

The following is a shortlist of the energy efficiency opportunities most commonly identified as relevant for investigation and implementation by NEEN pilot sites and their representatives.

These are the top energy efficiency opportunities identified by our NEEN pilot sites.

NEEN Members were motivated by the following factors:

- Cost savings achieved
- Low implementation costs
- Access to relevant support/resources
- Opportunities used as an engagement tool with staff and / or community
- Whether organisations owned their own premises (which determined whether they could upgrade equipment or make modifications to the building)

For all organisations, a gradual roll out is recommended. While 15 - 20 opportunities may be initially identified, it is most practical to act upon a much smaller number (5 - 10) straight away. Then savings achieved from these earlier opportunities can help pay for further opportunities in the next 6- 12 months.

1. LIGHTING - DELAMPING

Many workplaces are over lit. Removing one fluorescent tube from a bank of two is a practical way of reducing energy consumption. To optimise savings, the ballasts associated with the removed lamps must be removed by an electrician.

There was a strong interest in delamping from pilot sites. This was due to the low cost involved and ease of implementation (even though there is generally only low to moderate savings).

Another reason for the high interest from sites was the ability to easily replicate delamping in other offices, regardless of whether the site is owned or leased.

Another similar lighting opportunity includes taking advantage of natural light and installing additional controls (switches or sensors), so lights are switched off when they are not needed.

2. LIGHTING - TECHNOLOGY UPGRADE

Lighting is generally one of the top three energy consumers areas in the not-for-profit sector. A lot of organisations are still operating out of premises that are more than 5 - 10 years old, and during that time lighting technology has improved significantly.

Most common technology upgrades include:

- Retrofitting any older style incandescent/metal halide light with a LED or CFL globe. LEDs are becoming increasingly versatile and most lights can be replaced with an LED option, often in a similar style.
- Replacing the older type of T8 fluorescent tubes commonly used in offices with newer generation fittings using tri-phosphoric T8 tubes and electronic ballasts, or highly efficient T5 fluorescent fittings and straight LED tube equivalents.
- Exchanging halogen spotlights that are common on the exterior of churches, facades, etc. with LED equivalents.
- Replacing older style fluorescent exit signs with LED equivalents, which offer good payback because they are left on 24 hours a day.

Please note - most lighting upgrades need to be completed by suitably qualified personnel.

Generally, some good medium sized savings are within reach, but they do require some upfront costs if doing a full lighting upgrade.

One idea popular amongst the pilot sites, was to gradually replace the older type T8 fluorescent tubes with LEDs. They would purchase a box of the LED tubes as spares, and install when the T8 tubes need replacing

If considering an upgrade, the best financial savings are made from those lights that are used the most, e.g. - lights in the main office or reception.

3. SOLAR PV (SOLAR PANELS)

Installing Solar PV reduces the amount of energy that organisations are required to purchase, but does not result in any actual reductions in onsite energy use. Solar PV offers the best financial return when it is used to offset the amount of power normally purchased or consumed, and should be sized so that there is little or no surplus power.

Organisations best suited to Solar PV are:

- Building owners who plan to remain in the same building for the next 5-10 years (due to the length of financial payback).
- In a building that has north-facing, unobstructed roof space (NE or NW can also work well). Installations can also be ground mounted, but that is generally more expensive.
- Using the bulk of their energy in daylight hours. For this reason, churches are not the best candidates, but offices or presbyteries that are used during daylight hours would work well.

While solar can provide significant offsetting of current and future energy costs, it does require a large upfront cost. If access to capital is an issue, a number of companies are starting to offer \$0 upfront as part of a long term contract.

4. TIMERS

24 hour, 7 day timers are a good, cheap tool to reduce energy use where equipment is left on all day, every day, regardless of the standard operating hours. From the sites visited, this equipment included hot water urns, hot water systems, water coolers, lights, air hockey tables and fridges that are empty overnight.

Generally low cost but mid sized savings can be achieved, especially from turning hot water systems and fridges off.

5. CONTRACT REVIEW

Organisations should be in regular contact with their energy retailer to check that they are getting the best deal possible. Some retailers will offer discounts for not-for-profit organisations. Depending on the existing contract and state, savings made can be up to 17%.

Another avenue for obtaining discounts includes signing up to one of the increasing number of group buying arrangements. This is generally suited to organisations that are spending under \$50,000 annually. When considering switching contracts, always check for any termination penalties that may be incurred. If your contract is one of several that have been bundled as part of a group contract (e.g. the power contract for a kindergarten is bundled together with the contract managed by the adjoining church), there may be penalties incurred by others.

This opportunity has little financial outlay, but can create significant savings for just the cost of a phone call.

A variety of government and privately operated websites offer energy price comparison tools to determine what other options may be available.

6. RELAX HEATING / COOLING TEMPERATURE SETPOINTS

Another popular opportunity is adjusting the air conditioning temperature set point - to slightly higher in summer and cooler in winter. While this action represents only small potential savings, it comes at no cost and is a positive engagement piece with staff as it is simple to execute and promotes energy efficiency.

Not all offices are designed to take the best advantage on the one HVAC system, so this can be a contentious opportunity for some organisations. In smaller offices, this may be resolved by rearranging desks or air conditioner locations, while in larger commercial buildings, it may require a review (or calibration) of the temperature sensors scattered around the office or balancing of the ducting system.

To assist with this, organisations should also think about investigating ways that they can reduce any draughts that can cause over-heating or cooling. External shading/reflection can also assist with reducing heat gain and ease air conditioning demands.

A variation on this opportunity includes reviewing the temperature in the server room, which can be raised up to 25°C with no impact on performance (in line with [ASHRAE guidelines](#) for data centres).

7. SOLAR HOT WATER

Solar hot water can provide excellent savings in situations where hot water use is high. For pilot sites, including retreat centres and aged care facilities, this reduced energy costs by up to 60% when replacing a standard electric system. This opportunity is not suited to organisations who only use hot water for general use, such as an office space, where the primary use is for washing up in the kitchen.

Medium sized capital investment is required for medium sized returns. In the scenarios listed above, financial payback is generally around 5 years. This works best with north facing roof space. Heat pump applications are a potentially more expensive yet valuable long term investment.

8. REVIEW HOT WATER TEMPERATURE SETPOINT

A relatively simple opportunity for organisations is reducing the thermostat setting of the hot water unit to reduce energy consumption. When installed, these historically have been set to a default of 65°C and most systems can be lowered down to a minimum of 60°C – check with your plumber or maintenance provider when they are next on site. It is not recommended to

lower any further, as this can encourage bacteria growth.

The extent of the savings will depend on how much hot water is used onsite. The best financial savings are obtained from sites such as kindergartens, aged care facilities or retreats, which have a high laundry or showering requirement.

Another similar opportunity is to use a timer to switch off the hot water system outside of working hours. It is important to ensure that the system is switched back on at least an hour before the water will be used, in order to destroy bacteria. Some additional savings can be achieved by installing low flow fittings, which will minimize the overall volume of hot water used.

9. TURN OFF PCs OVERNIGHT AND ON WEEKENDS

While savings might be low for turning off an individual computer (one example was approximately \$50 a year per computer), these savings can end up being substantial when roll out is considered across an entire organisation.

However, this can be an inconvenience to the IT department, as some organisations require people to leave their computers on overnight so the IT department can install updates outside of normal office hours. Therefore, alternative methods need to be developed to meet the IT requirement for installing software updates.

Some suggestions include developing a schedule where the computer is left on for the 1st day/week of the month or by email notification. A number of software packages can also be installed that assist in the rollout of software updates.

Similarly themed opportunities include enabling the standby functionality of computers and printers, so that the units power down when inactive for a nominated period, e.g. 10 - 15 minutes.

10. FRIDGE CONSOLIDATION

Most not-for-profit organisations will have at least one fridge in use. A common opportunity identified was to consolidate fridge contents and remove any unnecessary units. While this opportunity will generally only provide low cost savings, there is minimal effort and no cost involved. If you have multiple fridges that are more than five years old, it may be that you can consolidate two or more into one new energy efficient fridge (check the energy star rating to find an efficient fridge).

Other fridge/freezer related opportunities include:

- Relaxing temperature setpoint where possible, e.g. -18°C is generally the minimum requirement for ice cream in a freezer, so there is no need to have the freezer temperature set at -25°C.
- When fridges are empty overnight, consider switching them off (for example a lunchbox fridge in a kindergarten).
- Check seals to reduce heat ingress to the fridge.

TO DISCOVER THE HIGHEST POTENTIAL AND RELEVANT ENERGY EFFICIENCY OPPORTUNITIES FOR YOUR ORGANISATION, VISIT THE NEEN WEBSITE AND USE OUR FREE ENERGY EFFICIENCY OPPORTUNITY ASSESSMENT TOOL

www.neen.org.au/energy-efficiency-opportunitiesassessment-tool

FOR FURTHER INFORMATION

NEEN – NATIONAL ENERGY EFFICIENCY NETWORK

NEEN is a national initiative to promote open learning and collaboration amongst faith-based and not-for-profit community organisations, with the aim of increasing energy efficiency and establishing a positive energy future for the sector.

WHAT MAKES THE NEEN INITIATIVE SO POWERFUL?

NEEN provides small to medium sized community organisations with the resources to reduce energy consumption and the

opportunity to connect and collaborate on a range of initiatives that foster a resilient, sustainable future for the not-for-profit sector and the communities they serve.

AN OPEN INVITATION

No matter where you are on your journey to achieve your sustainability goals, you're welcome to join the NEEN community. Make the connection and discover a better energy future for your organisation.

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