



ZERO CARBON

NET ZERO EMISSIONS PLAN

FOR CITY OPERATIONS

2023-2030



CITY OF GREATER
BENDIGO

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ACKNOWLEDGEMENT OF COUNTRY

Acknowledgement of Country

The City of Greater Bendigo is on Dja Dja Wurrung and Taungurung Country. We acknowledge and extend our appreciation to the Dja Dja Wurrung and Taungurung People, the Traditional Owners of the land.

We pay our respects to leaders and Elders past, present and future for they hold the memories, the traditions, the culture and the hopes of all Dja Dja Wurrung and Taungurung Peoples.

We express our gratitude in the sharing of this land, our sorrow for the personal, spiritual and cultural costs of that sharing and our hope that we may walk forward together in harmony and in the spirit of healing.

Acknowledgement of First Nations People

The City recognises that there are people from many Aboriginal and Torres Strait Islander communities living in the City of Greater Bendigo.

We acknowledge and extend our appreciation to all First Nations Peoples who live and reside in Greater Bendigo on Dja Dja Wurrung and Taungurung Country, and we thank them for their contribution to our community.

EXECUTIVE SUMMARY

The City of Greater Bendigo (the City) is proud to have expressed, in the Climate Change and Environment Strategy 2021-2026, an ambitious target of zero greenhouse gas emissions for its own operations by 2030.

This Plan interprets this zero emission target as 'net zero' by 2030. Net zero means cutting greenhouse gas emissions to as close to zero as possible, with any remaining emissions being offset, ideally through local carbon offset projects that achieve co-benefits for the environment and community.

The City's core strategy to achieve its net zero target is to 'electrify everything' over the course of the 2020s.

This means that the City will aim to use no petrol, diesel or natural gas by June 30, 2030 and will continue to source its electricity from renewable sources.

To do this, the City needs to upgrade all machines, big and small, to new modern electric machines that are powered by 100% renewable electricity.

The City will also need to quantify and manage its landfill and other emission sources and purchase and retire carbon offsets to compensate for any residual emissions.

The transformation towards net zero emissions has commenced.

This Plan outlines the following five-point plan, with position statements and actions to complete the process:

- 1. Measure:** Calculate emissions
- 2. Reduce:** Implement our emission reduction strategy (electrify everything)
- 3. Offset:** Offset residual emissions
- 4. Validate:** Validate our carbon neutral status
- 5. Report:** Provide a public statement of our carbon neutral claim

In 2030, the City will seek to attain net zero 'carbon neutral' certification from the Australian Government's Climate Active program.

The emission reduction strategy to electrify everything is made up of five steps:

- A. Electrify buildings
- B. Electrify fleet and plant
- C. Electrify waste
- D. Reduce Scope 3 emissions
- E. Align the organisation

Decarbonisation of City operations is inevitable, achievable, and beneficial.

The transformation is expected to provide net savings over time through reduced operating costs. This net saving will require a significant investment of capital and operating expenditure upfront and additional to business as usual over the next seven financial years. The City will advocate for and actively seek out funding support from the State and Federal governments to assist with the upfront expenditure.

The immediate priority is to get off gas. This will require approximately \$6M of capital expenditure and will remove gas from City operations, including from our aquatic centres.

Reducing emissions will require a coordinated, organisation wide, collaborative effort.

Our staff values and behaviours will guide our work to become a modern, all-electric organisation:

We Lead

We have a clear vision and understand our purpose

We Learn

We work together to continuously improve what we do

We Contribute

We plan and deliver quality programs, projects, and services

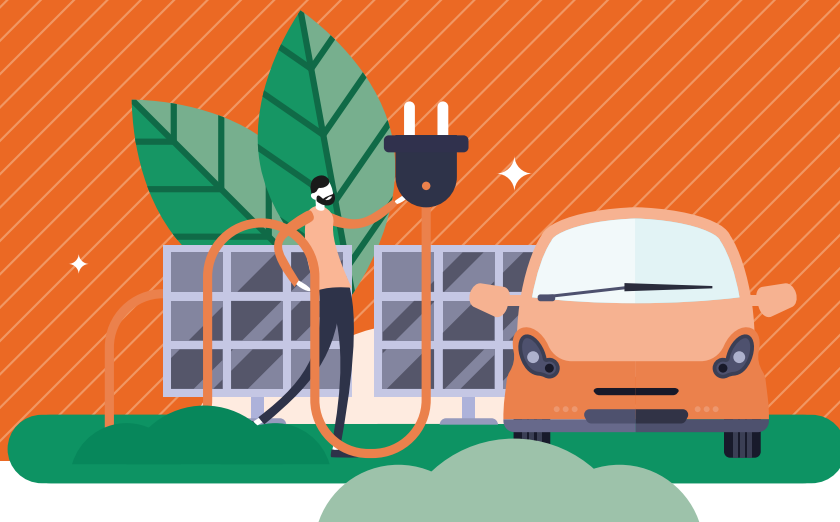
We Care

We work together to create a safe and healthy workplace

We Respond

We do what we say we will do

We Respect: We work together to create and maintain a positive culture



Key messages:

- **Climate change is happening.** We have limited time to prevent catastrophic outcomes beyond those already being experienced. Everyone needs to contribute to reducing emissions. The City is likely to be one of the larger emitters in Greater Bendigo (circa 3% of the total) and has an important leadership role in reaching net zero by 2030.
- **The State and Federal governments are ratcheting up their programs to reduce emissions too.** The State Government has a significant policy suite that includes policies on waste to energy, zero emission vehicles, and renewable energy; and recently updated the state targets to net zero by 2045 (brought forward from 2050), and 95% renewable energy by 2035. The Australian Public Service (excluding security agencies) has a new target of net zero emissions by 2030. The City will seek to collaborate with State and Federal initiatives.
- **This Plan outlines what we know and what we don't yet know.** The pathway to net zero must be pragmatic. We will continue to deliver our services while we transform. We will transform when we have confidence in the feasibility and cost and benefits of proposed changes. This confidence will be gained through the development of business cases and through project delivery.
- **While total costs and benefits are still uncertain, we know that some investments in electrification will generate savings.** For example, currently, each year, the City spends over \$2M each year on diesel and petrol. These costs will be removed through vehicle electrification and substituted by electricity costs that will conservatively be half the cost, providing at least a \$1M per year saving.
- **The transformation is based largely on the implementation of a small handful of technologies.** Most of these technologies, such as split systems for heating and cooling, are mature and ready to install. Other technologies, such as battery electric and hydrogen electric heavy vehicles, will mature in the next few years. We will make the change when a fit-for-purpose technology exists, and when we are ready in terms of supporting infrastructure.
- **As a rule, we will seek a '100% clean replacement rate', meaning that all new assets should be electric or fossil fuel free from July 1, 2023.** This means no new gas appliances, and the purchase of zero emissions fleet and plant where a fit-for-purpose option is available and affordable.
- **Much of the work needed to 'electrify everything' and get to net zero emissions will occur as the result of our standard process of building new assets, dealing with issues we are already thinking about, and doing the work we do maintaining, rectifying, and renewing assets.**
However, to achieve our net zero target, it is critical that we finalise decisions about our future building portfolio. For example, the timing of the depot redevelopment and availability of charging parking at Galkangu are critical to the broad procurement of electric vehicles. Therefore, a key requirement for the Plan's success is for the City to develop a draft ten-year capital works program that factors in the pathway to electrification and net zero emissions into all relevant projects.
- **In 2021-2022 the City's emissions were 50,263 tonnes of carbon dioxide equivalent (CO₂-e).** We have seven financial years, from 2023-2024 to 2029-2030 to get as close to zero emissions as possible.

Figure 1: Representative trajectory to net zero emissions (excluding scope 3)

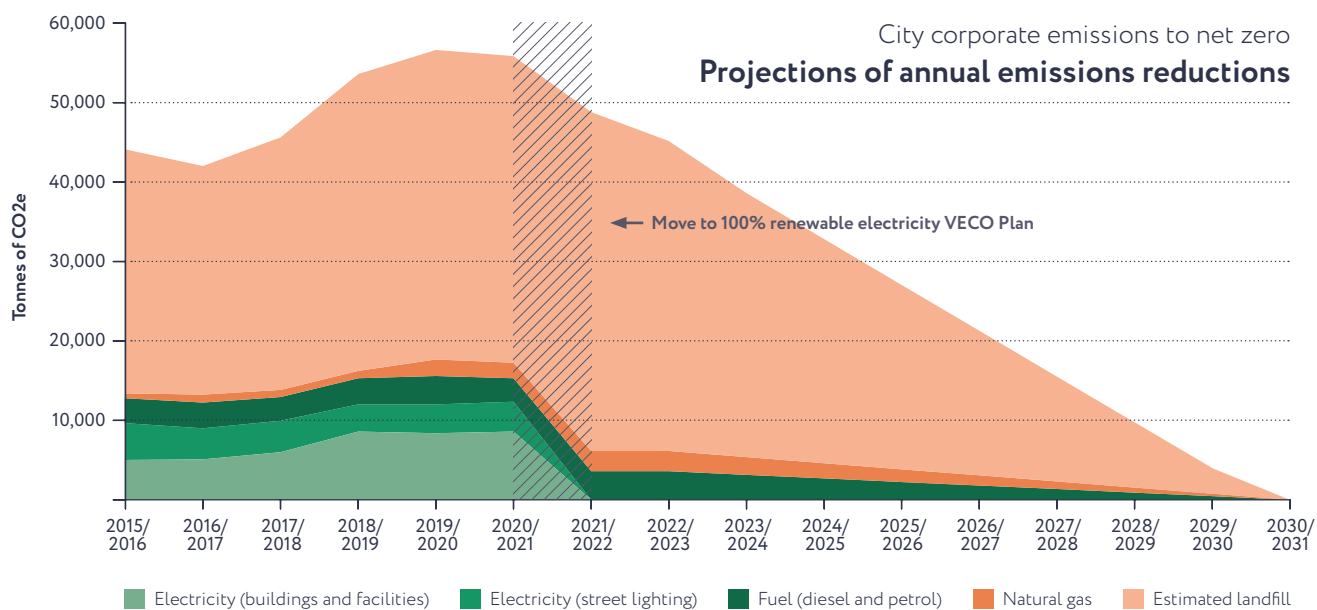
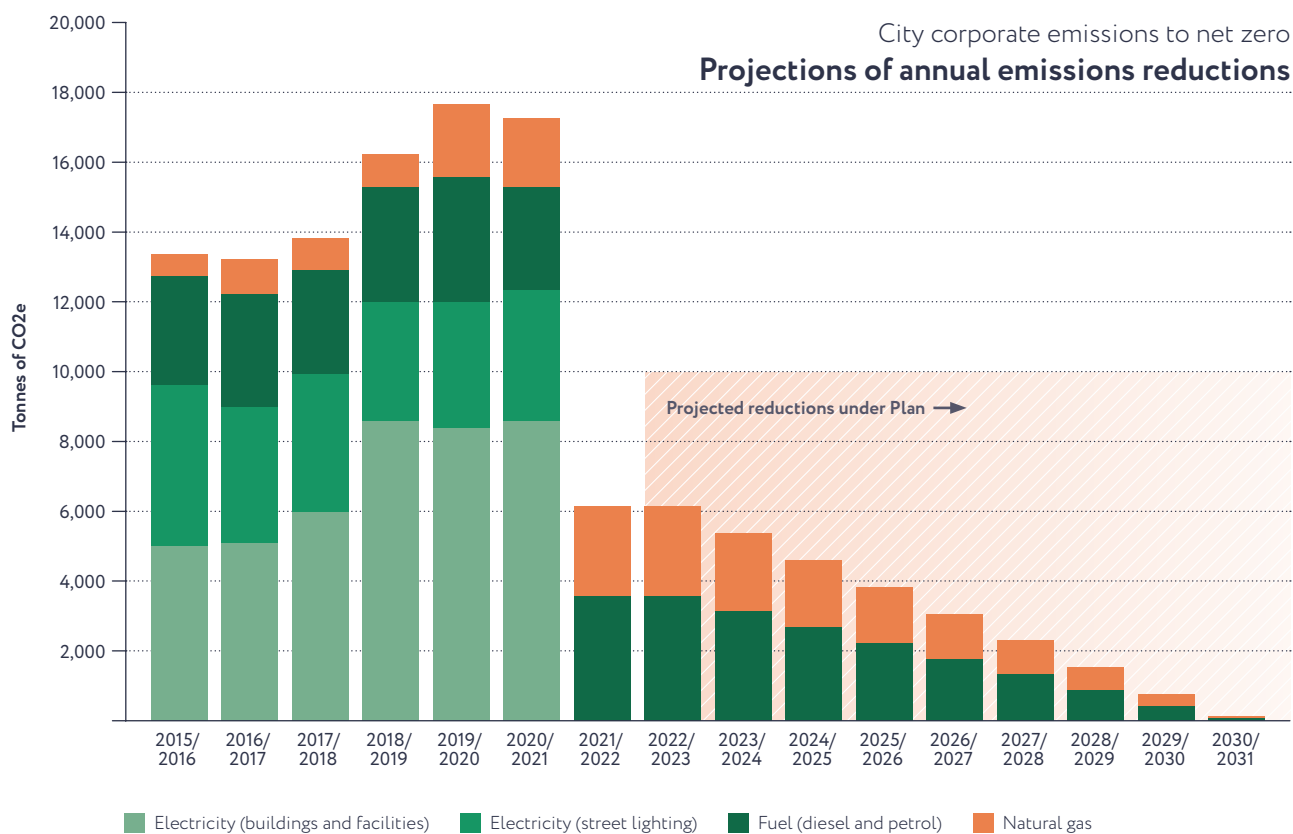


Figure 2: Representative trajectory to net zero emissions (excluding landfill and scope 3)





PLAN OVERVIEW

Purpose

To plan for the City to achieve net zero emissions and be certified carbon neutral in 2030.

Scope

To reduce to net zero all emissions within the City's operational boundary by 2030.

Net zero means cutting greenhouse gas emissions to as close to zero as possible, with any remaining emissions reabsorbed from the atmosphere by purchasing carbon offsets.

Strategy

The core emission reduction strategy is to 'electrify everything'.

Operating Context

In 2019 Council acknowledged and resolved to respond to the climate and biodiversity breakdown.

In 2021 Council endorsed the *Climate Change and Environment Strategy 2021-2026* and set the target of 'zero carbon from the City's operations by 2030'.

Implementation

Implementation will be achieved over the seven financial years of the Plan from 2023-24 to 2029-30.

Project Management

Each project will be managed independently.

Governance

Governance arrangements will ensure the consideration of relationships between projects and provide strategic coordination of the five-point plan.

Monitoring, Reporting and Learning

The Climate Change and Environment Unit will coordinate monitoring, reporting, and learning related to this Plan, and will publish relevant information in the City's Annual Environment Report.

Exclusions

The Plan does not describe the current operating context for emissions reduction, such as social, technological, economic, environmental, political, legal, and ethical considerations.

The Plan does not seek to estimate the cost savings or payback periods from undertaking projects. Projects will present business case information as part of the budget process.

INTRODUCTION

Climate Change in Greater Bendigo

The risk from climate change is ratcheting up each day as greenhouse gas levels in our atmosphere continue to increase, trapping more heat and warming the planet.

The main global cause of global heating is the burning of fossil fuels.

Australia's climate has warmed by an average of 1.47 degrees (land surface average temperature) since 1910 when records began.¹

This is the result of global mean atmospheric carbon dioxide concentrations reaching 414 parts per million (in 2021), and overall greenhouse gases reaching the carbon dioxide equivalent (CO₂e) of 516 parts per million. These are the highest levels on Earth in at least two million years.

The current climate projection for the City of Greater Bendigo, based on a high emissions scenario, anticipates a temperature increase of up to 4.2 degrees Celsius by 2090.

At this time, the climate of the City of Greater Bendigo will be like the current climate of Forbes in the Central West region of NSW.

We need to prepare for this future in a precautionary manner.

Multiple lines of evidence show that extreme weather events such as extreme heat events and floods are increasing in frequency and will continue to increase as our environment warms and dries.

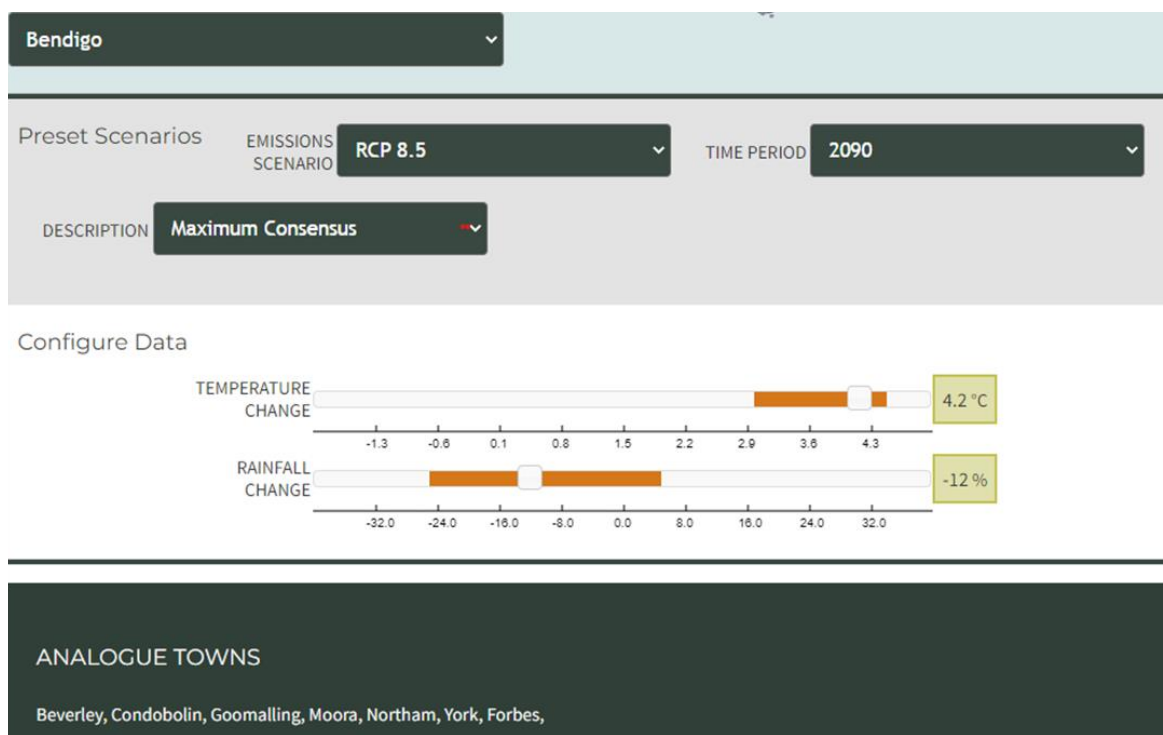


Figure 3: In 2090 Bendigo is likely to be as hot and dry as Forbes in the Central West of NSW

¹ <https://www.minister.industry.gov.au/ministers/husic/media-releases/launch-state-climate-2022-report#:~:text=Sea%20surface%20temperatures%20have%20increased,regions%20since%20the%20late%201950s>

Resolution of Council

On August 21, 2019, the Greater Bendigo City Council (Council) passed a Resolution of Council that recognises that we are in a state of climate and biodiversity breakdown, and that we must address this serious risk to the health and wellbeing of the people of Greater Bendigo.

The Resolution recognises that climate change will impact City services and that the breakdown carries financial implications and requires appropriate Council budget mechanisms and allocations to address the risks and issues.

A copy of the resolution is provided to the right.

That the Greater Bendigo City Council acknowledge:

1. The urgent need for action to address the environmental and climate breakdown that poses serious future risks to the health and wellbeing of the people of Greater Bendigo, especially those who are socially and economically the most vulnerable and disadvantaged in our community.
2. That climate risks will impact public health, emergency management, community services and recreation facilities and carry financial and social implications for LGAs requiring a whole-of-City approach.
3. The current global consensus that cities should be responsive to climate, environmental and biodiversity breakdown, investing in restoration and conservation of biodiversity and ensuring a resilient city in current and planned actions to mitigate and adapt to the effects of climate change and reduce greenhouse gas emissions.
4. That an internal report on the City's expenditures aligned to greenhouse gas emissions across Council's business will be prepared by December 31, 2019.
5. The need for budget considerations for the 2020/2021 year to incorporate City-wide mechanisms and allocations to address the risks that climate change presents to the future health and wellbeing of the people of Greater Bendigo.

Resolution of Council: Ordinary Meeting - 21 August 2019



Climate Change and Environment Strategy 2021-2026

The *Climate Change and Environment Strategy 2021-2026* was developed in consultation with the community of Greater Bendigo, agencies, stakeholders, and City staff. The Strategy includes six action areas, and six flagship projects.

This Plan is focused on the Zero Carbon action area. Specifically, the goal (F) to achieve net 'zero carbon from City operations by 2030'.

The Strategy includes targets for 2026 and 2036. This Plan aspires to achieve the 2036 targets by 2030, and to strengthen the 2026 targets where appropriate to achieve this 2030 aspiration.



Figure 4: Six action areas in the *Climate Change and Environment Strategy 2021-2026*

	2026 TARGETS		2036 TARGETS
COUNCIL	2036 GOAL F: Zero carbon from City operations by 2030		
	F1	No new gas connections in new City buildings built after 2021	All City owned buildings powered by 100% renewable locally generated electricity
	F2	60% of City small and medium-sized owned and operated buildings transitioned off-gas	No gas connections to City owned buildings
	F3	90% of City owned buildings have solar systems installed	
	F4	35% of lightweight fleet is electric	100% electric lightweight vehicle fleet
	F5	Five heavy plant vehicles are electric or powered by a sustainable fuel source	100% of the heavy vehicle fleet is electric or powered by a sustainable fuel source
	F6	Program for local regenerative offsets established in partnership with North Central CMA	
	F7	Offsets purchased to reach 2026 net-zero target	Purchase 25% fewer offsets than in 2031
	F8	More than 60% of the City’s funds are invested with financial institutions that do not lend to fossil fuel industries, or invested in products that reduce carbon emissions	100% of the City’s funds are invested with financial institutions that do not lend to fossil fuel industries, or invested in products that reduce carbon emissions
	F9		Leverage \$100M investment in local regenerative projects that bring Greater Bendigo community beyond net zero

Figure 5: Zero Carbon targets in the *Climate Change and Environment Strategy 2021-2026*

Emission scopes

Emissions are characterised by their scope. There are three scopes:

- **Scope 1 emissions:** The release of greenhouse gases into the atmosphere as a direct result of activities occurring within a responsible entity’s control. For example, emissions from the combustion of diesel in a City heavy vehicle, the burning of gas in a City building, or from the gas escaping from the Eaglehawk landfill.
- **Scope 2 emissions:** The release of greenhouse gases into the atmosphere from the consumption of electricity, heating, cooling or steam that is generated outside of a responsible entity’s control. For example, if the City purchased electricity from a coal fired powerplant, then the City would have to account for the associated emissions.
- **Scope 3 emissions:** Greenhouse gases emitted because of a responsible entity’s activities but emitted outside the responsible entity’s control. The City is just starting to measure and calculate its scope 3 emissions. An example of scope 3 activities are the emissions associated with the extraction and production of purchased materials, such as concreted and asphalt. There are 15 categories for scope 3 emissions.

Below
Figure 6: City emission scopes and sources

SCOPES				
SCOPE 1			SCOPE 2	SCOPE 3
City buildings	City fleet and plant	City waste	N/A	Any emissions under the following categories:
<ul style="list-style-type: none">• Natural gas• LPG	<ul style="list-style-type: none">• Petrol• Diesel• Oils	<ul style="list-style-type: none">• Landfill• Fugitive Emissions	<ul style="list-style-type: none">• N/A 100% Renewable Electricity via VECO	<ol style="list-style-type: none">1. Purchased goods and services2. Capital goods3. Fuel- and energy-related activities not included in scope 1 or scope 24. Upstream transportation and distribution5. Waste generated in operations6. Business travel7. Employee commuting8. Upstream leased assets9. Downstream transportation and distribution10. Processing of sold products11. Use of sold products12. End-of-life treatment of sold products13. Downstream leased assets14. Franchises (not applicable)15. Investments

OUR JOURNEY

Where have we come from?

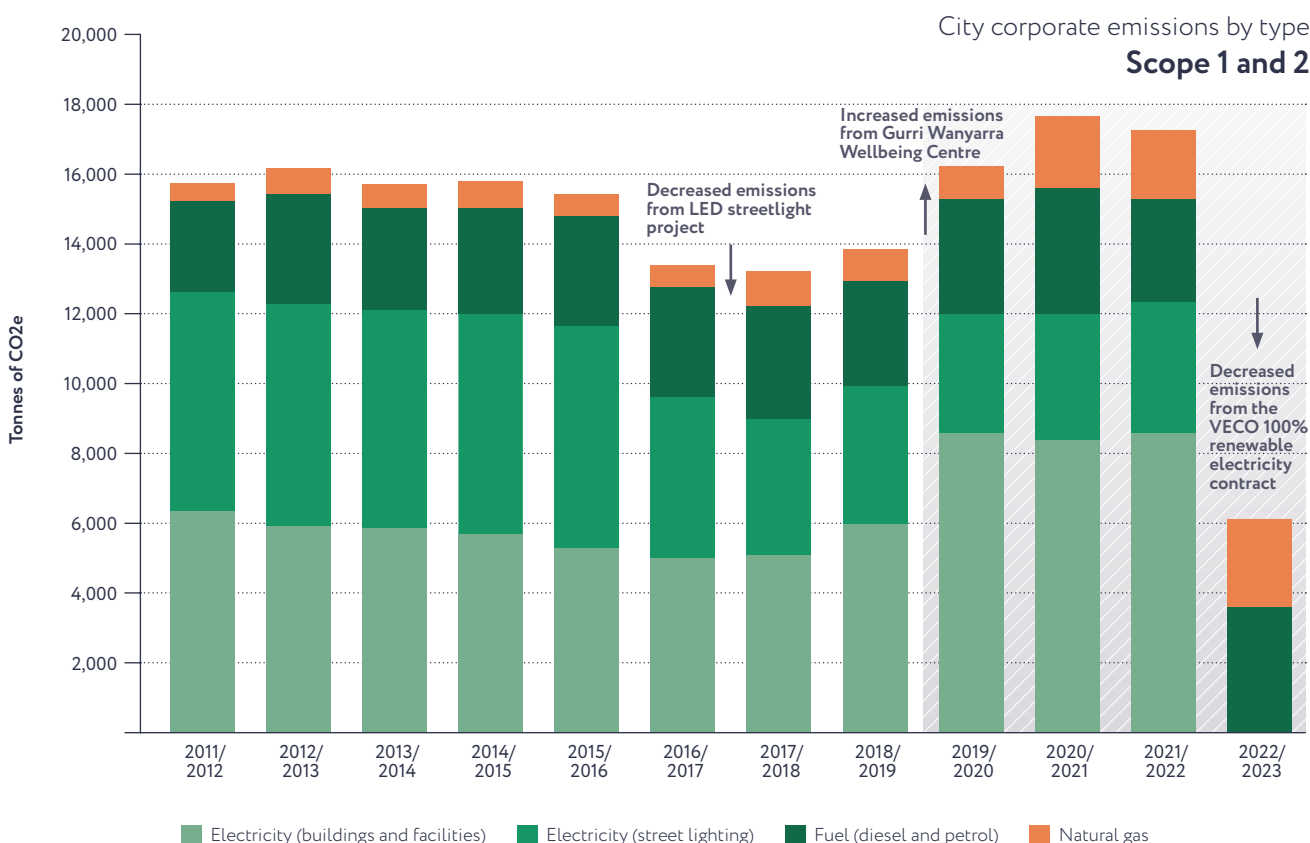
The City, over many years, has supported successive sustainability initiatives. However, the challenge has been to decouple the growth of the City's operational emissions from the growth in the City's assets and services that provide for the growing population and economy.

The significant projects below - one a large technology upgrade (LED streetlighting) and the other a large renewable energy procurement project (the Victorian Energy Collaboration 100% renewable energy project [VECO]) - are the ones that have significantly dented, and then significantly shifted the trajectory toward a positive story of reducing emissions. They signal that ambitious large projects are possible, beneficial and what is needed next. Electrification is inevitable. It is also an exciting opportunity.

A list of the City's key emission reduction achievements is provided at Appendix 1.

It is also clear that the pendulum can swing the other way if projects are not designed with emission reductions or zero carbon as a primary goal. Despite its only recent development, the Gurri Wanyarra Wellbeing Centre consumes a great deal of gas and has imposed a significant climate liability on the City.

Figure 7: City emissions from 2010-2011 to 2021-2202 (excluding landfill emissions)



Where are we now?

In 2021-2022 the City's emissions were 50,263 tonnes of carbon dioxide equivalent (CO₂-e).

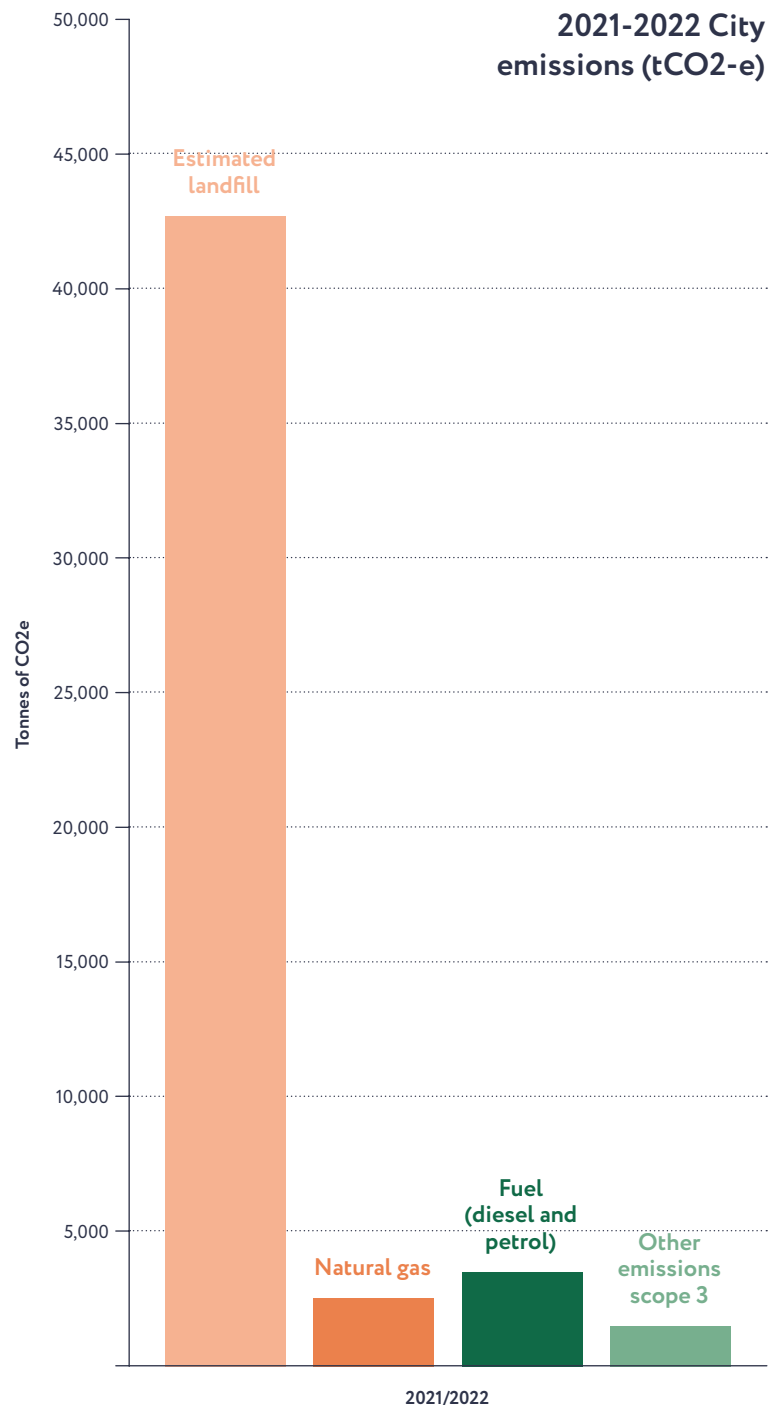
The City is using 100% renewable electricity. However, it is still very reliant on fossil fuels for heating and transport, its landfill emissions remain a significant issue, and it is yet to tackle other, scope 3 emission sources.

- Many City buildings still use gas for heating water and space, including a handful of very big consumers such as the Gurri Wanyarra Wellbeing Centre. The City spent over \$650,000 on gas in FY2021-22.
- The City has around 500 fleet and plant assets – from passenger vehicles to garbage trucks, brush cutters to road graders – that each year consume over a million litres of diesel and petrol. The City spent over \$2M on fuel in FY2021-22.
- The City's greenhouse gas emissions from waste buried at the Eaglehawk landfill are significant. These emissions are difficult to quantify and model into the future. The City is interrogating these landfill emissions, including through an expert third-party, to ensure that our understanding of this liability is as accurate as possible. An independent company, LMS Pty Ltd, captures landfill gas at the Eaglehawk landfill to create electricity, and so the amount of gas they capture is excluded from the City's emissions liability.

The below emissions profile includes:

- Gas emissions from facilities where Council pays the gas bill
- Modelled / estimated data for scope 3 and landfill emissions

Figure 8: Corporate FY2021-2022 emissions



Where do we want to be?

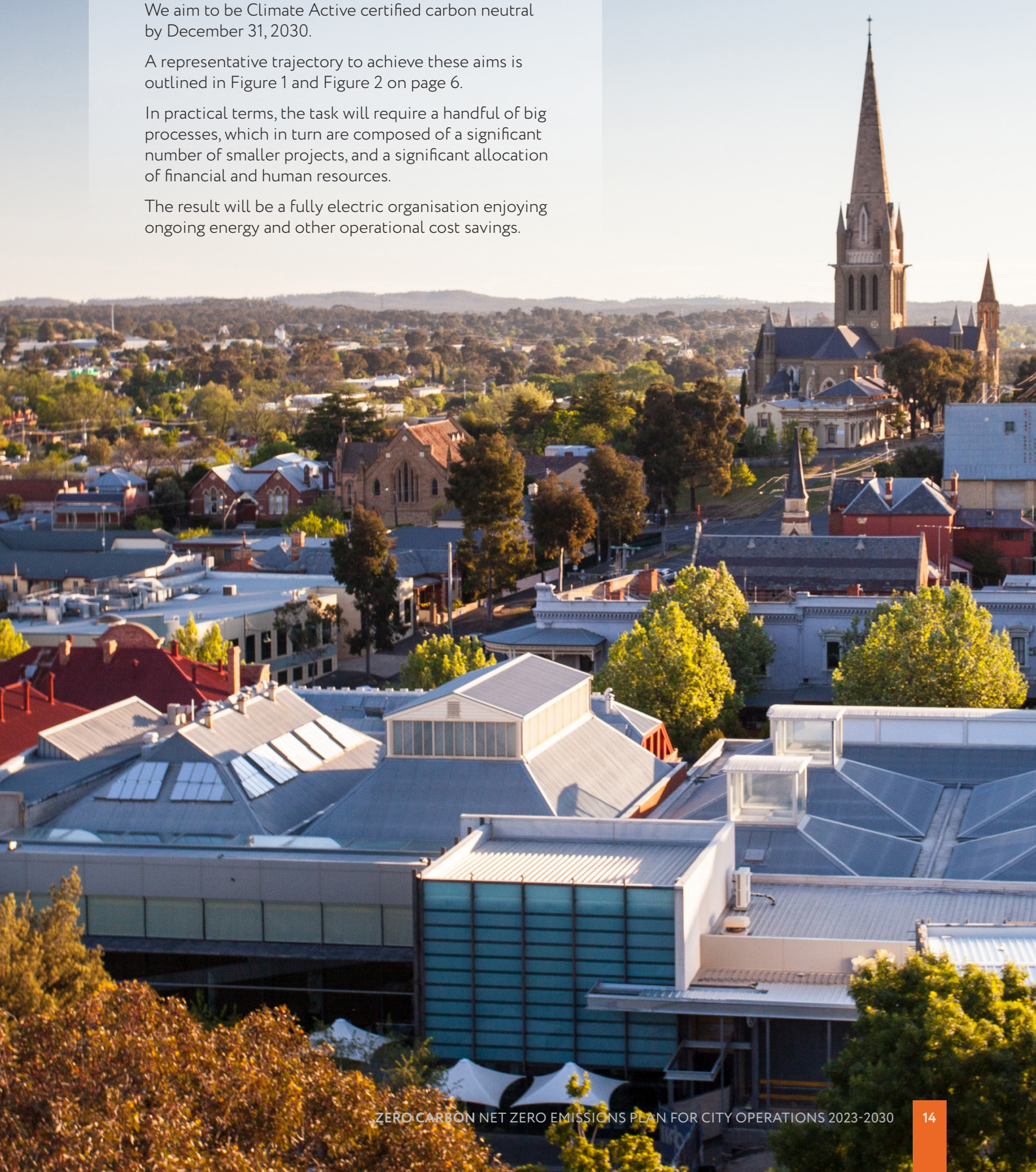
We aim to achieve net zero emissions by the end of financial year 2029-30.

We aim to be Climate Active certified carbon neutral by December 31, 2030.

A representative trajectory to achieve these aims is outlined in Figure 1 and Figure 2 on page 6.

In practical terms, the task will require a handful of big processes, which in turn are composed of a significant number of smaller projects, and a significant allocation of financial and human resources.

The result will be a fully electric organisation enjoying ongoing energy and other operational cost savings.



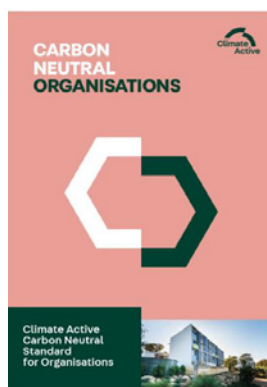
How do we get there?

The Core Aim: Certified Carbon Neutral

The City will seek to become Climate Active certified carbon neutral by 31 December 2030. Climate Active certification provides the organisation with verification of its net zero emissions position.

Accordingly, the City will begin immediately to align its carbon emissions reporting with the Climate Active Carbon Neutral Standard for Organisations (the Climate Active Standard).

Image 1: Cover - Climate Active Carbon Neutral Standard for Organisations



Climate Active is led by the Australian Government and is the only government accredited carbon neutral certification scheme in Australia.

Climate Active certification is awarded to businesses and organisations that have credibly reached a state of carbon neutrality. This means that the activities associated with running a business or producing a particular product have no net negative impact on the climate.

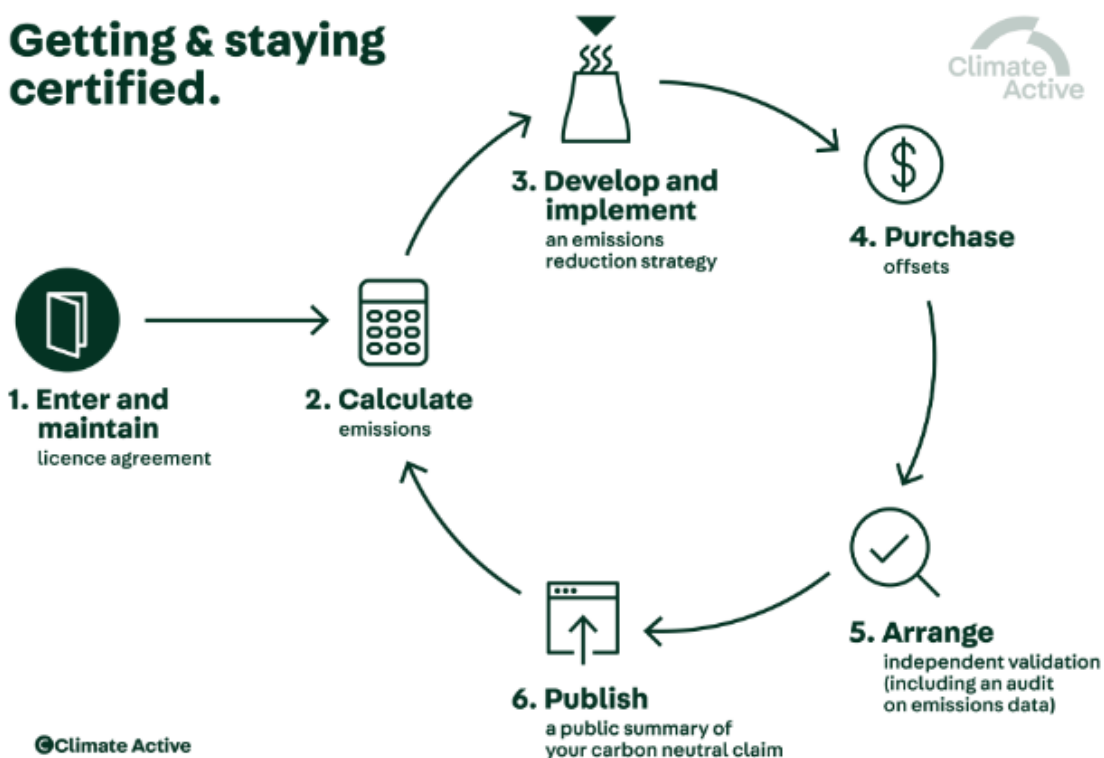
The transition to the leading practice Climate Active methodology for defining our corporate organisational emission boundaries will require the City to report on emissions from all our facilities, operations, services, and our supply chain.

Below

Figure 11: Climate Active certification process

Step-by-step certification process

Getting & staying certified.



2

² https://www.climateactive.org.au/sites/default/files/2022-10/10571RR%20Environment%20-%20Organisation%20Standard%20A4_FA_Web.pdf

The Core Strategy: Electrify Everything

The City's core strategy to slash its emissions is to 'electrify everything.' The 'electrify everything' transformation must occur at two levels at the same time, and in an orderly and efficient manner: on the 'supply side' and on the 'demand side'.

The combination of low-cost renewable energy on the supply side and reducing energy use by using efficient electric machines on the demand side, means we can do the same work at reduced running costs and with no emissions.

Coupled with an ongoing investment in solar PV and building energy efficiency, electrification will unlock even greater energy bill savings.

The 'supply side'

The supply-side is principally the 'electricity grid'. The grid comprises the National Energy Market (NEM) that services the east coast of Australia. The grid is moving rapidly towards renewables. For example, Victoria has set a renewable energy target of 65% by 2030 and 95% by 2035.

In 2021, the City took a huge step in the electric direction when it signed onto VECO to purchase 100% renewable electricity through to 2030.

The City also has solar PV installed at several sites and will continue to install solar PV where it is advantageous.

The 'demand side'

The 'demand-side,' is 'behind the meter'. In City sites the demand side is made up of all the things that use energy, including appliances in buildings, fleet, and plant.

Everything on the demand side must use electricity as soon as possible. This is the core task at hand. This means replacing all our machines, tools, appliances, and vehicles that burn fossil fuels with electric versions powered by renewable energy.

The main technologies are all well-known: heat-pumps for hot water, heat-pump split systems and HVAC systems for heating and cooling buildings, induction electric cooking, electric vehicles, and landfill gas (and/or waste) to electricity. Non-fossil fuel technologies for heavy vehicles and plant are still emerging.

Below

Image 2: Heat pump installation³

³ <https://www.energy.vic.gov.au/renewable-energy/victorias-gas-substitution-roadmap>



Energy efficiency

The energy hierarchy states that efforts to reduce and avoid energy consumption should be primary. This hierarchy will guide the City's path to electrify everything. For example, efforts will be made to reduce and avoid energy consumption through the optimisation of fleet and plant, and of buildings, to promote energy efficiency, and to integrated renewable energy such as solar PV.

Importantly, due to less energy wasted, modern electric machines are far more energy efficient than their fossil fuel counterparts, and battery electric machines are much more efficient than hydrogen fuel-cell electric machines.

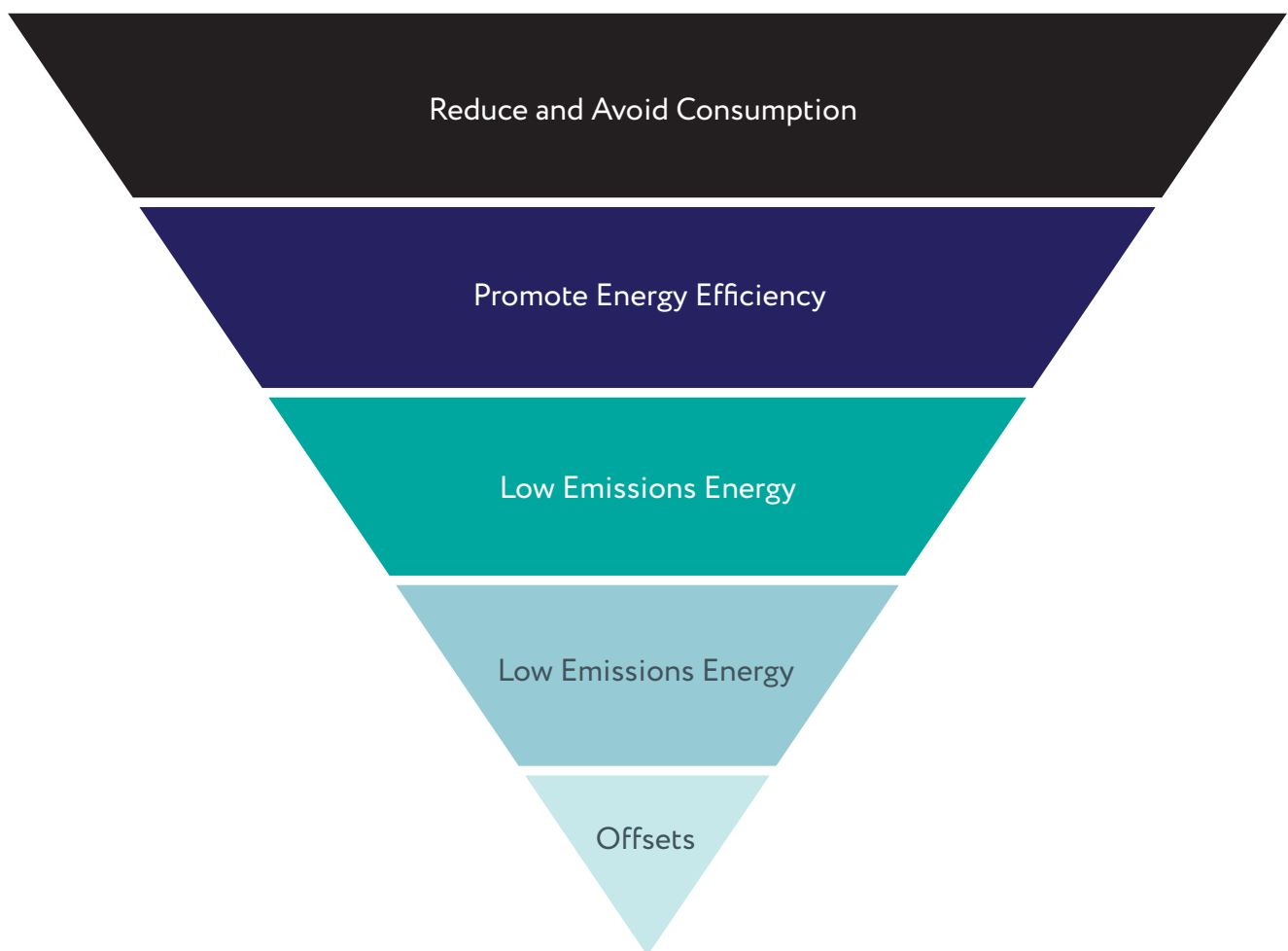


Figure 12: The energy hierarchy⁴

⁴ FG Advisory Group 2022. Electrification Foundation Paper, All-Electric Councils Information Group

OUR FIVE-POINT PLAN

Our five-point plan, in accordance with the Climate Active Standard to achieve carbon neutral status is to:

- 1. Measure** - Calculate our emissions
- 2. Reduce** - Implement our emission reduction strategy
- 3. Offset** - Purchase offsets for residual emissions
- 4. Validate** - Validate our carbon neutral status through external review
- 5. Report** - Provide a public statement of our carbon neutral claim

The following parts of the Plan are directed by content in the Climate Active Standard.



Figure 13: The five-point plan to net zero

Program Logic

The program logic below outlines how the five-point plan will be achieved.

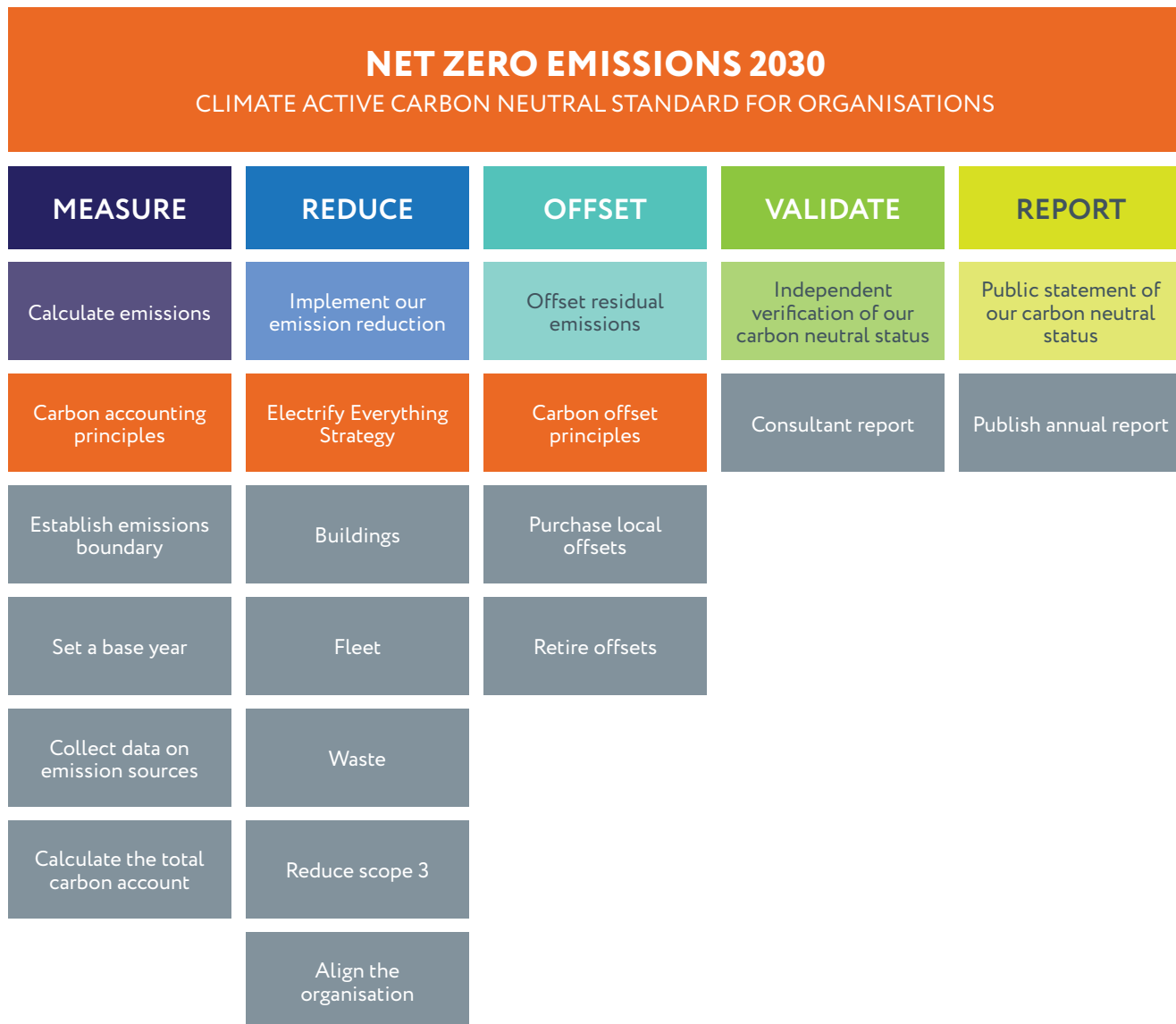


Figure 14: Program logic to achieve net zero emissions

PART 1. MEASURE

Calculate emissions

Part 1 of the Plan is for the City to undertake the preliminary work necessary to align with the Climate Active Standard.

The City will:

Step 1A: Establish its emission boundary, and have this boundary validated independently

Step 1B: Establish the 2023-2024 financial year as the base year for Climate Active alignment

Step 1C: Collect and establish a data monitoring regime on identified emissions sources

Step 1D: Calculate the total carbon account, and have this account validated independently

Further, the City will follow best practice principles when calculating its carbon account.

Carbon accounting principles

When seeking to claim carbon neutrality against the Climate Active Standard, the carbon account of an organisation must be calculated according to these principles.⁵

- **Relevance:** Ensure the greenhouse gas inventory of an organisation appropriately reflects the greenhouse gas emissions attributable to that organisation and serves the decision-making needs of users – both internal and external.
- **Completeness:** Account for and report all greenhouse gas emissions sources and activities within the defined boundary of the organisation. Disclose and justify all exclusions.
- **Consistency:** Use consistent methodologies to allow for meaningful comparisons of greenhouse gas emissions over time. Transparently document any changes to the data, boundary, methods, or any other relevant factors in the time series.
- **Transparency:** Compile, analyse and document greenhouse gas information clearly and coherently so that auditors and the public may evaluate its credibility. Disclose any relevant assumptions and

make appropriate references to the calculation methodologies and data sources used.

- **Accuracy:** Ensure the quantification of greenhouse gas emissions is unbiased (not systematically over or under actual emissions) and uncertainties are reduced as far as practicable. Achieves sufficient accuracy to enable users to make decisions with reasonable assurance as to the integrity of the reported information. Where uncertainty is high, use conservative values and assumptions.

1A: Establish the emissions boundary

Defining the emissions boundary is the first step in the carbon accounting process.

The emissions boundary refers to the coverage and extent of the carbon account for the City.

The City has had an emissions boundary since 2009 that was limited to scope 1 and 2 emissions and excluded scope 1 fugitive landfill gas emissions.

Climate Active requires all scopes to be included, and where significant exclusions are made, they must be clearly stated, and the reasons for and implications of the exclusions must be justified.

POSITION STATEMENT

The City will adopt the 'operational control' approach to determine what emissions are under the direct control of the organisation and will report on 100 percent of the operations over which it has 'the full authority to introduce and implement its operating policies'.

ACTION 1

The City will implement an emission tracking program, using the Trellis web-based emission tracking software to collect, interpret and act on data within its emission boundary.

⁵ https://www.climateactive.org.au/sites/default/files/2022-10/10571RR%20Environment%20-%20Organisation%20Standard%20A4_FA_Web.pdf



1B: Set a year

According to the principle of consistency, the carbon account must allow for the meaningful comparison of emissions over time. A base year provides a starting point for these emission comparisons. The base year carbon account must be validated independently to achieve Climate Active certification.

The City has been recording most of its significant emission sources for many years, such as for fleet and plant, and for energy. However, to align with Climate Active, more rigour is required in respect to landfill emissions, scope 3 emissions, and the detail about exclusions.

POSITION STATEMENT

The City will adopt financial year 2023-24 as its base year for Climate Active alignment.

POSITION STATEMENT

The City will adopt and align its emissions boundary with the requirements of the Climate Active Standard and will have its emissions boundary and base year emissions verified by a Climate Active qualified third-party.

1C: Collect data on identified emissions sources

In collecting data, the City will use measured data whenever possible, with conservative estimates used only where data is unavailable. The quality of data is key to the integrity of a carbon account. Quality control procedures will ensure data quality, and records will be kept for a minimum of seven years.

1D: Calculate the total carbon account attributable to the organisation

The carbon account must include emissions of carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), and other greenhouse gases. 'Emission factors' will be used to convert a unit of activity into its emissions equivalent.

The carbon account must also include renewable energy (used or generated) and account for any carbon neutral supply chains.

Significant changes (± 5 per cent) in the carbon account between reporting years that are not attributed to emissions reduction actions by the organisation's operations will be disclosed as part of the annual public report.

PART 2: REDUCE

Implement our emissions reduction plan

Part 2 of the Plan is for the City to reduce our emissions.

To implement the 'electrify everything' strategy over the seven financial years from 2023-2024 to 2029-2030, the plan is to:

Step 2A: Electrify Buildings

Step 2B: Electrify Fleet and Plant

Step 2C: Electrify Waste

Step 2D: Reduce Scope 3 Emissions

Step 2E: Align the Organisation

The challenge is to create the bridge from the old to the new. We can achieve zero net emissions much more quickly than is widely imagined by deploying and scaling the technology we already have, and that we are about to have.

2A: Electrify buildings

Approximate Capex Cost: \$6.3M (Additional)

Cost Confidence: Medium

'Buildings' includes all stationary (fixed in place) buildings and infrastructure assets, including aquatic centres and outdoor lights.

By 2030, the City will achieve a net zero emissions building portfolio.

This will require the total removal of all gas, and the substitution with electric machines and appliances.

Heat pumps will provide hot water, split systems will provide space heating and cooling, and electric induction cooking will be the norm. In addition, buildings will include more solar PV, and many will feature batteries and electric vehicle charging.

It is expected that there will be a net cost saving by electrifying buildings, and that the savings will increase further if the City also invests in building energy efficiency and solar PV.

Energy efficiency

Reducing energy consumption by maximising energy efficiency in buildings reduces demand for renewable energy infrastructure and generates long term cost savings for the organisation.

The City's Sustainable Building Policy is the main driver of energy efficiency in City buildings and is a companion policy document to this Plan.

The purpose of the Policy is to adopt and implement contemporary best practice Environmentally Sustainable Development (ESD) policy standards and practices into City service delivery. As a result, buildings will be efficient to run, healthy and safe to occupy, a good return on investment, and have a limited impact on our environment.

The Policy requires, for example, that no new gas connections are made, and that we stop like-for-like replacement, and instead always install an electric alternative.

Under the Policy, all new City buildings over \$5M in cost are required to be certified by the Green Building Council of Australia to a minimum 5 Star Green Star 'Australian Excellence' standard which, from 2023, requires net zero in operations.

ACTION 2

The City will finalise the 2023 update of the Sustainable Buildings Policy and promote it across the organisation.

Solar

Rooftop solar does not result in emission reductions in City run facilities with energy purchased via the VECO 100% renewable energy contract. For facilities where a community organisation purchases non-renewable electricity, solar panels do result in emission reductions. However, where the City does not pay the energy bills, these reductions are outside the City's emissions boundary and are not credited to the City under emissions reporting rules.

Either way, installation of rooftop solar supplies lower cost efficient electricity; increasing the City's self-sufficiency and generating long term cost savings.

It also buffers the organisation from annual price increases that which may occur when the VECO contract is renegotiated in 2030. It is estimated that the payback period for rooftop solar installations in City facilities is between 5 and 10 years. This means that the City could be generating savings from 2028 for solar panels installed today.

Where electrification works are proposed, rooftop solar can also offset any cost increases associated with the higher price of electricity compared to gas. This alleviates costs for community organisations, many of whom are struggling to pay their energy bills. Both gas and electricity prices are expected to increase annually to 2030 more than CPI, with gas pricing in winter months subjected to pressures from supply shortages.

Delivery of a solar and energy efficiency program may require additional staff resources for project management.

ACTION 3

The City will develop a multi-year capital program for both energy efficiency works and for sustainable technologies such as solar PV and batteries, including for community managed facilities.

Asset optimisation

Decisions about what assets will exist in the future is crucial to determining the schedule of works for electrification. Council is currently working on several strategic reviews which will have implications for the City's building assets. In addition, several masterplans have been prepared for Council facilities, many of which are not currently funded, such as the redevelopment of the City depot.

Therefore, asset optimisation (i.e., what buildings we will retain and use into the future) and significant project decisions (i.e., what and when we plan to build and commission new assets) need to be decided as soon as possible to enable the electrification transition.

For example, it will be critical to decide on the future of the aquatic facilities as these sites are significant energy consumers.

⁶ FG Advisory Group 2022. Electrification Foundation Paper, All-Electric Councils Information Group

POSITION STATEMENT

The City will follow an 'optimise, prioritise, invest' approach to the electric transition process for buildings.

ACTION 4

The City will finalise strategic planning for City and community facilities and will develop a related (draft) ten-year capital program.

Transition

Typically, project prioritisation to reduce emissions in buildings is based on the highest to lowest energy consumption. However, other factors must be considered such as the age and status of the current equipment, and the available budget.

ACTION 5

The City will complete a review of the condition of our plant and equipment at key sites to inform project prioritisation and future budget requests and allocations.

When investing in electrification, the financial benefits and emissions savings will be greatest for the large sites. The City will advocate for and actively seek funding support from the State and Federal governments.

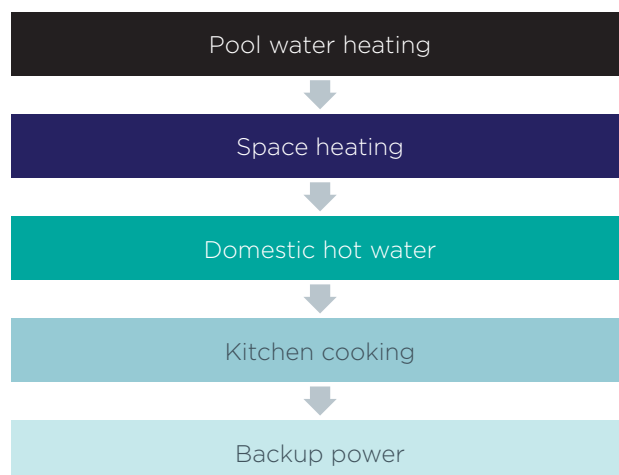


Figure 15: Typical council prioritisation for getting off gas⁶

Accordingly, project planning can be divided into large sites and small/medium sites.

Large gas consuming sites

The City's largest gas using sites are listed below. These sites are all very high energy consuming and so the City should commence planning to transition these to be all electric facilities as soon as possible.

The costs below for electrification are estimates. The operational cost of gas at Galkangu is yet to be determined.

It is important that upgrades to these large sites are undertaken simultaneously where there is an identified benefit from doing so. For example, the redevelopment of the Bendigo Art Gallery presents an opportunity to upgrade the adjacent Capital Theatre.

A cost saving will be realised by packaging works and by operating a single 'precinct' solution.

Delivery of the below gas transition works may require electrical upgrades in some cases, as well as additional staff resources for project management.

ACTION 6

The City will develop a capital program budget for the electrification upgrade of large gas consuming sites that include upgrades to electrical capacity where needed and will ensure that opportunities to package projects (i.e., co-deliver multiple upgrades concurrently) are realised to achieve cost efficiencies

Site	2020/21 Gas Volume Consumed (million MJ)	2020/21 Gas Cost (thousand \$)	Estimated Cost for Electrification (million \$)
Gurri Wanyarra Wellbeing Centre*	25.9	\$294	\$2.20
Faith Leech Aquatic Centre	8.6	\$157	\$1.30
Bendigo Art Gallery	6.6	\$121	\$1.70
Bendigo Library	4.1	\$77	\$0.89
The Capital Theatre	0.4	\$9	\$0.74
Eaglehawk Town Hall	0.4	\$9	\$0.12
Galkangu (Gov Hub)	TBD	TBD	TBD
Sub-total		\$667	\$6.95
Contingency 10%			\$0.695
Total	51.2		\$7.645
Assuming 30% of total is covered by already planned capital projects e.g., Bendigo Art Gallery redevelopment			\$5.3

(*GW's gas cost/MJ lower due to accessing large volume user tariffs)

Table 1: High gas consuming sites

“The technologies required for a zero-emissions building sector – deep energy efficiency and electrification powered by renewables – are available. The key challenge is widespread deployment.”⁷ - *ClimateWorks*

Small and medium gas consuming sites

City staff are already replacing gas appliances in a pragmatic and pro-active fashion, including by considering the facility type, equipment type, age of equipment and the usage pattern of the building's occupants.

Small and medium site prioritisation will be determined by the Property Services Unit in consultation with stakeholders.

Where electrification is not currently practical or justifiable from a cost or emissions reduction perspective (such as for sports grounds with high use but low frequency showers), the City will wait until suitable technological solutions are available.

The costs below for electrification are estimates.

Small Gas Appliances	Number	Approximate Cost for Electrification (million \$)
Heating	122	\$0.75
Hot Water	165	\$0.65
Cooking	N/A	\$0.40
Contingency 10%		\$0.18
Total	51.2	\$1.98
Assuming 50% of total is covered by the existing renewal program budget \$1		

Table 2: Small and medium gas consuming sites

ACTION 7

The City will develop a capital program budget for the electrification of small and medium gas consuming sites.

Step 2B: Electrify Fleet and Plant

Approximate Cost: To be determined

Cost Confidence: N/A

'Fleet' includes all vehicles including heavy truck assets such as garbage compactors and water carts; medium truck assets such as maintenance and patrol trucks; light truck assets such as light tipper; and passenger vehicles and commercial vehicles such as utes.

'Plant' includes all other mobile machines including heavy plant assets such as tractors, graders, loaders, backhoes, excavators, and rollers; light plant assets such as skid steers, rollers, sweepers, forklifts, smaller tractors, ride on mowers, and chippers; and minor equipment assets such as chainsaws.

The City currently has 472 fleet and plant assets, inclusive of minor equipment assets.

Class	Number
Heavy Plant	38
Heavy Truck	39
Light Plant	45
Light Truck	4
Medium Truck	35
Commercial Vehicle	75
Passenger Vehicle	50
Minor Equipment	186
Total	472

Table 3: Fleet and plant assets (December 2022)

In 2021-22 the City's fleet and plant used over one million litres of fuel. Approximately 95% was (bulk) diesel fuel used by depot-based operations. Total fuel consumption contributed over 3,500 tonnes of emissions to the City's emissions. Most fuel use and hence most emissions were by heavy fleet and plant.

Fuel	Diesel	Petrol
Total fuel consumed (L)	1,226,135	59,920
Total fuel cost (\$)	2,002,790	95,535
Total emissions (tCO ₂ e)	3,441	143

Table 4: 2021-22 fuel consumption and cost and emissions

⁷ <https://www.climateworkscentre.org/resource/government-climate-action-leading-policies-and-programs-in-australia-2022/>

Transition

By 2030, the City aims to be a leading jurisdiction in the adoption of zero emission fleet and plant technologies.

To achieve this aim, a 100% 'clean replacement rate' approach will be pursued

POSITION STATEMENT

From 1 July 2023 the City will require all new assets to be zero emissions in accordance with a 100% clean replacement rate approach, provided a fit-for-purpose option is available.

Technology

Battery electric vehicles will dominate the City's electric fleet and plant. Battery electric vehicles are around three times more energy efficient than hydrogen fuel cell electric vehicles and are available now for most use-cases other than the heavy plant segment. Zero emission heavy plant products are in development. Independent expert opinion⁸ confirms that hydrogen is not likely to be suited to widescale use as an energy source for fleet and plant.

Electric fleet and plant will provide benefits including:

- Reduced energy costs
- Lower asset maintenance costs and longer asset life expectancy

- Enhanced energy security
- No air pollution and reduced noise pollution
- Improved driving and operator experience

POSITION STATEMENT

The City will focus on battery electric vehicles as the core zero emission technology for fleet and plant, unless other technologies emerge which are more cost effective and fit-for-purpose.

Policy

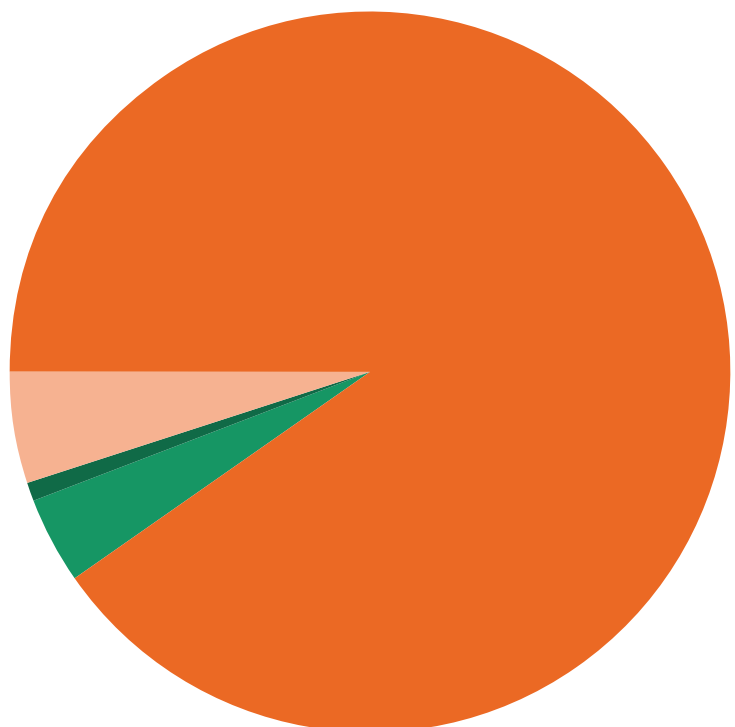
Importantly, as part of the transition, policy development needs to be undertaken. For example, policy changes need to be made to facilitate greater take up of electric private use vehicles and to ensure consideration of electric or zero carbon options as a part of procurement processes.

ACTION 8

The City will review its Fleet Policy and other relevant documents to enable the transition to electric vehicles.

⁸ <https://h2sciencecoalition.com/principles/>

Figure 16: FY2021-22 diesel and petrol expenditure proportions



Asset optimisation

Most analyses see electric vehicles as one-to-one substitutions for internal combustion engine vehicles. That is, in the future, the City will choose to own an electric vehicle instead of an internal combustion engine asset.

However, as a part of the transition, the optimisation of fleet and plant should be analysed sincerely to see how changes can be made to make productivity and efficiency improvements. For example, there may be an opportunity to replace an existing 4WD ute with an efficient electric van that can do more work.

This thinking reaffirms work undertaken by the City in 2019 to assess the changes needed to commence reducing fleet emissions. The key recommendation was to follow an approach of 'optimise, prioritise and invest'. This encourages data driven optimisation, followed by priority setting of replacements, and then investment.

POSITION STATEMENT

The City will follow an 'optimise, prioritise, invest' approach to the electric transition process for fleet and plant.

Charging infrastructure

A battery electric preference can best leverage our 100% renewable electricity supply contract and onsite solar PV. It will also simplify our charging infrastructure needs.

As the City principally runs a 'back-to-base' operation where most vehicles return to the depot or to Galkangu, these two garaging sites are critical to the transition process.

Accordingly, ensuring there is sufficient charging infrastructure at Galkangu and at the depot will be critical to the City's transition to electric vehicles. Delivery of this charging infrastructure will depend on discussions with the Victorian Government about upgrades to Galkangu and the timing and scope of any redevelopment of the depot.

While the City is investigating development of a multi-storey car park next to Galkangu, a business case is still being developed for the project. As a result, the delivery and timing of this car park is uncertain. Alternatively, additional charging infrastructure will be required for the City's passenger fleet at Galkangu in the next 2 to 3 years.

At the same time, electric vehicle charging installations can be added to other sites where they are congruent with longer-term service needs and infrastructure plans.

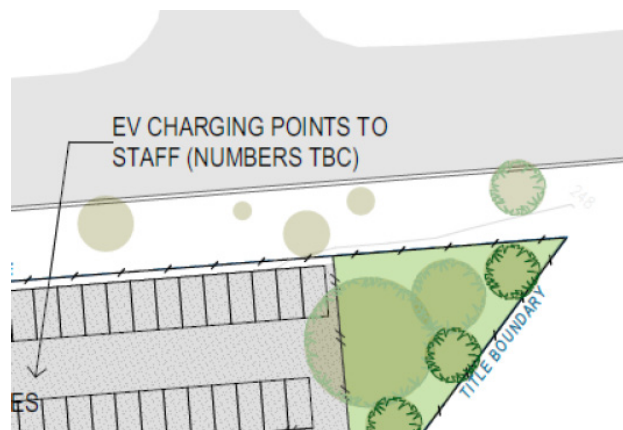


Figure 17: EV charging infrastructure will become standard in new City projects

The first task is to determine all future sites where electric vehicle charging will be required, and the current electricity supply at these sites. This will inform a determination about whether greater electrical supply capacity is required.

ACTION 8

The City will develop business cases for electric vehicle charging infrastructure at relevant Council facilities, prioritising Galkangu (in consultation with the Victorian Government) and the depot. This includes working with Powercor to determine the current electricity supply, spare capacity, constraints, and opportunities.

Vehicle availability

Electric fleet and plant options are set to become more available as production and competition ramps up, and as improved policy and financial support is provided by the Australian and Victorian governments attracts products from overseas manufacturers.

Electric options will be explored and considered as the first preference for all new assets. However, it is already clear that the City's initial focus will be to transition the fleet, minor equipment, and light plant. Electric heavy plant options are coming onto the market but are still in development for many applications.

Lightweight electric vehicles, including light trucks, are currently more available than medium trucks and heavy trucks, although the gap is closing. The City already has nine passenger electric vehicles in the fleet, and the existing target is to replace two vehicles per financial year, to reach a minimum target of 35% electric vehicles in the light vehicle fleet by 2026. This target will be reassessed and strengthened.

The target is to have a minimum of five light plant assets (e.g., ride on mowers) by 2026. This target will be reassessed and strengthened.

ACTION 10

The City will seek to optimise its fleet and plant and commence transitioning where suitable electric or zero emissions options are available. This includes seeking quotes for electric or zero emissions options as a part of future procurement processes.

Costs

At the current time it is estimated that the upfront capital cost is on average 50% higher for electric vehicles relative to conventional internal combustion vehicles. It is also estimated that the operating costs of electric vehicles are on average 50% lower. Given this situation it is important that decisions are based on comparisons of the total cost of ownership.

Total cost of ownership (whole-of-life comparison) includes both the capital and operating costs of assets over their lifetime, including their resale value.

POSITION STATEMENT

The City will move to using total cost of ownership to compare vehicle asset costs.

To realise the cost saving opportunities of electric vehicles, it is likely that the capital budget for purchasing vehicles will need to be increased with an associated reduction in the operating budget.

Operational savings will be achieved by removing the fossil fuel cost of circa \$2M per annum, with the electrical energy substitution costs likely to be approximately 50%-70% less costly i.e., a \$1M-1.4M saving per annum, or \$7M-10M over the first seven financial years. Operating savings have a medium confidence given the City has a long-term contract for electricity.

The approximate net financial impact of electrifying the City's fleet is difficult to determine at this time given that costs are likely to reduce over time and further work is required to determine cost savings from optimisation.

Importantly, opportunities may exist to reduce the amount of additional capital required, through State and Federal government grants and other measures such as joint procurement opportunities with other local governments.

Service planning and work practices

In the short term, some heavy vehicles and plant may not have the range or tonnage carting/towing capability compared to their diesel equivalent. As a result, the transition to electric or zero emissions vehicles may require changes to how the City plans its service delivery, particularly for operations such as garbage collections and road maintenance works. Responding to the specifications of new vehicles and plant may require expert advice and strategic planning.

ACTION 11

The City will engage industry experts to help plan and implement the transition to zero emission vehicles to help reduce the risks and optimise the financial outcomes.

Step 2C: Electrify Waste

Approximate Cost: Contractual operating cost per tonne to be confirmed. Cost Confidence: N/A

The City manages waste according to the waste hierarchy and is undertaking work to move towards a circular economy which reduces the consumption of finite resources.

For example, in accordance with the waste hierarchy, since 2016 the City has been collecting organic waste such as food and garden material for reuse. This material is currently sent for composting outside the municipality, however, by 2026 a new food and garden organics facility will commence operations in Greater Bendigo. The facility will be privately owned and operated but will be located on City land.

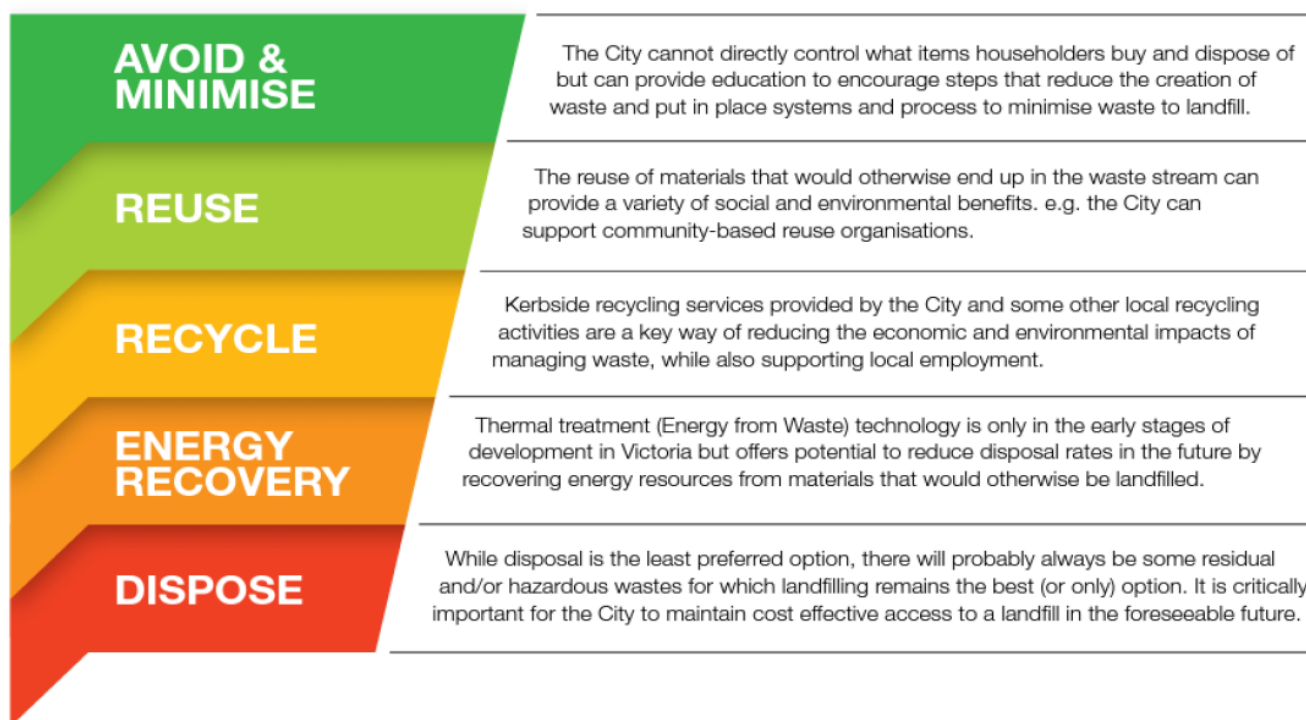


Figure 18: The waste hierarchy

Landfill gas to electricity

Importantly from an emissions perspective, the City owns and operates a waste landfill at Eaglehawk.

When organic matter is buried in a landfill it decomposes and releases 'landfill gas' for a long period.

This landfill gas is made up of 40% methane. For comparison, 'natural gas' is 70-90% methane.

In 2008, to address this issue, the Eaglehawk landfill gas electrification and energy facility was commissioned. The facility, operated by LMS Pty Ltd, captures the landfill gas from bore wells, and burns it to create electricity, with the by-product being carbon dioxide (which is a less potent greenhouse gas than methane).

The facility has an installed capacity of 500kW, which is akin to about 1500 solar panels. On average the facility exports 4,000MW hours of electricity each year. This is enough to power approximately 700 homes.

Without this project, all the methane from the decomposition of waste at the Eaglehawk landfill would be released into the atmosphere. Because it is effectively reducing emissions, this project

is registered under the Australian Government's Emissions Reduction Fund, and to date has been issued with approximately 180,000 Australian Carbon Credit Units (ACCU).

One ACCU is a carbon offset equivalent to one tonne of carbon dioxide, meaning that the facility has been able to demonstrate that it has avoided, through the burning of methane, 180,000 tonnes of carbon dioxide equivalent pollution.

Generating and selling these carbon credits creates income additional to the income from the electricity generated and sold.

In FY2021-22, the Eaglehawk landfill generated the total equivalent of 62,598 tonnes of emissions, as calculated using EPA site data (waste to landfill) reports.

This was reduced to 42,639 tonnes of emissions (a reduction of 19,959 tonnes of CO₂e or 31.9%) because of the LMS facility. Therefore, the City's landfill emission liability for FY2021-22 was 42,639 tonnes of carbon dioxide equivalent.

LMS, for the same year, was able to claim 14,032 carbon credits (equivalent to 14,032 tonnes of carbon removed) and generate electricity for the wholesale market.



Landfill closure and capping

The Eaglehawk landfill will be full and will cease accepting waste in 2023. The City will then begin, for a short period, to transport all residual waste to a landfill near Echuca. And the landfill will then be capped.

A landfill cap is a layer of material that is placed on top of a landfill to protect the environment from the waste stored in the landfill. Landfill caps are designed to isolate the waste from the surrounding soil and water and to prevent the release of the harmful gases and liquids from the landfill.

Landfill caps are an important part of the design of modern landfills and are used to help protect the environment and public health. Bores are typically drilled into the cap to allow for the extraction of landfill gas.

This change in operation to a closed landfill will have implications for the City's emissions. There is currently significant uncertainty about the waste emission liability for the City post Eaglehawk landfill closure, due to the change in the emissions calculations that will occur once the site is closed and capped.

Above: Image 3: Eaglehawk Landfill

ACTION 12

The City will work with expert consultants to better understand its current emissions liability from the Eaglehawk landfill, and to forecast this liability into the future taking account of planned operational changes including the closure and capping.

The Eaglehawk site will continue to create emissions for decades following its closure, and LMS has signalled that its electricity and carbon offset production facility will continue while it remains an economic proposition. The City will continue to liaise with LMS in respect to emission management.

Waste to energy

By 2027 the City hopes to have a waste to energy facility (gasification/pyrolysis) up and running in Bendigo. This facility is expected to process roughly 30,000 tonnes per year of predominately residential kerbside waste. The facility will be privately owned and operated but will be located on City-owned land.

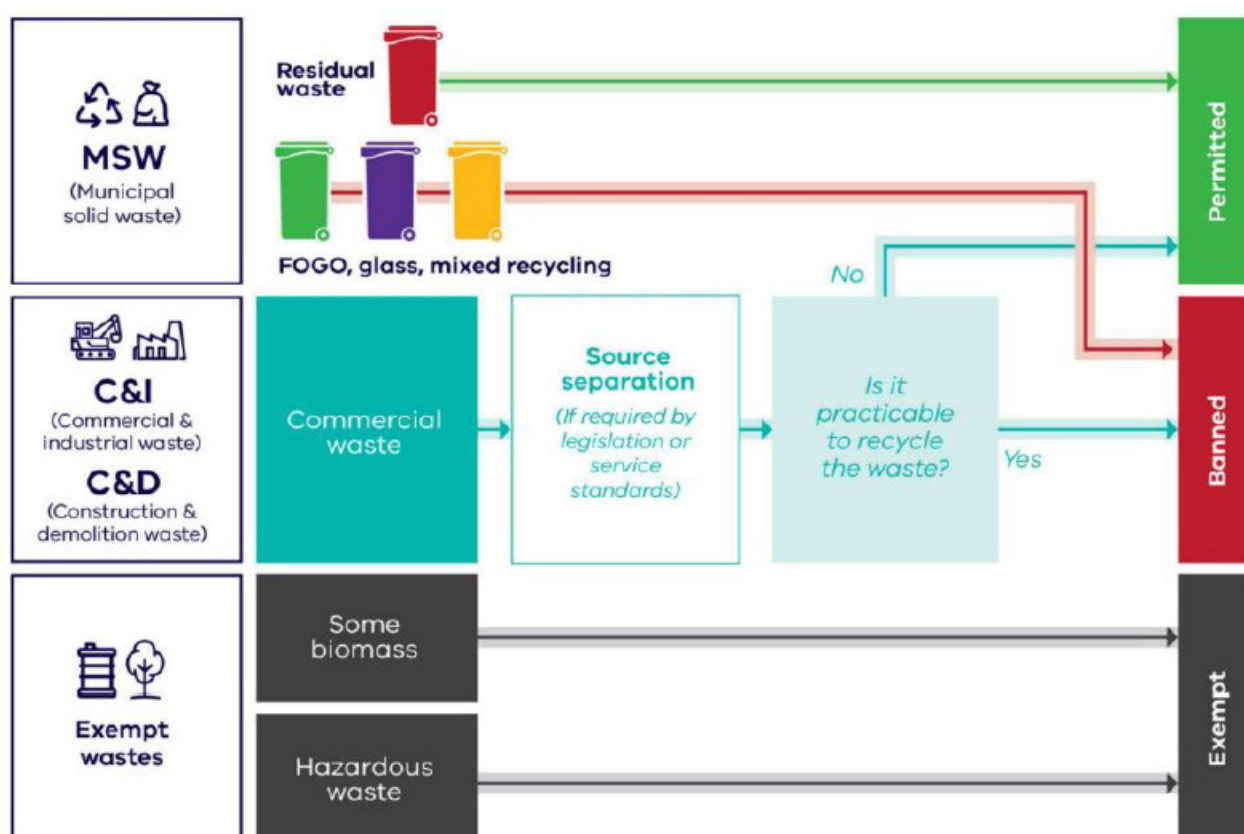


Figure 19: Victorian Waste to Energy Framework showing permitted materials

Waste pyrolysis is a process that involves the thermal decomposition of waste materials at high temperatures in the absence of oxygen. The goal of waste pyrolysis is to convert the waste materials into useful products, such as fuels, chemicals, and other materials. The materials produced depend on the chemical composition of the waste materials and the conditions used during the process. For example, the pyrolysis of tyres can produce oil, gas, and steel wire.

Gasification also applies heat to waste in the absence of oxygen, but the goal is to produce a clean burning fuel or a synthetic gas that can be used for a variety of purposes such as generating electricity, heat, or materials.

As per the waste hierarchy, 'energy recovery' is the final opportunity to get value from waste material that would otherwise go to landfill.

There are some waste to energy facilities already operating in Victoria. They are subject to conditions set through planning permits. Further, these facilities must comply with obligations set under the *Environment Protection Act 2017*.

The Victorian Government's circular economy plan, *Recycling Victoria*, includes a target to divert 80 per cent of waste from landfill by 2030, and an interim target of 72 per cent by 2025. These targets are supported by a range of new projects, regulations, and costs.

Step 2D: Reduce Scope 3 Emissions

The City will remain focused on reducing to net zero its scope 1 and 2 emissions, but going forward, beginning in the base year of FY2023-24, it will also begin to focus on scope 3 emissions.

Scope 3 emissions are all indirect emissions that occur because of the activities of the organisation but occur from sources outside the organisation's control boundary.

Climate Active requires a total emissions inventory that identifies and measures the City's scope 1, 2, and 3 emissions for all sources within its emissions boundary.

Scope 3 emissions are often difficult to quantify, but they can be substantial. For example, the concrete and asphalt and other materials used in City civil construction projects will have significant 'embodied emissions' - meaning all the greenhouse gas emissions that are released as part of making and transporting the product.

In total, scope 3 emissions span 15 different categories. Those that are 'upstream' include the emissions from production processes as well as emissions from travel and commuting, waste generated, and assets leased. Downstream activities include those emissions from activities like investing.

Any emissions under the following categories may be applicable as scope 3 emissions:

1. Purchased goods and services
2. Capital goods
3. Fuel and energy related activities not included in Scope 1 or Scope 2
4. Upstream transportation and distribution
5. Waste generated in operations
6. Business travel
7. Employee commuting
8. Upstream leased assets
9. Downstream transportation and distribution
10. Processing of sold products
11. Use of sold products
12. End-of-Life treatment of sold products
13. Downstream leased assets
14. Franchises (not applicable)
15. Investments

The best way for the City to reduce scope 3 emissions is to reduce the consumption of goods and services and reduce the waste output of the organisation. This exercise of itself can provide significant financial savings, and other benefits.

To this end, the City's Circular Economy and Zero Waste Policy seeks to change how we handle and value our material resources and keep them in use for as long as possible. The aim is to embed a shift from a 'take, make, waste' approach to a 'take, make, reuse' full life-cycle circular economy approach.

In 2022 the City's standard tender schedules were updated to include revised environmental performance criteria which will help the organisation make procurement decisions that minimise embodied energy and scope 3 emissions. Developing an approach to monitoring and reporting on the effectiveness of the updated schedules will be required in the future.

An important future consideration will be to require electrification of contractor operations.

ACTION 13

The City will quantify its annual material consumption and scope 3 emissions and identify and implement priority actions to reduce these emissions to net zero.

Step 2E: Align the organisation

Implementing actions to reach net zero emissions will require a large upfront investment. While some benefits of electrification and other climate response measures will be immediate, other benefits may take time to become apparent.

Accordingly, it is essential that the City's organisational culture is strategic and aligned in support of the challenge and opportunities of achieving net zero operational emissions.

There are several elements for successful alignment, including a long-term vision, political leadership, responsibility allocation, an oversight role, technical leadership, a whole of government approach, and a whole of society approach.

Long-term vision

The focus on electrification proves a crisp narrative for the core work to be done to achieve net zero emissions. It is easy to envisage the City doing what it does now, but just without fossil fuels. This long-

term vision of a City powered by renewable electricity, offering healthy workplaces, and having low operating costs, is within reach and is an exciting vision that needs to be communicated.

ACTION 14

The City will promote its vision of 'electrifying everything' to become an all-electric, zero carbon, healthy workplace that is leading by example to achieve net zero e.g., in prospectus documents and public communications.

Political leadership

Political leadership will be essential, especially when it comes to making the financial decisions necessary to achieve net zero. Leaders will need to articulate the benefits, as well as the risks addressed, and trade-offs considered, in moving to net zero emissions.

The Resolution of Council that recognised the climate change and the biodiversity breakdown, also recognised that the breakdown carries financial implications, and requires appropriate budget mechanisms and allocations to address the risks and issues.

The resolution included a requirement that expenditures are identified as they relate to climate change.

Green budget tagging is a tool that involves assessing each individual budget measure and giving it a 'tag' according to whether it is helpful or harmful to environmental objectives. Information gathered from tagging individual measures can be useful to understand how the overall budget impacts cross-cutting goals relating to climate change and the environment.⁹

ACTION 15

The City will identify expenditures as they relate to the environment. This 'green tagging' will become part of the annual budget process and will be reported in budget documents and in the Annual Environment Report.

Responsibility allocation

To enable the transformation, City managers will need to ensure that their unit has the appropriate capabilities and capacity to deliver projects and programs. This may, for example, include a

requirement for additional budget and staff, and professional development for staff in areas such as the maintenance of electric technologies.

Oversight role

The Climate Active certification process requires independent verification of the most important elements of the City's journey to net zero. The certification itself provides assurance of the claim of being a carbon neutral organisation.

Technical leadership

Business units will continue to lead their area of expertise. However, given the technical complexity of some aspects of the transition, it is expected that external consultant expertise will be required. The Climate Change and Environment unit will also be able to assist.

Whole of government approach

The transformation will require work across the organisation, and this work will require coordination.

ACTION 16

The City will develop governance arrangements, composed of new and existing small working groups, to coordinate the transformation to net zero emissions.

ACTION 17

The City will utilise its internal change management expertise to assist with the transformation, and to relate the transformation to the City's staff values and behaviours i.e., through the Be the Change flagship project.

Whole of society approach

The City is taking a leadership role to achieve net zero emissions by 2030. Importantly, the City also has a goal of the wider Greater Bendigo community achieving net zero emissions by 2030. Given this, it will be important for the City to communicate and report on its journey.

⁹ <https://www.oecd-ilibrary.org/sites/fe7bfcc4-en/index.html?itemId=/content/publication/fe7bfcc4-en>

PART 3: OFFSET

Approximate Opex Cost: To be confirmed
Cost Confidence: N/A

A carbon offset is a way to reduce greenhouse gas emissions by supporting projects that remove or reduce emissions from the atmosphere, such as planting trees or generating renewable energy.

It is meant to be a last resort, used to compensate for emissions that are difficult to reduce directly, like those from air travel.

Offset units are issued for each tonne of emissions avoided or removed and can be used by organisations to become carbon neutral, meaning they have offset all their own emissions.

Offset trading

Offsets can be bought and sold on the global market. In Australia, the government has a program called the Emissions Reduction Fund that offers landholders, businesses, and other organisations the chance to earn offset units by running projects in Australia that reduce emissions.

Examples of the types of projects that can generate Australian Carbon Credit Units that can then be sold include:

- Methane destruction (landfill gas capture and burning, currently occurring at Eaglehawk landfill)
- Forestry and soil carbon sequestration (planting trees, increasing soil carbon)
- Renewable Energy Certificates (from the generation of new renewable energy)
- Energy efficiency measures (avoided emissions)

Offset units are verified by independent auditors to ensure they represent real emissions reductions.

The Climate Active Standard allows organisations to use offset units to support their emissions reduction efforts.

Once the City buys and retires offsets to effectively cancel out any residual emissions, it can apply to be certified as 'carbon neutral'.

An independent review of the integrity of Australian Carbon Credit Units was recently completed which recommended revised governance arrangements for the Emission Reduction Fund.

Added benefits

The purchase of offset units supports projects that reduce or remove emissions from the atmosphere, such as through reforestation, renewable energy, or energy efficiency.

Many of these projects also deliver other environmental, social, and economic benefits, for example, improved water quality, increased biodiversity, and increased employment. Organisations often seek to buy offsets from projects that provide these benefits to align with their organisational values.

Only offset units that have met the integrity principles below are eligible for use in a carbon neutral claim against the Climate Active Standard.

PRINCIPLES:

- **Additional**
It must result in emissions reductions that are unlikely to occur in the ordinary course of events, including due to any existing commitment or target publicly agreed by the entity responsible for issuing the units. It must represent abatement that has not been double counted.
- **Permanent**
It must represent permanent reductions in greenhouse gas emissions. In the case of sinks, this requires that the carbon stored is sequestered and will not be released into the atmosphere for a period of 100 years. Where a period of less than 100 years is applied to sequestration units, an appropriate discount must be applied.
- **Measurable**
Methods used to quantify the amount of emissions reductions generated must be supported by clear and convincing evidence.
- **Transparent**
Consumers and other interested stakeholders must have access to information about the offset project that generated the abatement, including the applied methodology and project-monitoring arrangements.
- **Address leakage**
The system responsible for generating the offset unit must provide deductions for any material increases in emissions elsewhere which nullify or reduce the abatement that would otherwise be represented by the offset unit.



- **Independently audited**

The circumstances responsible for the generation of the unit must be verified by an independent, appropriately qualified third party and not found to be in contradiction with these integrity principles.

- **Registered**

The offset unit must be listed and tracked in a publicly transparent registry.

3A: Purchase local offsets

From 2030 the City could simply buy offsets from the global market as required. However, the City is currently working with regional partners to investigate the feasibility of a local vegetation based local program that generates carbon offset credits and has additional local environmental benefits.

Purchasing carbon offsets from a local revegetation offset program would enable the City to progress toward zero emissions for City operations while supporting the achievement of important local biodiversity outcomes.

ACTION 18

The City will participate in a pilot project in collaboration with the North Central Catchment Management Authority and other councils to test the feasibility of a local carbon offset program that achieves biodiversity co-benefits.

ACTION 19

The City will develop an offset policy to guide decisions about purchasing offsets.

3B: Prove offsets

ACTION 20

The City will purchase carbon offsets as required, from FY2029-30 to achieve its net zero goal and will provide the necessary evidence that these offsets have been retired to achieve Climate Active carbon neutral certification.

PART 4: VALIDATE

Part 4A: Consultant report

A carbon neutral claim against the Climate Active Standard must be subject to independent validation (i.e., audit or verification) by an environmental auditor or carbon consultant at least once every three years.

The independent validation report findings and/or assurance statement must be made publicly available.

The first review (of the base year) must include an assessment of the adequacy and appropriateness of the emissions boundary setting, emissions methodologies, and emission factors.

In addition to complying with the Climate Active reporting requirements, the City will also report annually on progress to implement this Plan through its Annual Environment Report.

The City will budget for third-party validation of its emissions accounting for its baseline year FY2023-24 and for certification and every third year after certification.



PART 5: REPORT

Part 5A: Publish Annual Report

The City will report against this Plan in its Annual Environment Report.

The Annual Environment Report will be made publicly available to communicate progress on emissions reduction activities and offsetting, including as part of a future carbon neutral claim.

The Report will include the following:

- The total gross and net greenhouse gas emissions of the organisation for the base year and current reporting period (considering any renewable energy and certified carbon neutral activities) and an explanation of any significant changes that are not attributed to emissions reduction actions.
- An emissions summary table showing high level emissions sources and total emissions for each source type.
- Disclosure of any non-quantified emissions within the emissions boundary and any plans to improve the consistency and completeness of the carbon account in the future.

- Disclosure of any excluded emission sources from the emissions boundary that stakeholders would expect to be included and the justification for the exclusion.
- A summary of the emissions reduction strategy and of the activities undertaken in accordance with the strategy.
- Records to prove that sufficient eligible offset units have been cancelled to offset the organisation's emissions (including the name of the registry in which the units were cancelled, vintage year, the project type, and serial numbers of the relevant units).

ACTION 21

The City will review and update the monitoring, reporting, and learning framework for its Zero Carbon journey as part of a larger review of the monitoring, reporting, and learning framework for the *Climate Change and Environment Strategy*.

An illustration on the left side of the page shows a person with dark hair and a beard, wearing an orange long-sleeved shirt and dark trousers, riding a bicycle. A black dog is sitting in the front basket of the bicycle. The background features stylized green trees and a bright orange sky with a diagonal line pattern. Two birds are flying in the sky. The overall style is modern and graphic.

APPENDIX 1: KEY ACHIEVEMENTS

The City has undertaken a range of environmental sustainability initiatives over many years. Key recent achievements to reduce corporate emissions include the following.

- The purchase of 100% renewable electricity to 2030 under the VECO renewable energy contract • Removal of gas appliances in more than 10 facilities
- Installation of rooftop solar PV on 36 buildings • Establishment of a Power Purchase Agreement for the installation of rooftop solar on City facilities which are high energy users
- Replacement of over 7,000 streetlights with LED lights
- Energy efficiency upgrades at buildings including at the Gurri Wanyarra Wellbeing Centre • Purchase of 9 electric vehicles • Progression on an investigation into establishment of a local revegetation-based carbon offsetting program
- Introduction of a fortnightly organic waste collection which has diverted organic waste from landfill
- Inclusion of emission considerations in the City's standard tender specifications
- Development of the Be the Change Action Plan which, amongst other things, establishes a program of initiatives to reduce emissions from the City's workplaces and work practices

APPENDIX 2: ACTION PLAN

Note 1: The indicative expenditure and timing outlined below will be subject to the City's annual budget process. The City will advocate for and actively seek funding support from the State and Federal governments.

Note 2: Operational savings are expected as a result of the increased efficiency and reduced maintenance costs associated with electric fleet and appliances compared to their fossil fuel alternatives. The specific savings will be monitored as the City implements its electrification program.

Theme	Action	Cost (additional resources needed)	Commence
Calculate emissions	1. The City will implement an emission tracking program, using the Trellis web-based emission tracking software to collect, interpret and act on data within its emission boundary.	Existing resources	Underway
Electrify buildings	2. The City will develop a multi-year capital program for both energy efficiency works and for sustainable technologies such as solar PV and batteries, including for community managed facilities.	\$200k per year + potential staff resources	2024/25
	3. The City will finalise the 2023 update of the Sustainable Buildings Policy and promote it across the organisation.	Existing resources	Underway
	4. The City will finalise strategic planning for City and community facilities and will develop a related (draft) ten-year capital program	Existing resources	Underway
	5. The City will complete a review of the condition of our plant and equipment at key sites to inform project prioritisation and future budget requests and allocations.	\$100K	2024/25
	6. The City will develop a capital program budget for the electrification upgrade of large gas consuming sites, that includes upgrades to electrical capacity where needed and will ensure that opportunities to package projects (i.e., co-deliver multiple upgrades concurrently) are realised to achieve cost efficiencies.	\$5.3M over 3 to 5 years + potential staff resources	2024/25*
	7. The City will develop a capital program budget, for the electrification of small and medium gas consuming sites.	\$1M over 3 to 5 years + potential staff resources	2024/25*
Electrify fleet and plant	8. The City will review its Fleet Policy and other relevant documents to enable the transition to electric vehicles.	Existing resources	2023/24
	9. The City will develop business cases for electric vehicle charging infrastructure at relevant Council facilities, prioritising Galkangu (in consultation with the Victorian Government) and the depot. This includes working with Powercor to determine the current electricity supply, spare capacity, constraints, and opportunities.	\$50k	2023/24
	10. The City will seek to optimise its fleet and plant and commence transitioning where suitable electric or zero emissions options are available, This includes seeking quotes for electric or zero emissions options as a part of future procurement processes	TBC	2023/24

Theme	Action	Cost (additional resources needed)	Commence
Electrify fleet and plant	11. The City will engage industry experts to help plan and implement the transition to zero emission vehicles to help reduce the risks and optimise the financial outcomes.	\$100K	2023/24
Electrify waste	12. The City will work with expert consultants to better understand its current emissions liability from the Eaglehawk landfill, and to forecast this liability into the future taking account of planned operational changes including the closure and capping.	Existing resources	Underway
Reduce scope 3 emissions	13. The City will quantify its annual material consumption and scope 3 emissions and identify and implement priority actions to reduce these emissions to net zero.	Existing resources	Underway
Align the organisation	14. The City will promote its vision of 'electrifying everything' to become an all-electric, zero carbon, healthy workplace that is leading by example to achieve net zero e.g., in prospectus documents and public communications.	Existing resources	As opportunity arises
	15. The City will identify expenditures as they relate to the environment. This 'green tagging' will become part of the annual budget process and will be reported in budget documents and in the Annual Environment Report.	Existing resources	2023/24
	16. The City will develop governance arrangements, composed of new and existing small working groups, to coordinate the transformation to net zero emissions.	Existing resources	2022/23
	17. The City will utilise its internal change management expertise to assist with the transformation, and to relate the transformation to the City's staff values and behaviours i.e., through the Be the Change flagship project.	Existing resources	Underway
Offset	18. The City will participate in a pilot project in collaboration with the North Central Catchment Management Authority and other councils to test the feasibility of a local carbon offset program that achieves biodiversity co-benefits.	\$100K for first year	2023/24**
	19. The City will develop an offset policy to guide decisions about purchasing offsets.	Existing resources	2023/24
	20. The City will purchase carbon offsets as required, from FY2029/30 to achieve its net zero goal and will provide the necessary evidence that these offsets have been retired to achieve Climate Active carbon neutral certification.	TBC***	2029/30
Report	21. The City will review and update the monitoring, reporting, and learning framework for its Zero Carbon journey as part of a larger review of the monitoring, reporting, and learning framework for the Climate Change and Environment Strategy.	Existing resources	Underway

*One year of funding to commence the City's gas transition works is proposed for consideration in the 2023/24 budget. A multi-year program will be prepared for consideration in the 2024/25 budget. **Subject to approval in the 2023/24 Council budget ***Cost to depend on the outcomes of the local carbon offset pilot program and the review of the City's landfill emissions



APPENDIX 3: POSITION STATEMENTS

Position Statement 1

The City will adopt the 'operational control' approach to determine what emissions are under the direct control of the organisation and will report on 100 per cent of the operations over which it has 'the full authority to introduce and implement its operating policies'.

Position Statement 2

The City will adopt financial year 2023-24 as its base year for Climate Active alignment.

Position Statement 3

The City will adopt and align its emissions boundary with the requirements of the Climate Active Standard and will have its emissions boundary and base year emissions verified by a Climate Active qualified third-party.

Position Statement 4

The City will follow an 'optimise, prioritise, invest' approach to the electric transition process for buildings.

Position Statement 5

From 1 July 2023 the City will require all new assets to be zero emissions in accordance with a 100% clean replacement rate approach, provided a fit-for-purpose option is available.

Position Statement 6

The City will follow an 'optimise, prioritise, invest' approach to the electric transition process for fleet and plant.

Position Statement 7

The City will focus on battery electric vehicles as the core zero emission technology for fleet and plant, unless other technologies emerge which are more cost effective and fit-for-purpose.

Position Statement 8

The City will move to using total cost of ownership to compare vehicle asset costs.

APPENDIX 4: PLAN ON A PAGE

The Action Plan includes position statements, and actions than relate to policy work, programs, and projects. The representation below include this view of the position statements and actions in the Plan.

POSITIONS	POLICIES	PROGRAMS	PROJECTS
Adopt operational control method for emission reporting	Finalise sustainable buildings policy	Develop capital program for energy efficiency and sustainable tech	Review condition of building assets
Adopt base year 2023-24 for emission reporting	Review fleet policy	Finalise strategic planning for facilities and develop 10-year capital program	Prioritise evs for services delivered from the depot and galkangu
Adopt and align with climate active standard	Develop a carbon offset policy	Develop capital program for upgrade of large gas using sites	Assess electrical supply capacity at key sites with powercor
Adopt an optimise, prioritise, invest approach to building electrification		Develop capital program for upgrade of small and medium gas using sites	Engage industry experts to assist with the fleet and plant transition
Adopt a '100% clean replacement rate' for fleet and plant		Implement emission tracking program using trellis software	Analyse landfill emission liability
Adopt an optimise, prioritise, invest approach to fleet and plant		Green tag the annual City budget	Analyse and respond to scope 3 emission liability
Adopt battery electric as the main electric vehicle tech		Implement 'be the change' program	Promote electrify everything vision
Adopt total cost of ownership for vehicle procurement		Participate in trial local carbon offset program	Develop and implement governance arrangements for zero carbon
		Purchase and retire carbon offsets	Review monitoring, evaluation and learning program