, and training staff to turn off appliances after hours.

Annual energy bill: \$101,768
(\$160,000 without time of use pricing)

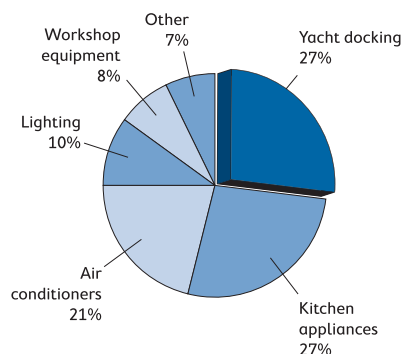
Annual greenhouse emissions:
1,009 tonnes per year

Post-makeover bill: \$90,352 a year

Total bill savings: \$11,416 a year

Total greenhouse savings: 87.6 tonnes a year

Breakdown of main energy uses



The type of equipment you use within your business and the way you utilise this equipment can significantly impact your energy usage, costs and greenhouse gas emissions.

While some measures will be specific to particular areas of your business, there are a number of general actions which can be applied to almost every business and which can make a real difference to your overall energy costs. These include:

- **Switching off appliances and equipment when not in use** and using timers to automate this process.
- **Purchasing high star rated equipment** – while the purchase price may be higher, in the longer term their lower energy consumption will mean lower running costs.
- **Educating employees about how to use equipment efficiently** and the benefits of adopting energy efficient practices and behaviour.

Lighting

Lighting

More efficient lighting can reduce energy costs by up to 50%, as well as saving on maintenance costs of older lighting systems and replacement costs of lighting with shorter operating lifespans.

Short-term actions

- Replace incandescent globes with compact fluorescent light (CFL) globes, which use 75-80% less electricity and last between eight and ten times longer. Incandescent exit lighting can be replaced with light emitting diode (LED) lamps, which use up to 70% less electricity.
- Only light the area you need, for example use task lighting to light a work area rather than lighting a wider area.
- Regularly clean your lights to ensure optimum performance levels – dust can halve the light output.
- Maximise available and natural light by painting ceilings and dark walls in light-reflecting colours and keeping surfaces clean. Ensure windows are not blocked, open curtains and pull up blinds and consider installing skylights.

Longer-term actions

- Install separate switches so you can turn on just the lights you require while the remaining lights stay off.
- Use dimmers, sensors or timers for areas which are not used very often, such as meeting rooms and bathrooms.
- Consider installing reflectors behind fluorescent tubes to increase light levels. You may then be able to use one lamp instead of two (de-lamping) which can halve the electricity use.
- Use low-loss ballasts for fluorescent lighting, as up to one fifth of the total electricity used in fluorescent lights can be lost in heat from the ballast.

Lighting type	Rating (Watts)	Cost/ kWh
Fluorescent 18W	25	\$0.006
Fluorescent 36W	45	\$0.011
Fluorescent 28W	30	\$0.008
Incandescent 75W	75	\$0.019
Incandescent 100W	100	\$0.025
Halogen down lights 50W (240V)	50	\$0.013
Halogen down lights 20W (12V)	20	\$0.008
Compact fluorescent 11W	11	\$0.003
Compact fluorescent 15W	15	\$0.004
Compact fluorescent 20W	20	\$0.005
Mercury vapour 125W	125	\$0.035
Metal Halide 70W	70	\$0.018

Safety first

Prior to undertaking projects, ensure that you are using suitably qualified, licensed technicians. All work conducted should comply with workplace OH&S guidelines. For advice on how to make your workplace safer visit: www.workcover.nsw.gov.au

Optimising heating, ventilation and air conditioning

Optimising heating, ventilation and air conditioning

Heating, ventilation and air conditioning (HVAC) can account for up to half of the total energy bill of a business.

In new buildings there are many ways to reduce HVAC energy usage through careful design and equipment choice. However, there are also a number of measures you can take to improve efficiency in older buildings.

Short-term actions

- Use fans on milder days to reduce the need for air conditioning and lower your cooling costs.
- Maintain your equipment to ensure reliability and efficiency. Change filters on a regular basis, clean condenser coils and evaporators, and fix duct leaks.
- Install timers and use thermostats to switch off systems when facilities are not occupied. This inexpensive investment can lower HVAC energy costs by as much as 30%.
- Turn off lights and office equipment when they are not being used to reduce heat and lower air conditioning costs.

Longer-term actions

- Choose the right sized HVAC equipment to suit your premises to avoid unnecessary investment and higher operation costs.
- Consider using heat recovery to capture and re-use waste heat from heat-generating



Optimal Temperatures

Recommended temperatures for optimal energy savings are 23-26°C in summer and 18-21° C in winter. A single degree higher or lower could increase your energy costs by as much as 10%. An effective and well-maintained thermostat is essential – one which can't be tampered with, and which is placed well away from draughts or heat sources.

processes. Where your ventilation requirements are significant, consider an energy recovery ventilation system which uses waste energy from the exhaust air stream to condition the incoming fresh air.

- Insulate, ceilings, walls, roof cavities and pipes to reduce heat loss and gain.
- Seal gaps around windows, doors and other openings. In summer, use curtains, blinds and window tinting to prevent the heat from coming inside. In winter let the sunlight in to provide natural heat and cover windows at night to prevent heat loss.
- Install variable speed drives (VSDs) on fan motors and adjust the speed in line with your requirements. Even the smallest change in speed can save up to 30% on energy costs.
- Consider installing an energy management system for larger, more complex air conditioning systems. This has the potential to reduce your air conditioning costs by more than a quarter.
- Use radiant heating if you have particular objects you wish to heat, rather than heating the whole room.

Motors

Motors

The running cost of a motor can be many times the purchase and installation price, so it's important to choose an energy efficient model. To be energy efficient a motor needs to have the lowest possible losses.

Using high efficiency motors

Three-phase electric motors could account for up to 40% of the total electricity consumed in the commercial and industrial businesses in Australia. A high efficiency motor will have an efficiency of around 80 - 96%. Many small, poor quality motors (such as exhaust fans) can have efficiencies as low as 50%. Low efficiency means higher running costs.

Since 1 October 2001, three phase electric motors from 0.73kW to 185kW manufactured in or imported into Australia must comply with Minimum Energy Performance Standards. More information can be found at www.energyrating.gov.au

Efficient motors can:

- Reduce operating costs compared with standard units.
- Have a payback period of less than two years when purchased at the time of replacement.
- Be quieter and run cooler than standard motors.

To use electric motors more efficiently you can:

- Install variable speed drives (VSD) whenever suitable to reduce running costs.
- Service them regularly, especially if they start making unusual noises or become excessively hot. You also need to regularly maintain motor starting equipment and ensure motor mounting, pulleys, attached pumps and fans are working correctly.
- Ensure motors have adequate ventilation.
- Match the motor capacity and speed to the function or process.



Refrigeration

Refrigeration

When looking at reducing refrigeration energy use, it is important to make sure that any changes you make will not impact the quality of product. Poor temperature control can be a major cause of food poisoning, so it is vital that your business has a good understanding of the health and safety requirements for the types of food you deal with.

Short-term actions

- Keep refrigerators at least 60% full and freezers at least 75% full to increase efficiency. Use containers of water to fill empty spaces as this reduces the amount of air that needs to be cooled.
- Try to fill up one refrigerator or freezer rather than using two that are only half full.
- Reduce the amount of cooling required from your refrigerator by keeping the temperature around 3–4°C (–15 to –18°C for freezers).
- Minimise door opening to prevent cool air from leaving the refrigerator. This will also minimise the amount of warm air that enters. Make sure you close cool room doors when entering and leaving and consider using swinging doors or plastic curtains to stop cold air escaping.
- Make sure your refrigerators are level to ensure doors are tightly sealed, preventing cold air from escaping. Door gaskets, hinges and catches should be checked regularly and replaced if necessary.

- Swap incandescent light bulbs for low temperature compact fluorescent or LED lamps to reduce the heat output. Turn off lights overnight to reduce energy use.
- Defrost freezers regularly – the build up of ice can reduce their efficiency.
- Locate refrigerators and freezers away from direct sunlight or other sources of heat and protect motors from direct sunlight and heat.
- Leave space around refrigerators and freezers for ventilation, with at least 80 mm between the condenser coils at the back and the wall. Poor ventilation can increase energy usage by up to 15%. Ensure the area around the fridge is free from items that might obstruct the airflow.
- Regularly maintain refrigerators and freezers to increase their lifespan and

efficiency and look out for issues, such as the compressor running continuously. Also check the thermal insulation on refrigeration lines to make sure it is not damaged and keep the coils clean to improve efficiency.

Longer-term actions

- Think about what features your refrigerator needs and your requirements in terms of product type and quantity, storage temperature and cooling speed. New, higher star rated models can use less than half the energy of older, inefficient models and cost a lot less to run.
- See if you can re-use the heat expelled from large refrigeration systems to heat water for your office.



New premises? Be energy efficient from the start.

If you are building new premises, you have a great opportunity to implement energy saving features such as double glazing, correct building orientation and skylights, to help reduce your energy costs and your impact on the environment.

Food preparation and kitchens

Food preparation and kitchens

No matter how big or small your cooking facilities are, businesses can benefit greatly by introducing more energy efficient practices. Aside from the significant cost savings, there are also advantages like reduced wastage and greenhouse gas emissions.

Short-term actions

- Use the right amount of water for the food you are cooking and try not to overfill. Use lids to keep in the heat and reduce cooking times.
- Use the smallest appliance that can do the job, rather than keeping one large appliance on all day and wasting energy during quieter periods.
- If possible, run equipment on a low setting, turn oven temperatures down and turn off equipment that is not being used.
- Pre-heat ovens only when required and minimise oven door opening. Each opening can cause a heat loss of around 4°C. Consider alternatives such as microwave ovens and electric fry pans, as these appliances use less electricity and can cook food faster than conventional ovens, which saves energy and reduces costs.
- Use the right equipment, such as pots with well-fitting lids and pans flat bases to ensure heat is transferred effectively.
- Regularly check the doors on your cooking appliances to make sure heat is not escaping.



- Turn off exhaust hoods (or slow them down) during quiet periods.

Longer-term actions

- Choose energy efficient cooking equipment that is insulated to keep in the heat. It may be worth spending a bit more upfront to make larger savings in running costs.
- Invest in thermostats and timers to ensure cooking equipment is used efficiently.
- Replace old dishwashers with newer, more energy efficient models.

Office equipment

Office equipment

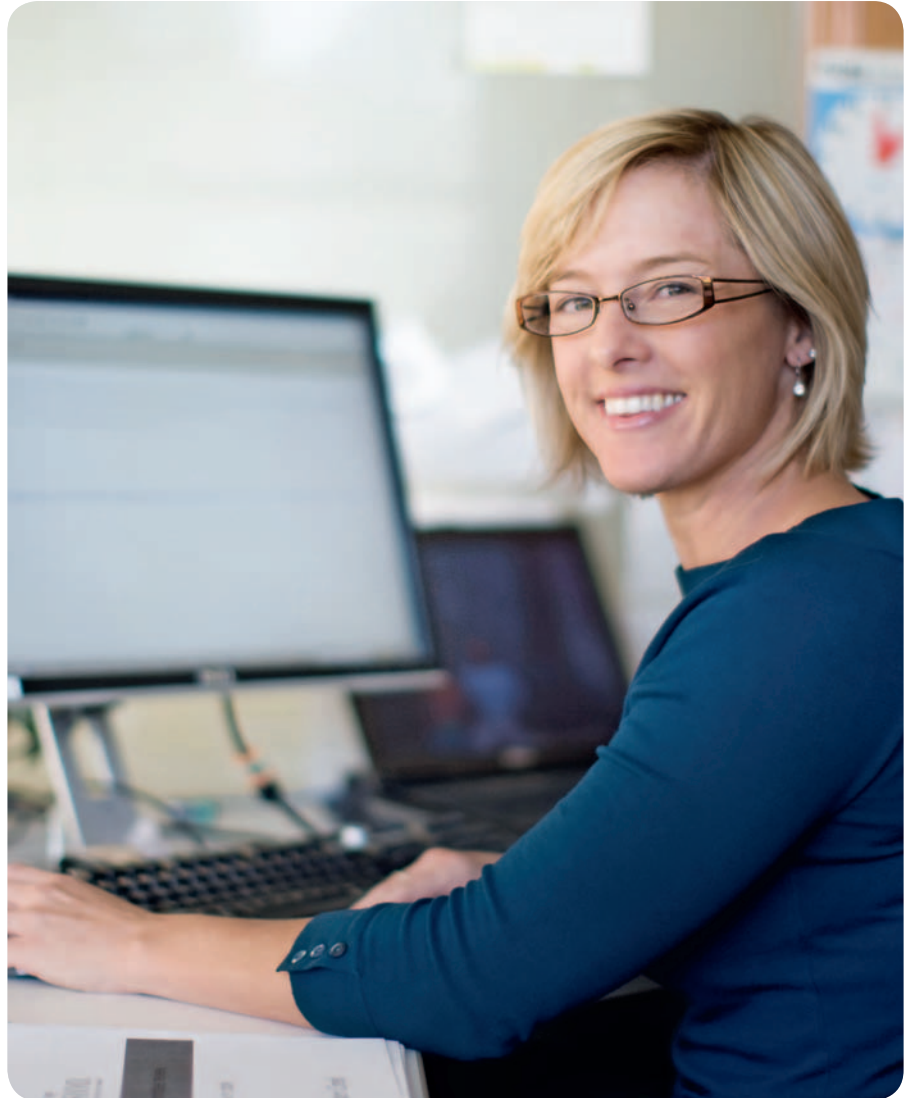
In many small businesses, office equipment can account for up to 20% of overall energy bills.

Short-term actions

- Apply energy-saving settings on computers and turn them off at the powerpoint overnight.
- Set screen savers to blank screen.
- Turn off your monitor if away from the computer for more than 30 minutes.
A desktop computer used for eight hours a workday can cost over \$50 in electricity per year.
- Use inkjet printers as they consume less than half the energy of laser printers and use double sided printing to reduce your paper use.
- Try to photocopy large amounts at a time rather than starting up the photocopier many times for small numbers of copies. Make sure your photocopier is turned off when your office is closed.

Longer-term actions

- Switch to laptops, which use up to 70% less energy than a standard desktop computer. Alternatively, choose a computer with a small monitor. Monitors can often consume as much as the computer itself.
- Invest in equipment that can perform a variety of tasks (such as fax and print) and connect all computers to that one machine. Make sure it switches to sleep or standby mode when it is not being used.



Compressed air

Compressed air

Some types of equipment such as drills and spray painting machines use compressed air. These systems can contribute significantly to your overall energy usage as they have a low energy efficiency and often leak.

Short-term actions:

- Switch off compressors and associated equipment when not being used.
- Establish a maintenance schedule and check valves, joints, hoses, drains and fittings and keep an eye out for leaks. Check the V-belt tension – too loose or too tight belts can put extra load on both the motor and the compressor.
- Try to stop dirt from entering the compressor. Filters need to be clear to ensure air flow to the compressor – higher performance filters may result in better performance.
- Use air pressure levels that are appropriate for the task you are performing to avoid unnecessary energy usage. Overly high air pressure can result in greater leakage, may damage equipment and could increase running costs.
- Use cooler intake air ducted from outside (rather than from within the room). It takes less energy to compress cooler air than warm air.
- Have the shortest distance possible from the air compressor to appliances as this will decrease energy use.

Longer-term actions

- Fit existing compressed air systems with variable speed drives (VSDs) which can provide energy savings of up to 50%.
- Choose the smallest compressor to suit your needs as they run most efficiently at full load. One larger but under utilised compressor is often less efficient than two smaller, fully utilised compressors which can be operated at different times.
- Utilise heat recovery to reduce energy costs. Up to 90% of energy used by a compressor is typically lost as heat.

These units can recover around 80% of the hot exhaust air from the air compressor for other uses, such as heating water.

- Fit pressure regulators to reduce the air pressure to the right level for your application. This will stop higher than necessary air pressure being used.
- To reduce capital costs, think about a correctly-sized air receiver tank for meeting short-term needs.



Educating employees on energy efficiency

Working together to reach your energy saving goals

Involving your employees in increasing the energy efficiency of your business is essential in ensuring you achieve your energy efficiency targets. Use simple reminders to build awareness of energy saving actions and be sure to motivate and encourage staff to adopt more efficient practices.

Rewards and recognition are highly beneficial in helping employees sustain their energy saving efforts, so consider making staff members accountable for energy efficiency measures and linking them to performance reviews and bonuses.



Monitoring and measuring your energy use

Knowing where your energy goes

Keeping track of the energy use of your business can help you make savings by identifying when and where you are using electricity.

Track your performance by recording the electricity usage information on your bills. Simple charts displaying the monthly or quarterly electricity use are a great way to see whether your energy efficiency actions are delivering savings. They are also a great way to educate and motivate your staff.

For businesses who use more than 160,000 kWh per year, you may be able to access detailed information about your electricity use online. Online access to your electricity use data is offered by many Retailers for a cost, but can be a cost effective solution for some customers. Contact your retailer and ask how you can view your meter data online.

For appliances or equipment which are likely to use a significant amount of electricity, consider installing a submeter to record and report the equipment or appliance electricity use. For other equipment, clamp on ammeters for measuring current can be used to spot check the demand from hard wired equipment and there are simple energy meters available to record the electricity use from plug in appliances.



Efficiency programs for business

Assistance for small businesses

Energy Efficiency for Small Business Program

The *Energy Efficiency for Small Business Program* includes individual energy assessments, personalised action plans and rebates of up to \$5,000 for implementing measures to improve energy efficiency. This program is available to businesses that spend less than \$25,000 per year on their electricity bills.

Visit www.savepower.nsw.gov.au for more information.

Assistance for medium to large businesses

Energy Saver Program

The *Energy Saver Program* is run by the Office of Environment and Heritage (OEH), which provides subsidised energy audits and assistance for businesses in NSW to make the switch to greater energy efficiency.

Visit www.savepower.nsw.gov.au for more information.

A one-off joining fee of \$500 is required, but offers discounts of up to 80% on energy audits for your business.

For more details, contact Business Partnerships on 02 8837 6000 or email sustainbus@environment.nsw.gov.au

Sustainability Advantage Program (available to businesses and not-for-profit organisations)

A business support service from the Office of Environment and Heritage (OEH), *Sustainability Advantage* helps organisations better understand the measures they can take to contribute to better environmental practices and improve their business. In addition, participants receive assistance in reducing their risk in areas such as legislative compliance and climate change.

A one-off joining fee of up to \$3,000 is required, dependant on the size of your organisation.

For more details, contact Business Partnerships on 02 8837 6000 or email sustainbus@environment.nsw.gov.au

For more information on managing your business energy use and start saving visit our website at **www.ausgrid.com.au**

About Ausgrid

Ausgrid is one of the largest electricity networks in the country with more than 100 years experience in providing a safe and reliable supply of electricity.

In March 2011, the EnergyAustralia electricity network was renamed Ausgrid after its retail arm was sold to TRUenergy. The Ausgrid electricity network remains a State Owned Corporation.

Ausgrid supplies electricity to more than 1.6 million homes and businesses in Sydney, the Central Coast and the Hunter Region of New South Wales.

The Ausgrid distribution network covers more than 22,000 square kilometres. It includes more than 200 large electricity substations, 500,000 power poles, 30,000 small distribution substations and almost 50,000 kilometres of below and above ground electricity cables.

Ausgrid is delivering a five-year capital works program that will help meet increasing peak demand for power and renew and replace large parts of the electricity network built in the 1960s and 1970s.

Ausgrid is also building the nation's first commercial-scale smart grid after being chosen to deliver the Australian Government's \$100 million Smart Grid, Smart City project. For more information visit www.smartgridsmartcity.com.au

Ausgrid delivers energy efficiency programs and advice to help households and businesses become more energy efficient.

Becoming an energy efficient business

For more information on how to become
an energy efficient business visit our
website at www.ausgrid.com.au
or call 13 15 25.

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