

Counting down to ZERO

Our plan to reach ZERO net emissions by 2030

Stage 1 – December 2022



Acknowledgement of Country

Macedon Ranges Shire Council acknowledges the Dja Dja Wurrung, Taungurung and Wurundjeri Woi Wurrung Peoples as the Traditional Owners and Custodians of this land and waterways. Council recognises their living cultures and ongoing connection to Country and pays respect to their Elders past, present and emerging.

Council also acknowledges local Aboriginal and/or Torres Strait Islander residents of Macedon Ranges for their ongoing contribution to the diverse culture of our community.

Contents

Acknowledgement of Country	1
Executive Summary	3
Context	5
The need for climate action	5
A declaration of climate emergency	6
Legislative and policy context	6
Background	8
Our journey so far	8
25% reduction target	8
Our emissions at 30 June 2021	9
Our emissions at 1 July 2021	9
Where we are now (30 June 2022)	10
The next step	11
A new baseline	11
A bigger and better inventory	11
A new baseline emissions profile for Council	13
Getting to ZNE	14
Reducing emissions	14
Avoiding emissions	20
Offsetting emissions	21
Influencing emissions	24
Keeping the plan alive: Implementation, Monitoring and Reporting	26
Action plan for Council to get to ZNE	27
Appendix	32

Executive Summary

Council committed to reaching a Zero Net Emissions status for its operations by 2030 when it adopted the refreshed Environment Strategy in October 2021. Council had already exceeded its original emissions reduction goal at 30 June 2021, having reduced emissions from its operations by almost 30%, from the baseline year of 2014-15.

The term 'zero net emissions' refers to achieving an overall balance between greenhouse gas emissions released into, and greenhouse gas emissions removed from, the atmosphere.

To track progress towards zero, there needs to be a starting point, which has been set as 30 June 2022. To increase accountability for Council's operations, the baseline greenhouse gas inventory will be expanded from the original inventory based on direct emissions, to include emissions from indirect sources, like emissions associated with contracted services for the collection and transport of different waste streams, and emissions associated with the operation of council-owned buildings tenanted to community groups.

Council's new emissions reduction target can therefore be framed as:

Zero Net Emissions for Council operations by 30 June 2030, from the baseline of 3,260.6* tonnes CO₂-e at 30 June 2022.

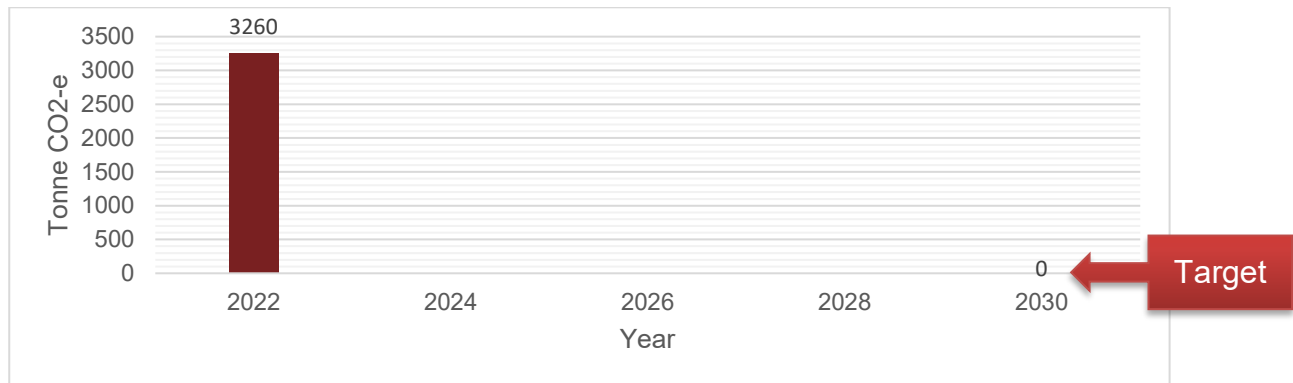
***or as retrospectively amended to account for additional indirect sources of greenhouse gas emissions**

This Zero Net Emissions Plan, **Counting Down to Zero**, will guide Council to reach this target, through initially focusing on the following key actions:

- "Getting off gas" at Council-owned buildings, particularly the aquatic centres
- Transitioning Council's passenger fleet to zero emission vehicles
- Working with community groups to reduce emissions from tenanted facilities
- Increasing generation and supply of power through installing solar panels and battery power storage at Council-owned buildings, and potentially through larger renewable energy generation projects.
- Exploring options for creating offsets that provide co-benefits for local communities, economies and biodiversity.

Importantly, **Counting Down to Zero** is designed to be an evolving document. Council will monitor and report on implementation progress on an annual basis through the Annual Environment Report and Council's Annual Report, and communicate progress towards meeting its target for Zero Net Emissions, for example, in graphics like Figure 1. Additionally, this plan will be reviewed every two years until 2030, to enable Council to respond to rapidly evolving technologies and climate programs.

Figure 1: Tracking Council's greenhouse gas emissions to 2030.



Context

The need for climate action

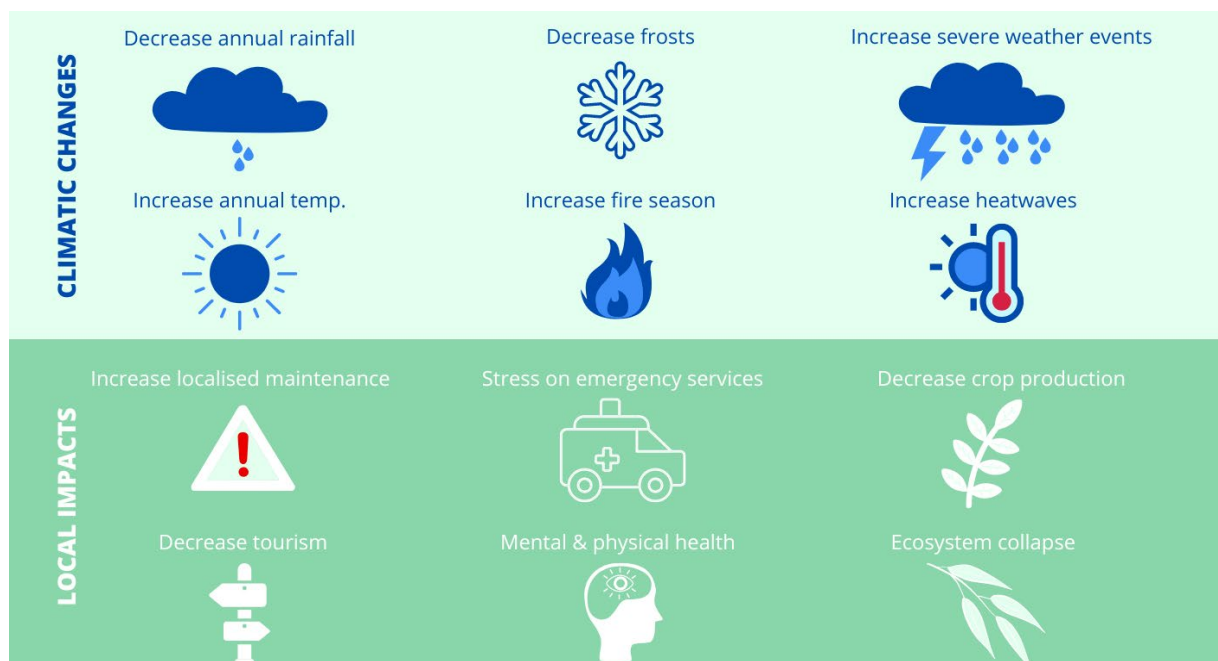
The forecast

Climate change impacts on everyone. The consequences of increasing temperatures, changed rainfall patterns and increases in the frequency and intensity of extreme weather events are being experienced more often, by more people, in more locations.

In the Macedon Ranges, forecast climate scenarios indicate hotter and drier conditions with greater variability in rainfall and increased fire danger ([Click here for DELWP climate predictions](#)).

Inevitably, this will mean our lives and livelihoods will be increasingly impacted upon, in terms of health and wellbeing, food production and distribution, water supply, buildings and infrastructure, biodiversity and landscapes, and many other aspects of everyday life. Figure 2 below illustrates these impacts.

Figure 2: Impacts of climate change on our lives and livelihoods



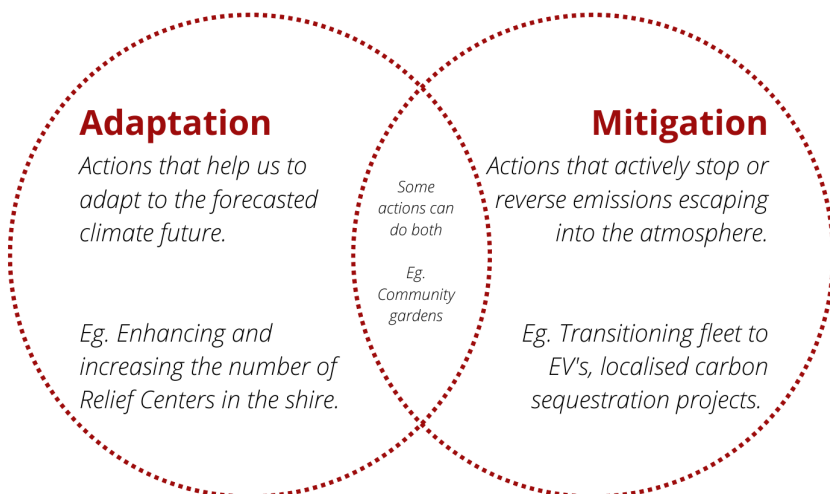
As the level of government working closest to the community, Council has a responsibility to do all it can to lessen the severity of impacts associated with climate change by reducing the amount of greenhouse gas emissions released into the atmosphere, and by preparing the community for forecast future climates. This plan is a guide for Council to reduce and eventually eliminate greenhouse gas emissions from its operations.

A declaration of climate emergency

Council officially recognised the urgency to address climate change by stating a Declaration of Climate Emergency at its meeting on 24 March 2021, thereby signalling its commitment to address climate change as a priority matter. Council recognises that action to reduce emissions can be, and should be, taken at every level of society. Council is committed to leading by example when supporting the community to prepare for forecast climatic changes.

Enacting the declaration involves both mitigation and adaptation action to address climate change (see Figure 3). The focus of this plan is on mitigation of emissions in relation to Council's operations.

Figure 3: Climate adaptation and mitigation



Legislative and policy context

A Declaration of Climate Emergency indicates a commitment to both lead in and advocate for climate action, and places climate considerations at the core of all decision making by Council how it delivers services and how it works with the community. In essence, the declaration is a trigger for switching how decisions are made within Council, for the shire and the community.

A key statutory driver for making this switch is in the Local Government Act 2020, in Part 2 Section 1, which requires councils to give effect to the stated overarching governance principles, one of which is "the economic, social and environmental sustainability of the municipal district, including mitigation and planning for climate change risks".

Counting Down to Zero will guide how the governance principle stated above can be incorporated into Council's work for climate mitigation, namely, to reduce emissions released into the atmosphere. It also supports the intent of the Climate Change Act 2017 with its legislated target for zero net emissions for Victoria by 2050.

Counting Down to Zero has a clear line of sight to Council's key policy document, the Council Plan (see Figure 4).

Figure 4: Council's policy context for Counting Down to Zero

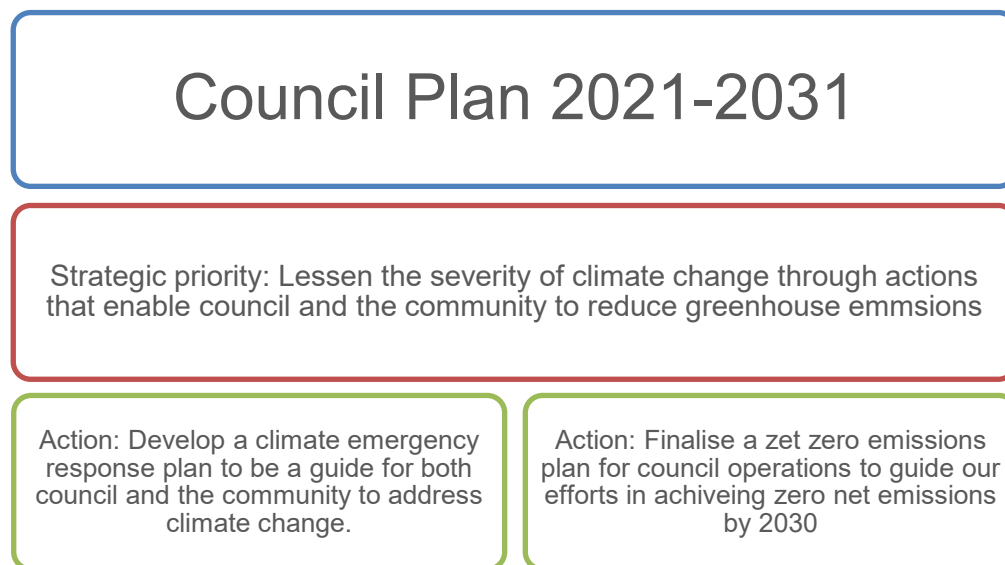
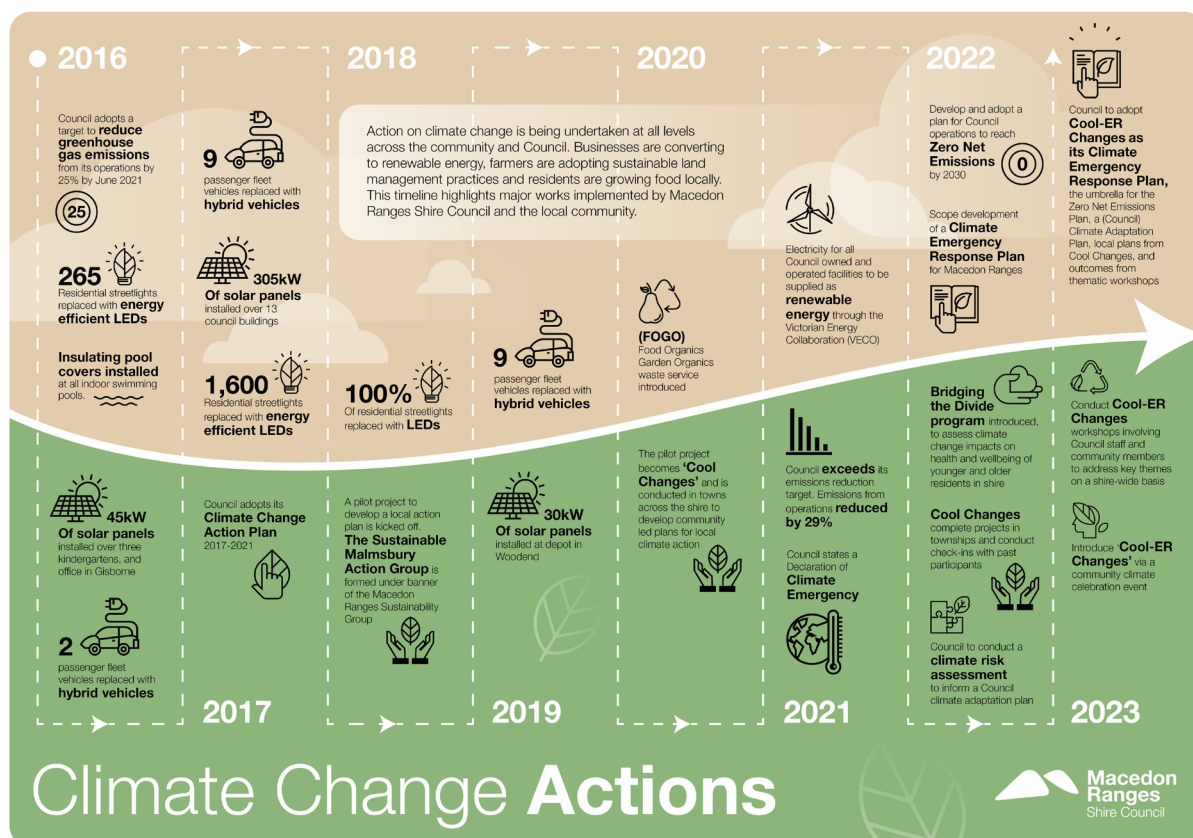


Figure 5 in the following section indicates how this plan will be a key component of the broader Climate Emergency Response Plan, to be developed in early 2023.

Background

Our journey so far

Figure 5: Summary of Climate Action in Macedon Ranges Shire (see appendix for full view)



25% reduction target

Council's adoption of the Environment Strategy in June 2016 included adoption of a target to reduce greenhouse gas emissions from its operations by 25% by 2020-21, from the baseline year of 2014-15. The Climate Change Action Plan, adopted by Council in June 2017, outlined the works required to reach this target. The target equated to 1,910 tonnes CO₂-e, from a baseline figure of 7,640 tonnes CO₂-e.

The target was established based on a limited inventory of sources of greenhouse gas emissions, namely, it only included emissions associated with consumption of fossil fuels that Council directly paid for (electricity and gas at Council-operated buildings, electricity by streetlights, and fuel consumption by the passenger vehicle fleet and heavy vehicle plant). The inventory also included an estimated amount for emissions from waste generated at Council worksites, based on available information about similar sized councils with measured data.

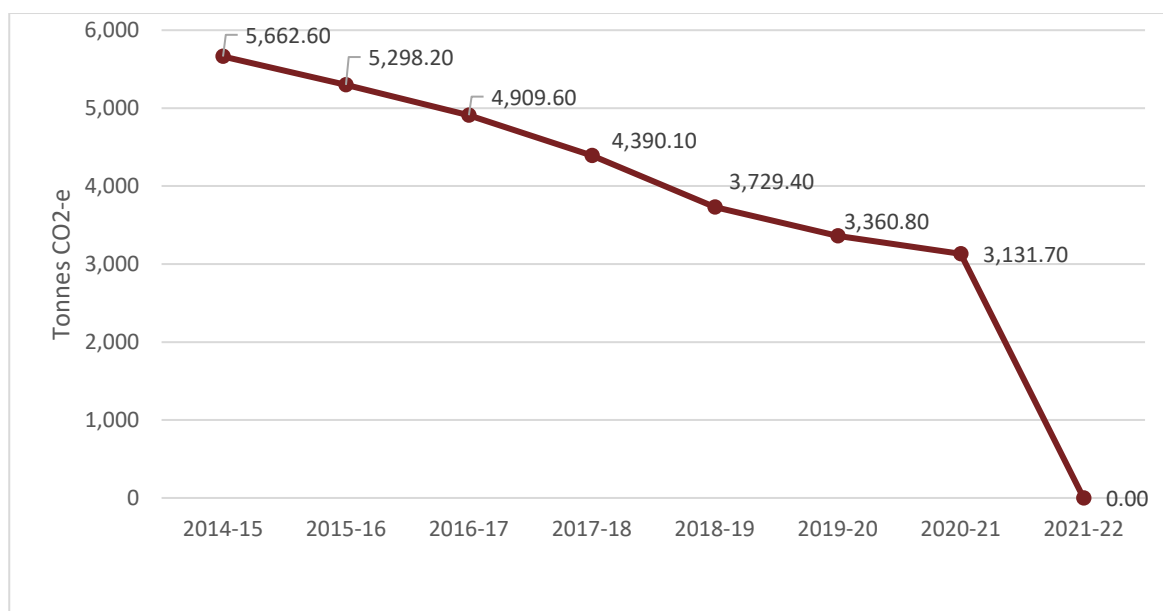
Our emissions at 30 June 2021

At 30 June 2021, emissions from Council's operations equated to 5,034 tonnes CO₂-e, a 34.1% reduction from the baseline year, based on its limited inventory of emission sources. As some of this reduction could be attributed to reduced use of work sites and community facilities due to pandemic-induced restrictions, a "business-as-usual" figure was calculated, resulting in emissions reduction of just below 30% (at 5,370 tonnes CO₂-e). With Council having exceeded its adopted emissions reduction target, the Climate Change Action Plan effectively "expired".

Our emissions at 1 July 2021

A new electricity supply contract commenced on 1 July 2021, ensuring that Council's electricity requirements would be met through the purchase of 100% renewable energy. The contract was secured through the Victorian Energy Collaboration (VECO), a Power Purchase Agreement involving 46 councils across Victoria procuring electricity from renewable energy generators until 30 December 2030. VECO effectively allows emissions associated with electricity consumption to be "cancelled out", a final step in Council's journey to reduce emissions from electricity consumption to zero, as shown in Figure 6.

Figure 6: Emissions from Council's use of electricity by year

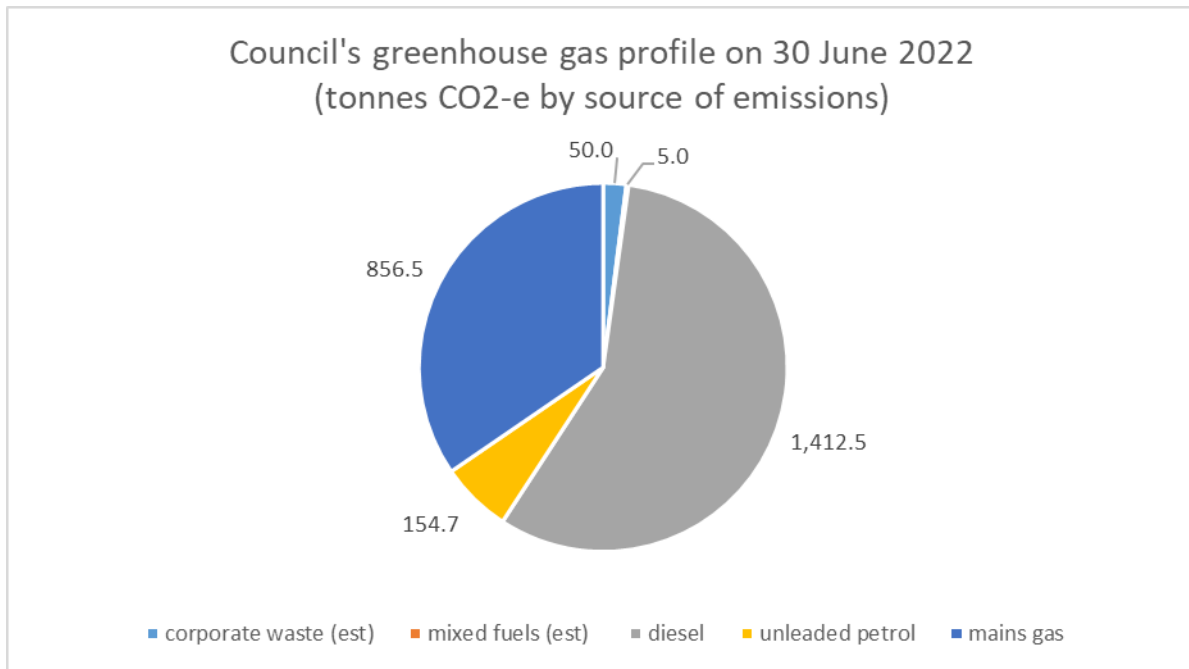


Emissions from Council's operations at 1 July 2021, based on its limited emissions inventory, would therefore have equated to approximately 1,902 tonnes CO₂-e, with the main sources of emissions being diesel and (mains) gas.

Where we are now (30 June 2022)

Council's emissions profile on 30 June 2022 is represented in Figure 7, showing total emissions associated with consumption of mains gas, unleaded petrol, diesel, and an estimated amount of emissions associated with consumption of mixed fuels and generation of waste at work sites. The total of 2,478.7 tonnes CO₂-e represents a starting point from which Zero Net Emissions is to be achieved, assuming a limited greenhouse gas inventory.

Figure 7: Council's greenhouse gas profile at 30 June 2022.



The next step

A new baseline

A “Zero Net Emissions by 2030” target implies that “zero” is relative to a baseline. Given the expiry of Council’s Climate Change Action Plan on 30 June 2021, and the commencement of the VECO contract to supply electricity as 100% renewable energy on 1 July 2021, it is logical to set 2021-2022 as the baseline year from which to measure emissions associated with Council operations.

As noted above, the original inventory of greenhouse gas emissions informing Council’s work to date was limited to operations directly controlled by Council.

To increase accountability for emissions associated with its operations, and enable Council to have a wider influence on emissions generated from its facilities and services, it is proposed to expand Council’s greenhouse gas inventory to include additional or indirect sources of emissions.

Expanding Council’s inventory to include additional sources of greenhouse gas emissions will occur over time as processes are established to obtain data. This means that the total amount of emissions for the baseline year will need to be revised as data on indirect sources of emissions becomes available, and estimates for 2021-22 are accounted for in a revised baseline figure.

A bigger and better inventory

Expanding Council’s greenhouse gas inventory is also better corporate practice, for several reasons:

- To increase accountability and transparency associated with Council operations
- To increase potential for Council to influence or drive action amongst community groups and service providers to reduce emissions
- To position Council to receive accreditation for carbon neutrality under the national Climate Active program, should it wish to do so in the future.

In order to be compliant with Climate Active, and be eligible to obtain accreditation for a carbon neutral status in future years, there are sources of emissions that Council needs to address in defining its greenhouse gas inventory. Sources of emissions need to be considered in terms of materiality, complexity of sourcing data, and potential for Council to reduce emissions from that

source. Preliminary investigations undertaken regarding the potential to include additional indirect sources of emissions in Council's greenhouse gas profile is summarised in Table 1.

Table 1: Key sources of emissions considered for inclusion in Council's greenhouse gas inventory are listed below, with a recommendation regarding their inclusion.

Source of emission	Recommendation for inclusion in Council's greenhouse gas inventory.
Emissions associated with fuel used for contracted services	✓ Include in Council's greenhouse gas inventory and baseline emissions profile
Emissions associated with electricity and mains gas consumption at council owned sites operated by community groups	✓ Introduce into greenhouse gas inventory and add to the baseline emissions profile over time
Emissions associated with consumption of bottled gas (bulk LPG)	✓ Include in Council's greenhouse gas inventory and baseline emissions profile
Legacy emissions associated with closed landfill sites	✗ Exclude from greenhouse gas inventory and baseline emissions profile
Emissions from goods and services required to support operations (refrigerants, concrete and asphalt, paper, etc)	✓ Introduce into greenhouse gas inventory and add to the baseline emissions profile over time
Emissions associated with water consumption and waste water treatment	✓ Introduce into greenhouse gas inventory and add to the baseline emissions profile over time
Emissions associated with travel for work, outside of fleet vehicle (air travel, taxi services)	✗ Exclude from greenhouse gas inventory and baseline emissions profile

The following action is proposed to improve Council's accountability for emissions associated with its operations:

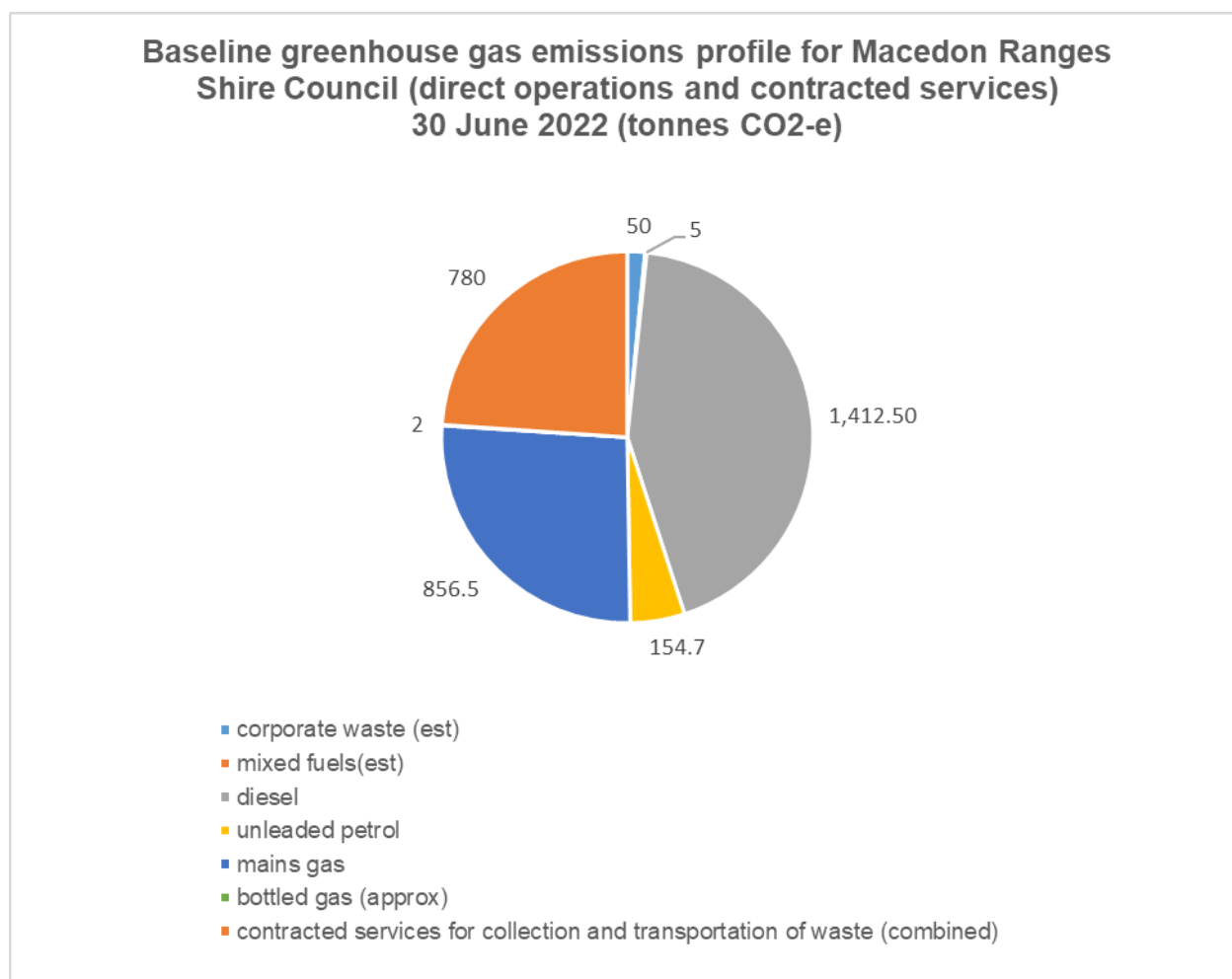
- **Action 1:** Expand Council's greenhouse gas inventory to account for as many indirect sources of emissions as possible, according to feasibility and capacity to do, from 2022 to 2030. Adjust the baseline amount of emissions to account for the additional sources.

A new baseline emissions profile for Council

Based on preliminary investigations, the baseline emissions profile can immediately be amended to include emissions associated with contracted services to collect and transport waste streams, and emissions associated with use of bottled gas at council operated sites.

Adding these emissions to the profile means that the baseline base level of greenhouse gas emissions for 2021-22 is 3,260.6 tonnes CO₂-e.

Figure 8: Council's greenhouse gas profile at 30 June 2022, including contracted services for waste management



Council's new emissions reduction target can therefore be framed as:

Zero Net Emissions by 30 June 2030 for Council operations, from the baseline of 3,260.6* tonnes CO₂-e at 30 June 2022.

*or as retrospectively amended to account for additional indirect sources of greenhouse gas emissions.

Getting to ZNE

The term ‘zero net emissions’ refers to achieving an overall balance between greenhouse gas emissions released into, and greenhouse gas emissions removed from, the atmosphere.

While it’s the sum total of emissions that is measured, reducing the amount of emissions released into the atmosphere reduces the need to remove emissions from the atmosphere. From this perspective, adopting a hierarchal approach to reaching the sum total of “zero” can be adopted:

1. **Reducing emissions**
2. **Avoiding emissions**
3. **Offsetting emissions**

An additional approach, namely **Influencing emissions**, is also proposed for this plan, to extend Council’s intentions to key stakeholders involved in its operations and the provision of services.

Reducing emissions

Reducing emissions is about works and practices at our facilities and within our operations that minimise the use of fossil fuels, thereby reducing the amount of greenhouse gas emissions generated from Council’s current activities.

Key opportunities for reducing emissions are summarised below:

Electricity consumption and generation at Council managed sites

The procurement of electricity as 100% renewable energy effectively means there are no emissions associated with electricity consumption at facilities directly managed by Council, including streetlights. However, Council is still committed to reducing electricity consumption through improving energy efficiency at our facilities. Aside from savings gained (or costs avoided) from reduced power consumption, minimising electricity usage demonstrates efficiency in our operations, and responsible use of funds. Options for reducing emissions should be identified and explored in the early stages of planning works at council owned sites.

In addition to works like replacing streetlights and many indoor lights with energy efficient LEDs to reduce emissions, Council has invested in installation of roof top solar systems on 18 of its buildings, totalling just over 350kW. The benefits that these installations can deliver could be better realised if more resources were available to monitor the performance of buildings, for example, to manage time-of-use and to ensure power generation at key sites is being registered.

Another option for reducing emissions is to rationalise the number of assets owned by Council, so that funds from the sale of assets are made available for investment in energy efficiency at more utilised sites.

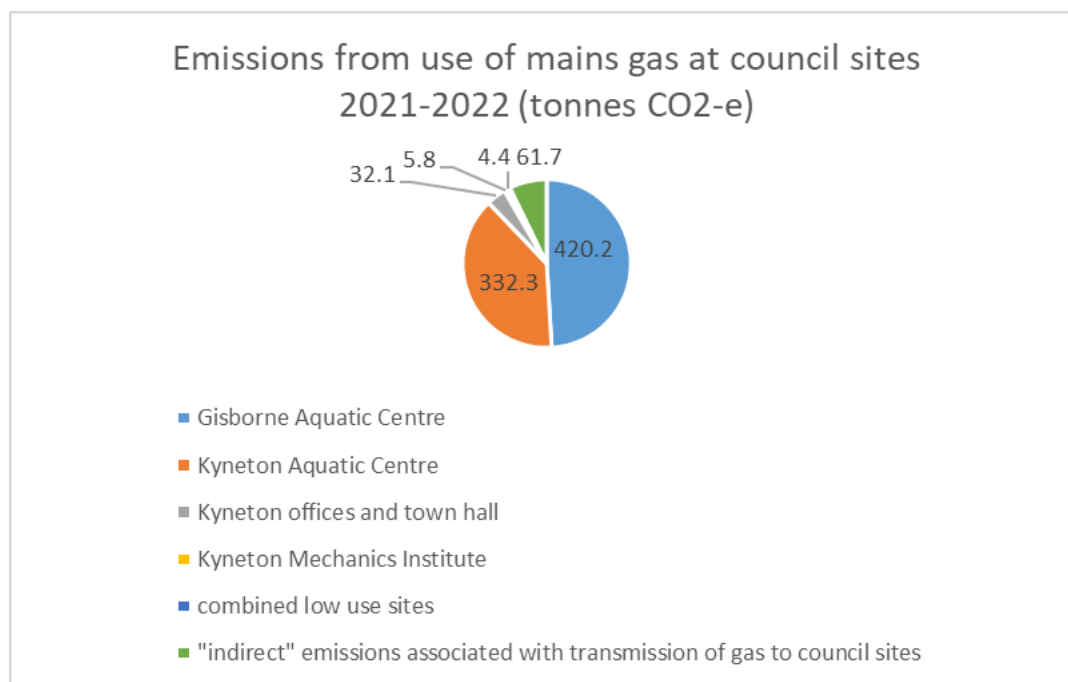
- > **Action 2:** Continue to invest in smaller scale works for energy efficiency (lighting, heating, cooling, and insulation) at key Council facilities and community use buildings where feasible to do so.
- > **Action 3:** Ensure that the performance of works and retrofits for energy efficiency is optimised on an ongoing basis, including regular checks on electricity consumption and generation, and address any maintenance issues as they are identified.
- > **Action 4:** Undertake a feasibility study of Council owned buildings to identify the potential and viability of installing additional roof top solar systems, and consider battery power storage for key community sites in the study. Ensure funds are allocated to ongoing investment in onsite power generation and storage at high priority sites.
- > **Action 5:** Embed climate considerations in all stages of the project life cycle management process and in the preparation of business case documents for projects and works. Consider how design options will impact on Council's greenhouse gas emissions profile, and ensure that Council's adopted Sustainable Buildings Policy is referred to and applied in all works.
- > **Action 6:** Undertake a review of under-utilised and poor-condition assets to identify potential for reducing the number of assets to be managed by Council, thereby reducing energy consumption and greenhouse gas emissions accountable to Council's operations.

Gas at Council-managed sites

Gas is only used at a few sites managed by Council, however it is a major source of greenhouse gas emissions. Figure 9 shows consumption of mains gas at Council sites for 2021-22, totalling 856.5 tonnes CO₂^e.

This equates to 34.5% of the total amount of direct emissions from Council operations in 2021-22 (excluding fuel from contracted services).

Figure 9: Emissions from use of mains gas at Council facilities.



The graph shows that the two aquatic centres are responsible for almost 95% of emissions associated with mains gas consumption by Council. In 2022, Council investigated alternatives for heating pool water and domestic water at these sites, with the aim of replacing the gas boilers with a low or zero carbon system.

The study indicated that electric heat pumps are the most feasible option for eliminating emissions associated with the operation of aquatic centres, and for ease of ongoing maintenance. Electricity is most easily and most reliably provided as zero emissions (when procured as 100% renewable energy) compared to other fuel sources, and many councils are employing heat pump technology when designing new aquatic centres or upgrading existing heating systems, in the aim of meeting emission reduction targets. The existing atmospheric gas boiler at Kyneton Toyota Sports & Aquatic Centre is close to its end of life, and replacement with a heat electric heat pump should be a priority project for Council. The condensing gas boiler at the Gisborne Aquatic Centre is likely to remain operational for another ten to 15 years, meaning that its replacement can be deferred until 2028-29, so that emissions associated with its operation are eliminated before the target date.

There are several challenges associated with the aim of phasing out gas at some of Council's sites, for example, a potential limitation may be the quantity of power that can be allocated to any one site by the host electricity distributor through the existing mains power infrastructure. Council will need to consult with the host distributor Powercor when planning individual projects for transitioning from gas to electricity. Other limitations may be presented by heritage controls at

many sites, and in the case of the depot at Woodend, replacing the use of cylinder gas (LPG) would require changes to Council's lease arrangements with a private landholder.

- > **Action 7:** Continue planning for the replacement of the gas boilers at the Kyneton Aquatic Centre and the Gisborne Aquatic Centre with electric heat pumps by 2028-2029. Schedule design and installation of heat pumps into the ten year capital works program.
- > **Action 8:** Conduct a scoping study for alternative heating sources at Kyneton Mechanics Institute and Kyneton Town Hall with the aim of replacing the gas heating system with a low or zero carbon alternative by 2027-2028.
- > **Action 9:** Continue to phase out the use of gas at Council operated sites. Replace gas appliances with electric alternatives as they become redundant, or in 2027-2028, whichever comes first.

Fuel – direct consumption

Council's direct consumption of fuel relates to its passenger vehicle fleet (diesel and unleaded petrol) and its heavy vehicles and equipment (diesel).

Given the increasing availability and uptake of electric vehicles, it is feasible to aim for reducing emissions from the passenger fleet by replacing existing vehicles with electric vehicles (EV). The transition to EVs by Council and across the community needs to be supported by the installation of charging infrastructure, and Council has commenced the development of a policy to guide and support the installation of infrastructure across the shire.

- > **Action 10:** Replace passenger vehicles with EVs as they reach their end of life, as funds and fit for purpose vehicles become available, or in 2029-2030.
- > **Action 11:** Develop a policy to guide the installation of charging infrastructure across the shire, aiming to maximize benefits for residents and visitors and the regional economy.

Almost 90% of emissions associated with direct fuel use for Council operations is through the use of diesel. While Council can remove the use of unleaded fuel by replacing the passenger fleet vehicles with electric vehicles, there are currently no viable alternatives for heavy vehicles to facilitate a reduction in emissions associated with use of diesel. However, advancements in hydrogen fuel cell vehicle technology and availability of refuelling infrastructure may present a viable low carbon options for at least some of Council's heavy vehicle plant in the coming years.

- > **Action 12:** Aim to replace heavy vehicles and plant equipment with lower carbon options as they reach their end of life, subject to availability of suitable options and available resources.

Fuel – contracted services

Emissions associated with transport of waste streams can only be reached through a reduced need for transport, through a reduction in the amounts of waste generated in each stream. Council can include this messaging in programs and communications to encourage best management practices for all waste streams, promoting the co-benefits of waste minimisation, for both resource efficiency and emissions reduction.

- > **Action 13:** Continue resource recovery education programs to promote waste minimisation and reduced requirements for waste transportation.

Corporate waste

All Council worksites are provided with bins for four streams of waste, managed as part Council's kerbside collection service. The current emissions profile assumes an estimate of greenhouse gas emissions associated with waste generated at worksites, based on known data from similar sized organisation (at 2017). The most feasible way of determining the actual emissions associated with waste generated by staff at worksites would be to conduct regular audits of bins. This may be an activity that can be undertaken by a reformed Environment team, with guidance from the Resource Recovery Unit.

- > **Action 14:** Continue waste reduction initiatives within Council, to facilitate best practice waste management amongst staff at all sites.
- > **Action 15:** Conduct audits of waste bins at Council work sites and calculate corresponding emissions to improve the accuracy of Council's greenhouse emissions profile.

Reducing emissions from Council-leased Facilities

A wide range of community groups use and operate Council-owned facilities, through several different arrangements (lease, licences, and user agreements, including seasonal user agreements for sports clubs). The community groups are generally required to procure and pay for electricity (may or may not include external lights and / or light towers at sports grounds), gas, and water (excluding watering of sports grounds).

In aiming to increase accountability for greenhouse gas emissions generated from management of its assets, Council would need to 'bring-in' payment of electricity and gas bills. The electricity accounts could be added to Council's existing contract with Red Energy through VECO, procuring energy from renewable sources, thereby "cancelling out" emissions generated from use of electricity at the corresponding buildings. Additionally, accounts for mains gas could be added to Council's contract for procuring gas, and Council can then work with community groups to phase out gas from the buildings.

However, there are several steps involved in establishing new administrative arrangements to allow Council to account for emissions at tenanted facilities. Two major projects, both involving extensive consultation with stakeholders, are needed to guide the change in administration of community operated buildings, subject to additional resources being provided:

- > **Action 16:** Undertake a comprehensive review of the Leasing and Licencing Policy to enable Council to "bring-in" utility bills currently paid by user groups, with the intent of accounting for and reducing greenhouse gas emissions associated with electricity and gas usage at the corresponding facilities.
- > **Action 17:** Undertake a comprehensive review of the Fees and Charges Policy to apply to the different categories of user groups, based on an assessment of costs and charges for electricity, gas and water proportional to a group's use of a site, and reflecting the outcomes of the above investigation. Ensure that the policy is equitable to user groups, and feasible for staff to implement, and that adequate resources are provided for the review and implementation of the new resulting policy.

One category of tenanted buildings which Council could absorb responsibility for in the immediate future is the community halls, managed by ten committees of management working as a network. The accounts paid by the committees could be transferred to Council, and added to Council's existing electricity supply contract, thereby delivering financial savings to the committees, which can then be used to support other community initiatives. Additionally, the committees would be able to claim climate friendly management of the facilities.

- > **Action 18:** Work with the Halls Committees of Management to establish a pilot project to "bring-in" electricity bills in 2023-2024.

Avoiding emissions

Avoiding emissions relates to new facilities and operations, either constructed by Council or coming into its management. In constructing new assets, Council should aim for a zero or low carbon life cycle, namely, purchasing materials and services for the construction should be as sustainable as possible, and operations of the new or acquired assets should be self-sufficient as possible, to avoid adding emissions to Council's total profile.

Avoiding emissions asks the question:

How can this new service be provided without adding to Council's greenhouse gas emissions profile?

Then exploring options for ensuring that additional emissions are avoided.

Council's Sustainable Buildings Policy

Council adopted a Sustainable Buildings Policy on 22 September 2021. The policy provides a guide to council to manage its large portfolio of over 280 buildings and over 200 minor structures in a way that minimises harm to the natural environment while improving the presence of its built environment. The policy sets minimum standards for different levels of works.

- > **Action 19:** Ensure that the implementation of the Sustainable Buildings Policy is embedded for all levels of works across Council,, through the project life cycle project management process, and through the procurement process.
- > **Action 20:** Ensure sufficient funds are provided to enable application of sustainable design principles in the design and construction of all works to buildings.

Project planning

In addition to using the life cycle project management process to embed sustainable design features into works, staff will need to allow for potential future upgrades, for example, to retrofit or connect EV charging stations to solar panels, or to add battery power storage to buildings.

- > **Action 21:** Ensure project planning and design for capital works and major upgrades allows for additional emission reduction measures to be added to the asset in the future, as resources and technology become available.

Decision making

A Declaration of Climate Emergency places climate change as a key consideration in Council's decision-making processes.

Introducing a Climate Impact Assessment to the template for Council reports will help prompt this consideration, through requiring staff to specify the implications of their recommendations to climate change.

As a question, a Climate Impact Assessment can be framed as:

How will greenhouse gas emissions associated with implementation of the recommendation be minimised and accounted for by Council?

- > **Action 22:** Introduce a requirement in the council report template for staff to address climate change, in the form of a Climate Impact Assessment.

Behaviour Change

In addition to avoiding and reducing emissions through planning and delivering projects involving Council owned and managed assets and facilities, emissions from Council's operations can be avoided through simple everyday practices by staff.

- > **Action 23:** Re-form a staff environment group to initiate and promote everyday sustainability in work practices across all units of Council. Include educational activities like learn-over-lunch presentations on topics related to climate change.

Offsetting emissions

Offsetting emissions involves purchasing accredited offsets (or carbon credits) to "cancel out" any residual emissions associated with Council operations that cannot be reduced through other means. As indicated above, these emissions are mostly from gas and fuel consumed at council owned sites and through use of the passenger fleet and heavy vehicle plant. As the last rung on the energy hierarchy, Council should aim to minimise the need to offset emissions through undertaking as many works as possible to reduce the generation of emissions from its operations.

A hypothetical offset scenario

Ideally at 30 June 2030, Council would have achieved a Zero Net Emissions status through a range of actions, and not need to purchase any offsets. Realistically though, based on current knowledge, Council will need to purchase offsets to cancel out residual emissions associated with

several aspects of its operations at that point in time. Table 2 below presents a summary of emissions likely to be offset on 30 June 2030, based on current information and the baseline emissions profile in Figure 8.

Table 2: Potential amount of offsets to be purchased at 30 June 2030 to meet the target for Zero Net Emissions

Source of emissions	Baseline at 30 June 2022 (tonnes CO ₂ -e) (a)	Potential reduction by 2030	Offset required on 30 June 2030 (tonnes CO ₂ -e) (a-b)
Electricity consumption at all council owned and operated sites, and at sites leased by Council for its operations. Note: Electricity consumption at council owned sites leased to community groups, will be added to the emissions inventory over time	0	0	0 Note: VECO expires 31 December 2030
Mains Gas consumption at all council owned and operated sites, and at sites leased by Council for its operations. Note: Mains gas consumption at council owned sites leased to community groups will be added to the emissions inventory over the next few years	856.5	850.5 (assume gas removed from all sites except KMI)	6 PLUS allow extra 10 to cover hot water systems at buildings tenanted to community groups
Bottled Gas consumption at all council owned and operated sites.	2	1.5 (assume bottled gas remains at depot)	0.5
Unleaded fuel consumption by passenger fleet vehicles	154.7	154.7 (assume all fleet vehicles are EVs)	0
Diesel consumption by heavy vehicle plant	1,412.5	0 (assume no change to plant or level of usage)	1,412.5
Diesel consumption by contracted services for collection and transport of waste	780	0 (assume no change to quantity of waste to be transported, or to vehicles used by contractors)	780

Mixed fuels (lubricants, oils, kerosene, etc)	estimate 5	0	5
Waste generated at council worksites	estimate 50	25 (assume behaviour change programs are effective)	25
TOTAL offsets required at 2030 (estimated)			2,239

Purchasing offsets

Offsets can be purchased through a range of means and providers. The carbon credit market is diverse and rapidly evolving, both in price / tonne CO₂^e and in the merits of offsets on the market. Factors like type, origin, and co-benefits of offsets influence their price. To guide Council in selecting offsets to purchase on 30 June 2030, and every year beyond then, it is proposed that a policy will be developed and presented to Council for adoption by June 2025.

The policy will be based on principles that deliver co-benefits, for example, preference should be given to offsets that promote biodiversity conservation, involve traditional owners, provide social benefits, and support the local economy and regional development goals.

- > **Action 24:** Develop a policy to guide the purchase of offsets for residual emissions by June 2025.

Creating offsets

An alternative to purchasing offsets is to create offsets. For example, Council may want to explore options for establishing a small-scale solar farm on land like a closed landfill site, which may be more feasible to do as power distribution networks are upgraded, and costs associated with establishing and operating a solar farm become more viable.

- > **Action 25:** Investigate the viability of creating offsets through the generation of renewable energy, for example a small scale solar farm on a closed landfill site or other cleared area of Council owned land.

Council may also partner with neighbouring local government councils to procure or create offsets for residual emissions on a larger scale. A recent preliminary feasibility study led by the City of Greater Bendigo and supported by the North Central Catchment Management Authority, outlined indicative costs and benefits for several approaches to creating offsets.

- > **Action 26:** Participate in the next stage(s) of the Cross-Council Carbon Offset Scoping Study partnership, including any pilot project that may be established to offset emissions at the regional level.

Influencing emissions

Tenanted sites

While Council works to improve the energy efficiency of tenanted facilities as resources allow over time, it can also encourage tenants and user groups to adopt practices for reducing emissions. Communications around good practices will need to complement communications around how council may account for associated emissions in its inventory.

- > **Action 27:** Support community organisations to reduce emissions from tenanted facilities.

Divestment

Council's Investment Policy includes an aim to have at least 20% of its investments with banks and financial institutions that do not invest in or finance the fossil fuel industry. In working towards a zero carbon future, Council can regularly review the policy with the aim of increasing the proportion of its investments with banks and financial institutions that do not invest in or finance the fossil fuel industry.

- > **Action 28:** Regularly review Council's investment policy with the aim to increase the proportion of funds invested with banks and financial institutions that do not invest in or finance the fossil fuel industry, 30

Sustainable purchasing

Section 3.2 in Council's Procurement Policy outlines the principles and requirements in regards to sustainable purchasing, with an aim to "reduce greenhouse gas emissions and contribution towards Council's carbon footprint". Additionally, a mandatory evaluation criteria for the assessment of major tenders relates to environmental benefit.

- > **Action 29:** Ensure that staff have the capacity and support to apply section 3.2 of the Procurement Policy when procuring goods and services and awarding contracts, so that the intended benefits can be realised.

Supporting the transition

One external limitation Council faces as it transitions away from fossil fuels is in relation to the capacity of existing electricity transmission and distribution infrastructure to deliver additional power loads to sites. Advocating to external stakeholders for policy and enabling mechanisms to support a transition to Zero Net Emissions will help increase support to everyone working towards this target.

- > **Action 30:** Advocate to state and federal governments and host distributors for upgrades to electricity infrastructure, either as the opportunity arises, or in relation to individual sites and project, and for policy and programs that support and facilitate the transition to a zero emissions and climate safe future.

Keeping the plan alive:

Implementation, Monitoring and Reporting

Reaching the new target for Zero Net Emissions involves all units across Council. While different units may have different responsibilities, a central point of coordination to facilitate and support action would ensure the best outcomes. Council will also need to measure the impact of works it undertakes to reduce emissions from its operations on an annual basis, through internal processes, and through its subscription to an external utility monitoring service.

Council will continue to report on works and their impacts through the annual environment report and / or the Council Annual Report. Monitoring and reporting on work undertaken to meet the Zero Net Emissions target, alongside changes in available technology and development of climate action programs, will inform reviews of this plan every two years.

- > **Action 31:** Convert the Sustainability Officer role to a permanent position from 2023-2024 to facilitate the implementation of this plan, to monitor and report on its impact, and to regularly review and update the plan.
- > **Action 32:** Monitor and report on progress to achieve the Zero Net Emissions target through the annual environment report or Council Annual Report.
- > **Action 33:** Review the Zero Net Emissions Plan every two years until 2030.

The next section lists the actions summarised in this plan. The three priority actions for funding in 2023-2024 are highlighted.

Action plan for Council to get to ZNE

Action	Units in Council	Resource required	Timeframe
A bigger and better inventory			
Action 1: Expand Council's greenhouse gas inventory to account for as many indirect sources of emissions as possible, according to feasibility and capacity to do so, from 2022 to 2030. Adjust the baseline amount of emissions to account for additional sources.	- Environment	BAU	June 2024
Reducing Emissions			
Action 2: Continue to invest in smaller scale works for energy efficiency (lighting, heating, cooling, and insulation) at key Council facilities and community-use buildings where feasible to do so.	- Facilities Management	TBC - dependent on works required at a specific site	On-going
Action 3: Ensure that the performance of works and retrofits for energy efficiency is optimised on an ongoing basis, including regular checks on electricity consumption and generation, and address any maintenance issues as they are identified.	- Environment - Facilities Management	BAU	2 times / year
Action 4: Undertake a feasibility study of council owned buildings to identify the potential and viability of installing additional roof top solar systems, and consider battery power storage for key community sites in the study. Ensure funds are allocated to ongoing investment in onsite power generation and storage at high priority sites.	- Environment - Facilities Management	\$25,000*	June 2024
Action 5: Embed climate considerations in all stages of the project life cycle management process and in the preparation of business case documents for projects and works. Consider how design options will impact on Council's greenhouse gas emissions profile, and ensure that Council's adopted Sustainable Buildings Policy is referred to and applied in all works.	- Assets and Project Management Office	BAU	On-going

	<ul style="list-style-type: none"> - Facilities and Operations - Engineering and Resource Recovery - Open Space and Recreation 		
Action 6: Undertake a review of under-utilised and poor-condition assets to identify potential for reducing the number of assets to be managed by Council, thereby reducing energy consumption and greenhouse gas emissions accountable to Council's operations.	<ul style="list-style-type: none"> - Asset Management - Facilities Management 	\$20,000*	June 2026
Action 7: Continue planning for the replacement of the gas boiler at the Kyneton Aquatic Centre and the Gisborne Aquatic Centre with electric heat pumps by 2028-2029. Schedule design and installation of heat pumps into the ten year capital works program.	<ul style="list-style-type: none"> - Facilities Management - Aquatics and Fitness 	<p>Kyneton Aquatic Centre* \$1,180,000 for purchase and installation of heat pumps and associated electrical works in 2023-24</p> <p>Gisborne Aquatic Centre \$75,000 (estimated) for design works in 2027-28, approximately \$850,000 for purchase and installation of heat pumps in 2028-29.</p>	from 2023-29
Action 8: Conduct a scoping study for alternative heating sources at Kyneton Mechanics Institute and Kyneton Offices and Town Hall with the aim of replacing the gas heating system with a low or zero carbon alternative by 2027-2028.	<ul style="list-style-type: none"> - Facilities Management 	\$10,000*	June 2026

Action 9: Continue to phase out the use of gas at council operated sites. Replace gas appliances with electric alternatives as they become redundant, or in 2027-2028, whichever comes first.	- Facilities Management	TBC	June 2028
Action 10: Replace passenger vehicles with EVs as they reach their end of life, as funds and fit for purpose vehicles become available, or in 2029-2030.	- Infrastructure Operations	BAU	June 2030
Action 11: Develop a policy to guide the installation of charging infrastructure across the shire, aiming to maximize benefits for residents and visitors and the regional economy.	- Environment	BAU	June 2024
Action 12: Aim to replace heavy vehicles and plant equipment with lower carbon options as they reach their end of life, subject to availability of suitable options and available resources.	- Infrastructure Operations	BAU	June 2030
Action 13: Continue resource recovery education programs to promote waste minimisation and reduced requirements for waste transportation.	- Resource Recovery	BAU	On-going
Action 14: Continue waste reduction initiatives within Council, to facilitate best practice waste management amongst staff at all sites.	- Resource Recovery	BAU	On-going
Action 15: Conduct audits of waste bins at council sites and calculate corresponding emissions to improve the accuracy of council's greenhouse emissions profile.	- Resource Recovery	BAU	On-going
Action 16: Undertake a comprehensive review of the Leasing and Licencing Policy to enable Council to "bring-in" utility bills currently paid by user groups, with the intent of accounting for and reducing greenhouse gas emissions associated with electricity and gas usage at the corresponding facilities.	- Property and Valuations	A new role: 1 EFT for 2 years*	2024-26
Action 17: Undertake a comprehensive review of the Fees and Charges Policy to apply to the different categories of user groups, based on an assessment of costs and charges for electricity, gas and water proportional to a group's use of a site, and reflecting the outcomes of the above investigation. Ensure that the policy is equitable to user groups, and feasible for staff to implement, and that adequate resources are provided for the review and implementation of the new resulting policy.	- Property and Valuation	A new role: 1 EFT for 2 years (as in Action 16)*	2024-26
Action 18: Work with the Halls Committees of Management to establish a pilot project to "bring-in" electricity bills in 2023-2024.	- Environment	BAU#	June 2024

	- Arts + Culture	#may require additional resources subject to further investigation	
Avoiding Emissions			
Action 19: Ensure that the implementation of the Sustainable Buildings Policy is embedded for all levels of works across Council, through the project life cycle project management process, and through the procurement process.	<ul style="list-style-type: none"> - Assets and Project Management Office - Facilities and Operations 	BAU	June 2024
Action 20: Ensure sufficient funds are provided to enable application of sustainable design principles in the design and construction of all works to buildings	<ul style="list-style-type: none"> - Assets and project Management Office - Facilities Management 	BAU	On-going
Action 21: Ensure project planning and design for capital works and major upgrades allows for additional emissions reduction measures to be added to the asset in the future, as resources and technology become available	<ul style="list-style-type: none"> - Assets and Project Management Office - Facilities Management 	BAU	On-going
Action 22: Introduce a requirement in the Council report template for staff to address climate change, in the form of a Climate Impact Assessment	<ul style="list-style-type: none"> - Environment - Governance 	BAU	June 2023

Action 23: Re-form a staff environment group to initiate and promote everyday sustainability in work practices across all units of Council. Include educational activities like learn-over-lunch presentations on topics related to climate change.	- Environment - Resource Recovery	BAU	June 2023
Action 24: Develop a policy to guide the purchase of offsets for residual emissions by June 2025.	- Environment	BAU	June 2025
Action 25: Investigate the viability of creating offsets through the generation of renewable energy, for example a small scale solar farm on a closed landfill site or other cleared area of Council owned land	- Environment	\$20,000*	June 2024
Action 26: Participate in the next stage(s) of the Cross-Council Carbon Offset Scoping Study partnership, including any pilot project that may be established to offset emissions at the regional level.	- Environment	\$40,000*	June 2024
Influencing emissions			
Action 27: Support community organisations to reduce emissions from tenanted facilities.	- Facilities Management - Arts + Culture - Open Space and Recreation - Community Development	BAU	On-going
Action 28: Regularly review Council's investment policy with the aim to increase the proportion of funds invested with banks and financial institutions that do not invest in or finance the fossil fuel industry. ,	- Finance and Reporting	BAU	On-going

Action 29: Ensure that staff have the capacity and support to apply section 3.2 of the Procurement Policy when procuring goods and services and awarding contracts, so that the intended benefits can be realised.	<ul style="list-style-type: none"> - Environment - Contracts - Accounting 	BAU	On-going
Action 30: Advocate to state and federal governments and host distributors for upgrades to electricity infrastructure, either as the opportunity arises, or in relation to individual sites and project, and for policy and programs that support and facilitate the transition to a zero emissions and climate safe future.	<ul style="list-style-type: none"> - Environment 	BAU	On-going
Monitoring and Reporting			
Action 31: Convert the Sustainability Officer role to a permanent position from 2023-2024 to facilitate the implementation of this plan, to monitor and report on its impact, and to regularly review and update the plan.	<ul style="list-style-type: none"> - Environment 	\$100,000 / year*	from 2023-24
Action 32: Monitor and report on progress to achieve the Zero Net Emissions target through the annual environment report or Council Annual Report.	<ul style="list-style-type: none"> - Environment 	BAU	Annually
Action 33: Review the Zero Net Emissions Plan every two years until 2030.	<ul style="list-style-type: none"> - Environment 	BAU	June 2024 June 2026 June 2028

*Subject to funding availability and Council budget process.

Appendix

Figure 5: Summary of Climate Action in Macedon Ranges Shire

