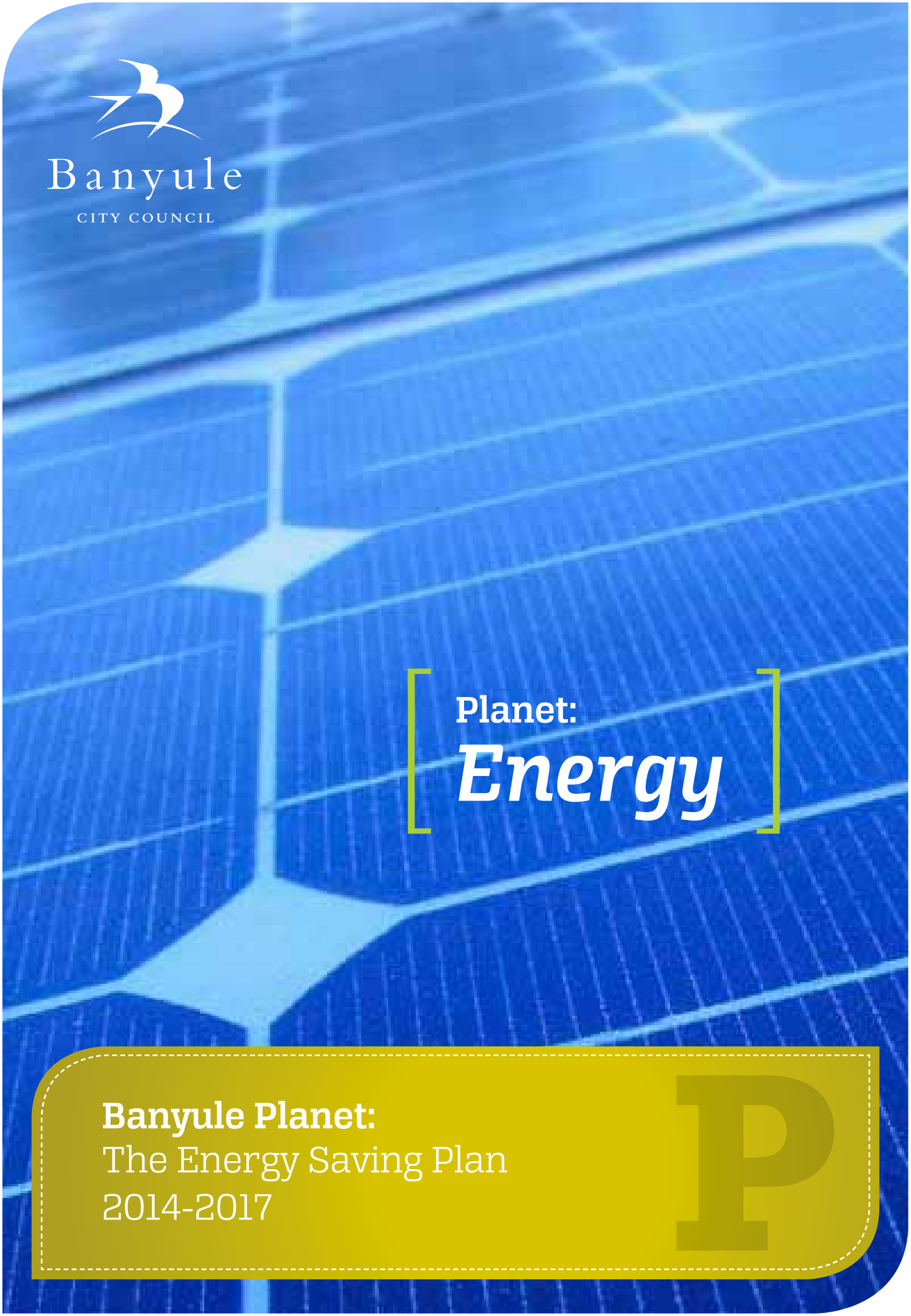


Banyule
CITY COUNCIL

Planet:
Energy

Banyule Planet:
The Energy Saving Plan
2014-2017

Contents **Page**

Executive summary

Banyule City Council recognises the threat to people and the environment from climate change. To address this threat and protect people and the environment, Council is committed to delivering appropriate action on climate change.

Council's annual energy use and greenhouse gas emissions have increased in recent years after more than a decade where levels were reasonably steady. Council's current annual emissions are over 20,000 tonnes of Carbon Dioxide-equivalent (tonnes). Council's energy bill has increased by about 85% in the eight years to 2014.

The recent emissions increase was mainly due to the energy use of *WaterMarc*, Council's new aquatic centre in Greensborough and the largest service expansion in over a decade.

Emissions would be even higher if Council had taken no energy saving measures over the last decade implementing the *Greenhouse Action Strategy* adopted in 2002. These measures include building and vehicle efficiency.

To help protect people and the environment, to reduce our contribution to climate change and to constrain Council energy costs, it is important to reduce energy use and emissions through implementation of the *Energy Saving Plan*.

The target for the *Energy Saving Plan* is to achieve carbon neutrality by 2019/20 for Council operations. This entails reducing energy use and emissions to zero, reducing Council's contribution to climate change to nil.

Council will continue to use or consider a range of measures to achieve this target. These include:

- streetlight energy efficiency
- solar panels
- cogeneration
- building energy efficiency
- fleet fuel efficiency
- renewable energy purchasing
- carbon offset purchasing

Buildings and streetlights are Council's dominant energy uses and source of emissions. Already, Council has invested about $5.5 million on energy efficient streetlights and solar hot water and cogeneration for Council buildings as leading approaches for the *Energy Saving Plan*. These measures will reduce Council emissions by over 5,000 tonnes. These are the first important steps towards carbon neutrality and they will result in significant energy cost savings.

As they have been with measures already completed or underway, future consideration of energy saving and emissions reduction measures will carefully weigh environmental and financial costs and benefits. Solar photo-voltaic panels that generate electricity and building energy efficiency measures are the next priorities that Council will consider.

With this suite of energy saving initiatives, Council aims to mitigate its contribution to climate change, reduce its ecological footprint and contribute to broader environmental sustainability.

What is Planet?

> *We need to ensure that what we consume in our community today does not disadvantage future generations.*

'*Planet*' is about the natural and formed environment and the ecosystems that sustain the community. Our community is an integral part of the environment and together we are the custodians of our shared home.

We need to ensure that what we consume in our community today does not disadvantage future generations. By developing strong partnerships with our community we can work together to become more sustainable.

The conservation of water and energy is a priority for the development of a sustainable community and will be a major focus for us in planning and delivering services and infrastructure. We will also continue to focus on other environmental issues including waste avoidance, preserving and enhancing areas of high conservation significance and promoting environmental stewardship.

We recognise the threat to all ecosystems and communities from climate change. We will address this by reducing greenhouse gas emissions in Council operations and working with the community to encourage further emissions reduction and eventual carbon neutrality.

We are also committed to the protection and restoration of diverse land and water-based ecosystems in Banyule, which will help to ensure a sustainable environment.

Banyule's passive and active open spaces, bushland reserves, and broad tree cover are key features of the municipality and are strongly supported by community values. The enhancement and maintenance of Banyule's parks, reserves and private gardens is paramount in contributing to sustainability and a sense of wellbeing in the community. We will explore innovative models for water and energy management in active and passive open spaces to meet community aspirations.

We will maintain community assets to reduce our ecological impact by not having to replace or constantly add new assets.

The ecological footprint of a municipality is a measure of the 'load' on nature imposed by its population. Council and the community need to continue to work together to identify and address opportunities to reduce Banyule's footprint.

Case Study: Solar hot water

What was done?

Council has installed a number of Solar Hot Water (SHW) panel systems across a handful of Council buildings over the last decade or so. These systems provide a more energy efficient water heating service for uses that require a lot of hot water like kitchens, showers and swimming pools.

The SHW installations include:

- older flat panel systems on Council's Rosanna office and atop the McCubbin room at Centre Ivanhoe
- 1,200 evacuated tube system installed in 2012 on *WaterMarc*, Council's new aquatic centre in Greensborough, for a hydro-therapy pool
- 180 evacuated tube system installed in 2014 beside the old McCubbin room installation at Centre Ivanhoe, for the Great Hall Kitchen
- 120 evacuated tube system installed in 2014 on the Olympic Leisure Centre in Heidelberg West, for showers and basins
- 180 evacuated tube system installed in 2015 on the Ivanhoe Aquatic Centre for showers and basins

The 2014 installations cost about $70,000 with the Federal Government's Local Energy Efficiency Program providing about $40,000 of funding towards this cost.

The SHW panels are boosted by instantaneous natural gas heaters. Replacing old electric and gas-only systems, the new solar systems result in about 100 tonnes of emission reduction and energy cost savings.

Figure 1: Policy and strategy context for the Energy Saving Plan

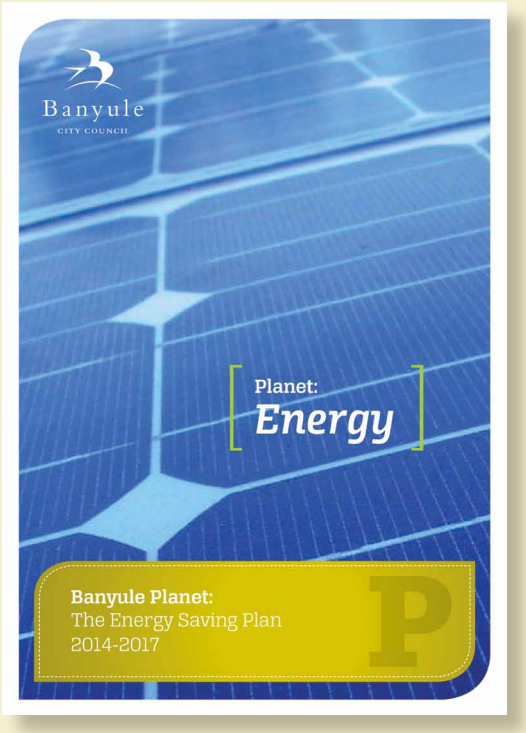
Banyule City Council – City Plan 2013-2017

Planet Policy & Strategy

Key Directions:

- Protect and enhance our natural environment
- Conserve water and improve stormwater quality and impact
- Deliver appropriate action on climate change
- Avoid waste generation
- Act as environmental stewards

Water | *Biodiversity* | *Greenhouse* | *Waste* | *Stewardship*



Energy Saving Plan

Key Direction:

Deliver appropriate action on climate change

Key Steps:

- Reduce energy use and improve efficiency of use
- Substitute greenhouse emissions-intense energy sources with one that are less emissions-intense
- Offset all emissions that remain after the previous step

Targets:

Achieve carbon neutrality by 2019/20 for Council operational energy use

Background

Banyule City Council recognises the intrinsic value of the natural environment and aims to conduct its activities in a sustainable manner and practice sound stewardship of the natural environment to ensure its diversity, protection and enhancement.

Additionally, humanity's survival and well-being depends on the natural environment's provision of clean water, air, food and shelter. Council recognises that environmental sustainability means contributing to meeting the needs of the present generation without compromising the ability of future generations to meet their own needs with these ecosystem services provided by the natural environment.

To achieve this vision for environmental sustainability, Council's key directions for environmental sustainability are:

- Protect and enhance our natural environment
- Conserve water and improve stormwater quality and impact
- Avoid waste generation
- Act as environmental stewards
- Deliver appropriate action on climate change

This *Energy Saving Plan* focuses on the 'deliver appropriate action on climate change' key direction. As part of this, Council's goal is to minimise energy use and greenhouse gas emissions with a target of achieving carbon neutrality by 2019/20. This entails reducing energy use and emissions to zero, reducing Council's contribution to climate change to nil.

The overall policy and strategy context for the *Energy Saving Plan* is shown in Figure 1 opposite.

> *Conduct Council activities in a sustainable manner and practice sound stewardship of the natural environment to ensure its diversity, protection and enhancement.*
>
> *–Council's objective for Planet: Environmental Sustainability*

The world-wide scientific consensus is that the increasing concentration of greenhouse gases in the atmosphere is causing rapid climate change and the impacts will get worse and more costly. Greenhouse gas emissions are primarily from human activity, particularly from energy generation, transport and agriculture.

Climate change is the foremost environmental issue facing the world because of its wide-ranging impacts on people, the natural environment, local amenity, the built environment and the economy. Already observed and worsening impacts include higher average temperatures, heatwaves, worsening bushfire conditions, lower long term average rainfall putting pressure on drinking water supply and more extreme storms and floods that damage infrastructure and property.

Council has already undertaken some energy saving and emissions reduction measures (examples highlighted in boxes throughout this document). In developing more initiatives to reduce energy use, substitute to less emissions-intense energy and offset emissions, Council aims to reduce its contribution to climate change, reduce its ecological footprint and contribute to broader environmental sustainability and other benefits.

Banyule, a green, liveable and prosperous city sustaining a healthy and engaged community.
Council's vision, City Plan

Case Study – Energy efficient streetlights

Up to $4.7 million has been invested in energy efficient streetlights across the municipality in 2014/15. About 8,000 inefficient 80 watt Mercury Vapour (MV) streetlights are being replaced with Twin 14 watt T5 fluorescents (T5).

Council is replacing Banyule's streetlights so that we can light our streets in a more cost effective and energy efficient way. The change will bring climate change benefits and long-term financial savings, including:

- a 67% reduction in the amount of electricity needed to provide similar illumination to the old lights
- a $350,000 reduction in Council's annual streetlights bill
- a 3,000 tonne reduction in annual greenhouse gas emissions

Streetlights are important for public safety. But they are a significant energy use and expense for Council. Over six years to 2013/14, annual streetlight energy and maintenance costs have doubled to over $1.7 million. The new T5 lights are cheaper to maintain and use less electricity than the old MVs resulting in the initial $350,000 of savings. This figure will grow with price rises in the future.

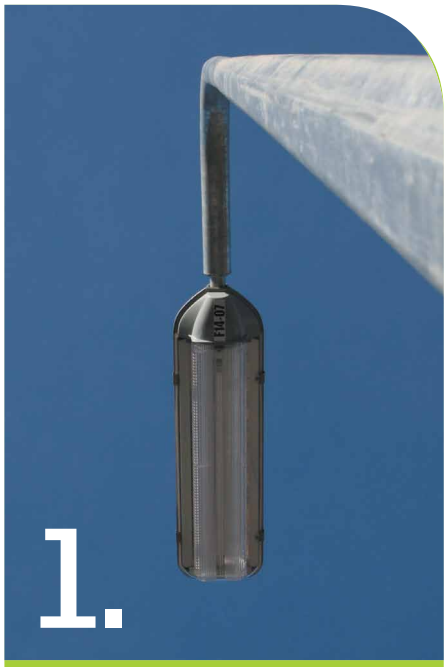
Light emitting diodes (LEDs) were seriously considered for this energy efficiency project, but there were barriers to their use. For example, at the time, LEDs were not approved by Jemena, one of the electricity distributors that own and operate streetlights in Banyule. LEDs are also significantly more expensive to buy than T5s. While LEDs result in slightly better electricity and maintenance savings, the T5s will still result in significant savings in the change from MVs. Taking into consideration all factors at the time, the T5s were estimated to result in a slightly better return on investment.

In 2014 in Victoria, 30 Councils had completed or were about to replace their streetlights, with 22 Council using T5s, two using LEDs and the others unconfirmed. If their price drops significantly, LEDs will likely become more popular. But it was preferable to implement the project and start accumulating savings in 2014/15 rather than wait.

GREEN LIGHTS
for a more sustainable future

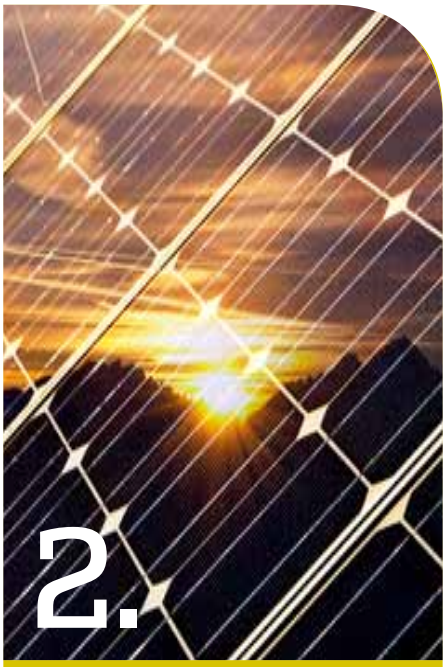
What we want to do

Conceptually, the key energy saving and greenhouse gas emission reduction steps are:



1.

Reduce energy use and improve efficiency of use



2.

Substitute greenhouse emissions-intense energy sources with ones that are less emissions-intense

3.

Offset all emissions that remain after the previous steps

Council will continue to use a range of Reduce, Substitute and Offset measures to implement the Energy Saving Plan. Council has used these types of measures in the past and currently (examples highlighted in boxes throughout this document). This has and will continue to include energy efficiency, solar panels, cogeneration, less use of vehicle fuel and purchasing renewable electricity and carbon offsets. These measures are detailed later in this document. Each of these measures plays a part in reducing our ecological footprint and achieving carbon neutrality by 2019/20. They will continue to be implemented as part of a holistic approach to implementing the Energy Saving Plan.

Energy use and emissions – Summary

Figure 2 Council greenhouse gas emissions to 2013/14. Note 1997/98 to 2005/06 excluded for simplicity sake*

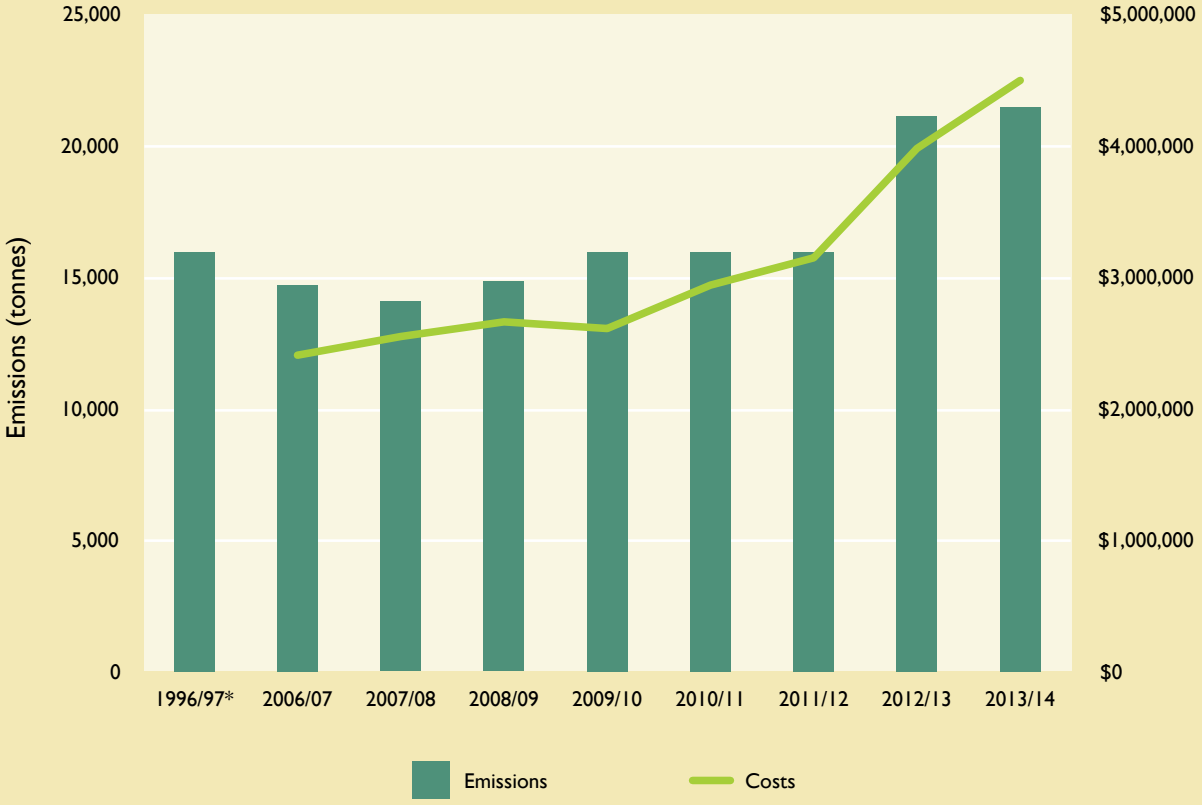
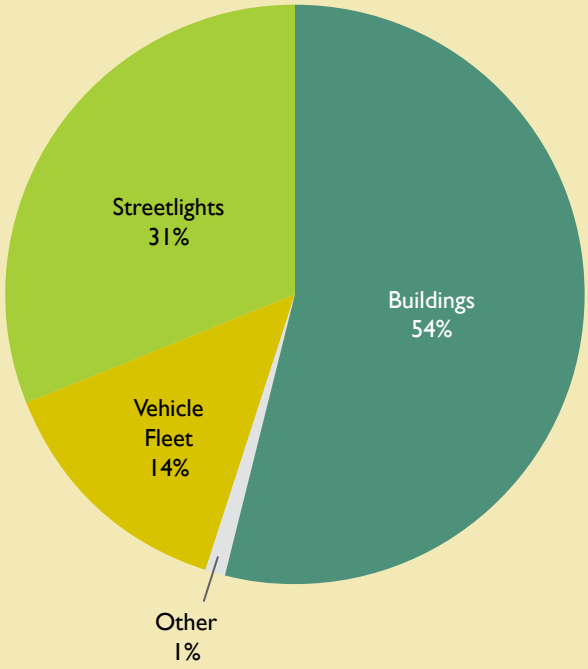


Figure 3 Breakdown of Council greenhouse gas emissions in 2013/14



As shown in Figure 2 opposite, Council's greenhouse gas emissions have been monitored since 1996/97. This emissions graph brings together all of Council's use of electricity, natural gas and vehicle fuel – all referred to as 'energy' throughout this document. This energy use data is converted into the standard units for greenhouse gas emissions – tonnes of Carbon Dioxide equivalent or simply 'tonnes' used throughout this document.

With some minor fluctuations, Council's emissions were reasonably steady for over a decade and a half. In recent years though, emissions have increased significantly. This is mainly due to the energy use of *WaterMarc*, Council's new aquatic and fitness facility in Greensborough. *WaterMarc* is Council's largest service expansion in over a decade and it caters for hundreds of thousands of visitors who derive health and wellbeing benefits.

Emissions would be even higher if Council had taken no energy saving measures over the last decade implementing the *Greenhouse Action Strategy* adopted in 2002, the predecessor to the *Energy Saving Plan*. These measures include building energy efficiency, vehicle fuel efficiency and some purchasing of renewable energy.

Recently installed measures such as solar hot water and cogeneration are not yet reflected in the level of emissions shown in Figure 2. These measures, highlighted in boxes throughout this document, will decrease Council emissions in 2014/15 onwards and will be reflected in the next update of energy use data.

Energy prices have been rising over the long term mostly due to electricity network improvements. Council's combined buildings, streetlights and fuel energy bill has been growing and this is likely to continue. From 2006/07 to 2013/14, the bill has increased by about $2 million to a total of about $4.5 million, a rise of about 85%.

These factors are illustrated in Figures 2 and 3 opposite. In Figure 3 opposite, a breakdown of Council's emissions shows the dominance of buildings energy use of which *WaterMarc* is a significant contributor. The current situation described above demonstrates that constraining energy use and emissions is an ongoing challenge, especially as 'business as usual' is not an environmentally sustainable path to continue on and we need to change direction.

...'business as usual' is not an environmentally sustainable path to continue on and we need to change direction.

Case Study:
WaterMarc cogeneration

In 2014, Council installed natural gas fired cogeneration (cogen) at *WaterMarc*, Council's new aquatic centre in Greensborough, for energy generation that emits less greenhouse gas.

Cogen generates two types of energy – electricity and heat. Usually, electricity is generated at remote locations like the La Trobe Valley and transmitted through the grid. For aquatic centre pools, water is usually heated with local boilers using natural gas. Bringing generation of these two types of energy together in a local cogen plant is more efficient.

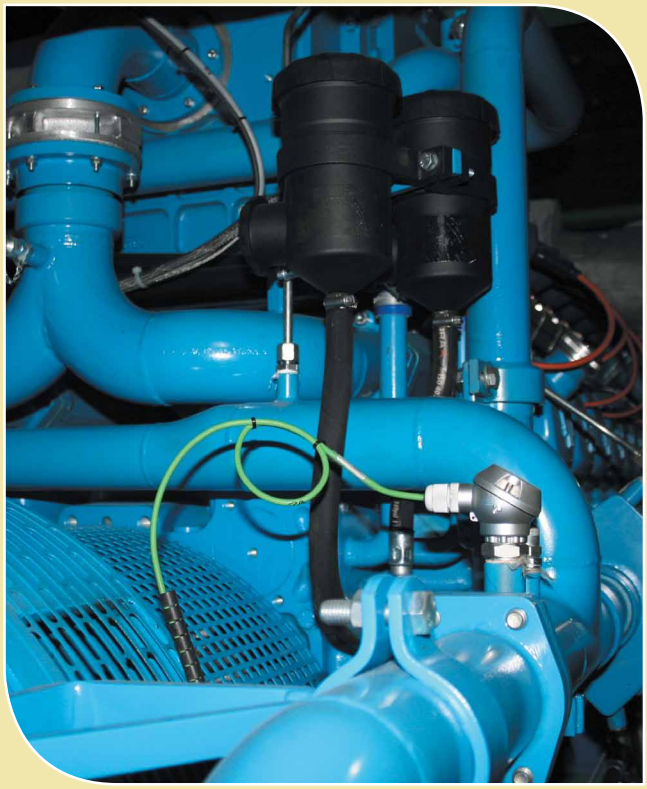
Cogen has distinct advantages over grid electricity and boiler heat, including:

- the by-product of remote electricity generation is heat which is typically wasted into the atmosphere
- cogen captures and uses this heat, thereby extracting more value from the fuel source
- local generation avoids electricity transmission losses and associated costs
- gas and cogen are cheaper than grid electricity

The *WaterMarc* cogen is a 334 kilowatt-equivalent unit. Including a four year maintenance arrangement, it cost about $700,000 and will deliver the following approximate annual savings:

- 2,800 tonnes of emissions reduction
- $175,000 of energy costs
- four year return on investment

WaterMarc also has solar hot water, energy efficient insulation including for the pool hall floor (which is atypical for aquatic centres), efficient ventilation and air conditioning and lighting. It has window shading and some double glazing, pool hall skylights, motion sensors, fans to circulate pool hall air and a range of water efficiency measures and rainwater harvesting.



Plan

To help protect people and the environment, to reduce our contribution to climate change and to constrain Council energy costs, it is important to reduce energy use and reduce greenhouse gas emissions through implementation of the *Energy Saving Plan*.

A range of energy saving and other emissions reduction measures are already underway and will be continued by Council to reduce greenhouse gas emissions into the future. This includes energy efficient streetlights, buildings and fleet, solar panels, cogeneration and purchasing renewable energy and carbon offsets.

Estimation and analysis of the costs and benefits of these emission reduction measures is ongoing and will help to determine priorities guided by cost effectiveness and return on investment from energy bill savings.

Energy efficient streetlights and buildings, solar panels and cogeneration are estimated to be the most cost effective and have been prioritised as the leading Council energy saving measures. Additional factors why these are leading measures include:

- they target Council's larger energy uses and will achieve large energy and cost saving outcomes – for example, new streetlights uses 67% less electricity per light
- the practical achievability of these measures is high
  - energy efficient streetlights and solar panel technology is mature, proven, reasonably affordable and relatively easy to retrofit, and
  - Council has some large building projects where energy efficiency is easier to incorporate now in the design stage rather than retrofit later
- particularly with building projects, more flow-on benefits unrelated to energy saving will result from improved accommodation for Council services provided to the community
- there result in readily measurable energy saving outcomes and Council can lead by example in encouraging community sustainability

So far, about $5.5 million has been expended on these measures and Council will consider expanding them in the future. These measures and their approximate emissions reduction tonnage include the following:

- 100 tonnes from solar hot water panels for *WaterMarc*, Centre Ivanhoe and Olympic Leisure Centre
- 3,000 tonnes from energy efficient streetlights
- 2,800 tonnes from *WaterMarc* cogeneration

See examples of these measures highlighted in boxes throughout this document.

Solar photo-voltaic (solar PV) panels that generate electricity and building energy efficiency measures are the next priorities. The following measures will be considered by Council for 2015/16 and 2016/17:

- $700,000 of solar PV for Council's largest electricity using buildings
- 5% to 10% allocation within the project budget for energy saving and other environmental measures for Council offices planned for above *WaterMarc*

For years 2017/18 through to 2019/20, Council will consider about $9 million of energy saving and emission reduction measures. Some of this will be expansion of existing measures along with measures in new areas. These measures and their approximate emissions reduction tonnage include the following:

- 1,000 tonnes from solar PV
- 680 tonnes from 5% to 10% environmental measure allocations for future building project budgets
- 500 tonnes from Ivanhoe Aquatic Centre cogeneration
- 400 tonnes from fuel efficient fleet
- about 15,000 tonnes from purchasing GreenPower renewable energy and carbon offsets

Combined and fully implemented, these measures will allow Council to become carbon neutral by 2019/20.

By 2030, $16 million of accumulated savings to Council are estimated from all these *Energy Saving Plan* measures.

Case Study: GreenPower, fleet, offsets

For about a decade, 10% of Council's major streetlight electricity accounts have been purchased from renewable sources to reduce our reliance on greenhouse emitting coal-fired generation that is typical for grid electricity.

This *GreenPower* is electricity government-accredited to come from the likes of emissions-free wind and solar farms. Annually, the GreenPower costs about $40,000 and reduces emissions by about 700 tonnes.

Mykis are provided to Council staff to use public transport instead of driving Council fleet vehicles. This helps reduce fuel use and the resulting emissions and reduces costs from car parking and maintenance. A number of hybrid cars in the Council fleet and a downsizing in car size and cylinders are producing similar cost and emission reductions.

Starting in 2014, Council purchases a small quantity of carbon offsets to reduce emissions by about 900 tonnes. Purchasing offsets is paying someone to reduce or avoid greenhouse gas emissions elsewhere. In 2014, the offset purchase was for protecting native forest from logging in Tasmania, allowing tree carbon to be retained. This carbon offsetting initiative is the only one in Australia to achieve the *Verified Carbon Standard*, an international accreditation scheme that satisfies the Federal Government's *National Carbon Offsetting Scheme's* criteria for organisations to achieve carbon neutrality.

Some emissions will remain after Council has maximised its **Reduce** energy saving measures. At this point, **Substitute** and **Offset** measures will need to be expanded. This will mean that an expansion of *GreenPower* and carbon offset purchasing will be needed for Council to achieve carbon neutrality by 2019/20.

Targets

1.

In 2013, Council resolved to achieve the City Plan 2013-2017 target of carbon neutrality by 2019/20 for Council operations.

2.

This carbon neutrality target entails reducing energy use and greenhouse gas emissions to zero and will require the full gamut of Reduce, Substitute and Offset measures.

3.

Achieving carbon neutrality is viewed by Council as the best goal for delivering appropriate action on climate change as it will reduce Council's contribution to climate change to nil.

4.

It is estimated that implementing the Energy Saving Plan and reaching this target will cost almost $15 million including expenditure already committed. By 2030, $16 million of accumulated savings to Council are estimated from plan implementation.

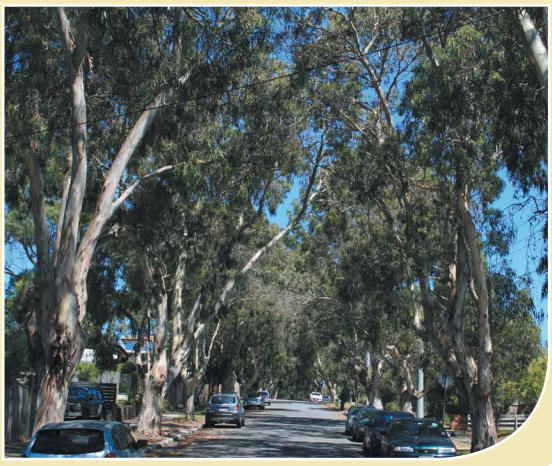
Case Study: Carbon sequestration from trees

Council plays a significant role in maintaining an 'urban forest' of trees within Banyule that absorb and sequester greenhouse gas emissions.

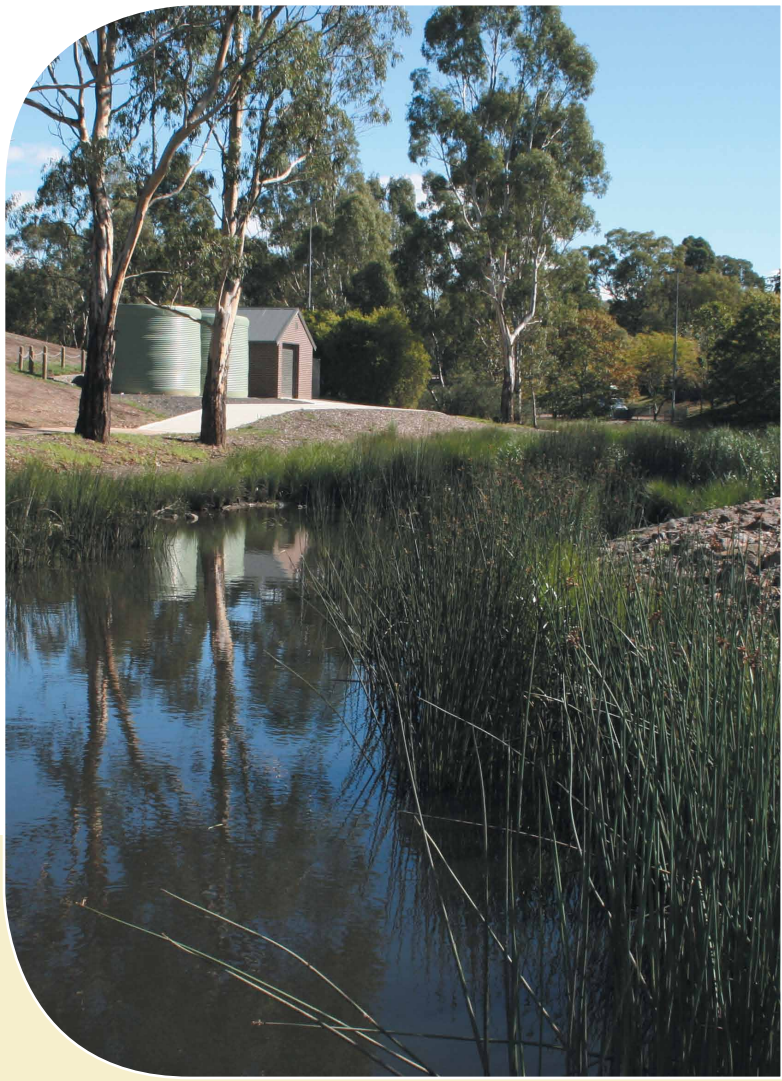
Tree planting and maintenance on Council owned land in streetscapes, parks and bushland is an important role for Council in keeping Banyule green. The community highly values this urban forest for how it contributes to the beauty and liveability of Banyule. Trees are very important for urban biodiversity, habitat for wildlife and cooling landscapes and reducing the 'urban heat island effect' that climate change is making worse.

The value of trees is articulated in Council's *Urban Forest Strategic Plan*. In the plan, it is estimated that Council trees sequester about 5,000 tonnes of emissions annually.

While this sequestration would not be recognised under the likes of the Federal Government's *National Carbon Offsetting Scheme, Verified Carbon Standard* or any other carbon offset accreditations, it does emphasise the value of trees and the holistic nature of Council's environmental sustainability initiatives.



Council will continue to advocate for improvements in the planning system to encourage or mandate ESD (ecologically sustainable design) including emissions reduction.



Related Initiatives and Monitoring

Council will lead by example with its energy use and greenhouse gas emissions reduction measures as part of the *Energy Saving Plan* implementation.

In addition, Council will continue to engage and encourage the community and Council staff towards reducing emissions. These include demonstrating Council projects and facilities to the community and staff, through *EnviroReps* and the *Sustainable Homes & Communities* and *Positive Charge* programs. Many of these and other environmental community engagement activities that Council runs are detailed in Council's *Environmental Stewardship Plan 2014-2017*.

Banyule's largest climate change adaption initiative is the $6 million Stormwater Harvesting Project located at Kalparrin Gardens in Greensborough, Chelsworth Park in Ivanhoe and DeWinton Park in Rosanna. The Stormwater Harvesting Project is the leading project for Council's Water *Sustainability Plan 2013* which prepares for a climate changed future where there is a high likelihood of dry periods to which we need to adapt.

Other Council adaptation initiatives include flood mitigation, planning for heatwaves and bolstering Banyule's urban forest. Flooding hotspots in the municipality have been mapped, stormwater drainage is being improved and a special building overlay may be incorporated into the planning scheme to help mitigate flooding impacts. Council's *Heatwave Plan* profiles vulnerable groups of people within Banyule and guides actions for protecting community health from extreme heat. An urban forest strategy is being developed which aims to increase tree cover across the municipality for a range of benefits including helping to cool landscapes and mitigate heat islands.

The *Banyule Planning Scheme* (BPS) and *Municipal Strategic Statement* (MSS) gives direction for Council decisions on planning permits for private property development proposals. The MSS encourages more environmentally sustainable design (ESD).

The BPS and MSS is overseen by the State Government and Council can propose MSS changes for approval by the Planning Minister. Additionally, the State Government's building approvals system sets minimum ESD outcomes with the *6 Star Standard*. This includes the requirement for either a solar hot water system or a rainwater tank for toilet flushing along with a 6 star energy efficiency rating for new homes, developments and major alterations.

Council will continue to advocate for improvements in the planning system to encourage or mandate ESD (ecologically sustainable design) including emissions reduction.

Implementation progress on the *Energy Saving Plan* will be monitored and publicly reported upon through Council's Annual Report. These reports will incorporate emission levels from Council operations and will track progress against the targets in the *Energy Saving Plan*.

Sustainable Homes & Communities Program

positive charge

enviro reps
USE OUR RESOURCES WISELY

Banyule
CITY COUNCIL

How to contact your council

For all enquires please call

9490 4222

Fax: 9499 9475

Email: enquiries@banyule.vic.gov.au

Website: www.banyule.vic.gov.au

If your hearing or speech is impaired, you can call us through the National Relay Service on 133 677 (TTY) or 1300 555 727 (ordinary handset) and ask for 9490 4222.

All correspondence to:
PO Box 51, Ivanhoe, 3079
DX 97904 Ivanhoe

Council Service Centres:
Ivanhoe - 275 Upper Heidelberg Road
Rosanna - 44 Turnham Avenue
Greensborough - 9-13 Flintoff Street

All offices are open:
Monday to Friday 8.30am-5pm
Rosanna - Wednesday night until 7pm
Greensborough - Saturday 9am - 12noon

Interpreter service:
If you need an interpreter, please contact TIS National on 131 450 and ask to be connected to Banyule Council on 9490 4222.

إذا كنتم بحاجة إلى مترجم. الرجاء الاتصال بالخط القومي لخدمة الترجمة الهاتفية TIS على الرقم 131 450. واطلبوا إيصالكم ببلدية بانيول على الرقم 9490 4222.

若你需要口譯員，請致電131 450聯絡TIS National，要求他們為你致電9490 4222接通Banyule市政廳。

Ako vam je potreban tumač, molimo vas, nazovite TIS National na broj 131 450 i zatražite da vas se spoji sa Vijećem općine Banyule na broj 9490 4222.

Αν χρειάζεστε διερμηνέα τηλεφωνήστε στην Εθνική Υπηρεσία Διερμηνέων Μεταφραστών στον αριθμό 131 450 και ζητήστε να σας συνδέσουν με τη Δημαρχία Banyule στο 9490 4222.

Se hai bisogno di un interprete chiama TIS National al numero 131 450 e chiedi di essere messo in comunicazione con il Comune di Banyule al numero 9490 4222.

Ако ви треба преведувач ве молиме јавете се на TIS National на 131 450 и замолете да ве поврзат со Banyule Council на 9490 4222.

如果你需要一名翻译，请打电话到国家电话翻译服务处(TIS National) 131 450，再转接到Banyule市政府9490 4222

Haddii aad u baahan tahay mutarjum wac khadka qaranka oo ah TIS 131 450 weydiina in lagugu xiro Degmada Banyule tel: 9490 4222.

Nếu cần thông dịch, xin gọi cho TIS Toàn Quốc qua số 131 450 rồi nhờ họ gọi cho Hội Đồng Thành Phố Banyule theo số 9490 4222 giùm quý vị.

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