



Ian Mootie

# Towards zero carbon in Monash

Quantifying emissions and reduction opportunities  
for Monash Council and community



sustainable  
monash



CITY OF  
MONASH

# Summary: Towards zero carbon in Monash

Monash Council has identified that reducing its own corporate emissions is an important step in leading the Monash community towards a zero-emissions future.

This booklet provides an overview of greenhouse gas emissions for the City of Monash's community and Council, their sources, and comparisons with other councils. It provides ideas on how the community and Council can reduce greenhouse gas emissions.

## Greenhouse gas emissions

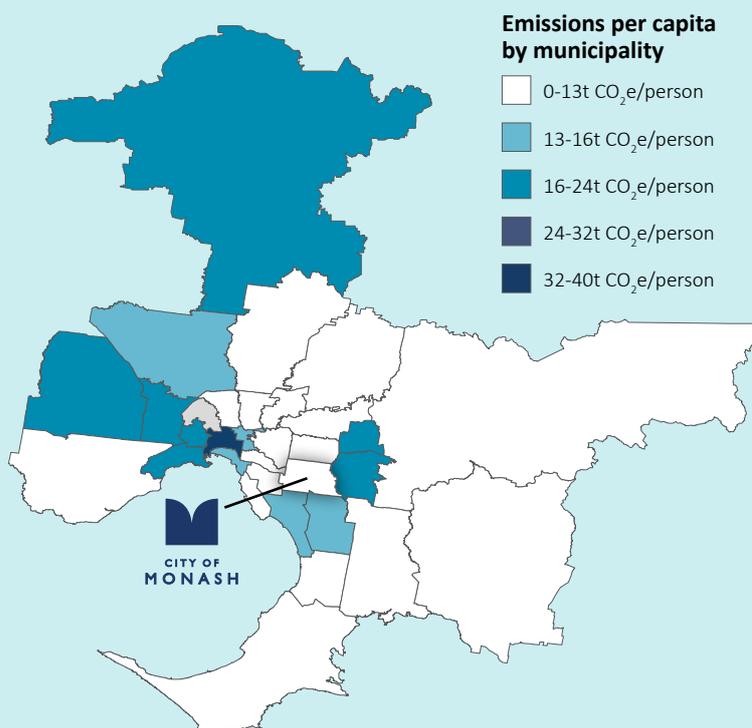
Carbon dioxide (CO<sub>2</sub>) is one of several greenhouse gases; the other main ones are water vapour, methane and nitrous oxide. Emissions of these are added together as the 'carbon dioxide equivalent' (CO<sub>2</sub>-e).

The City of Monash Council's total annual greenhouse gas emissions (in 2016) were **19,875 tonnes** of carbon dioxide equivalent (tCO<sub>2</sub>-e). The largest source of emissions is electricity for buildings and Council operations, which accounts for 46% of the emissions, followed by electricity for street lighting (29%), emissions from natural gas (11%) and transport (7%).

Monash Council's emissions contribute less than 1% of the emissions across the Monash community. However, Council has the opportunity to support the community to reduce emissions through planning, education and targeted programs. The total annual emissions generated across the municipality of Monash, including by residents, workers and businesses, is **2,903 kilotonnes** of carbon dioxide equivalent (ktCO<sub>2</sub>-e).

The sources of community emissions are:

- electricity used by buildings and facilities (65%)
- road transport (21%)
- energy from gas (12%)
- solid waste (2%)
- wastewater (1%).



Overall, annual emissions across the Monash community represent 14.8 tCO<sub>2</sub>-e per person or 5.4 tCO<sub>2</sub>-e per person counting just residential emissions (see emissions per capita map below). The Monash municipality has higher emissions than many other municipalities as a result of its relatively higher population and level of economic activity. Monash's emissions rank 6th highest overall for the Greater Melbourne area, or 9th highest for emissions per person in Victoria, which takes population into account.

Reducing Monash Council's own emissions is an important step in leading the Monash community towards a zero-emissions future

## Greenhouse gas impacts

Greenhouse gases keep the surface of our planet at a habitable temperature, about 33 °C higher than it would be without an atmosphere. The natural greenhouse effect has been enhanced over the past two centuries by a rise in activities such as the burning of fossil fuels – gas, petrol, oil, and coal – for energy and transport, and expanding agriculture and deforestation. We are experiencing carbon dioxide levels that are likely to be the highest in at least the past two million years.

Global temperature has increased at record levels over the past century. Australia's climate has warmed by more than 1 °C since 1910, the number of extreme temperature events has increased over large areas, and sea level has risen by about 10 cm since the 1960s. Temperatures in Victoria are rising (especially minimum temperatures), and rainfall is decreasing.

Global warming is projected to be between 0.3 °C and 1.7 °C by the end of this century if future emissions of greenhouse gases are low following global reduction efforts, or it could warm by 2.6 °C to 4.8 °C if there is little global action to reduce greenhouse gas emissions.

A survey by Monash University found that more than 95% of residents in the City of Monash think that climate change is happening or possibly happening, and 46% of Monash residents said they were very concerned about climate change. The top action that respondents said they personally intended to take was to reduce home energy consumption.

## Greenhouse gas targets

Countries around the world have agreed to avoid dangerous climate change by limiting the increase in global warming to well below 2 °C, and making efforts to limit it to 1.5 °C. To do this, industrialised countries need to reduce their greenhouse gas emissions by approximately 85% by 2050 (compared with 2015). Australia's targets for greenhouse gas emission reductions are 26 to 28% by 2030 (compared with 2005).

The Victorian Government aims to achieve net zero emissions by 2050. Emissions are on track to fall by 18% below 2005 levels in 2020, and there are interim reduction targets of 32 to 39% by 2025, and 45 to 60% by 2030.

Between 2010 and 2016 Monash Council achieved the following emissions reductions:

- 34% from electricity
- 28% from gas
- 8% from transport.

By 2030, Monash Council aims to reduce emissions by more than 75% (compared with 2015/16) by undertaking priority actions. To contribute to relevant international targets that put the world on track to avoid dangerous levels of climate change, the Monash community will need to reduce emissions by about 2.7% each year, leading to a 38% reduction by 2030.

## Greenhouse gas reductions

Monash Council has already taken action to reduce emissions. To build on that success, the top five priority actions, ranked by ability to reduce emissions, that together could reduce Monash Council's corporate emissions by more than half are:

1. purchasing renewable energy (saving over 11,000 tCO<sub>2</sub>-e)
2. replacing street lighting with LEDs (saving up to 1,740 tCO<sub>2</sub>-e)
3. establishing Environmental Performance Contracts for Council facilities (saving up to 1,400 tCO<sub>2</sub>-e)
4. installing solar systems on Council facilities (saving 600 tCO<sub>2</sub>-e)
5. developing environmentally sustainable design standards (saving 510 tCO<sub>2</sub>-e).

Additional actions include:

- using smaller vehicles, hybrids and electric vehicles
- developing energy-efficient equipment procurement policies
- reducing water use and improving the efficiency of other resource use
- monitoring and reinvestment of savings from successful activities into future projects
- establishing an environmental fund.

Every resident of Monash can make a difference to the amount of greenhouse gases released into the air. About a quarter of Australia's greenhouse gas emissions come from our homes. Changes we all make at home, work and school will together reduce emissions, lower our carbon footprint and, in many cases, also save us money.



# Greenhouse gas emissions

## Monash Council

Monash Council's corporate greenhouse gas emissions are those resulting from activities that are within the Council's own operations. This includes using electricity in Council buildings, public lighting, and fuel in Council cars. Most of the Council's emissions are a result of grid-supplied energy being used for heating or cooling within the Monash city boundary – usually this energy is from a source outside of Monash.

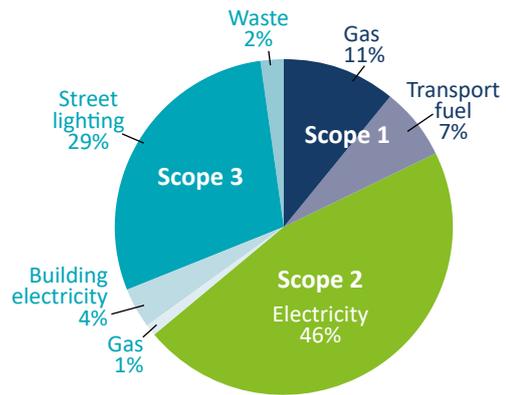
Carbon dioxide (CO<sub>2</sub>) is one of several greenhouse gases. The other main ones are water vapour, methane and nitrous oxide. Emissions are added together and expressed as the 'carbon dioxide equivalent' (CO<sub>2</sub>-e) to measure the combined influence of total greenhouse gas emissions. The total emissions from the Council's corporate activities are 19,875 tonnes of carbon dioxide equivalent (tCO<sub>2</sub>-e) annually (for 2016).

The sources of Monash Council's emissions are:

- electricity use in buildings and Council operations (46%)
- electricity for street lighting (29%)
- natural gas (11%)
- transport (7%).

Electricity purchases for externally owned assets add another 831 tCO<sub>2</sub>-e, meaning that total electricity consumption from all sources accounts for 79% of total Council emissions.

Greenhouse gas emissions are divided according to the 'scope' of the emissions. This differentiates emissions occurring within the boundary of the organisation or region (scope 1) such as those from fuel use for Council cars; from energy generated outside of the boundary but used within it (scope 2) such as grid-sourced electricity purchased for the Council's buildings, or those occurring outside of the boundary (scope 3) such as gas lost from transmission through the distribution network to service activities in Monash.



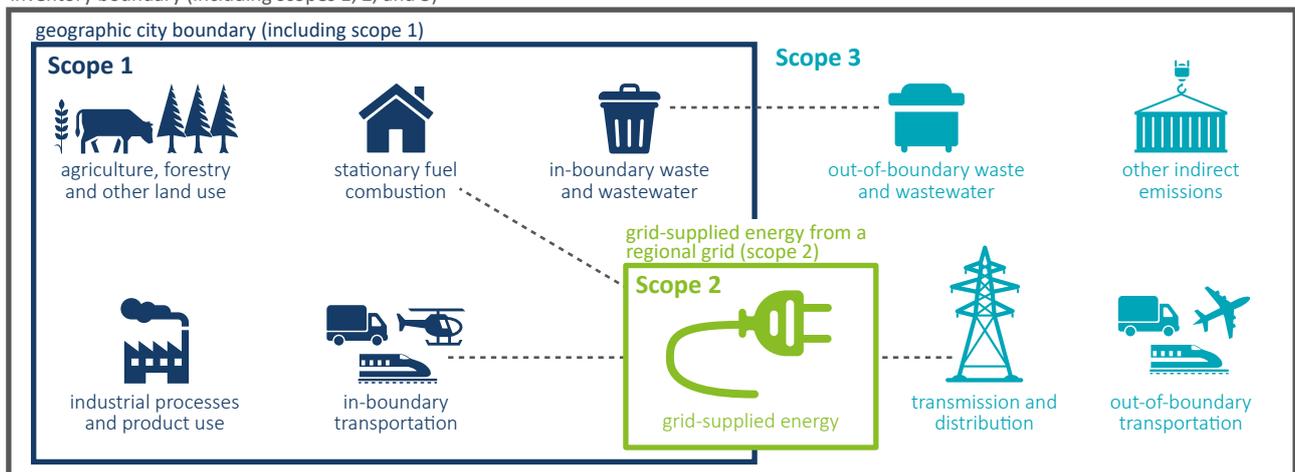
Source of emissions from Monash Council corporate activities

Total corporate emissions for City of Monash (2015/16)

Source	Emissions (tCO <sub>2</sub> -e)	Total emissions (tCO <sub>2</sub> -e)	Percentage (%)		
Transport fuel	1421	3,657	18		
Gas	2236				
Electricity	9062	9,062	46		
Street lighting	5660	7,156	36		
Waste	422				
Building	831				
Transport	74				
Gas	169				
<b>TOTAL</b>				<b>19,875</b>	<b>100</b>

The largest source of community emissions is electricity, followed by road transport, energy from gas, and emissions from waste

inventory boundary (including scopes 1, 2, and 3)



## Monash community

Council's emissions contribute less than 1% of the emissions across the municipal areas of Monash. However, Council has the opportunity to support the community to reduce emissions through planning, education and targeted programs. The total annual emissions generated across the municipality of Monash, including by residents, workers and businesses, is 2,903 kilotonnes of carbon dioxide equivalent (ktCO<sub>2</sub>-e).

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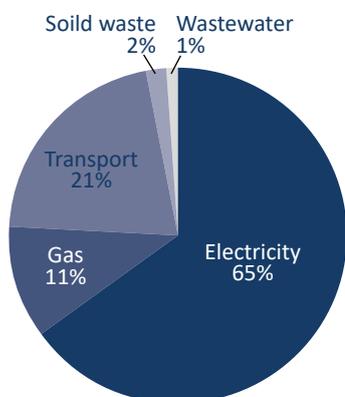
For the municipality's estimated population in 2017 of 196,922, this represents emissions of 14.7 tCO<sub>2</sub>-e per person a year across the Monash community, or 5.4 tCO<sub>2</sub>-e per person counting just residential emissions.

1 ktCO<sub>2</sub>-e = 1,000 tonnes CO<sub>2</sub>-e

1 MtCO<sub>2</sub>-e = 1,000,000 tonnes CO<sub>2</sub>-e

### Total community emissions for City of Monash (2017)

Category	Emissions (tCO <sub>2</sub> -e)	Percentage (%)
Electricity	1,876,714	65
Gas	337,491	12
Transport	604,397	21
Waste	61,728	2
Wastewater	23,012	1
<b>TOTAL</b>	<b>2,903,342</b>	<b>100</b>



Source of emissions from Monash community activities

## Comparison with other municipalities

Total annual community emissions across all of Melbourne were 67 MtCO<sub>2</sub>-e in 2017. Emissions vary across the 32 local government areas considered part of Greater Melbourne, from just over 600,000 tCO<sub>2</sub>-e per year in Mitchell, through to more than 5,000,000 tCO<sub>2</sub>-e per year in Hume, which includes the large emissions associated with Tullamarine airport. Most municipalities are in the 1,000,000 to 3,000,000 range, with Monash just under 3,000,000 tCO<sub>2</sub>-e per year, as noted above.

When comparing total emissions per person, the range narrows significantly, with the highest-emitting municipalities being where there are higher levels of industrial activity.

Monash's emissions see it ranked 6th highest overall for the Greater Melbourne area, or 9th highest for emissions per person, which takes population into account. It is ranked 16th – roughly in the middle of the group in Victoria – for residential emissions per person.

The Monash community has higher emissions than many other councils as a result of its high population and level of economic activity – Monash is the largest employer in Victoria outside the CBD. The City of Monash also has a higher than average proportion of emissions from electricity than the average council in the Greater Melbourne area, driven in part by lower use of gas.<sup>1</sup>



<sup>1</sup> Greater Melbourne Community Emissions Inventory Report (2018), Prepared by ICLEI Oceania and Ironbark Sustainability

# Greenhouse gas impacts

## The greenhouse effect

Greenhouse gases create a natural atmospheric process called the greenhouse effect, which keeps the Earth's surface at a temperature comfortable for humans and other life to exist. Carbon dioxide makes up just 0.04% of the air (400 parts per million, or ppm). But the effect of this and other greenhouse gases trapping heat and radiating it back to the surface of the Earth is to keep the surface of our planet at a habitable temperature, about 33 °C higher than it would be without an atmosphere.

While the natural greenhouse effect is essential for life on Earth, it is the enhanced greenhouse effect that is now threatening life on Earth. The natural greenhouse effect has been enhanced over the past two centuries by a rise in activities such as the burning of fossil fuels for energy and transport, and expanding agriculture and deforestation. We know this through analysis of different types (or isotopes) of carbon, which show that the burning of fossil fuels are the source of this extra carbon dioxide.

Measurements of air trapped in Antarctic ice show that for the past 800,000 years, carbon dioxide concentrations remained below 280 parts per million. The carbon dioxide concentration of just above 400 ppm today is much higher than the natural range of 172 to 300 ppm that has existed for hundreds of thousands of years. We are experiencing carbon dioxide levels that are likely to be the highest in at least the past two million years.

Other greenhouse gases have also increased due to human activities: methane concentrations have more than doubled and are now about 1800 parts per billion (ppb); nitrous oxide has steadily increased and is now more than 20% higher than before industrialisation, at about 330 ppb; halocarbons (including CFCs, which also harm the ozone layer) didn't even exist in the atmosphere prior to human activities, and have increased rapidly. Today's equivalent carbon dioxide concentration (CO<sub>2</sub>-e) is just over 500 ppm.<sup>2</sup>

2 CSIRO/Bureau of Meteorology (2016). State of the Climate. <https://www.csiro.au/state-of-the-climate>

## The carbon cycle

The extra carbon from human activities is changing the natural cycling of carbon through the environment. Plants take in carbon dioxide during photosynthesis, and animals – including humans – breathe it out as part of the carbon cycle. When plants and animals die, their stored carbon is released as carbon dioxide into the air. The carbon cycle has occurred for millions of years. Each year, natural processes such as respiration, decay, forest fires, and volcanic eruptions added approximately 190.2 billion tonnes of carbon to the air. This was balanced by the oceans, land and plants absorbing 190.2 billion tonnes of carbon from the air.

We create extra carbon dioxide when we burn fossil fuels such as gas, petrol, oil, and coal, adding an additional 9.1 billion tonnes of carbon to the air each year. Plants and the land take up 2.8 billion tonnes of this extra carbon, while the oceans take up 2.2 billion tonnes. The remainder (4.1 billion tonnes each year) stays in the air, increasing the atmospheric concentration of carbon dioxide. The steady increase of carbon dioxide from human activities has been the dominant cause of the warming we have experienced since the mid-20th century.<sup>3</sup>

3 IPCC (2014). Climate Change 2014: Synthesis Report.

More than 95% of residents think that climate change is happening or possibly happening



## 78% of Monash residents are proud on the environmental benefits of installing solar energy

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### Changes in Australian climate

Global temperature has increased at record levels over the past century. Australia's climate has warmed by more than 1 °C since 1910, and the number of extreme temperature events has increased over large areas of the continent. 2018 was Australia's third hottest year on record, behind the country's warmest year in 2013. Nine of Australia's 10 warmest years on record have occurred since 2005 (six of them in the past six years). Temperatures in Victoria are rising (especially minimum temperatures), and rainfall is decreasing. Since 2001, the number of extreme heat records in Australia has outnumbered extreme cool records by about 3 to 1 for daytime maximum temperatures, and about 5 to 1 for night time minimum temperatures. The sea level around the Australian coastline has risen by about 10 cm since the 1960s.

Scientists have developed computer-based, mathematical representations (called global climate models) of the Earth's processes. After careful testing and comparison with historical climates, these models can simulate likely future changes in the climate based on different greenhouse gas emission scenarios.

Global warming is projected to be between 0.3 °C and 1.7 °C by the end of this century if future emissions of greenhouse gases are low following global reduction efforts, or it could warm by 2.6 °C to 4.8 °C if there is little global action to reduce greenhouse gas emissions. With these changes, Australia will be hotter and drier, with more extreme hot days and fewer cold days: temperatures are projected to increase by between 0.5 and 5.3 °C by 2090, depending on the emissions scenario. The world is currently tracking along a high-emissions scenario path.

Small changes in average temperature can lead to large changes in the number of extreme temperatures. In most Australian capital cities, there is a potential doubling of the current number of days over 35 °C by later this century for a high emissions scenario. For example, Melbourne experiences an average of nine days a year above 35 °C, but by 2070 could experience between 12 and 17 days for a low emissions scenario, or between 15 and 26 days for a high emissions scenario.<sup>4,5</sup>

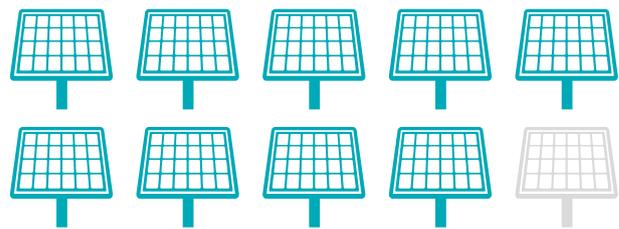
### Monash residents' understanding of climate change

More than 95% of residents in the City of Monash believe that climate change is happening or possibly happening, based on a survey of more than 3000 residents around Melbourne by Monash University, including 123 in the City of Monash. However, only about half (52%) of the Monash residents surveyed believed that other members of their local community thought that climate change is happening.

Almost all (97%) of the survey respondents from the City of Monash believe that climate change is affecting weather to some extent. About half the residents (47%) believed that humans are contributing to climate change. Perceptions of the scientific consensus about the human causes of climate change were relatively low, with only 31% correctly identifying that almost all climate scientists (97%) agree that human-caused climate change is happening.

46% of Monash residents said they were very concerned about climate change, but only 13% thought that others in their local community were also very concerned. This highlights the opportunity Council has to help the community understand the causes of climate change, and raise awareness of ways to reduce greenhouse gas emissions.

The top three effective actions to tackle climate change, cited by residents, were switching from fossil fuels to renewable energy (57% of respondents), reducing toxic waste (49%), and planting trees (45%). The top action that respondents said they personally intended to take was reduce home energy consumption (54%).<sup>6</sup>



## 9 out of 10 residents agree that increasing renewable energy will reduce environmental impacts

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4 CSIRO and Bureau of Meteorology (2015) Climate Change in Australia website. <http://www.climatechangeinaustralia.gov.au>

5 CSIRO, Science and Solutions: [http://www.publish.csiro.au/ebook/chapter/CSIRO\\_CC\\_Introduction](http://www.publish.csiro.au/ebook/chapter/CSIRO_CC_Introduction)

6 Holmes D and Hall S (2018) City of Monash: Newspaper Readers and TV audiences' climate change perceptions and literacy, Monash Climate Change Communication Research Hub, Monash University, Melbourne.

# Greenhouse gas targets

## Local, national and international policy

Globally, many countries, states and cities are making significant changes to the way they live and work to be more sustainable. In some countries, it has been cities and communities leading the way with policies and programs to reduce emissions. In Australia, this has been the case, with most councils having a corporate emissions inventory and having, or intended to have, a corporate emissions target.

A number of councils in Victoria have shown strong leadership in climate action, such as the City of Melbourne's Zero Net Emissions Strategy and Moreland City Council's Zero Carbon Evolution program. The City of Yarra was Victoria's first carbon neutral council. Leadership in these areas has resulted in benefits by reducing operational costs and carbon emissions, and improving productivity. In addition, these council initiatives have provided a basis for community engagement and leadership on environmental issues.

## International emission reduction targets

At the United Nations Framework Convention for Climate Change (UNFCCC) Conference in Paris in 2015, the Australian Government – with 181 other countries, representing about 90% of global emissions – signed an international agreement to keep any temperature rise 'well below 2 °C', and to drive efforts to keep warming below 1.5 °C higher than pre-industrial levels. This Paris Agreement entered into force in November 2016. The agreement explicitly recognises the critical role of local and state governments in supporting action on climate change.

A rise in global average temperatures of 2 °C is defined as the threshold for avoiding dangerous climate change. To limit the increase in global warming to below 2 °C, the total volume of greenhouse gases that can be emitted globally is about 1,700 gigatonnes of CO<sub>2</sub>-e for the period 2000 to 2050. This would require industrialised countries to reduce their greenhouse gas emissions by approximately 85% by 2050 (compared with 2015).<sup>7</sup>

The reduction target to avoid dangerous climate change is independent of political or other considerations and does not consider how difficult (or not) the target will be to achieve. This science-derived target – perhaps better thought of as a limit, rather than a target – has the primary motivation of avoiding negative impacts.

There is no international agreement on the division of the global carbon budget between countries. A fair and equitable approach may be for developing countries to initially increase emissions while they grow their economy, while high per-person emitters (such as Australia) adjust to a reduced carbon budget.

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Victoria's emissions are on track to fall by 18% in 2020, with a target of zero emissions by 2050

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## Australian and Victorian emission reduction targets

Australia's targets are to reduce greenhouse gas emissions by 26 to 28% by 2030 (compared with 2005).

There has been significant national policy uncertainty over the past decade through the introduction and repeal of policies such as the price on carbon and the review of the Renewable Energy Target. The Federal Government's direction is not clear.

At a state level, the Victorian Government has established the Climate Change Act 2017, aiming to achieve net zero emissions by 2050. Emissions are on track to fall by 18% in 2020 (compared with 2005), and there are interim reduction targets of 32 to 39% by 2025, and 45 to 60% by 2030. Strategies to reducing emissions in Victoria include increased renewable energy generation (to 25% by the year 2020) and the Take 2 Pledge that can be signed by individuals, families, businesses or governments. In addition, the Victorian Climate Change Adaptation Plan 2017–2020 encourages adaptation to climate change to enable a climate-resilient community and economy.<sup>8</sup>



**9 out of 10 residents**  
agree the Federal Government should  
introduce a Clean Energy Target to  
incentivise low emissions energy

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<sup>7</sup> Science-based targets: A guide for setting greenhouse gas emissions targets informed by climate science, WSP, 2016

<sup>8</sup> Independent expert panel on interim emissions reduction targets for Victoria (2021-2030), Final report, March 2019

## Monash Council emission reduction targets

Monash City Council is committed to reducing its impacts on the environment, which includes reducing greenhouse gas emissions from operations and activities, improving energy efficiency and reducing energy costs for Council.

In **2010**, Monash Council proposed a number of targets to support greenhouse gas emission reduction. The Council subsequently achieved most of these targets by **2016**, with reductions of:

- 34% in emissions from electricity
- 28% from gas
- 8% from transport.

In the past, greenhouse gas emissions targets were set more as aspirational goals. Science-based targets are now preferred as they are targets adopted by organisations to reduce greenhouse gas emissions that are considered reasonable in the context of current scientific evidence.

Science-based targets consider the level of decarbonisation required to keep global temperature increase below 2°C (compared with pre-industrial temperatures). This is consistent with global targets described in the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) and can be used to quantify the reduction in greenhouse gas emissions that is required.<sup>9</sup>

Based on the science, scaling global reduction targets to Council level, the target for Monash Council's carbon emissions reductions is **437 ktCO<sub>2</sub>-e by 2030** (from 2016/17 onwards). To achieve this, Council will need to reduce its annual corporate carbon emissions by 2.3% per year, leading to a **32% reduction by 2030** (compared with 2015/16). This aligns with agreed national and international targets of reducing carbon emissions.

Following the proposed credible pathways available for the Council to implement change, emissions could be reduced by approximately 8,750 tCO<sub>2</sub>-e per year, achieving a **more than 75% reduction in emissions by 2030** (compared with 2015/16).

Council could exceed the science-derived target of 30% by 2030 and confidently have zero net emissions by 2050 with minimal offsets.

## Monash community emission reduction targets

Scaling Monash community targets from global reduction targets identifies how much the community and businesses in the municipality should achieve collectively to adequately contribute to relevant international targets that put the world on track to avoid dangerous levels of climate change.

Based on the science, scaling global reduction targets to Council level, the target for carbon emissions reductions is **57,380kt CO<sub>2</sub>e** (from 2016/17 onwards).

To achieve these ambitious yet minimum targets required to limit global warming to 2 °C, emissions will need to be reduced at around 2.7% each year, leading to a 38% reduction by 2030 (compared with 2016/17). Please note, it should be clear that Council is not capable of delivering the community reduction outcome in isolation but can help to facilitate action. These targets should not be seen as binding to Council, but are presented as a way for Council to provide guidance to the greater community and show stewardship around this challenge that will affect everyone.

### Council science-derived targets

Year	Target reduction (from 2015/16 levels)
2020	7%
2025	20%
2030	32%

### Community science-derived targets

Year	Target reduction (from 2016/17 levels)
2020	11%
2025	25%
2030	38%

The target for Monash Council's carbon emissions reductions is 437 ktCO<sub>2</sub>-e by 2030, to reduce carbon emissions by around 32%.

<sup>9</sup> <http://www.sciencebasedtargets.org>

# Greenhouse gas reductions

## Council emission reduction opportunities

Monash Council is responsible for an extensive range of services and functions. For many areas there are already actions underway by staff to reduce emissions, either through directly targeted actions or indirectly as benefits of other projects and activities.

Council has already implemented a range of successful initiatives to improve the sustainability of its operations. To build on that success and improve on existing processes, the Council will improve energy efficiency in its departments, implement large Council-wide or highly aspirational projects, conduct community engagement to communicate the outcomes of Council-led initiatives, begin initiatives to reduce community emissions, and ensure ongoing review of all progress.

The top five priority actions, ranked by ability to reduce emissions, that overall could reduce Monash Council emissions by at least 75% by 2030 (compared with 2015/16) are:

1. purchasing of renewable energy (saving 6,000 to more than 11,300 tCO<sub>2</sub>-e)
2. replacing street lighting with LEDs (saving 1,740 tCO<sub>2</sub>-e)
3. establishing Environmental Performance Contracts for Council facilities (saving 1,400 tCO<sub>2</sub>-e)
4. installing solar systems on Council facilities (saving 600 tCO<sub>2</sub>-e)
5. developing environmentally sustainable design standards (saving 510 tCO<sub>2</sub>-e).

Regarding point 1 (renewable energy), Council is investigating options to purchase around 90% renewable energy as a standard part of its retail electricity supply, including through collaborative relationships led by the Eastern Alliance for Greenhouse Action (EAGA), and the South East Melbourne group of councils' Renewable Energy Project (SEMREP). Such purchasing power, combined with energy reduction and renewable energy installation, will enable the Council to quickly reduce emissions to almost zero for many buildings and street lighting.

Regarding point 2 (LED street lighting), Council has replaced some street lights with low energy technology, resulting in significant reductions in energy consumption. Further opportunities are available to replace lighting on major roads, residential streets, and other sites with LEDs, and increase the use of internet-connected smart lighting that enables movement detection, dimming and other energy-reducing functions.

Regarding point 3, Environmental Performance Contracts for Council facilities aim to reduce energy consumption within the Council's largest buildings, in partnership with other councils from EAGA.

Regarding point 4 (solar power), Council is conducting a program to assess, design and install solar systems for all suitable small to medium Council sites and facilities not included in an Environmental Performance Contract, including consideration of battery storage and energy management strategies.

Regarding point 5 (sustainable design), the construction of new buildings, especially major sites such as sports and aquatic centres, provides opportunities for reducing emissions by including sustainability in building design and equipment specification. It is recommended that environmentally sustainable design policy and standards are developed and adopted for new buildings, with a consideration of operating and performance standards. This may include designing major buildings to be at least 6 Green Star or equivalent.

Additional actions include:

- using smaller vehicles or hybrids, and incremental introduction of electric vehicles
- development of energy-efficient equipment procurement policies
- reducing water use (so energy for heating and pumping is also reduced)
- improving the efficiency of resource use and waste going to landfill
- monitoring, and reinvestment of savings from successful activities into future projects through an environmental fund to ensure long-term support for environmental actions and emission reduction projects, while capping the cost to Council based on the real savings from previous projects.



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A quarter of Australia's greenhouse gas emissions come from homes, so every resident of Monash can make a difference to the amount released into the air

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## Community emission reduction opportunities

Monash Council can continue to advocate and help the community implement energy efficiency and renewable energy projects, but has only a limited amount of influence over many of the emissions sources.

Every resident of Monash can make a difference to the amount of greenhouse gases released into the air. About a quarter of Australia's greenhouse gas emissions come from our homes. So changes to activities at home, at work and at school that we can all make will reduce emissions, lower our carbon footprint, and in many cases will save money.<sup>10</sup>

### Around the home you can:

- ensure appliances are energy efficient (the more stars the better)
- reduce stand-by power (keep appliances that need constant power connected to one plug, and anything else to another that you can switch off at the wall)
- remove one globe from multi-globe fittings, and turn off lights when not in use (even if fluorescent)
- put on a jumper and turn down your thermostat
- insulate your home and install double-glazed windows with curtains
- reduce shower time, install a water-efficient showerhead, and fix dripping taps
- change from electric to gas hot water, insulate your hot water unit and turn it off when you're away
- up to half the waste in garbage bins is food, which produces greenhouse gases if sent to landfill; so compost food and look out for Monash Council's Food Organics in Green Organics (FOGO) waste food collection service, which will be introduced July 2020
- consider installing solar panels: Monash Council is working with Solar Savers to support pensioners to install solar on their homes, and the Victorian Government provides a 50% rebate to other eligible households
- Save energy, money and emissions by following sustainability Victoria tips (<https://www.sustainability.vic.gov.au/You-and-your-home/Save-energy>).

### When shopping you can:

- buy clothes from op-shops so there are no new greenhouse emissions from manufacturing; and repair rather than replace damaged clothing
- buy local food, as it generates fewer travel-related emissions
- buy less processed food
- avoid excessive packaging
- don't buy unnecessary items; make a shopping list.

### At work, consider:

- using smaller cars, hybrids or electric vehicles
- set up an energy action staff committee to implement energy-saving ideas
- open blinds and curtains to let in natural light rather than switching on lights
- remove tubes from fluorescent fittings if there is more light than needed
- implement controls such as timers, movement detectors and light level sensors
- use heaters and coolers only when people are in rooms
- ensure that photocopiers, computers, printers and other equipment are switched off at night, weekends, and during holidays
- set all monitors to automatically turn off after 10 minutes of inactivity — screen savers do not save energy
- think before you print
- see if your business is eligible for Energy Upgrade finance to reduce emissions and improve your economic and environmental performance (<https://www.monash.vic.gov.au/Business/Start-and-Grow-Your-Business/Environmental-Upgrade-Finance>).

### At school, students and staff can:

- keep doors and windows closed when heaters or air conditions are running
- plant trees, which absorb carbon dioxide from the air
- ensure you use recycling bins
- establish a compost heap
- set up an environment committee and undertake a school energy audit
- walk, ride your bike or use public transport to get to school
- Join the ResourceSmart Schools program and receive help to reduce your school's emissions (see <https://www.sustainability.vic.gov.au/schools>).

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<sup>10</sup> Climate Change: What you can do about it, by Paul Holper and Simon Torok. CSIRO Publishing and Pan Macmillan Australia, 2008.

Monash City Council is committed to reducing its impacts on the environment, and since 2011 has reduced its greenhouse gas emissions from operations and activities by 34%.

This report quantifies the current greenhouse gas emissions for Monash council operations as well as the wider municipality including the community and businesses. To align with international and national targets, this emission reduction action plan also sets science-based targets for Monash and priority actions, which take into account the level of decarbonisation required to keep global temperature increase below 2°C compared with preindustrial temperatures.

Council will lead and support the community to reduce emissions through planning, education and targeted programs, with the aim to cut emissions by 86% (compared with 2015/16 levels) and progress the municipality towards zero carbon emissions.

Acknowledgements: Full report (Monash City Council: Emissions Reduction Strategic Approach, 2019) prepared for Monash Council by Ironbark Sustainability. This booklet was prepared by Scientell and designed by Hodge Environmental.

## More information

Monash Civic Centre



293 Springvale Road Glen Waverley 3150



[www.monash.vic.gov.au](http://www.monash.vic.gov.au)



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## Monash Language Link

普通话 9321 5485  
हिंदी 7005 3000

Ελληνικά 9321 5482  
Việt Ngữ 9321 5487

廣東話 9321 5481  
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