

Generations Church, Cairns

People, place, potential

The Generations Church is located just north of Cairns and was built as a result of fundraising and donations from the congregation in the mid 1990s. The primary building contains one large hall area that is used as the main auditorium, and is served by a large commercial chiller unit that was donated by a member of the congregation. A number of small rooms and office spaces adjoin the auditorium with a variety of wall unit air conditioners. An adjacent smaller building is made up of toilets, a kitchen area (for tea, coffee and snacks) and a children's playgroup / community room.

The church is not staffed full time, and is used by the congregation two or three days during the week as well as Saturdays and Sundays. The office space is used most days of the working week.

Opportunities at a glance

Projected savings top 5 opportunities:

\$1430 per year

Estimated investment top 5

Opportunities:

\$2550

Projected savings all opportunities:

\$2740 per year

Estimated investment all opportunities:

\$19,900

The site hosts an annual youth event, which a large number of people attend. A large electric hot water system is switched on to supply hot water for showers during this event, but is otherwise switched off for the rest of the year.

The key opportunities of the audit:

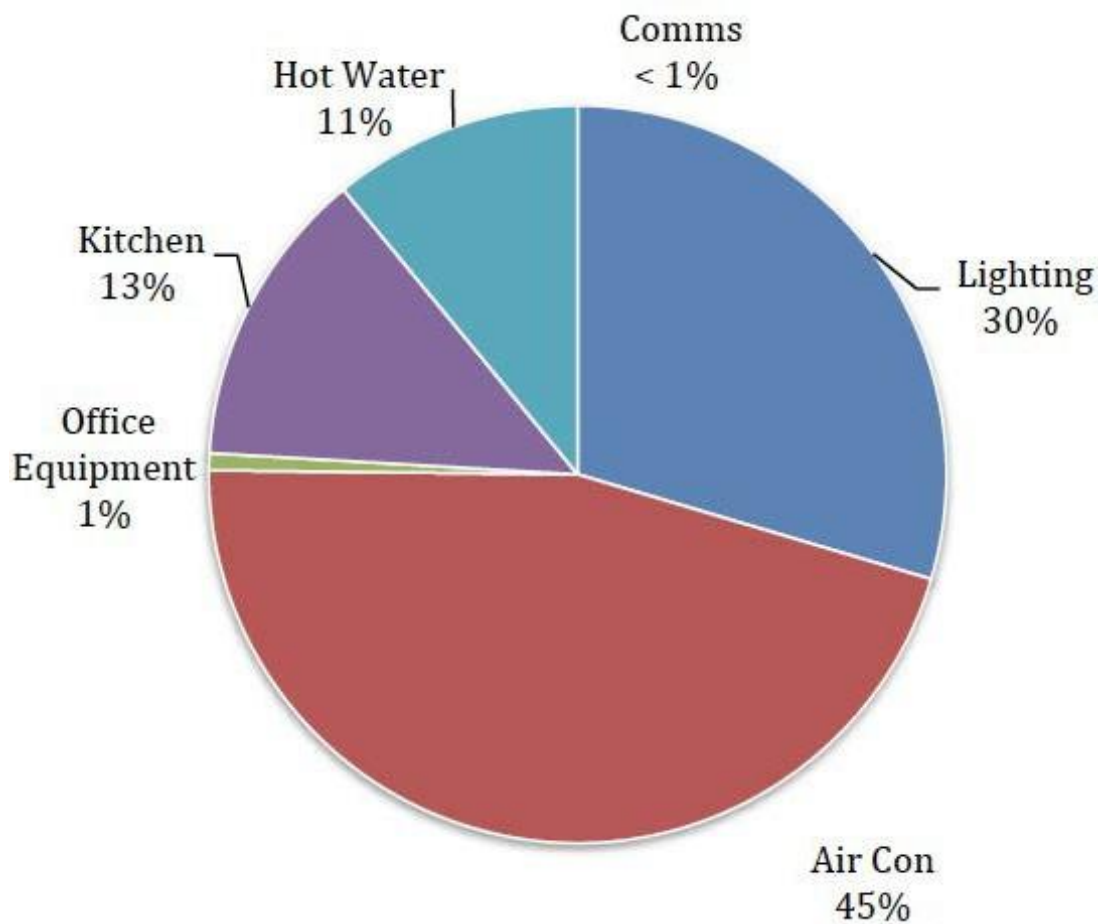
- Help share the learning and the story of NEEN project as applied to the church.
- Find ways to help to better manage the site's energy consumption.
- Look at possible alternate technologies to assist in the above.

Current Activities

A site assessment was undertaken of the Generations Church which has an annual electricity cost of approximately \$6000 from an estimated annual usage of 20,000kWh. The total energy savings from the identified opportunities are \$2,740 per year (including benefits from solar PV in the order of \$700 per year). A number of opportunities were prioritised with the site representative for further investigation and / or implementation, with anticipated energy savings of approximately \$1,430 per year being derived from approximately \$2,550 investment.

Primary energy-using equipment includes:

- heating, ventilation and air conditioning
- lighting
- hot water
- kitchen appliances
- domestic refrigeration



Energy-efficiency measures already implemented are:

- delamped the security lights in the car park
- quotes for reflective roof coating have been sought
- replacement of outdoor lighting with energy-efficient options
- Implementation of a turn-off campaign with printer and wifi.

Energy efficiency opportunities

Looking at the whole site there are a range of opportunities we suggest, and these include:

Opportunities	Description	Estimated savings (\$/yr)	Estimated cost (\$)	Indicative payback (yrs)
Car park lighting	<p>Consider installing some timer controls or push button timers so that the car park lights automatically go out at 10pm on Sunday.</p> <p>Calculated savings are associated with lights being left on 2 days / month.</p>	\$310	\$100-200	<1yr
Toilet lighting	<p>Consider installing some timer controls or push button timers so that the toilet lights automatically switch off.</p> <p>Calculated savings are associated with lights being left on 2 days / month</p>	\$13	\$50-150	5-10yrs
Electricity contract review	<p>Contact existing electricity supplier to determine if already getting best rate available.</p> <p>Some state government websites offer comparison tools. Depending on the state, it is common to receive discounts of at least 5%. Indicated savings based on receiving 5% discount from current rate.</p>	\$300	low	<1yr
Lighting T8 upgrade	<p>Consider upgrading current fluorescent T8 tubes to more efficient lighting technology (T5 or LED).</p> <p>Note that T5 tubes will need an adapter kit as tubes are slightly shorter. LED tubes are a straight swap with existing T8 tubes and offer greater savings, but are more costly.</p>	\$485	\$2000	3- 5yrs

Opportunities	Description	Estimated savings (\$/yr)	Estimated cost (\$)	Indicative payback (yrs)
Delamp back undercover area	<p>Consider delamping of lighting in undercover area at back of church, subject to visibility requirements.</p> <p>Indicated savings associated with removal of only two lamps.</p>	\$10	low	<1yr
Switch off main church aircon for 1 hr/wk	<p>The main air conditioning unit is oversized for the area that it services. As an engagement tool with the congregation, the indicated savings are associated with switching off the air conditioning for 1 hour per week</p>	\$10	low	<1yr
Reflective Roof Coating	<p>Consider applying a new coat of paint to the roofing structure, especially the bare metal air conditioning ducting to reduce heat gain within the building and reduce the air conditioning load.</p> <p>Indicated savings are associated with a reduction of 2-10% in aircon load. Staff onsite can implement this opportunity at a \$0 labour cost due to painting background.</p>	\$85-425	Materials Only	2yrs
Replace outdoor halogen spots with LEDs	<p>Consider upgrading existing 400W halogen spotlights in illuminating car park area with 150W LED equivalents. This generally requires replacing the entire lighting unit, rather than simply replacing the globe. Indicated savings are per lamp.</p>	\$35	\$300	8yrs
Solar hot water / heat pump	<p>Consider the installation of a solar hot water unit or heat pump to reduce electricity associated with the hot water unit in the smaller building.</p>	\$180	\$2000	5-10yrs

Opportunities	Description	Estimated Savings (\$/yr)	Estimated Cost (\$)	Indicative Payback (yrs)
A/C Wall unit consolidation	<p>The smaller rooms and office space that adjoin the auditorium each have window air conditioner units.</p> <p>This is an opportunity to consolidate the units and replace with new split systems, some of which involve a single outside unit delivering air conditioning to two or more rooms.</p> <p>While highly likely that there will be savings, it is difficult to quantify given constraints of assessment. Indicated savings associated with a 5% improvement.</p>	\$50	>2,000	>20yrs
A/C Maintenance	Regular maintenance of systems, cleaning filters.	\$80	\$250	3-5yrs
Energy Monitoring	<p>The installation of monitoring equipment does not itself result in savings, but does allow for the identification of items being left on overnight that could be switched off.</p> <p>This may also be used as an engagement tool with staff or congregation members on saving energy and freeing up funds for other fundraising activities.</p>	N/A	\$400	N/A
Solar PV	<p>Installation of solar PV on rooftop. Savings and capital cost based on unit size of 5kW.</p> <p>Poor benefit due to church being vacated for the bulk of the time that power is generated, meaning that it would be exported off site into the local network for little or no financial benefit.</p>	\$700	\$12,500	18yrs
Check fridges	On an annual basis, check seals on fridges, ensure units are defrosted and conduct regular maintenance.	\$120	\$250	2yrs

Opportunities	Description	Estimated Savings (\$/yr)	Estimated Cost (\$)	Indicative Payback (yrs)
Hot Water - reduce thermostat down to 55°C	Reduce thermostat setting on hot water system down to 60°C. It is not recommended the thermostat be lowered any further than this level.	\$30	low	1-2yrs
Switch off large hot water unit	Large hot water unit located at the back of the main building is switched off for the bulk of the year except for when the youth event is held. Therefore indicated savings have already been achieved.	up to \$1000	0	< 1yr
TOTAL	Cumulative total for all opportunities	\$2740	\$19,900	

Top 5 opportunities

One of the major outcomes of the audit was to provide sound advice and analysis to help the Priest develop an energy efficiency strategy that the management committee could then implement. The Priest was excited about getting a new staff member who would be given the responsibility of drafting a five year energy efficiency strategy to ensure that continued efforts to reduce energy are on the agenda. However, the audit identified that the extreme weather in Cairns presented challenges for changing behaviour around the use of air conditioning.

Based on prioritised efficiency measures, the overall anticipated savings are \$2740.