

# TOWARDS ZERO

**STORIES AND JOURNEYS**  
ST ANDREW'S GARDINER UNITING CHURCH



# Towards Zero: stories and journeys

## St Andrew's Gardiner Uniting Church

Started in 2010

### 1. Rainwater tanks

- Installed 9,000L water tanks.
- Connected to the toilets through a pump system.
- Increased water saving measures for garden.

### 2. Better garden

- St Andrew's Gardiner congregation had a history of taking excellent care of their environment.
- A working team gathered monthly and cared for the garden and environment.
- Installed water saving systems.
- Increased green areas for the public.
- Reduced garden waste and landfill waste.

### 3. Solar hot water system

- Installed three collectors to increase the capacity.
- Installed 400L storage tank with a gas buster.
- Supplied hot water to its large commercial kitchen.
- Put a timer on two wall mounted hot water urns.
- Used dishwasher as often as possible to save water and energy.

### 4. Removal of all electric heaters

- Removed eight blow heaters in the church hall (each was rated at 6kW).
- Removed electric fan heaters in various offices.
- Installed four reverse circle air conditioning units in the church hall.
- Installed six gas heaters in the church building.

### 5. Install energy efficient lighting

- Removed old lights.
- Installed new generation flood lights for the church hall.
- Installed automatic switches for the toilets.
- Managed outdoor area lighting.

### 6. Install 10kW solar panel systems

- Installed the first 5kW PV.
- Installed the second 5kW PV based on the real data.
- Designed the system to supply more electricity than its annual usage.
- Used the solar to offset other emissions, like gas and waste.
- Installed a public display TV to show real time data.

## **7. Produce education materials**

- Published environmental sustainability materials.
- Witnessed to neighbouring congregations encouraging them to increase efficiency.
- Neighbouring Korean Church of Melbourne installed solar panels and adopted other measures to care for the environment and save money.
- Shared the story with the Presbytery of Port Philip East and the Synod of Victoria and Tasmania.

# **Glen Waverly Uniting Church**

**Started in 2014**

## **1. Rainwater tanks**

- Installed 40,000L water tanks.
- Supplied water to the toilets and the manses through a pump system.
- Designed the system for the facilities having 4000 visitors a month.
- Received a government grant.
- Implemented water saving measures throughout the church complex.

## **2. Better garden**

- The congregation has a history of taking good care of their environment.
- Removed the English garden, grew Australia native plants.
- Installed water saving systems.
- Increased green areas for the public.
- Reduced garden waste and landfill waste.

## **3. Reduce, reuse, and recycle**

- Reduce waste through both internal and external usage.
- Reuse items, discourage one-use plastic cups
- Recycle all the recyclables.

## **4. Remove of all electric heaters**

- Removed a large in-ceiling heater in the church building.
- Removed electric fans in various offices.
- Installed reverse circle air conditioning units throughout the church.

## **5. Install energy efficient lighting**

- Removed old lights.
- Installed new LED lights for the church and its hall.
- Installed LED lights for outdoor space.

## **6. Install 30kW solar panel systems on the church and the manse**

- Installed 30kW PV and three 10kW invertors.
- Installed the second PV system for the manse.

- Planned to install PV on the second manse.
- Moved towards full electrocution of the church complex.
- Used the solar to offset other emissions.

## **7. Environmental behaviour**

- Communicated the message simply and brought the congregation along the journey.
- Developed a holistic approach to care and stewardship, including caring for the people, the church, the land, and God's creation.
- Witnessed to the local community – zero emissions is possible.
- Maintained international connections.
- Shared the story with the Presbytery of Port Philip East and the Synod of Victoria and Tasmania.

## **Bentleigh Uniting Church**

### **Started in 2008**

Our minister, Rev Dr Ji Zhang, issued a Call in to the congregation July 2008. The call was about discerning, planning, acting, and assessing the call of God for this church in the next five years.

One aspect of the calling was moving towards a sustainable future.

A working group of eight people worked on environmental sustainability.

### **1. Electricity**

Listed current energy usage (electricity only; no gas at property):

- underfloor 'electric blanket' in church
- electric heaters in kitchen & meeting room
- no fixed heating/cooling anywhere else on property
- lighting

### **2. Water**

Listed current water usage:

- toilets
- kitchen
- watering grass at front of church

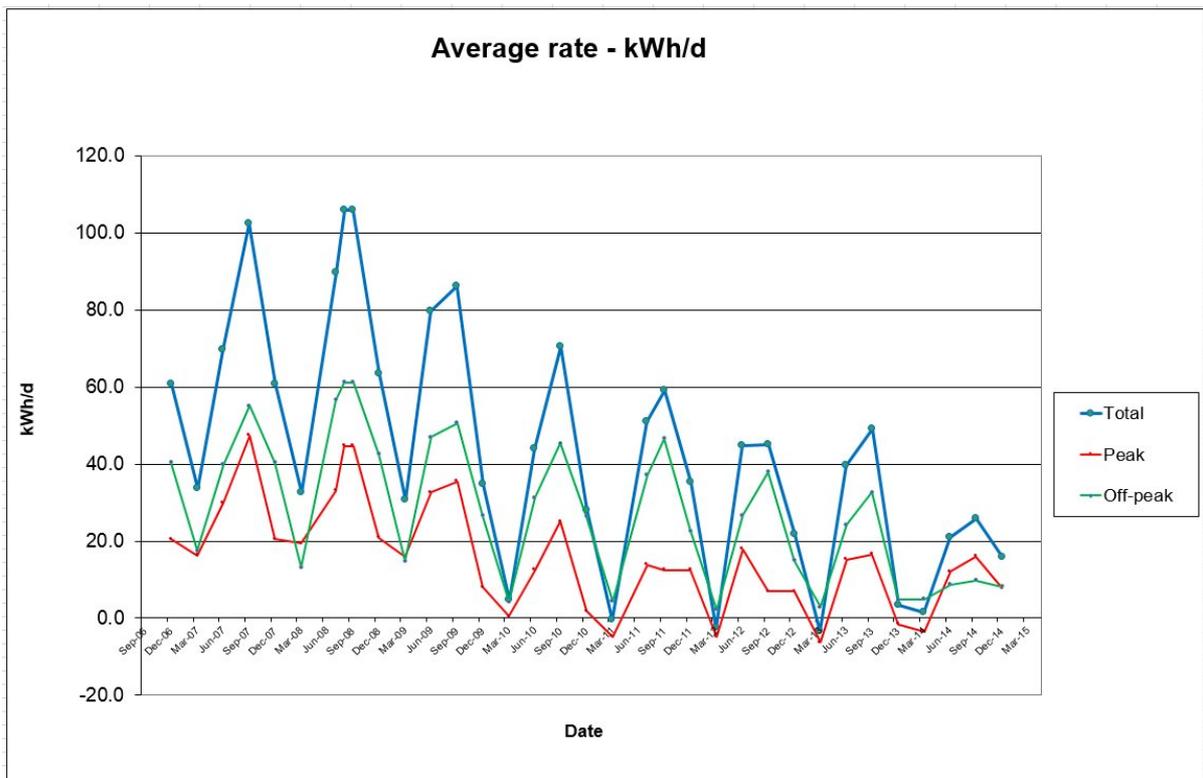
### **3. Brainstormed ideas**

- Discarded proposal to install a large water tank – minimal garden; no adjacent manse; prohibitively expensive to install and plumb to flush toilets

- Discarded proposal to build community garden – insufficient land. (Subsequently realised we could have subdivided back half of adjacent rental property)
- Discarded proposal to heat church with heat-pump and hydronic heating – too expensive
- Discarded proposal to install solar hot water – too expensive at that time considering the amount of hot water used.

#### 4. Savings

- Collected electricity and water accounts for previous two years. 26,000kWh/yearr and 200 litres/day
- Commenced spreadsheets of water usage and of electricity usage.
- This proved fortuitous as, in 2012, the water usage suddenly tripled. The cause was eventually traced to an intermittent fault in one of the toilet cisterns. If we hadn't been tracking the usage, it would have gone unnoticed.



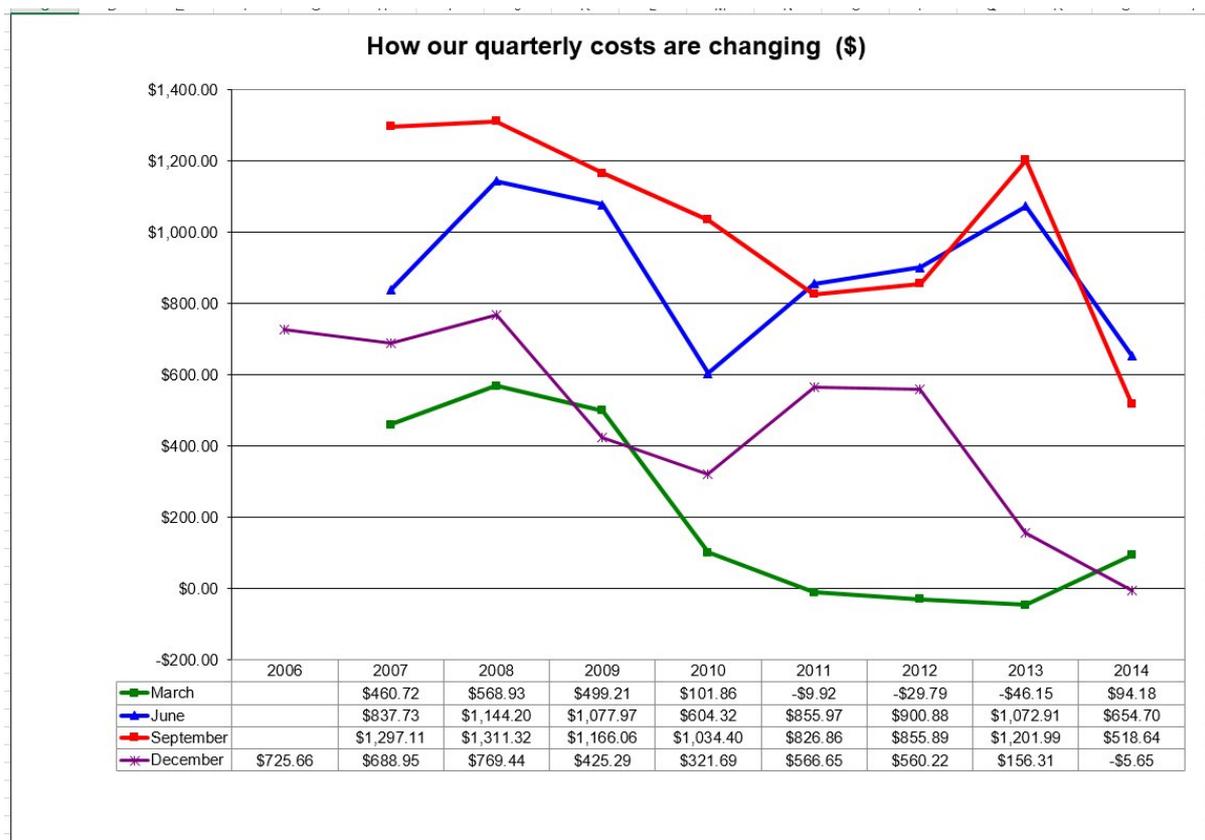
#### 5. Conducted energy (electricity) audit.

Listed all items using electricity, their wattage and number of hours in use per annum.

After some minor adjustments (for example, having a second person look for items using electricity and discovering a number of unknown sources) the annual usage was calculated. It was within 5% of that calculated from the electricity accounts.

## 6. Solar panels (PV)

- Installed 6.3kW solar panels on roof of the meeting room.
- Installed a public display panel in Centrepont.
- It was the largest system we could practically install. Back in 2008, we were probably the first UCA congregation in Victoria to receive the Commonwealth renewable energy grants for schools and community buildings.
- Close to commissioning – literally the day before the Commonwealth grants closed - we discovered the premium tariff rebate (20c/kWh) only applied to systems of 5kWh or less. The working group decided to proceed with the 6.3kWh system, maximising the saving of CO<sub>2</sub> instead of maximising our financial savings.



## 7. Environmental behaviour education

- Undertook a program of education. Updates were provided to the congregation at regular intervals.

- An update was given each week in the digital presentation before the service, occasionally announcements were made during the service, items were included in the weekly pew sheet, and occasional articles were written for the bi-monthly magazine. Everyone was interested - some in the amount of CO<sub>2</sub> emissions saved; some in the money we were saving.

#### **8. The Phase of Decreasing Waste and Increasing Efficiency**

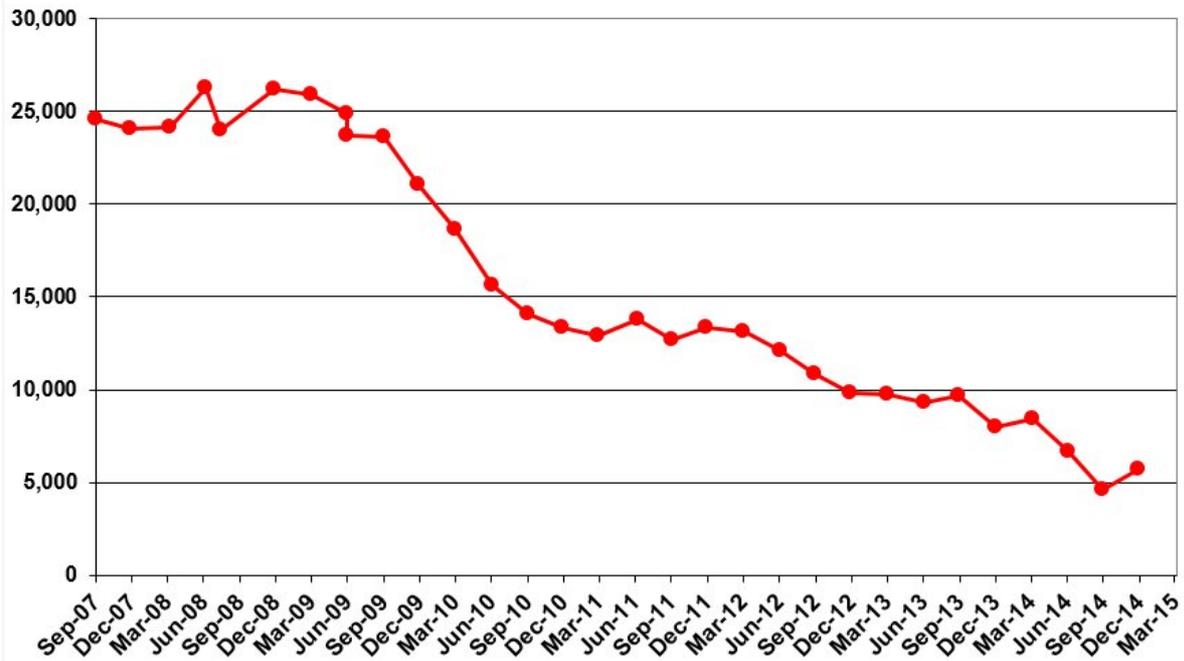
- At the same time, we blocked all the air leaks – primarily the wall vents and around the doors. One advantage of making the church more air-tight was that noise from the street was much reduced.
- We double-glazed a window near the vestry, which noticeably reduced the heat leakage in winter.

The Phase of Decreasing Waste and Increasing Efficiency was completed in 2012.

Here is the list of changes:

- reverse cycle air conditioner installed in meeting room, replacing two electric wall heaters.
- wall heater in kitchen disabled.
- 'electric blanket' in church was replaced with gas heaters.
- overhead gas heaters installed in kindergarten (previously relied on portable bar heaters).
- overhead gas heaters installed in main hall (previously unheated).
- reverse cycle air conditioner installed in minister's office (previously relied on portable bar heater).
- reverse cycle air conditioner installed in count room (previously relied on portable bar heater).

## How our annual electricity usage is changing (kWh/yr)



### 9. Support others to take climate action

The sum of \$12,000 was gifted to Robinvale Uniting Church for the installation of a photovoltaic system on their church.

*(Prepared by David Evans, a Melbourne-based climate scientist)*