

A guide to improve the energy efficiency at your YMCA aquatic centre



The Australian Conservation Foundation (ACF) stands for ecological sustainability.

We all have a stake in preserving a healthy environment for ourselves and the other species who share our world. ACF tackles the underlying social issues which threaten our environment from the wasteful way we consume resources to our growing disconnection from nature.

We connect people with the environment, in the city and the bush, through personal experiences. We equip people, communities and organisations with information, skills and tools to build an ecologically responsive society.

Spark Energy for Change is an ACF program specifically designed to connect with you, so we may work together towards a sustainable Australia.

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IT MAKES SENSE TO SAVE ENERGY

Why is energy efficiency important to your centre?

It's about living up to the YMCA ethos.

As an organisation that prides itself on playing a community leadership role, the YMCA is committed to sustainability. The YMCA mission statement recognises the critical importance of caring for the environment for the future of humanity.

As aquatic centre staff, you are well aware of the key role you play in the community. You are a hub for people from all walks of life, and a place for people to come together. Almost 3 million swimming lessons are held at YMCA pools every year. You have an opportunity to teach other lessons as well.

The messages you send on energy efficiency and sustainability will be seen by everyone, and help set the tone for the kind of communities we want to have. It is an important responsibility.

It's about saving money!

IEA, Energy Technology Perspectives 2010

Aquatic centres use an enormous amount of energy. But with efficiency measures, YMCA Spark pilot site Peter Krenz aquatic centre has already managed to cut electricity use by 8.5%, and has identified opportunities to save a further 20%!

This aquatic centre found that by being more energy efficient and making some smart energy investments, they could have a reduction off their energy bills of at least \$30,000 per year. That's equivalent to saving the carbon footprint of approximately 19 homes, or over 700 return car trips from Melbourne to Sydney.

By taking simple actions, your centre could substantially reduce environmental impact and energy bills. And if every one of Australia's 174 YMCA aquatic centres saved even a third of this much, there would be \$1.5m more to go around, every year.

Every dollar that's not going to waste is a dollar that can go to building a better experience for your community! Saving energy isn't difficult. You just need to know what to do and how to do it.

Spark is a program supported by the Australian Government's Energy Efficiency Information Grants (EEIG) and delivered in partnership between YMCA and the Australian Conservation Foundation (ACF).

Spark will help you learn how to make energy savings at YMCA. You'll learn how to measure what you use, discover where waste occurs and take the steps you need to increase your energy efficiency.

Spark will run over four years, reaching every one of YMCA's 620 sites – from YMCA Katherine to YMCA Ballarat. But right now we're at the beginning of the journey, where we test ideas and discover solutions, work with you and tailor the program to meet your needs.

GETTING STARTED

Saving energy isn't difficult. You just need to know what to do and how to do it. Spark Energy for Change is a new program that will help you learn how to make energy savings at YMCA centres. You will learn how to measure how much energy you use, discover where waste occurs and take the steps needed to increase energy efficiency.

step 1

Familiarise yourself with energy use at your centre

There is a lot you can learn from reading energy bills. Take a look at your centre's bills over a 12 or 24 month period. Inspect the bills and look for patterns.

Try to answer these questions:

- 1) What percentage of your energy is drawn during peak or off-peak times?
- 2) What percentage of costs is service charges?
- 3) What variations across seasons can you see? Do you use more energy in summer or winter?

Now that you have a better sense of your bill, you can start looking around your centre to see what you think might be causing the patterns you see in your energy usage.

step 2

Take an energy assessment of your centre's energy usage

Once you have a good idea of what your energy use is like from looking at the bills, it's time to inspect the facility to see what you can learn. As a participating site you'll have a Spark team member assist you with this stage.

Getting a basic understanding of how and where you use energy is as simple as taking a walk through your site with a Spark team member. If your centre is not actively working with the Spark team, it is highly recommended that you obtain an energy audit, for your facility, from a professional auditor.

Spark will provide a Spark energy assessment spreadsheet that you will complete during the assessment. You will list how many lights, heating and/or cooling systems, hot water services, fans, computers, fridges, washing machines and dryers you have. Your Spark team member will help you to estimate the energy use of each of these appliances. Then it's your job to estimate how often you use them.

Once you have all of this information, and have added it into your Spark energy assessment spreadsheet, it's easy to see where energy is used across your centre, and how it can be reduced.

step 3

get to it!

Once your energy assessment is complete, it's action time! With the support of a Spark team member, you will now create a Spark Action Plan for your centre. This will list all of the potential energy saving actions you have identified through the assessment, and allow you to put names, approaches and timelines to these actions.

Some points on your action plan may be as simple as 'update closing roster: make sure all appliances are turned off at the switch at night'.

Others may take some time, such as upgrading old lighting systems or heating and cooling systems. These actions may have a few steps, such as finding funding, getting approval, and researching the best option to upgrade to.

Don't worry - the Spark team is here to help.

step 4

monitor your good work

Bills are helpful to monitor your energy use, but what you really need is information that shows you your use through the day, or across a week. This is how you can see the impact of the changes you have made.

Some centres already have energy monitoring equipment installed. If you don't have a monitoring device, talk to the Spark team and ask about how to get this installed. Alternatively, if you have a smart meter installed you can use a compatible web portal or in-home display to track energy consumption.

Make a diary note to compare your energy use before and after you have taken action. Why not share the results with the patrons at your centre? They would be interested to compare and contrast the numbers and keep an eye on what is going on.

ENERGY AUDIT CASE STUDY

A few years ago the Peter Krenz Leisure centre at Bendigo underwent a Level 2 audit by Parsons Brinckerhoff to identify opportunities to reduce energy consumption and improve its

sustainability practice. This edited case study is based on the materials supplied as part of the audit:

YMCA Peter Krenz Leisure centre, Bendigo, Victoria – Case study

The Peter Krenz Leisure centre, located in Napier Street, Eaglehawk, consists of an indoor pool area with a main, intermediate and toddler's pool, a basketball stadium, group fitness room, gymnasium, four squash courts and a number of other facilities.

An energy audit at this YMCA aquatic centre showed the team there how to save over \$30,000 in energy costs annually, paying itself back in savings every year. Energy audits can be hugely beneficial. Once you've paid off your initial investment in the audit you're saving money and energy, year on year. You may even be able to access subsidies for your audit; contact your local and state government to find out.

The major energy consuming activities at the site were: pool space heating (46.3%), main pool heating (15.1%), pool pumping energy (12.3%), intermediate and toddler pool heating (10.4%) and lighting (6.0%), accounting for over 90% of site's total energy consumption.

Audit results indicate an estimated total annual electricity consumption of 895,723kWh/year.

It was identified that there are times when equipment is left operating unnecessarily. A range of opportunities identified outline potential energy savings in kWh/yr and \$/yr, however all of the recommendations required capital expenditure, and so few measures have been implemented.

The average peak demand was approximately 120 kW during summer and approximately 150 kW during winter. The base load (or after hours) demand represents around 50% of the site's maximum demand, which is relatively high. This is due to the operation of the recirculation pumps and the heat pumps during out of hours periods.

The opportunities identified represent total annual electricity savings of 191,740kWh/year (21.5% of the site's annual electricity consumption) and natural gas savings of 1316GJ/year (38.6% of the site's annual gas consumption). This represents an estimated annual cost saving in the vicinity of \$31,200.

It is recommended that the site implement all options with a payback period of three years or less. It should also consider installing variable speed drives (VSDs) on the pool recirculation pumps as this option has the potential to deliver significant energy savings.

THE BIG PICTURE

This guide sets out some tips and information to help you make your centre more energy efficient. It details a range of simple measures available to you to help you save energy and improve your staff and patrons' understanding of energy efficiency.

Once you have a better idea of how your centre performs after a Spark energy assessment or a professional audit, you'll know what needs to be done, and perhaps have an idea of how much it might cost.

But before you start thinking about budgets or shopping lists take a little time to absorb the following. Firstly, proactively managing energy usage is one of the most effective ways to save energy and money and it requires very little financial outlay. Secondly, any efficiency measures will be compromised if you have a building that's performing badly thermally. Let's take a further look at these two important points:

Ask good questions

Energy audits are a useful tool in helping us understand where we use energy and how much we use. However, it is only by constant monitoring and understanding our 'demand' for energy (peak and off-peak usage) that we can better manage our energy use, and schedule our equipment to work smarter, not harder. This can deliver immediate energy and cost savings at little or no cost to you. In the last few years, monitoring has become more affordable, making it a viable option for small to medium facilities to get faster feedback in tracking their energy performance.

Energy companies are very interested in the energy use of organisations like YMCA aquatic centres. The more they know, the better they can plan for how much they need to provide. So they can understand your needs, they may have already installed monitoring on your site. Ask your energy retailer today if they can provide you access to metering information about your site.

What do you do with this information? That's the easy part.

Timing is everything

In many parts of Australia, the cost of electricity is different depending on the time of day. A 'peak' rate applies when the demand for electricity is high (during the day and evening), then an 'off peak' rate applies overnight. Call your energy provider to find out which peak and off-peak times apply to your energy contract. In an aquatic centre, by adjusting or moving your energy demand into off-peak times you can save on your bills.

This is especially relevant with swimming pools. Changing the times you run the heating pumps can radically reduce costs without noticeably impacting on patron comfort levels.

Making changes to the timing and schedules of major equipment can be accomplished relatively easily. By training and changing staff practices, staff can learn how to better optimise the use of major equipment. In the longer term, installation of simple daily timers and automatic controllers can make this easier to accomplish.

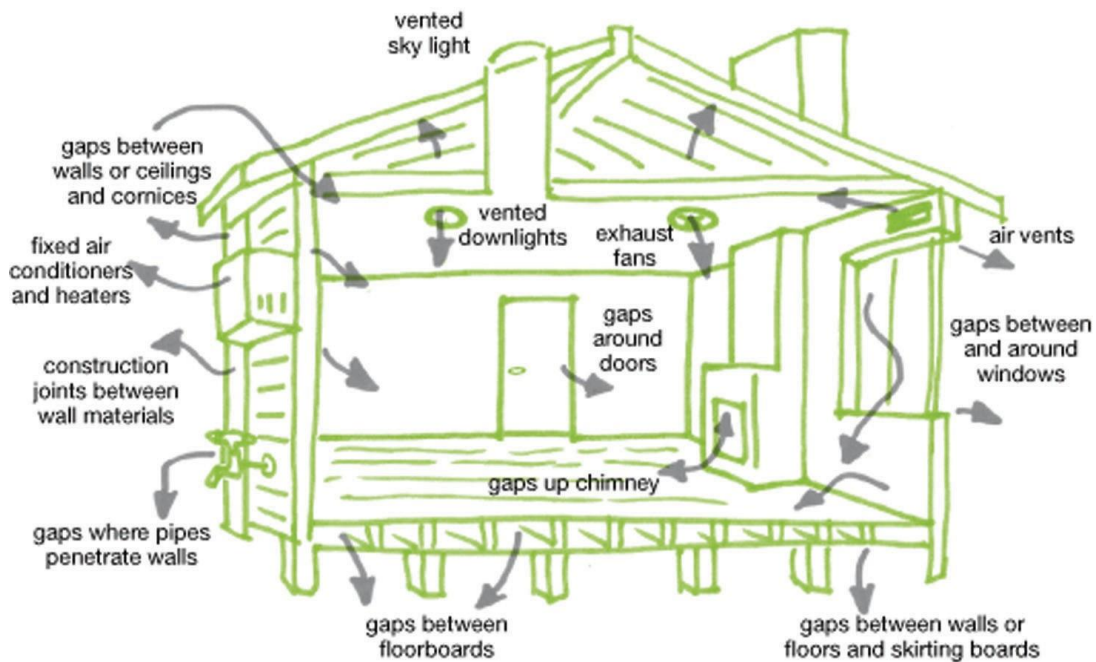
Managing expectations

Of course, the comfort of the patron is always paramount. But with effective communications you can bring patrons along for the journey and reduce and manage incidences of complaint.

Ideally, every member of staff should have confidence in setting appropriate temperature settings and be able to explain to patrons what they are and why they are optimum.

Some centres have found that a 'sandwich board' display board by reception advertising room and pool temperatures reduces the risk of client dissatisfaction. You might also include energy efficiency goals and benchmarks for the centre.

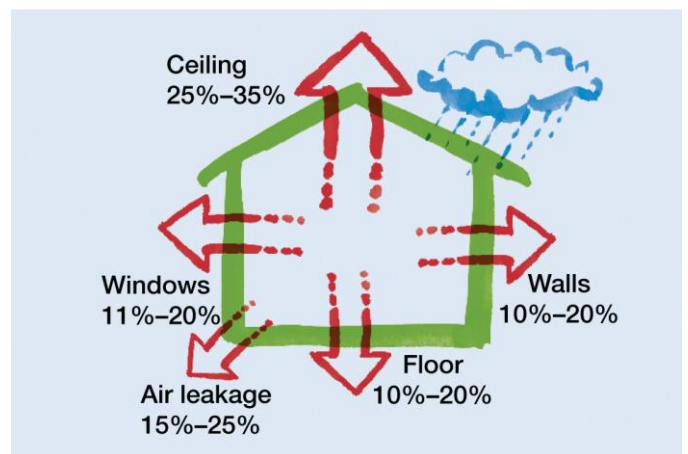
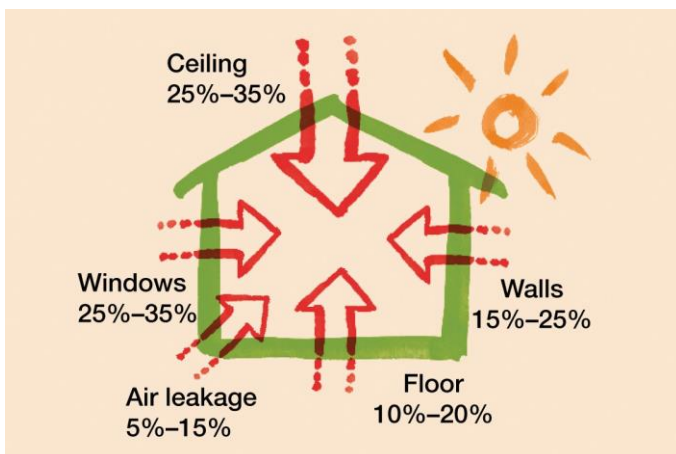
Make sure the building isn't letting you down



Do you have insulation? Are there draughts or windows without blinds or curtains? Leaky buildings waste money and energy. They're like a bath with no plug: the more water you put in, the more you waste. You'd buy a plug for that bath, wouldn't you? Well, it's important to plug holes in buildings too. Studies have shown that up to 25% of heating and cooling costs in a building are due to heat loss – that's a lot of waste! Heat leaks out through constantly opening and closing doors, through windows and from around light fittings.

Heat loss occurs in many parts of a building, from gaps around doors to gaps between floorboards. Seal the gaps and save energy and money.

This illustration has been adapted from the Your Home Technical Manual www.yourhome.gov.au/



Insulation guards the building against heat gain in summer (left illustration) and heat loss in winter.

These illustrations have been adapted from the Your Home Technical Manual

www.yourhome.gov.au/

SPACE HEATING & COOLING

An audit at YMCA's Peter Krenz Leisure Centre found that 46.3% of energy use (including both electricity and gas) was due to space heating the pool rooms. That's a lot of opportunity for savings!

Don't over-cool or over-heat

Aquatic centres have two major requirements for space heating: the pool rooms, which often run on a centralised system, and smaller rooms, including the gym, class and staff rooms, which are usually serviced by air-cons.

Let's look at the first option

The pool rooms in the Peter Krenz Leisure centre were maintained at a temperature of 26°C to 30°C, year round. This equated to an expense of around \$58,000 for heating (excluding service charges). We know that each degree of extra heating or cooling can increase energy consumption by up to 10%, so we can estimate that with a reduction of just 1°C YMCA Bendigo would save \$5800 annually.

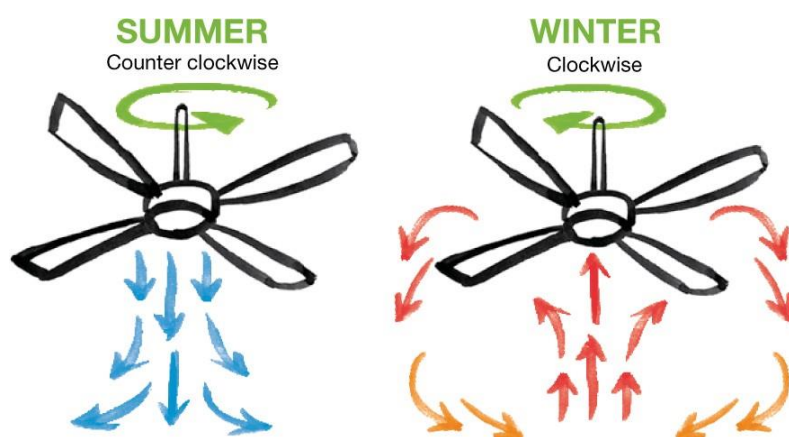
The audit recommended reducing the temperature by 5°C during unoccupied hours to offer significant additional savings. In your centre you need to ensure that staff know how to set the timer on the centralised system to operate at the desired temperature range and to reduce the temperature overnight and during other unoccupied times. Ideally you should have a space heating control system which would include temperature sensors in the return air temperature, fresh air intake and a relative humidity sensor on the return air duct.

One of the reasons for the huge cost for space heating the pool rooms is due to necessary air exchange to reduce air chlorine levels to meet the Australian Standard for indoor air quality (AS 1668.2). The pool space heating units in the Bendigo pool were exchanging 100% fresh air. Energy savings could be achieved if a reduced level of air exchange occurred while still

meeting the Australian Standard. This change in practice would need to be balanced with customer expectations, but should be considered.

The second type of space heating in an aquatic centre is manual control heating and cooling (such as air-cons) for rooms such as the gyms and group fitness. These can also benefit from careful monitoring of their temperatures. Room temperatures should be set to 24-25°C in summer and 18-20°C in winter. Areas such as foyers, toilets and storerooms can be set to around 26°C in summer and 16°C in winter.

Fans reduce the need for air conditioning. This means if you need the air conditioner on, instead of setting it to 24-25°C in summer, you could set it to 27-28°C. Unlike air conditioning, fans work by cooling people, not the room, so make sure you turn them off when you leave the room. If you have reversible fans you can also use them in winter (see illustration, below) to help push warm air, that naturally rises, back down.



Fans work by circulating air in a room. If you have reversible fans you can use them during winter to 'push' the warm air, that naturally rises, back down. These illustrations have been adapted from the Your Home Technical Manual www.yourhome.gov.au/

Switch it off

Rooms that have manual control small space heating and cooling such as the gyms and group fitness rooms should have push-button timers installed. Push button timers can be set to suit the length of occupancy, e.g. one to three hours.

Heat is also created by appliances, such as computers, so make sure appliances that aren't in use are switched off at the plug. Plug-in heating, such as bar heaters, and cooling devices

should also be off when the building-wide heating and cooling systems are switched on, and only used after hours.

Keep doors and windows closed

You should always keep doors and windows closed wherever possible. Open doors can increase heating and cooling costs by up to 50%. Consider installing plastic strip doors throughout the centre – especially to external doors. These will significantly reduce the exchange of air and reduce heating and cooling requirements.

In hot weather, pull down blinds and shades wherever possible, to lower loads on the air conditioner. In winter keep the shades up, allowing the sun to warm the building – then close the shades again at night to prevent heat loss.

Make sure all heating and cooling outlets are clear of obstructions like furniture and partitions.

Work together

From the pool deck to the kiosk, everyone has a role in saving energy.

When it comes to saving energy around the home it can be relatively easy to work out who does what. Someone fixes gaps and cracks each autumn before the winter chill sets in; another monitors energy use and repeatedly reminds the teenagers to switch off lights.

But when it comes to a flexible workforce, like an aquatic centre, things become trickier. There will be gym, group fitness and admin staff on various rosters to cover the extended opening hours, and perhaps a number of managers on duty throughout the week – for starters. How do you get everyone on board when it comes to saving energy? The key is to create an energy team that involves staff from all areas of the business.

Understand benchmarks, set targets, meet regularly and support each other and other organisations with your staff successes.

SWIMMING POOL(S)

Most of the money spent on energy and water bills at an aquatic centre relates to the pool(s), and there is plenty you can do to save both money and greenhouse gases.

Install a variable speed drive

If you can turn down pumps with a VSD you can make energy savings after-hours by reducing the volume of water that is reticulated. After all, there is no need to retain the same level of water turnover after hours as there is during occupancy hours.

You may also want to install a maximum controller, which sets a maximum speed setting for any given time to conserve energy.

Install pool blankets

Pool blankets make a huge difference to heat loss, saving both energy and your centre's environmental outcomes. They can save at least 25% of pool heating costs while in use. Pool blankets also reduce the humidity in the air, which reduces the load on the ventilation system.

When you're looking to purchase a pool blanket, make sure you plan for blanket storage and ease of use. Look for a product with the highest 'R'* value you can afford, while still being light enough to operate and handle if necessary.

*'R' value is the measure of thermal resistance – the higher the value the better it will insulate (act as a barrier to heat exchange) and the more money you will save on your bills.

Turn it down

Pool temperatures are usually set between 25°C and 28°C, depending on the user. Competition swimming or laps require cooler temperatures; recreational swimming temperatures are usually set a little warmer. A 1°C rise or fall is significant to energy use, so close monitoring of pool temperature is essential.

The audit from Peter Krenz Leisure Centre recommended the centre install a PLC (programmable logic control) system. This device would automate control of the pool temperature, ensuring the pool is maintained at appropriate temperatures year-round. It would reduce pool heating at the end of the day and ensure appropriate temperatures are reached by the time the centre opens in the morning. You may want to consider installing a system like this in your centre.

HOT WATER

Heating water uses a lot of energy, especially where electric systems are involved. Electric hot water storage systems produce at least three times more greenhouse gases than high efficiency gas or solar.

Turn it down

Hot water systems for showers and taps are usually separate from the pool hot water system. These systems come with a thermostat with a variable temperature set point and many are set at an unnecessarily high level. By reducing the water temperature by as little as 5°C, you can reduce energy consumption by between 3% and 5%. (Just don't set the thermostat lower than 60°C as this could permit the growth of pathogens in the storage tank.)

Ensure all hot water pipes, the storage tank (of electric storage water heaters only) and fittings are insulated to minimise heat loss.

Consider upgrading to a gas boosted solar hot water system – the most greenhouse friendly way to heat your hot water.

Use less

Make sure your shower heads are efficient. Three star rated shower heads are best practice: see WELS (www.waterrating.gov.au). You could also install push-button timers that cut out after a certain time and need to be reactivated to continue. These have been successfully implemented at another Spark pilot site, the Ballarat Aquatic Centre in Victoria.

Basin taps need to be considered as well. Six star rated tapware is best practice, but you can install flow restrictors if you don't want to replace hardware.

Adopt best practice

Dishwashers should be turned on only when there's a full load. use the eco-load wherever possible.

Keep an eye out for leaks and ensure they are fixed promptly. Dripping taps can waste as much as 20,000L a year – if it's a hot water tap, that's a lot of wasted energy too!

If it is time to upgrade your electric hot water system, consider all options. Solar is the most efficient in terms of the kind of energy used to heat the water, but upgrading to a heat pump, or natural gas powered hot water system are also ways to make your hot water generation more energy efficient. Have a look at all of your energy efficient options and make an informed decision about which hot water system is best for your centre.

LIGHTS

The number of lights in Australian homes and businesses has rapidly increased in recent years. Many homes and workplaces would be sufficiently lit with half the number of lights – and they'd save a lot of energy. While lighting accounts for a smaller proportion of energy consumption in aquatic centres, there is still much you can do to reduce that figure even further.

Turn it off!

Lights not only use energy, they create heat, so switch off unused lights whenever possible. Fluorescent tube lights should also be turned off: despite popular belief, they are not 'best left on'.

Take it out!

Keep an eye out for opportunities to 'delamp'. Delamping is a process of taking out excess light bulbs where they're not needed, saving energy and light bulbs. A good place to start looking is ceiling lights. These are commonly furnished with two fluorescent tubes when often one would suffice. Taking one of the tubes out won't damage the fitting. Look out for excess lightbulbs in areas where you don't need as much light, such as hallways and walkways.

Install photocell sensors

Aquatic centres usually have a number of high energy drawing lights. Ensuring these lights are replaced with low energy lights – with the same light performance – is essential. It's also important to ensure lights come with electronic ballasts that can be dimmed depending on the daylight available. This means that on low natural light days you use the energy you need, but on high natural light days you reduce artificial lighting, saving on bills and greenhouse gas emissions. Install photocell sensors to all lights where the assistance of daylight can reduce the level of lighting required.

According to the Peter Krenz Leisure centre audit: 'Typical energy savings associated with upgrading 400W high bay lamps to 150W LED high bay lamps are in the vicinity of 65%. In addition, the cost for maintaining the high bay lamps is significantly reduced as the typical lifetime of the metal halide lamps are around 10,000-15,000 hours, in comparison to LED high bay lamps, which have a typical operating lifetime in the vicinity of 50,000 hours.

Let light in

On sunny days when glare is a problem staff tend to close curtains and switch on lights.

This can be beneficial to reducing the heat load on the cooling system, but one of the most cost effective solutions is to install solar films and blinds on windows where glare and solar penetration are a problem.

Solar films are a transparent film which adheres to the window glass. They are inexpensive, effective and work by blocking out UV radiation and heat but allowing in light. They are a great choice for any windows which receive a lot of sun in summer.

You can also install retractable solar shades, which also let in natural light and keep out glare. They can be installed internally or externally. They're a good choice in colder climates where you'd want as much sun as possible penetrating the building in winter.

Spring clean

Most bulbs over time will produce less light but draw the same power, so make sure that you keep an eye on your bulbs' light output and clean them as necessary. You should clean bulbs and fittings on a regular basis – a good clean can increase light output by up to 20%!

Adopt best practice

Seek the advice of an electrician or lighting specialist to rearrange lighting circuits based on the way rooms are used and natural lighting, e.g. daylight areas of a room on the one circuit (that can be switched off most of the time!). using one switch for all lights in large rooms is very inefficient.

Install motion sensor lights in low occupancy rooms such as bathrooms, storage spaces and staff rooms. Light coloured and reflective surfaces can also improve the natural light in a space so paint dark surfaces with lighter colours to reflect and maximise available light.

For the future

Consider upgrading your centre's lighting to include one of the many types of efficient lighting systems available. Sometimes simply changing the kind of light bulb you use will be enough to make your centre's lighting more efficient. Many efficient lighting technologies exist, including modern fluorescent lamps and LED lighting. Installing lighting controls, including sensors and timers in bathrooms and storerooms will make sure lights are switched off automatically. Talk to your local lighting specialist or reputable supplier, to ensure you are aware of the many readily available options.

Lighting glossary

Do you know the difference between a LED and a watt?

Don't worry, most people find lighting confusing. This glossary should help:

Watt (W) – A watt is a unit of power. The higher the wattage the more electricity the bulb will use. High wattage bulbs draw over 25W; low wattage bulbs use generally around 8-10W.

Voltage – This is the electric tension between two points: usually rated as 240V in Australia. This measurement is not related to the energy saving capabilities of the light bulb.

LED (light emitting diodes) – the new generation in lighting: quality output, dimmable, low energy, robust and very long lived.

Incandescent – the classic lightbulb with the filament. These are being phased out.

Halogen – Once touted as low energy, but they're not. Avoid and replace with energy-saving lights as soon as possible. Seek advice from LED specialists on the right LED for your light fittings

CFL (compact fluorescent lamps) – the 'old generation' in low energy lights. Contain mercury, making disposal problematic. Fade quicker than LEDs, but cheaper and long lived.

APPLIANCES

If you count them up, your aquatic centre is probably packed with electrical appliances.

Fridges, computers, heating urns and photocopiers. If you're leaving these on 24 hours a day, that is a constant drain of dollars and a poor outcome for the environment.

You don't need to make big changes to your appliances, just use common sense and make some adjustments, and you'll be amazed at the savings you can make.

Refrigerators

Fridges are a relatively small cost in the greater scheme of things, but savings are easy here. Try to keep refrigerators at least 60% to 75% full. A full refrigerator has less air flowing in each time it is opened then needs less chilling every time the door is shut again. So if you have a well-stocked refrigerator, your refrigerator will use less electricity (but do make sure the air can still circulate). Keep your refrigerator full by stocking the shelves with bottles filled with water.

Also remember that one full refrigerator is more efficient than two half-full ones, so if you have refrigerators that are mostly empty, stop using them.

Other appliances

If it blinks at you – it's still on!

Standby power is the electricity consumed by an appliance when it's not being used.

When you turn appliances off with the remote, rather than at the wall, the appliance will go to standby power. Most appliances are on standby power when not in use, and often it's serving no real function.

Computers & other office equipment

It's estimated that two thirds of the energy used by office equipment is used during 'idling' time, when the equipment isn't being used. Which means there are a lot of computers, printers and photocopiers sitting there doing nothing but using energy.

Simply ensure all computers are put into sleep mode when not in use and are fully shut down at the end of the day. You should also turn your monitor off at lunch breaks or extended periods of non-use.

Another thing to remember

Photocopiers and printers are the two largest users of energy per unit in the office but can be standing idle for up to 95% of the day. Turn them off when not in use and especially overnight and over weekends. Shutting off these appliances will save you money.

YMCA

Our Commitment to the Environment

Honesty, Caring, Respect and Responsibility

The YMCA Movement in Australia is committed to being a leading environmentally-responsible organisation, acting in a sustainable way, and minimising our environmental impact.

We recognise the critical importance of caring for the environment for the future of humanity. In providing programs and services that build strong people, strong families and strong communities, we will also protect, sustain and restore our natural environment.

Our environmental commitment will be achieved by our Member Associations through:

- reduction of greenhouse gas emissions
- we accept the science of climate change and our responsibility to reduce our environmental 'footprint'.
- sustainable use of water
- we adopt and promote water-efficient strategies.
- sustainable use of land and resources

We preserve the earth's ecological diversity and the natural ecosystems in our communities via materials efficiency, facility design and waste minimisation.

Community Leadership and Advocacy

We actively encourage public education & awareness – for our staff, customers and partners.