



Wollongong City Council

Net Zero Wollongong Climate Change Mitigation Plan 2023-30





Acknowledgement

Wollongong City Council acknowledges the Traditional Custodians of the land on which this city is built, Dharawal Country. We recognise and appreciate their deep connection to the land, waters and the greater community.

We acknowledge and pay respect to Elders past, present and those emerging and extend our respect to all Aboriginal and Torres Strait Islander people who call this city home.

We recognise Aboriginal and Torres Strait Islander people as the first people to live in this area. We respect their living cultures and recognise the positive contribution their voices, traditions and histories make to the city.

Photo: Megan Rowlatt

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Executive summary

Wollongong City Council (WCC) recognises the urgent need to respond to the impacts of Climate Change. We proudly align with the principles of the Paris Climate Agreement through our partnerships with the Global Covenant of Mayors for Climate and Energy and the Cities Power Partnership. To address the climate emergency and recognising our responsibility to support residents and local businesses, the Climate Change Mitigation Plan 2023-30 is a whole of community approach to reducing emissions in Wollongong.

This Plan has been developed alongside the community and guided by the following principles:

- Build on progress and successes of CCMP 2020-2022
- Target actions that will have the greatest and earliest impact on reducing emissions
- Improved social and economic equity is included in a transition to net zero
- Deliver commitments under the Global Covenant of Mayors and Cities Power Partnerships
- Focus on a community led approach to emissions reductions
- Learn from traditional owners to co-develop solutions.
- Work together with all levels of government, industry and community for a united approach to emissions reduction
- Show leadership by reducing Council's corporate emissions through best practice

The outcomes of this plan aim to achieve the related goals set out in the Community Strategic Plan and Wollongong's emission reduction targets.

Emissions sources and abatement pathways are identified for both the community and Council's operational emissions. These are underpinned by detailed action plans that target the main emissions sources in each sector. There is a separate action plan for each of the following pillars:

Communities in action

Opportunities for households and businesses to reduce emissions and gain from co-benefits such as reduced household costs and healthier environments.



Empowering communities

Actions Council will implement to support the community in emissions reductions aimed at delivering assistance where it is needed most.

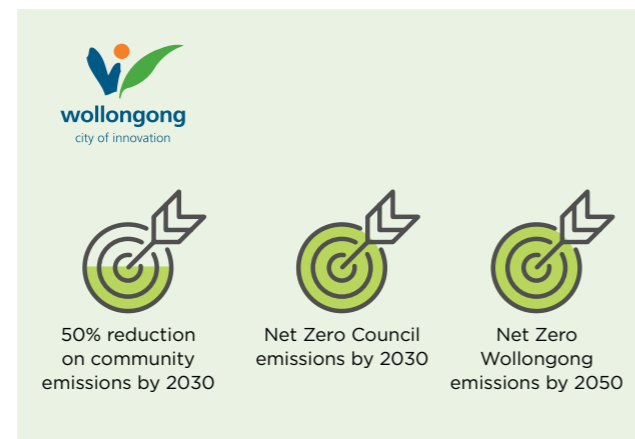


Leading by example

Actions Council will take to reduce its own emissions to showcase leadership and best practice to the community.



These action plans have been designed to make a tangible impact on achieving our short-term emissions targets. We will aim to resource, monitor and update them over the life of the plan. Together through collaborative effort we can drive meaningful change to build a resistant and climate friendly Wollongong.



Lord Mayor's message

Welcome to the Climate Change Mitigation Plan 2023 for Wollongong – The City of innovation. Wollongong has long established itself as a leader in responding to climate change and its far-reaching impacts. As a city, we proudly embrace the principles of the Paris Climate Agreement, and through our collaboration with the Global Covenant of Mayors for Climate and Energy and the Cities Power Partnership, we reaffirm our commitment to global efforts in combatting climate change.

Climate policies across all levels of government need to be accelerated and the role for local governments is crucial. This Plan is an essential roadmap for Wollongong's future to position itself to be a frontrunner in the emerging low carbon economy. With a blend of industries, exceptional education institutions, a diverse and skilled workforce, and the spirit of innovation, Wollongong possesses all the essential ingredients to lead the charge in a clean energy transition.

At the heart of this Plan lies our unwavering commitment to support our residents and local businesses in harnessing available technologies and building resilience against the climate crisis. We have integrated the Sustainable Development Goals into our Community Strategic Plan, and these guiding principles permeate throughout our organisation to ensure a sustainable and equitable future for all.

This Plan outlines steps that we can all take to work together building a climate friendly Wollongong and contribute to meaningful emissions reductions. Building upon the achievements of the former CCMP 2020-22, this plan sets the course for achieving our net zero emissions targets alongside the Climate Change Adaptation Plan.

Thank you for joining us on this journey.

Lord Mayor Councillor
Gordon Bradbery AM

'Climate policies across all levels of government need to be accelerated and the role for local governments is crucial'



Continuing action in a climate emergency

In August 2019 Wollongong City Council (WCC) declared a climate emergency recognising the urgent action required from all levels of government to curb the impacts of a rapidly changing climate. Since then, WCC has put words into action by taking steps to reduce both community and operational emissions. Wollongong's Climate Change Mitigation Plan 2020-22 (CCMP 2020-22) was adopted in 2020, which set the scene for WCC's pathway to reducing emissions to date.

The CCMP 2020-22 established ambitious net zero targets for the community and Council's operations (Figure 1, pg 6) and identified actions to move forward on the journey to meeting these emissions reduction targets. The purpose of the Plan was to establish the appropriate governance structures, policy settings, and relationships with key stakeholders for future plans to build upon. Implementation of the CCMP 2020-22 saw significant actions completed, resulting in recognisable reductions in emissions. Notable

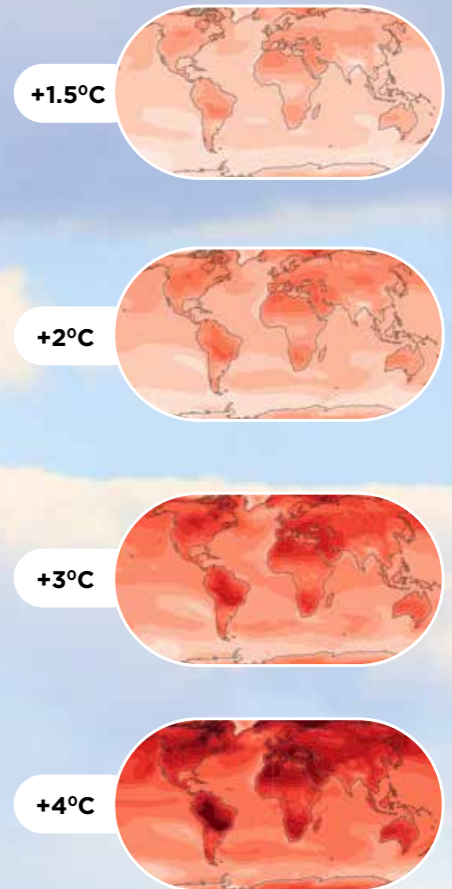
achievements include WCC's renewable energy power purchase agreement (PPA) and the successful introduction of the food organics & garden organics (FOGO) waste diversion. The Climate Change Mitigation Plan 2023-30 (CCMP 2023-30) acknowledges the achievements so far in reducing emissions and builds upon the success of previous initiatives and actions.



The CCMP 2023-30 aims to increase focus on actions that lead to tangible reductions in both operational and community emissions profiles. It responds to the challenge highlighted by the Intergovernmental Panel on Climate Change (IPCC) AR6 synthesis report released in 2023, which identifies the existence of an 'emissions gap' between current policies globally and the necessary actions to limit warming to 1.5°C. The report also underscores the heightened risks and impacts associated with each incremental increase in temperature beyond this threshold (IPCC, 2023).

To address this challenge, the CCMP 2023-30 identifies and prioritises opportunities and technologies that are already, or increasingly becoming viable and cost effective. Focusing on these options and planning for future opportunities will result in the greatest and earliest emissions cuts over the time frame of this Plan. The 2030 targets align with the scope of the Sustainable Wollongong 2030 Strategy. We recognise that climate change is a dynamic and complex issue requiring our response to be adaptive, ensuring our strategies remain relevant and effective.

Crucially, the success of this Plan depends on the collective action and support of all stakeholders including other levels of government, businesses, residents, and community organisations. Together we can create a resilient and sustainable Wollongong region that leads the way in addressing the climate crisis.



IPCC, sixth assessment report / Synthesis Report

Scope

Our targets

Our existing emissions reduction targets are net zero emissions by 2050 for the Wollongong community and by 2030 for Council operations.

Based on the carbon budget concept it is understood that early emissions reductions will displace more emissions by 2050 than those achieved closer to the deadline. To promote urgent action that aligns with this knowledge, the CCMP 2023-30 introduces an interim target of 50% reduction in community emissions on 2016 levels by 2030. This aligns with the NSW Government's interim target and serves as a catalyst for immediate and transformative action.

the CCMP 23-30 introduces an interim target of 50% reduction in community emissions on 2016 levels by 2030.

Mitigation and adaptation: What's the difference?

Climate change mitigation and adaptation represent the two focus areas for WCC's response to reduce the impacts of climate change.

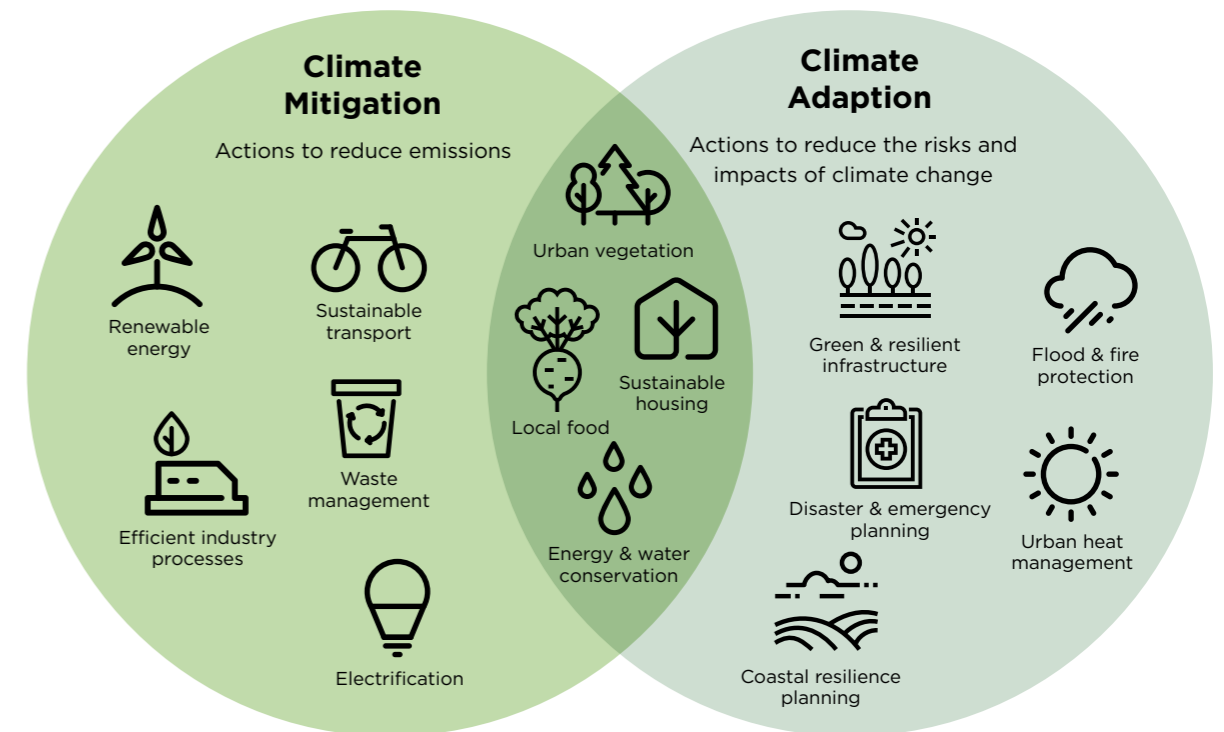
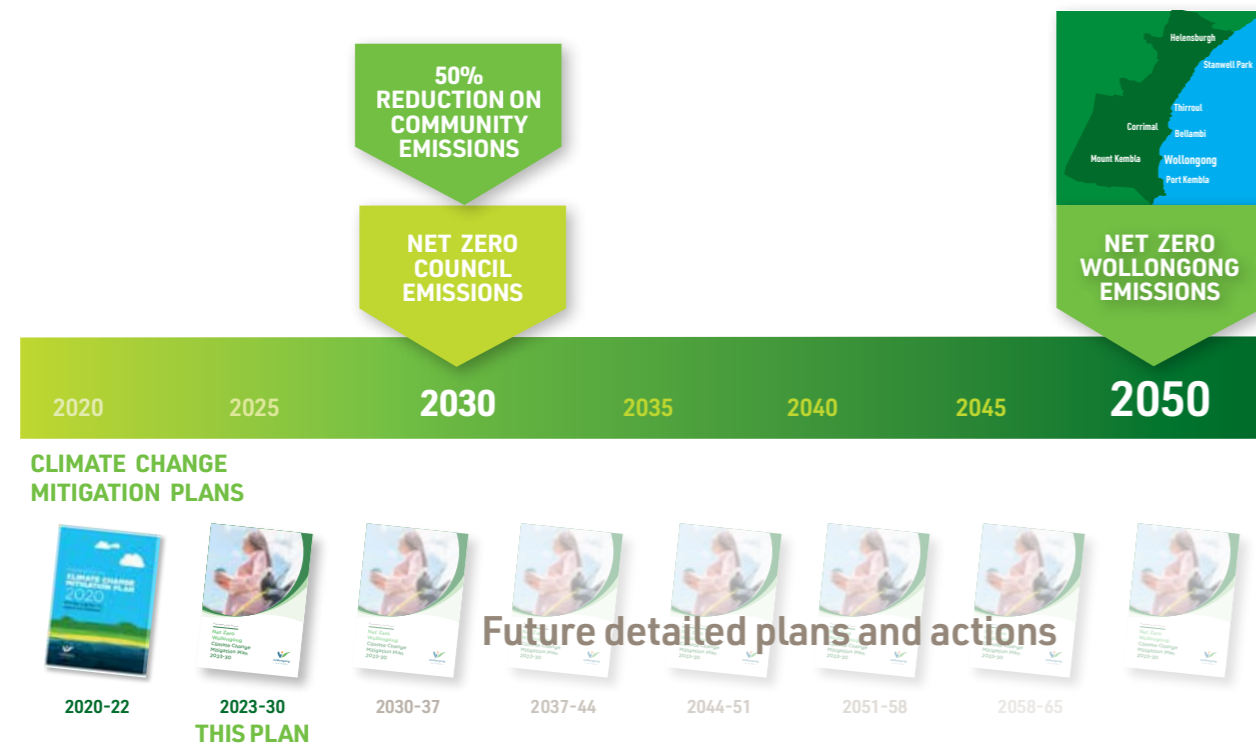
Adaptation involves strategies to build resilience and adapt to the impacts of climate change so we can continue to live sustainably and minimise the disturbances caused by climate change. We have a separate Climate Change Adaptation Plan that focuses on this area and provides an action pathway to integrate adaptation thinking into our systems and processes.

Mitigation (emissions reductions) refers to reducing greenhouse gas (GHG) emissions to limit the extent of climate change at the source. This involves human intervention to both implement actions that reduce GHG emissions and enhance 'carbon sinks' that reduce the amount of GHG's in the atmosphere. This plan focuses on the action pathways to both reduce WCC's operational emissions as well as facilitate programs to assist residents and businesses to reduce community emissions.



Many adaptation and mitigation options can help address climate change, but no single option is sufficient by itself. Effective implementation depends on policies and cooperation at all scales and can be enhanced through integrated responses that link mitigation and adaptation with other societal objectives' (IPCC, 2023)

Figure 1: City of Wollongong emissions targets



How Council will use this plan

The CCMP 2023-30 consists of pathway actions for WCC to progressively implement and review over the next seven years to 2030. This timeframe will align with the scope of our Sustainable Wollongong 2030 document as well as our 2030 operational target and 2030 community interim target. We will regularly review progress and consider our approach as this Plan is implemented.

Council will use this Plan to inform internal decision making about operational priorities, budgets and resource allocation. The 'Leading by Example' actions listed within this plan consider Council's boundary of influence, focusing on emissions sources that WCC has operational control over as defined by the GHG Protocol. This includes WCC buildings and facilities, operational fleet, street lights and Whyte's Gully waste facility.

The 'Empowering Communities' actions for WCC capture opportunities for Council to facilitate residents and businesses to reduce community emissions. Understanding that Council's sphere of influence is limited in this space. This action pathway focuses on the important role local government can play as the closest level of government to the community. Action areas include advocacy opportunities, education and awareness, provision of public infrastructure, review of local planning framework and partnership opportunities.

We will also use indicators within the Plan to monitor and report on progress towards the community target, ensuring a transparent and unified approach with the community.

How our community can use this plan

In response to feedback from the community, the CCMP 2023 has been designed to help residents and visitors identify emissions sources and understand opportunities to reduce emissions in the home and local businesses. The 'Communities in Action' plan (page 26) provides recommendations of many different actions that can be taken for households and businesses to reduce emissions based on individual situations. You are encouraged to consider what is appropriate for you to implement today and what you can plan for in the future. Noting not all actions may be suitable to your circumstances but all the actions identified in the action plan are proven to directly or indirectly contribute to emissions reductions and usually have additional co-benefits such as cost saving or health benefits. WCC educational and awareness programs are being developed as part of this Plan to provide further resources and advice on opportunities in this space. Sign up to WCC's sustainability newsletter to receive updates on any new information

www.wollongong.nsw.gov.au/my-community/sustainable-living

Objectives

The CCMP 2023-30 aims to achieve the following objectives:

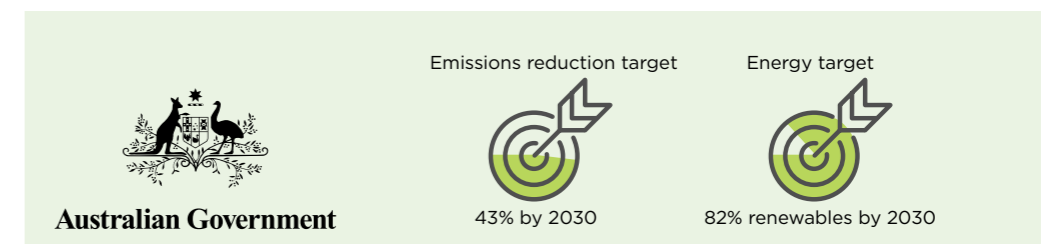
- Reach interim and net zero emissions targets for both Council and the Wollongong community
- Build on success and foundations of previous CCMP 20-22 to continue to embed climate emergency considerations across all Council operations and decisions
- Support Wollongong residents, visitors and businesses to reduce community emissions
- Provide pathways for Council operations to reduce emissions towards net zero by 2030

Policy context

Working together to address the challenge

Emissions and the impacts of climate change do not adhere to regional boundaries, a concerted effort from all levels of government is crucial to enabling and accelerating action

required to maintain a sustainable future (IPCC, 2023). This Plan sits within an interdisciplinary and multi-level policy framework.



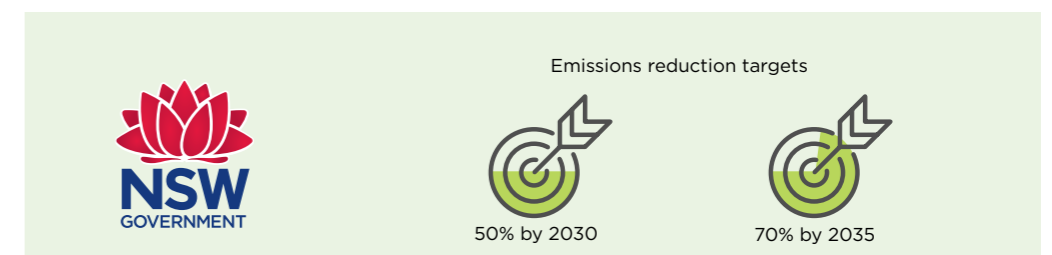
Australian Government

Emissions reduction target: 43% by 2030

Energy target: 82% renewables by 2030

Since the previous CCMP was developed, Australia, under the ratification of the Paris Climate Agreement, has updated its National Determined Contribution (NDC) to a 43% reduction of 2005 levels by 2030. This is an interim target of the long-term strategy to net zero by 2050. The Climate Change Act 2022 legislated the new emissions reduction target and established a platform for further refined emissions reduction policies.

The Powering Australia Plan is Australia's policy suite for reducing emissions and transitioning to clean, affordable and reliable energy. It focuses on increasing the uptake of renewable energy technologies and introduces a target of 82% market share of renewables in the National Electricity market (NEM) by 2030. Under this plan are a number of policies and programs that provide funding and direction on emissions reductions projects nation wide. These are identified in Figure 5 on page 17.



NSW GOVERNMENT

Emissions reduction targets: 50% by 2030 and 70% by 2035

The NSW Government has committed to more ambitious interim targets of 50% reduction on 2005 levels by 2030 and 70% by 2035 as part of its journey to net zero emissions by 2050. These targets are underpinned by the Net Zero Plan Stage 1: 2020-2030 which outlines the state's approach to reducing emissions while also growing the economy and creating jobs. The Illawarra is identified as a key region for clean energy and industrial transition under a number of NSW programs identified in Figure 5 on page 17.

The Our Wollongong Our Future Community Strategic Plan (CSP) sits atop of our strategic framework. It includes specific community visions and goals for Council to work towards shaping the future of the region. The impacts of climate change and emissions reduction are identified as a key challenge and theme in the CSP. To address this, mitigation is included under the following goals and actions:

Goal 1: We value and protect our environment

Objective: We will work together to reduce emissions and the effects of a changing climate.

Action 1.4: Work together to achieve net zero emissions and reduce waste going to landfill.

Goal 2: We have an innovative and sustainable economy

Objective: We are leaders in innovative and sustainable and green industries.

Action 2.5: Work with partners to facilitate sustainable and green industries.

The CCMP is a supporting document which provides a roadmap and strategy for delivering the goals outlined in the CSP. As opportunities arise feasibility and project plans are established to implement individual actions within the CCMP, through Delivery Programs and Operational Plans.

The Sustainable Wollongong 2030: A climate healthy city strategy is our highest order strategic document for all environmental and sustainability programs. It outlines Council's commitment to environmental sustainability for both Council operations and our community and identifies pathways to create a sustainable, greener, healthier, cooler and more liveable city. The climate change mitigation and adaptation plans fall within the suite of documents that underpin this strategy and support delivery of a number of its goals.

There are a number of other documents supporting climate change mitigation and emissions reduction actions across Council and the community, these are identified in the Supporting documents section on page 36.

Figure 2: Council's Integrated Planning Framework



Climate commitments

WCC is firmly committed to taking a leadership role in addressing climate change and achieving sustainable outcomes in the region. Council's declaration of a climate emergency joins what is now over 100 local governments in Australia, and over 2,300 jurisdictions worldwide, in recognising the need for immediate and transformative action

to mitigate the impacts of climate change (Climate Emergency Declaration Website, 2023). To demonstrate this commitment WCC has actively engaged in several partnerships and commitments that guide and drive our actions in this space.

United Nation's Sustainable Development Goals



WCC acknowledges the importance of contributing towards the achievement of the United Nations' Sustainable Development Goals and the 2030 agenda for sustainable development. These goals provide a global strategy to work towards a sustainable future.

The actions within this Plan are mapped against their contributions to individual goals and consider their related targets and indicators. Below are the goals directly relating to the objectives of this Plan.

Sustainable Development Goals directly relevant to sustainability (United Nations 2020)



Global Covenant of Mayors for Climate and Energy



GCoM is a global alliance of cities and local governments that works to mobilise city level actions and support a long term vision of moving to a low emissions and climate resilient future. WCC have been a member of GCoM since 2017 and have since continued to achieve commitments under the program. WCC transparently reports its progress through GCoM annually against criteria that includes;

- Completing and updating a city level emissions profile
- Adopting ambitious emissions reduction targets based on science

- Developing, updating and implementing a climate change mitigation plan
- Completing a climate change adaptation risk assessment and adopting subsequent plan

As part of an update to this Plan, we will undertake an 'energy access & poverty' assessment, develop targets and incorporate actions into the CCMP to continue our commitment to the GCoM program and a just transition to a low carbon future.

The Cities Power Partnership



As an active member of the Cities Power Partnership (CPP) program since 2020, WCC works collaboratively with other Australian local governments to take action on climate change. Through this membership Council leverages resources, shares knowledge and participates in collective advocacy opportunities. Councils are required to submit 5 pledges relating to renewable energy, energy efficiency and sustainable transport.

Council has committed to the following pledges:

- Install renewable energy on Council assets
- Implement landfill gas methane flaring or capture for electricity generation

- Encourage sustainable transport use such as public transport, walking and cycling through Council transport planning and design
- Adopt best practice energy efficiency measures across Council buildings, and support community facilities to adopt these measures
- Set city-level renewable energy or emissions reduction targets.

Delivery of the actions within this Plan will assist in achieving these pledges, synergistically the ongoing CPP membership and support will assist Council with action delivery.



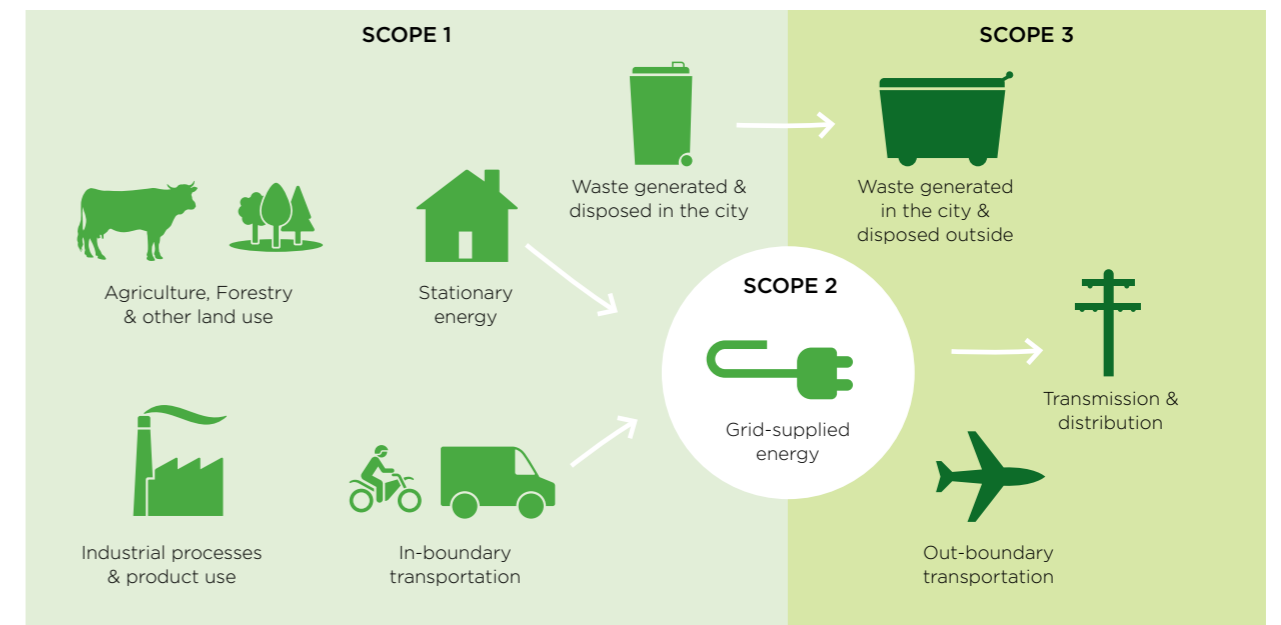
Community emissions

Defining our boundary

As part of our commitment to Global Covenant of Mayors (GCoM), the community emissions profile has been updated biennially since our 2018 baseline in accordance with the Greenhouse Gas Protocol: Global Protocol for Community-Scale Greenhouse Gas Emission Inventories. Utilising the international standards in this document, the outlined methodology in Figure 3 below has been used for defining Wollongong's emissions boundary by scope and the origins of Wollongong's emissions have been broken down into the following sources:

- **Stationary energy (electricity & gas)** - includes emissions from combustion of fossil fuels in residential and commercial buildings and facilities, manufacturing and construction processes, and generation of grid-supplied energy.
- **Transport** - emissions from all journeys directly involving combustion of fuels including road, rail, water and air.
- **Waste** - includes emissions generated by waste disposal and treatment including landfill, construction, composting, and wastewater treatment.
- **Industrial Processes and Product Use (IPPU)** - main sources are released from industrial processes that chemically alter materials such as steel production or fugitive emissions from mining.
- **Agriculture** - produced through a wide variety of agricultural activity, particularly livestock management.
- **Land Use** - includes emissions sequestration from vegetation and emissions associated with land clearing.

Figure 3: Sources and boundaries for Wollongong community greenhouse gas (GHG) emissions.



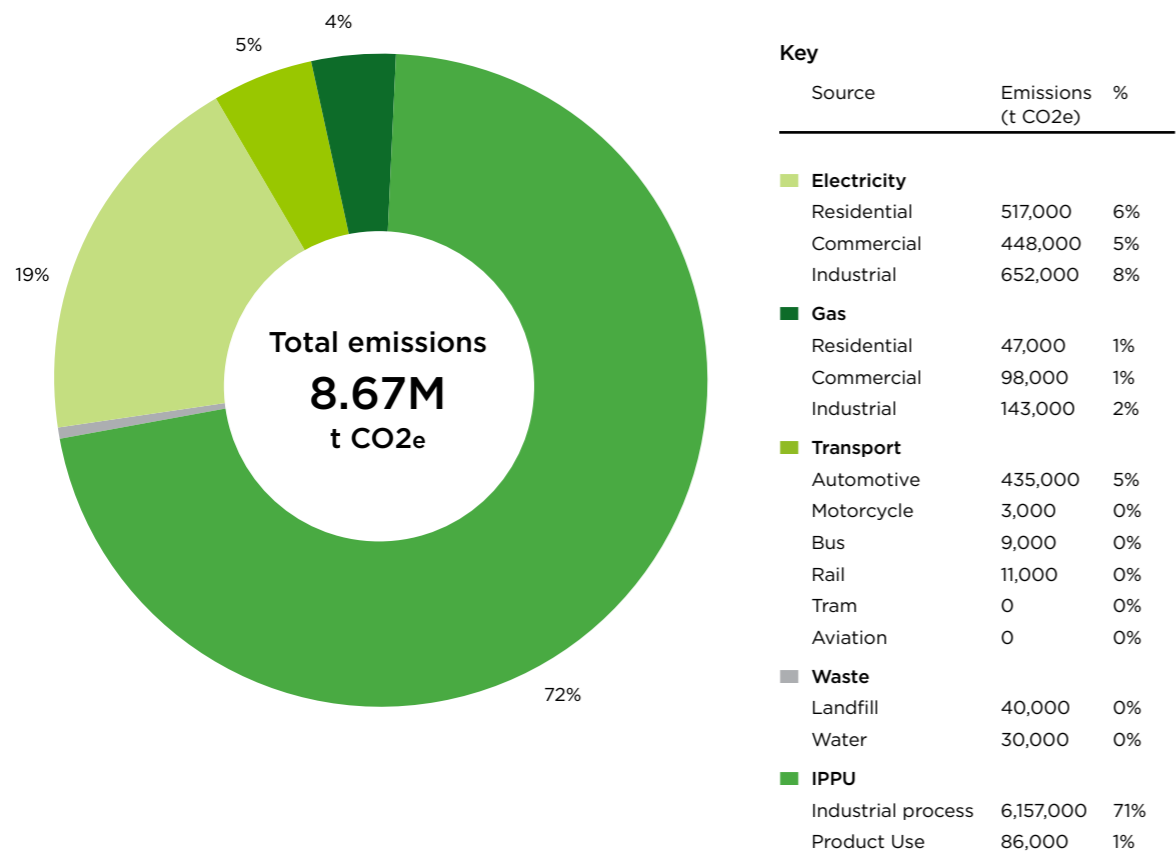
Greenhouse Gas Protocol: Global protocol for Community-Scale Greenhouse Gas Emission Inventories. An Accounting and Reporting Standard for Cities.

City of Wollongong community emissions

It's important to note that methods for meeting global standards are often based on a top-down approach scaling down aggregated data sets. This reduces duplication and provides consistency with neighbouring states. However availability of data sets and changes in methodology from year to year make comparing progress to our baseline difficult. For monitoring progress of community, we will use local consumption data where available as best practice, however because of the above this may differ to the community profile holistically (see below).



Figure 4: City of Wollongong community emissions 2019/20



A united regional approach and Council's role

Wollongong's emissions profile is relatively unique because of our heritage industrial presence. Within our LGA boundary are four of Australia's top emitters captured by the Safeguard Mechanism and naturally these emissions dominate our profile. Transitioning the region to a low carbon, clean energy economy will take a concerted effort from all stakeholders including Council. Based on our sphere of influence and available levers to enable action within the community (Appendix 1), advocacy and partnerships are the main options within the broader regional sense. To this end Council is committed to being involved in the process of decarbonising our industrial sector while strengthening our

local economy through State, Federal and privately run programs.

Figure 5 below identifies initiatives external from Council, that are progressing large scale emissions reductions in the region. We will seek to contribute toward and leverage these opportunities to ensure the best outcome for the future of the community. We note that momentum in this space is progressing rapidly. Council will continue to respond to future opportunities and consider options in response to changing legislation and policy, particularly the NSW Government's proposed Climate Change Bill 2023 and related Net Zero Commission.

Figure 5: State and Federal programs

	Industry	<ul style="list-style-type: none"> Safeguard Mechanism Regional Growth Fund Powering the Regions fund National Reconstruction Fund
	Clean energy generation	<ul style="list-style-type: none"> Offshore Renewable Growth Strategy (Illawarra Offshore wind zone) National Energy Transformation Partnership Rewiring the Nation National Hydrogen Strategy
	Community and Transport	<ul style="list-style-type: none"> Net Zero Authority ARENA - Community batteries funding National Construction Code & Energy Efficiency Driving the Nation fund National electric vehicle strategy
	Industry	<ul style="list-style-type: none"> Clean Manufacturing Precincts Net Zero Industry & Innovations TAFE NSW & UOW Energy Futures Skills Centre
	Clean energy generation	<ul style="list-style-type: none"> NSW Electricity Infrastructure Roadmap and Renewable Energy Zones (Illawarra REZ) Illawarra Hydrogen Hub (NSW hydrogen strategy)
	Community and Transport	<ul style="list-style-type: none"> Sustainable Buildings SEPP NSW Transport Strategy NSW Electric vehicle strategy Sustainability advantage Net Zero Emissions Dashboard NSW Waste and Sustainable Materials Strategy

A regional clean energy transition

The Illawarra region is emerging as a clean and low-carbon energy hub that will provide an opportunity to transform local industry and energy generation into a renewable and clean economy. Powering this transformation is the Illawarra Renewable Energy Zone (REZ) declaration by the NSW State Government targeting renewable energy investment in the region. This includes the Federal Government declared 'Illawarra Offshore Wind Zone' that proposes to host offshore wind generation providing enough electricity to power 3.4 million homes. Wollongong is an ideal location already hosting major energy infrastructure, deep water port, a skilled workforce and existing industry to utilise clean energy.

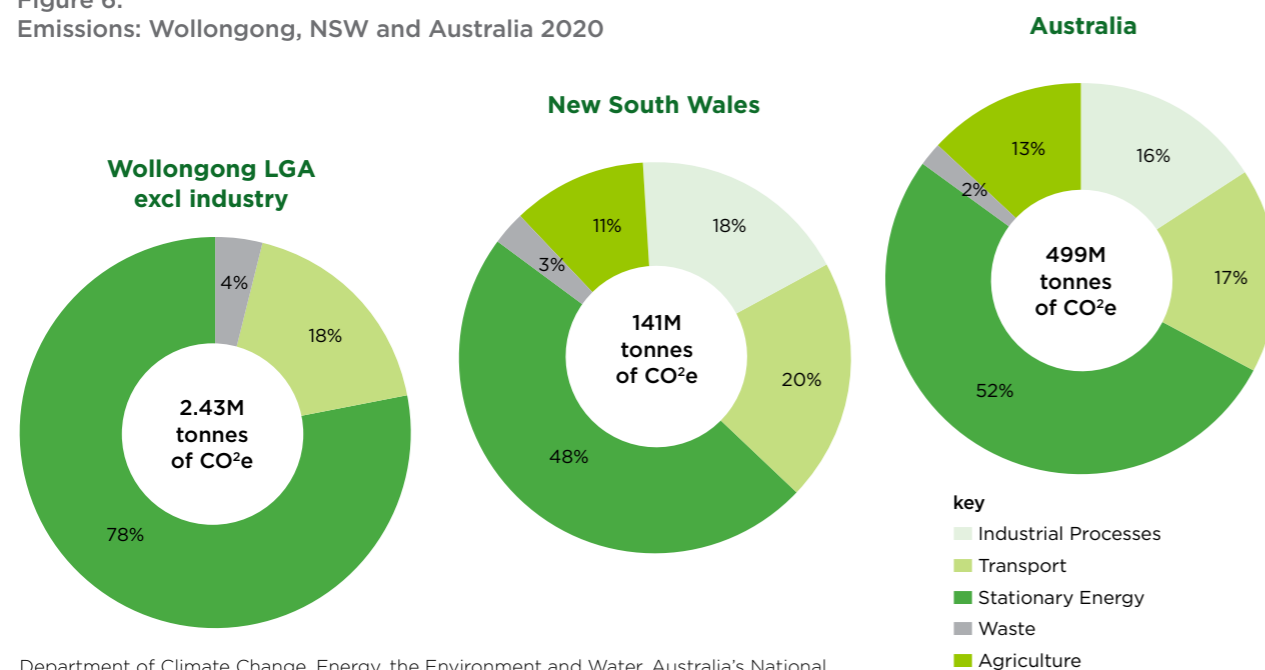
Significant investment in projects to further reduce emissions and benefit the region economically include preparing a skilled workforce through the University of Wollongong and Tafe NSW's proposed 'Energy Futures Skills Centre', alternative clean fuel production at the Port Kembla Hydrogen Hub, Local clean energy tech start ups, and opportunities to decarbonise existing industries.

Whilst Council is not the lead organisation in delivering this infrastructure or determining approval

pathways, it is a key stakeholder in the process. It will work to ensure that the associated benefits are delivered to the local community such as economic growth, cheaper and more reliable electricity, emissions reductions from industrial sector, and local jobs.

We are not alone in the fight against climate change, Wollongong is a part of a broader effort to reduce emissions at a state and national context. Figure 6 represents Wollongong's emissions sources (excluding industrial emissions) and compares this to State and Federal emissions profiles. This reveals similar trends in terms of emissions sources and emphasises the importance of reducing emissions in areas that make meaningful change. This also reflects areas where Council has more significant influence and the focus of the actions within this Plan. Many of the technologies needed to impact the sectors below currently exist and are cost effective today, whilst other areas are constantly developing and becoming feasible at scale. In order to make meaningful and immediate emissions reductions over the next decade we need to focus on solutions that can be implemented in the short term to achieve our targets.

Figure 6:
Emissions: Wollongong, NSW and Australia 2020



Department of Climate Change, Energy, the Environment and Water. Australia's National Greenhouse Accounts. Australian Government website



Community emissions reduction pathway

The business as usual (BaU) pathway (Figure 7) represents the community's emissions profile in a scenario under no abatement measures (if we did nothing), taking into account BaU growth rate assumptions (predicted population and economic growth and grid decarbonisation). This clearly demonstrates that we will not reach our net zero emissions pathway without collective action.

The abatement action pathway (Figure 8) has been developed in partnership with a sustainability consultant - *100% Renewables*, using technical analysis from an existing suite of abatement options. We considered their economic benefit, feasibility, and social desirability to determine their forecasted implementation. This analysis is identified in more detail in appendix 2.

The pathway demonstrates that over the next 10 years a staged implementation will deliver significant emissions cuts surpassing our 2030 interim target toward net zero emissions in 2030. Identifying emissions cuts beyond the timeframe of this plan is difficult as technologies and policy approaches will change. We have assumed a linear reduction to Net Zero emissions as we approach 2050. Subsequent plans will update this pathway as information becomes available. Every emissions source will need to be addressed and the implementation of emissions reduction may differ slightly than the

assumed reduction below, this is due to limitations such as home ownership, technology maturity and cost.

The pathway and 2030 interim target excludes emissions from industrial processes and product use. As Figure 6 suggests, this represents the majority of the community's and Council's influence and the focus of the actions within this plan. We need to work together to do our bit to reduce emissions where we can and we'll help to ensure our industrial partners do theirs through the support and strategies mentioned in Figure 5.

Figure 7: Emissions BAU excluding Industrial processes

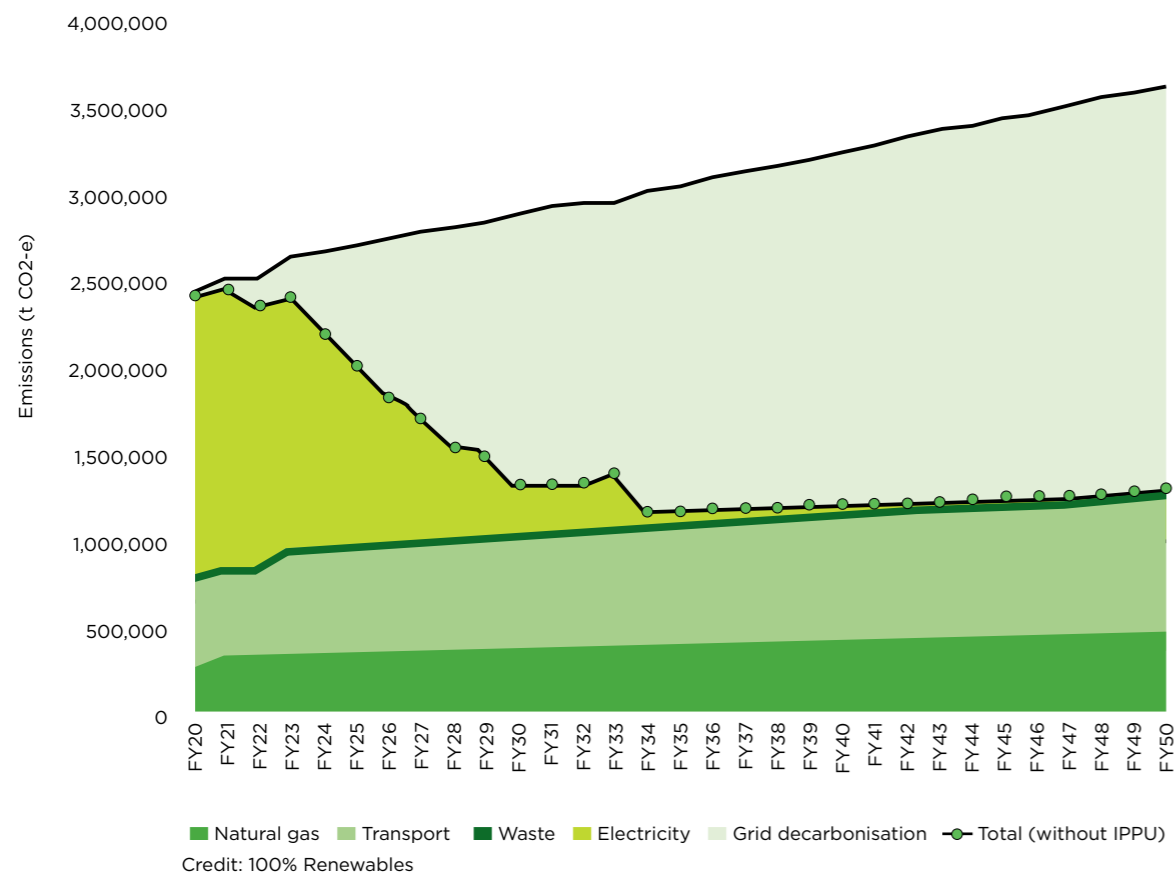
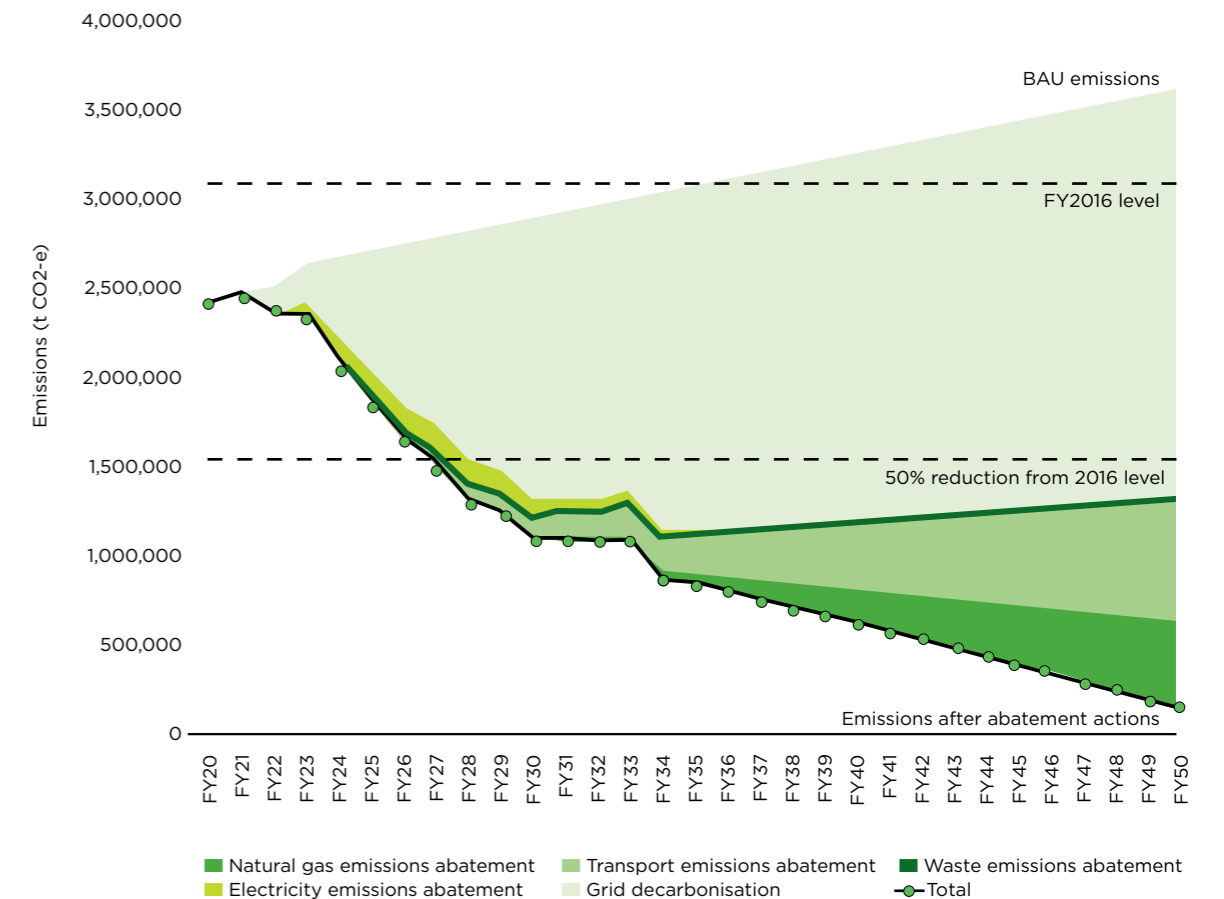


Figure 8: Abatement Action Pathway



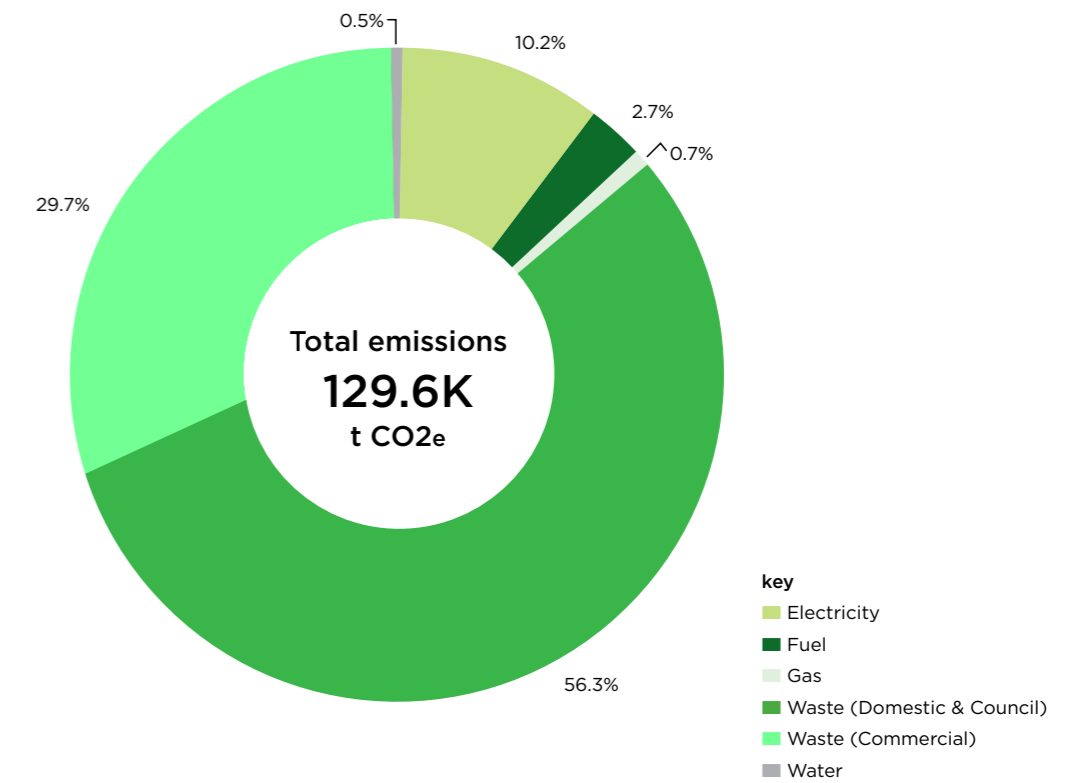
Council operational emissions

WCC recognises the importance of its role as a leader in the community and reducing the impacts of climate change. This is illustrated by Council's net zero emissions by 2030 target from all operations under Council's control. Council manages a large number of buildings, facilities, fleet vehicles, plant and equipment and the Whytes' Gully landfill, which all contribute to its corporate emissions profile represented in Figure 9. These sources are further broken down in the table on page 23. We have set up tools to consistently monitor our emissions and target areas

where meaningful impacts can be made. This will routinely be reported for transparency and provide awareness for the community.

Council's operational emissions profile is a holistic capture of Scope 1 and 2 emissions in-line with reporting standards. Some Scope 3 emissions sources are included (e.g. transmission and distribution losses) however a complete Scope 3 inventory is not reported in this Plan. Council will continue to identify, quantify and monitor Scope 3 emissions sources as part of our ongoing reporting process.

Figure 9: Wollongong City Council operational emissions profile 2022



WCC operational emissions inventory 2022

Emissions Sector	Emissions Source	Area	Quantity (unit)	Emissions tCO2-e
Stationary Energy	Electricity	Public Street Lighting	7.5M (kWh)	5902
		Large Buildings & Facilities	6.5M (kWh)	5388
		Small Buildings & Facilities	2.4M (kWh)	1954
	Renewable Energy	Generated Solar	638k (kWh)	(-465.74)
	Natural Gas	Buildings & Facilities	14.6M (Mj)	941
Transport	Unleaded	Fleet + Plant	193K (L)	516
	E10 unleaded	Fleet + Plant	68K (L)	169
	Diesel	Fleet + Plant	883K (L)	2757
Waste	Landfill	Commercial	33.8K (T)	45,531.67
	Landfill	Domestic & Council	51.3k (T)	86,399.24
	Gas Capture/Flaring	Municipal	1.1M (m^3)	-20,600
	Recycling	Municipal	15K (t)	0
	FOGO	Community	34k (t)	(-56,000)
Water	Water Supply & treatment	Operational	304K (kL)	605
Total Net Emissions				129,600

Council's progress

We have seen steady progress in reducing emissions from Council programs over the past six years mainly through efficiency projects. Figure 11 below identifies this trend excluding waste emissions. Waste emissions contribute a significant portion to Council's profile as we own and operate the landfill. As waste is received from the wider community, we do not have full control over the amount of waste entering the site. This makes landfill

emissions vary year on year and difficult to mitigate, which is represented in Figure 10. Council's role in reducing waste emissions is through encouraging and supporting waste minimisation, circular economy and recycling in the community as well as implementing gas capture infrastructure on site (Further information of waste actions on page 41).

Figure 10: Wollongong City Council emissions over time

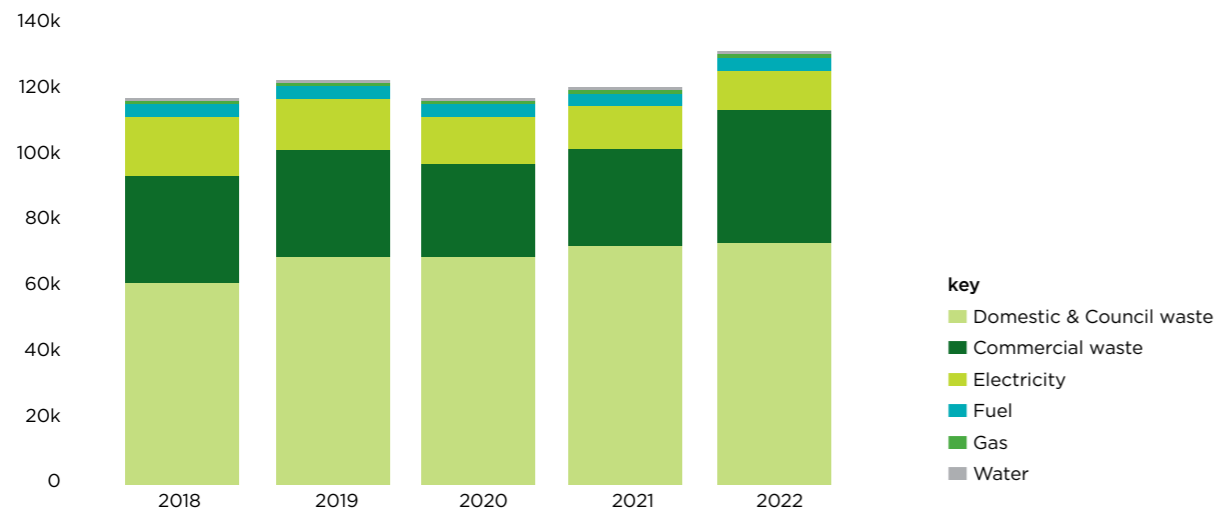
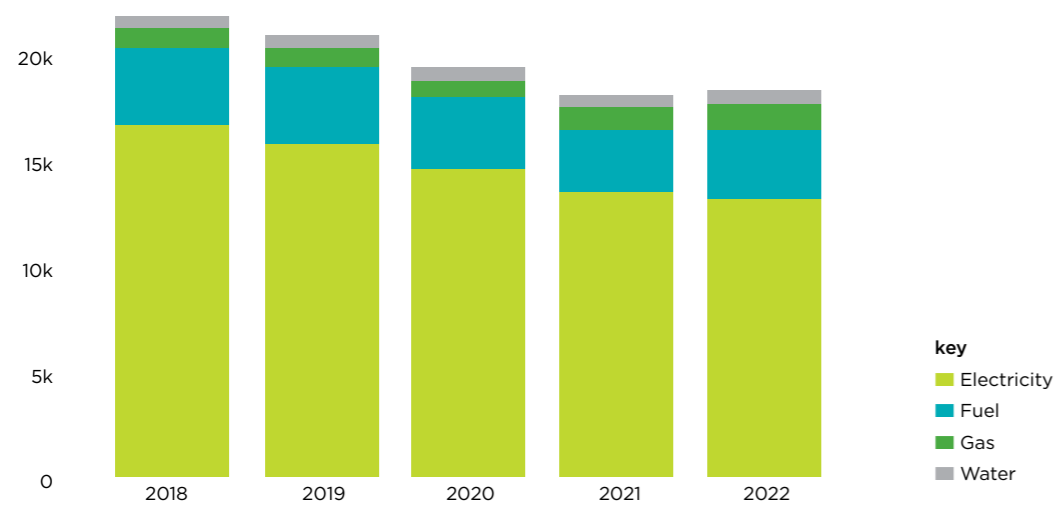


Figure 11: Wollongong City Council emissions over time (excluding waste)

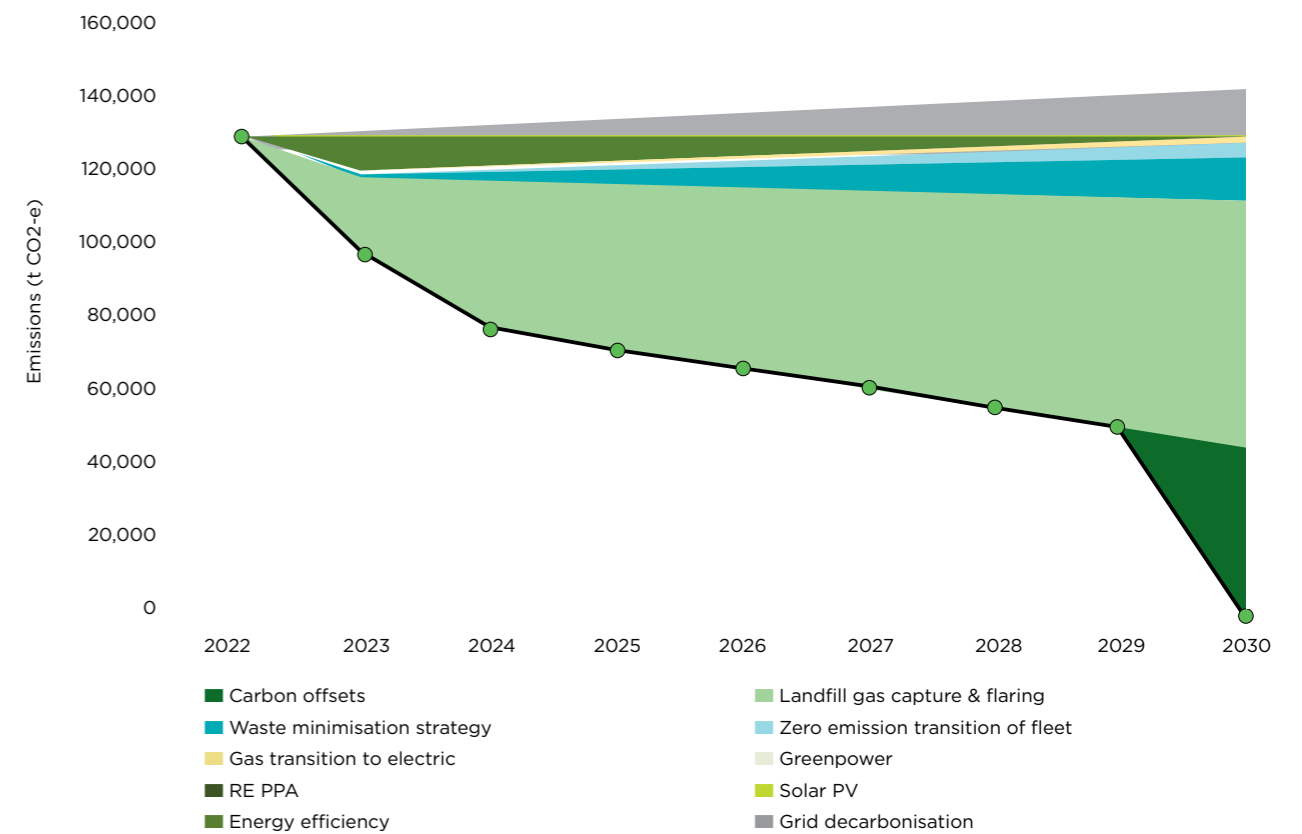


Council's operational emissions reduction pathway

Forecasting ahead to 2030 we have mapped our transition to net zero emissions based upon the corporate actions outlined in 'Leading by Example' on page 38. This will see a gradual reduction in operational emissions through efficiency, renewable energy, electrification and gas capture

projects. The purchase or generation of accredited carbon offsets for residual emissions will be considered during periodic reviews of this plan including a carbon offset procurement strategy.

Figure 12: Operational emissions after abatement



Communities in action



Residential households contributed to around 30% of Wollongong's stationary energy consumption in 2020 (Figure 5). Emissions from our homes and businesses mainly come from appliances and vehicles that use petrol, gas and fossil fuel supplied grid network electricity. This action plan responds to the feedback that residents and business owners would like to identify and prioritise ways to reduce energy consumption and transition to renewable energy to help achieve net zero emissions by 2050.

Not all actions will be relevant to everyone, some residents and business owners will be able to take action immediately and some can plan to take actions when upgrading or buying new appliances. In addition to reducing emissions, many of the actions will result in co-benefits such as reducing household bills and providing health benefits.

There are opportunities to learn from First Nations residents who have intimate knowledge of Country and sustainable practices.



How to read this section

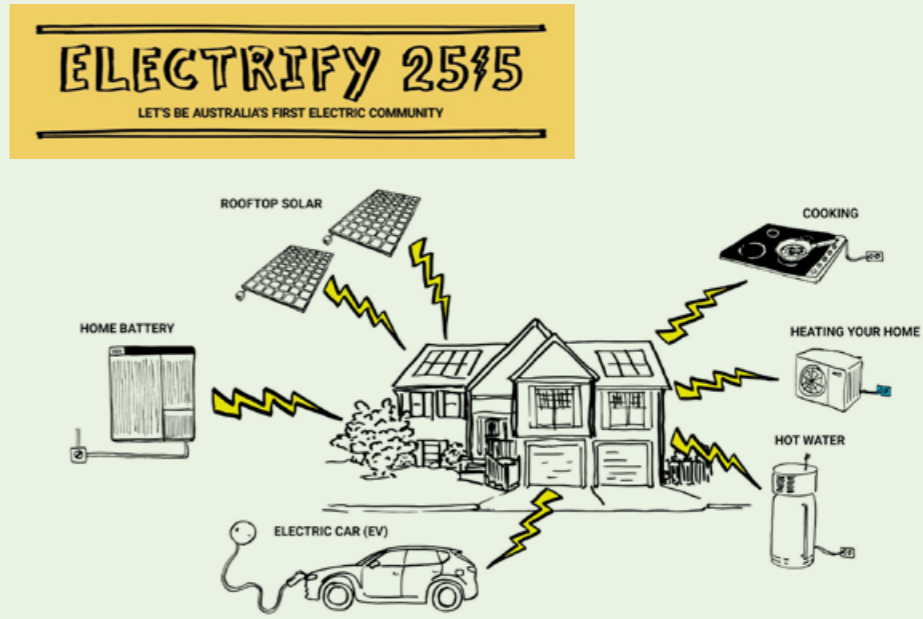
Emissions source	Community action	Rationale	Supporting actions from Council
Identifies the sector of the community emissions profile that is being targeted	What action communities can take to reduce emissions	Explanation of why it is a recommended action	Identifies the actions that Council will undertake to support its community in taking this action (refers to the actions in the Empowering Communities Action Plan)

Communities in action (CA)

Emissions source	Community action	Rationale	Supporting actions from Council
Stationary energy	CA1. Switch to all electric house/business	Transitioning appliances and household systems to electric alternatives is generally more efficient, cost saving and can be powered by renewable energy, leading to lower energy bills and lower emissions.	Empowering Communities 2, 3, 4, 5, 6, 7, 8, 9, 10,
	CA2. Install solar PV	Rooftop solar photovoltaic (PV) is the cheapest electricity available, once installed solar PV can provide free, zero emissions electricity for your home and sell excess generation to the grid. With the cost of solar PV continuing to decrease, this can provide significant long-term savings, lower household energy bills, reduce emissions, increase the value of your property and contribute to resilience of the grid.	Empowering Communities 2, 3, 4, 8, 9.
	CA3. Install battery storage	Pairing solar PV with batteries enables homes and businesses to generate, store and use their own electricity during the day or night. Installing batteries will increase the value of using the energy generated on site rather than exporting to the grid.	Empowering Communities 2, 3, 4, 8, 9.
	CA4. Purchase renewable green power	By opting for renewable green power via your electricity retailer, you can access renewable electricity without having to install solar on your home or business. Green power makes the switch to renewables accessible to everyone, even those who are renting that cannot install solar at their residence. It can also supplement residences that have solar systems but may need power from the grid on occasions.	Empowering Communities 2, 3
	CA5. Replace gas powered cooking and heating equipment with electric alternatives	Electric alternatives are more efficient, safer, healthier and cheaper to run than gas appliances (and technology is continually improving). Electric alternatives can also be powered through renewable energy meaning zero emissions.	Empowering Communities 2,4 8,
Energy efficiency	CA6. Upgrade space heating/cooling system to electric heat pump	Heating and cooling is the largest energy user in the average Australian home (DCCEE, 2020). High efficiency reverse cycle air conditioners typically use around 35-30% of the energy required by conventional gas or electric systems reducing costs and harmful pollutants in your home.	Empowering Communities 2, 4, 8,
	CA7. Upgrade hot water systems to electric heat pump	Accounting for over 25% of the average Australian household energy bill, efficient water heating systems can mean significant cost savings. Similar to reverse cycle air conditioning, electric heat pump hot water systems are the most efficient water heating technology.	Empowering Communities 2, 4, 8,

Emissions source	Community action	Rationale	Supporting actions from Council
Energy efficiency	CA8. Upgrade lighting to LED	LED lighting uses around 80% less electricity to produce the same amount of light as a halogen bulb and also last longer.	Empowering Communities 2, 3, 8,
	CA9. Insulate your home	Homes with inadequate insulation use significantly more energy as heat escapes and enters more easily. Upgrade to at least 'R4' thermal fabric equivalent to stay warmer in winter and cooler in summer without using energy.	Empowering Communities 2
	CA10. Upgrade to energy efficient appliances	Keep an eye out for Minimum Energy Performance Standards (MEPS) and the energy star rating system when buying new appliances. Transitioning large appliances (fridges, washers, freezers & TVs) to higher efficiency options will cost less to run.	Empowering Communities 2
	CA11. Incorporate sustainable & passive building design to buildings	When building new houses consideration should be given the materials used and its design to increase natural lighting and passive heating and cooling. This will reduce the need for energy using systems to light, heat and cool your home.	Empowering Communities 6
Waste	CA12. Reduce waste to landfill & utilise a circular economy through recycling and FOGO services	Buying second hand, repairing items and selecting reusable options not only reduces the amount of waste produced and diverts materials from landfill, but it is also budget friendly. Using your FOGO service at home to separate food waste from landfill waste means this valuable resource can be turned into compost, reducing landfill emissions.	Empowering Communities 12, 13
	Transport	CA13. Switch to low or no carbon transport	Using sustainable transport modes such as walking, cycling or public transport rather than driving a private vehicle will not only reduce emissions but will also reduce your fuel and vehicle maintenance costs and has associated health benefits.
CA14. Purchase an electric or low carbon vehicle		Electric vehicles or low emissions alternatives are far more efficient at converting energy to motion than traditional petrol or diesel vehicles. This saves money and reduces air and noise pollution. When charged by renewable energy they are zero emissions. Hydrogen alternatives for heavy and commercial vehicles are supported through the Illawarra Hydrogen hub project.	Empowering Communities 10, 11
Vegetation	CA15. Expand urban and rural gardens and tree cover	Increasing the amount of vegetation and trees around your home or business will help to keep buildings cooler by providing shade and minimising the heat absorbed by buildings, reducing ambient air temperatures and energy costs required to run cooling appliances in the warmer months.	Empowering Communities 14, 15
Industry	CA16. Support green manufacturing by purchasing low carbon and local products	Demand for green and low carbon products will push the manufacturing industry to develop technology and products that reduce emissions. This is one way the community can help advocate for emissions reductions in the industrial sector.	Empowering Communities 1

Communities in action case studies



Electrify 2515 are a local community group working together to become Australia's first all-electric community. Fuelled by the economic, health and emissions reduction benefits of electrification, the group are supporting local residents and businesses to transition household machines and appliances to electric alternatives and power through renewable energy. Some of the ways they are delivering local action is through group purchasing projects, community education events, online resources, advocacy, and seeking funding opportunities. The initiatives of this plan support the community-led approach from Electrify 2515 and other local community groups to contribute to Wollongong's Net Zero emissions by 2050 and 2030 interim target.




Renew Illawarra are a community network of volunteers that run local activities and events aimed at helping transform Australian homes for climate and energy resilience. This network represents the local branch of the national community-based organisation Renew Australia. Their current members have particular focus and expertise in distributed energy resources, community batteries and energy efficiency. Renew Illawarra have previously made submissions and presentations to Council and the community to contribute toward the development of this and previous Climate Change Mitigation Plans.

Sustainable House Day

Empowering communities



This Plan highlights actions Council will aim to deliver to support the community in reducing its emissions. When developing this action list Council considered the policy instruments at its disposal identified in Appendix 1 and analysed the most effective abatement options. This was based on feasibility (resourcing, ability to implement, and time), impact on emissions, and community feedback gathered through engagement. The actions also attempt to address social equity. Many of the household opportunities to reduce emissions also result in cost savings through reduced energy consumption, however an upfront cost is often associated with this infrastructure (solar is an example). Parts of the community that experience barriers such as financing, renting, apartments, could be left behind in these opportunities. Council's Empowering communities action plan aims to deliver support to where it's needed most and facilitate abatement where it wouldn't otherwise

happen. Council will engage with Traditional Owners to understand how climate change will impact First Nations people and culturally significant places. This section is broken down into three tiers of support:

- Climate emergency commitments - These are foundational actions that contribute to emissions reductions, which Council will continue to implement.
- Empowering communities actions - These are tangible actions focused on delivering support to the community. Implementation of these actions will be monitored and reported to measure the success of this Plan.
- Supporting documents - Consists of other Council and regional plans and strategies that incorporate climate change mitigation actions. This Plan will focus on priority areas and seek to not duplicate effort where actions already exist.



WCC climate emergency commitments

WCC core business commitments

- > Continue to implement commitments made under climate action partnerships including the Global Covenant of Mayors and Cities Power Partnership
- > Continue WCC's contribution to the UN Sustainable Development Goals
- > Continue to incorporate sustainability into regional planning projects
- > Where necessary update sustainability targets to reflect the latest science
- > Update climate change mitigation and adaptation plans as necessary to reflect on progress made and consider how the situation has changed.

What does this look like?

As part of the CCMP 2020-22 implementation and Council's ongoing commitment to reduce the impacts of the climate emergency, many Empowering Community actions are already underway. Some examples of Council's support to help the community reduce emissions include;

- Commitment to the Global Covenant of Mayors to monitor and reduce city-wide emissions
- 'Electrify Wollongong' education and resource platform
- Circular economy projects such as the Food Organics & Garden Organics (FOGO) waste diversion program
- Advocacy and partnership examples through Cities Power Partnership and local industry
- Public Electric Vehicle Charging Infrastructure policies and deployment
- Facilitation of active and public transport through cycling and transport strategies
- Support for community batteries in the local network
- Targets to increase and management of existing urban vegetation and blue carbon sinks

How to read this section

Emissions source	Strategy	Action	Details
Identifies the sector of the community emissions profile that is being targeted	Strategy that will support the community to reduce their emissions	Description of the actions to be implemented to deliver on the strategy	<p>Priority: Priority assigned based on potential impact to emissions profile and ability to deliver early emissions reductions</p> <p>Community Action Level: The approach used by Council based on influence and effectiveness</p> <p>Responsibility: Area of Council responsible to implement the action</p> <p>Potential maximum impact: Annual emissions needing abatement assistance that could potentially be eliminated through assistance of supporting action</p> <p>Measurement: How we will monitor the success of the action</p>

Empowering Community Actions (EC)

Emissions source	Strategy	Empowering Action	Details
All sources	EC1. Develop partnerships and advocacy opportunities to support a regional clean energy transition	<p>Work with other levels of government and stakeholders to accelerate a regional clean energy transition for the community including a focus on;</p> <ul style="list-style-type: none"> - increasing renewable energy generation & storage - improved energy efficiency and planning standards- transition from fossil fuels - low carbon transport options and improved public transport access 	<p>Priority: Medium</p> <p>Community action level: Advocacy, lobbying, Environmental Planning/ Economic Development</p> <p>Responsibility: Environmental Planning/ Community Development/ Economic Development/ Transport</p> <p>Potential maximum impact: 59K t CO2-e</p> <p>Measurement:</p> <ul style="list-style-type: none"> - Number of partnerships and advocacy opportunities taken, reduction in stationary energy and transport emissions.
All sources	EC2. Provide access to the community to an emissions dashboard and education hub	<p>Develop an online emissions portal that houses critical emissions reduction information for the community including;</p> <ul style="list-style-type: none"> - local emissions indicators and monitoring tools to track progress - Links to educational resources and case studies - Overview of Council programs and available grant/incentive opportunities 	<p>Priority: High</p> <p>Community action level: Education & Training</p> <p>Responsibility: Environmental Planning/IMT</p> <p>Potential maximum impact: Indirect</p> <p>Measurement:</p> <ul style="list-style-type: none"> - Number of website visitation

Stationary energy	EC3. Provide energy efficiency and renewable energy solutions for residents with implementation barriers	<p>Collaborate with NSW Government, CHPs, developers, local strata managers and community groups to develop energy efficiency and renewable energy solutions to residents with implementation barriers (Low-income households, renters, apartments).</p>	<p>Priority: High</p> <p>Community action level: Collaboration</p> <p>Responsibility: Environmental Planning/ Community Services</p> <p>Potential maximum impact: 37K t CO2-e</p> <p>Measurement:</p> <ul style="list-style-type: none"> - Postcode level renewable energy installations - Postcode Energy consumption
Stationary energy	EC4. Facilitate where possible procurement opportunities to support the community's transition to renewable energy	<p>Investigate opportunities for WCC to support the community with access to discounted or readily accessible renewable energy and electrification solutions including;</p> <ul style="list-style-type: none"> - Bulk Buy opportunities - low interest or 'green' infrastructure loans/financing options - Local Business buying groups for renewable energy purchasing 	<p>Priority: Medium</p> <p>Community action level: Financial/ Other Incentives</p> <p>Responsibility: Environmental Planning/ Finance</p> <p>Potential maximum impact: 45K t CO2-e</p> <p>Measurement:</p> <ul style="list-style-type: none"> - Number of participating community members/number of programs
Stationary energy	EC5. Review Council's planning documents and guidelines to increase sustainability principles where feasible.	<p>Review changes to state and federal planning policies to direct revision of local planning policies considering the extent of Council's influence to include additional sustainability principles and guidance.</p>	<p>Priority: Medium</p> <p>Community action level: Planning Controls</p> <p>Responsibility: Environmental Planning/ Land Use Planning</p> <p>Potential maximum impact: 30K t CO2-e</p> <p>Measurement:</p> <ul style="list-style-type: none"> - Stationary Energy consumption, Stage of reviewed chapters
Stationary energy	EC6. Provide sustainable buildings guidelines	<p>Educate and work with developers / builders / home renovators on best practice for efficiency, no-gas and low emissions materials.</p>	<p>Priority: Low</p> <p>Community action level: Education, Training, Workshops</p> <p>Responsibility: Environmental Planning</p> <p>Potential maximum impact: 19k t CO2-e</p> <p>Measurement:</p> <ul style="list-style-type: none"> - Material developed/accessed, number of engagements

Emissions source	Strategy	Empowering Action	Details
Stationary Energy	EC7. Support local businesses to reduce emissions and benefit from a regional clean energy transition	Utilise economic development strategy/newsletter and collaborate with local business collectives (I3 Net, Business Illawarra, Invest Wollongong, etc.) to promote low carbon solutions and opportunities to participate in and benefit from, the region's clean energy transition. Investigate feasibility of program to provide subsidised business energy audits linked with available opportunities for energy efficiency and renewable energy. Promote opportunities to transition heavy vehicle fleet to hydrogen alternatives supported by the Illawarra Hydrogen Hub project.	Priority: Medium Community action lever: Financial/ Other Incentives Responsibility: Economic Development/Environmental Planning Potential maximum impact: 22K t CO2-e Measurement: - Commercial Emissions indicators/ Number of program participants.
Stationary energy	EC8. Support a community approach to electrification	Investigate opportunities to provide support and education for residents, local businesses and community groups to electrify household appliances, machines and systems. Promote the cost saving, health and environmental benefits of electrification principles through community education campaign and electrification tool kit.	Priority: High Community action lever: Education, Training, Workshops Responsibility: Environmental Planning Potential maximum impact: 43K t CO2-e Measurement: - Stationary Energy Consumption, Site visitors to 'Electrify Wollongong', Education material delivered
Stationary energy	EC9. Support community distributed energy development and innovations	Partner with Endeavour Energy, community groups and other stake holders to provide community distributed energy resources. Investigate options for Council to house community batteries, demand management systems and renewable energy generation on public land. Develop guidelines for installation on public land.	Priority: High Community action lever: Collaboration, Infrastructure Responsibility: Environmental Planning/ Infrastructure Strategy & Planning Potential maximum impact: 5K t CO2-e Measurement: - Number of installed systems and the capacity of renewable energy generation, showcase community distributed energy resource projects.
Transport	EC10. Support uptake of EVs and acceleration of public EV charging infrastructure implementation	Identify opportunities for public or private investment in public EV charging infrastructure supported by the reviewed Electric Vehicle Charging Infrastructure (EVCI) on Public Land Policy. Increase access for apartment buildings, businesses and on-street parking areas to EVCI.	Priority: High Community action lever: Infrastructure/Services Responsibility: Environmental Planning/Transport/Property Potential maximum impact: 167K t CO2-e Measurement: - Number of public EV chargers/ LGA EV Registrations

Transport	EC11. Increase public and active transport availability and options via delivery of infrastructure, strategies and planning provisions.	Implement targets to increase mode shift towards public and active transport options reducing in-boundary and trans-boundary car trips including linkages to Greater Sydney. Include focus on multi-modal, micro-mobility & tactical urbanism options. Deliver the Wollongong Integrated Transport Strategy, the City Centre Movement and Place Plan, the Wollongong Cycling Strategy and the Illawarra Shoalhaven Regional Transport Plan.	Priority: High Community action lever: Infrastructure/Services Responsibility: Transport and Traffic/Land Use Planning Potential maximum impact: Not estimated Measurement: - Community Transport emissions/mode shift data/ delivery of associated strategy and infrastructure.
Waste	EC12. Support development of circular economy opportunities within the region	Partner with regional stakeholders including the Illawarra Shoalhaven Joint Organisation of Councils (ISJO) for opportunities to develop new circular economy streams in the community to increase diversion of waste from landfill. Investigate opportunities to develop key infrastructure at Whyte's Gully site.	Priority: Medium Community action lever: Collaboration, Infrastructure/ Services Responsibility: Waste Services/ Environmental Planning/ Economic Development Potential maximum impact: Not estimated Measurement: Waste diversion percentage/ landfill tonnages
Waste	EC13. Increase diversion rates and reduce waste to landfill	Continue waste diversion education programs, bin audits and review of collection service strategies to divert more waste from landfill. The delivery of this action is supported by the revised Waste and Resource Recovery Strategy and targets within Waste and Sustainable Materials Strategy 2041 (WSMS) 2041.	Priority: Medium Community action lever: Strategy Responsibility: Waste Services Potential maximum impact: 28K t CO2-e Measurement: - Waste diversion percentage/ landfill tonnages
Vegetation	EC14. Improve vegetation cover in urban centres	Deliver actions within the Urban Greening Strategy to increase canopy cover and implement principles of Council's Tree Management Policy to protect existing important vegetation across the LGA.	Priority: Low Community action lever: Strategy Responsibility: Open Spaces and Environmental Services Potential maximum impact: Not estimated Measurement: - Increase in canopy cover percentage across the LGA
Vegetation	EC15. Improve resilience of blue carbon ecosystems	Effectively manage and preserve natural wetlands, estuaries, salt marsh and mangrove areas as critical carbon sinks. This action is supported through the delivery of the Coastal Management Program.	Priority: Low Community action lever: Strategy Responsibility: Open Spaces and Environmental Services/ Environmental Planning Potential maximum impact: Not estimated Measurement: - Water Quality/Percentage of wetland coverage.

Supporting Documents

Documents supporting climate change mitigation actions		
Emissions source	Supporting document title	Relationship to CCMP
All Sources	2023 Wollongong Investment Prospectus & Economic Development Strategy	Identifies regional investment opportunities promoting a transition to clean energy.
All Sources	Climate Change Adaptation Strategy	Lateral document targeting adaptation actions that also contribute to mitigation in some instances.
All Sources	Sustainable Wollongong Strategy 2030	Outlines Council's commitment to sustainability for the community. Identifies pathways to create a sustainable and more liveable city, including priority area focusing on achieving net zero emissions.
All Sources	Planning Framework; - Local Environmental Plan - Development Control Plans - Town Centre & Village Plans - Neighbourhood Plans - West Dapto Vision - West Dapto Community Infrastructure Needs Assessment and Gap Analysis	Multiple planning documents with varying principles and controls that contribute to climate change mitigation.
All Sources	Illawarra-Shoalhaven Regional Plan 2041	This regional planning document aims to protect and enhance the region's assets and plan for a sustainable future. Emissions reduction are specifically targeted through Objective 15: Plan for a Net Zero region by 2050, and action 6: Develop an Illawarra Shoalhaven Sustainability Roadmap.
All Sources	Innovate Reconciliation Action Plan	Strategic document that guides Council's commitment and vision to create an inclusive and connected community for First Nations people. The CCMP will draw on these principles during implementation.
Stationary energy	Sustainable Buildings SEPP	NSW State Government planning document that dictates sustainability controls in developments, contributing to emissions reductions of all new buildings particularly through stationary energy.
Transport	EV Charging infrastructure on Public Land Policy	Sets out guidelines for supporting implementation of public EVCI reducing community transport emissions.
Transport	Wollongong Integrated Transport Strategy	WCC document delivering on our CSP Goal 6 – we have affordable and accessible transport, with a focus on increasing sustainable transport modes including public transport, walking, and cycling.

Transport	City Centre Movement and Place Plan	A multi-modal and sustainable integrated transport plan to address general traffic, public transport, pedestrians, cycling and car parking in the Wollongong City Centre, supporting the objectives of the Wollongong Integrated Transport Strategy.
Transport	Wollongong Cycling Strategy	Strategy that works towards a 10-year vision where cycling is a preferred option for transport in Wollongong.
Transport	Illawarra Shoalhaven Regional Transport Plan	NSW Government document outlining local actions to improve connectivity and access to transport in the region, with a key focus on increasing active transport trips.
Waste	Waste and Resource Recovery Strategy	Represents a pathway for Council and the community to work towards sustainable waste management, including actions for landfill gas capture and diversion of materials from landfill.
Waste	Waste and Sustainable Materials Strategy 2041	NSW Government document outlining actions to phase out problematic waste materials and mandating and incentivising the use of recycled content, biogas generation from waste and waste separation, with an aim to reduce carbon emissions through better waste and materials management.
Waste	Illawarra Regional Food Strategy 2013	Illawarra Councils joint strategy outlining their role in supporting local food security and sustainability.
Vegetation	Urban Greening Strategy	Guides the management and enhancement of urban vegetation across the LGA including targets to increase in canopy cover.
Vegetation	Tree Management Policy	Sets out guidelines for tree management on private and public land, supporting the tree management goals set out in the Urban Greening Strategy 2017-37.
Vegetation	Illawarra Regional Biodiversity Strategy	Joint strategy outlining how Illawarra councils will help meet biodiversity targets and respond to regional issues such as new and significant pressures on biodiversity brought about by climate change.
Vegetation	NSW Blue Carbon Strategy 2022-2027	Supports restoring coastal biodiversity and ecosystems while simultaneously working towards emissions reductions. Specific sites in Wollongong are identified in the document as priority blue carbon ecosystems and outlines process for generation of blue carbon credits.
Vegetation	Coastal Management Program	Set the long-term strategy for the coordinated management of Wollongong's coast and estuaries (particularly Lake Illawarra). These documents also guide the management of local coastal vegetation ecosystems that act as critical carbon sinks.

Leading by Example



The final suite of actions focus on reducing Council's corporate emissions to zero by 2030, it is broken down into four target areas based on the main sources of our emissions including:

1. Leadership and Governance
2. Waste
3. Buildings and Facilities
4. Transport and Fleet



What does this look like?

Material examples of actions in this section that Council has already achieved as part of the CCMP 2020-22 include:

- Deployment of 545kW of solar PV systems on Council buildings
- Introduction of electric vehicles in Council's fleet
- 100% Renewable power purchase agreement for supply of Council's 17 largest sites and streetlights
- 6 star green star performance rating for Council's administration building
- Future proof design to transition buildings to all electric
- Energy efficient LED lighting upgrades of certain Council facilities
- Ongoing waste minimisation strategies and implementation of gas capture infrastructure at waste facility



Leadership and governance

Council has made commitments to incorporate emissions reductions principles into core business and operations. Actions in this area will be considered as ongoing business as usual and themes including: maintaining responsibility, resourcing, monitoring success and leadership.

WCC operational commitments

- > Continue to foster leadership working groups and steering committee with senior representation - adapt to ensure productivity as needed.
- > Adequately resource and support implementation of CCMP actions
- > Continue to align Council's decision making processes and policies with emissions reductions principles.
- > Continue to update and monitor internal emissions dashboard and report progress through established reporting framework
- > Continue to show leadership to the community by showcasing emissions reduction solutions and innovations
- > Assign responsibilities and KPIs to ensure accountability of individual actions
- > Increase Council's focus on sustainable procurement through policy and framework decisions
- > Review this plan within 5 years to reassess Council's emissions profile and adjust actions based on emerging and best available technology. Incorporate a carbon offset purchasing position for Council's residual emissions



56,000 tonnes of emissions was diverted from landfill through the green 'Food Organics and Garden Organics' bin in 2022.

The diversion rate of total potential domestic waste in 2022 was 50.2%. We aim to continuously increase this towards 2030 and beyond to continue to reduce emissions from landfill.

Waste

Landfill waste, particularly organic content, emits greenhouse gas as it decomposes. Whyte's Gully waste facility makes up a significant source of Council's operational emissions, a problem unique to Local Government's that own and operate community waste facilities. As a priority focus area for this plan, there are several approaches to reduce waste emissions across the three action plans. This is because whilst Council manages the landfill, it accepts waste from the wider community and we all play a role in reducing waste and building a circular economy. As new technologies evolve, particularly involving the local clean energy transition, new waste challenges and opportunities will emerge. Council will seek to explore innovative solutions to partner with industry to reduce waste across the community.

There are multiple opportunities that Council can leverage to help reduce waste emissions.

- NSW EPA Climate Change Policy & action plan – The EPA regulates almost all waste activities including our licenced landfill facility. This policy has particular focus and support actions aimed at reducing landfill waste.
- NSW Waste & Sustainable Materials Strategy – Targets net zero organic waste emissions from landfills by 2030. This document also establishes the State Government's requirement for landfill gas capture and net zero emissions for all licenced landfill facilities. To support compliance of this there is available funding that Council can access, as well as consideration of financial incentives through waste levy rebates.
- NSW Clean Manufacturing Precincts – Supports growth of low-emissions industries and energy recovery facilities. Wollongong is identified as a key area to support delivery of this program and will attract industrial circular economy opportunities such as waste to hydrogen production.

Priority Action	Contributing milestones	Details
LE1. Integrate emissions reductions priorities into strategic planning framework for waste	<ul style="list-style-type: none"> • Develop Long Term Master plan for Whyte's Gully site and Review Waste Management Strategy to align and contribute towards targets in the <i>NSW Waste & Sustainable Materials Strategy 2041</i>. • Develop Whyte's Gully Greenhouse Gas Management Plan 	<p>Measurement – Adopted targets/policy development</p> <p>Impact - *111.3K t CO2e</p> <p>Responsibility - Lead: Waste. Support: Environmental Planning, NSW Gov.</p>
LE2. Develop new waste diversion streams, practices and infrastructure as opportunities and technology become available	<ul style="list-style-type: none"> • Consider increased screening options and future recycling opportunities to increase diversion at Whyte's Gully • Consider options to increase waste diversion and reduction from commercial businesses (DCP Chapter) • Trial available emerging technologies to reduce waste to landfill 	<p>Measurement - Waste Diversion Rate</p> <p>Impact - *111.3K t CO2e</p> <p>Responsibility - Lead: Waste. Support: Environmental Planning, NSW Gov, Land Use Planning.</p>
LE3. Expand gas capture infrastructure at Whyte's Gully towards electricity generation	<ul style="list-style-type: none"> • Continue to expand infrastructure as practically possible • Develop future cell design with consideration for maximum gas capture efficiency 	<p>Measurement - Gas capture flow rate/recovered emissions</p> <p>Impact - *111.3K t CO2e</p> <p>Responsibility - Lead: Waste. Support: Environmental Planning.</p>
LE4. Review waste contracts to include emissions reduction priorities	<ul style="list-style-type: none"> • Include sustainability and efficiency principles in future waste contract tenders to reduce Scope 3 emissions and encourage circular economy • Investigate feasibility of options for increasing efficiency of waste service (e.g pilot bi-weekly landfill collection) 	<p>Measurement - Scope 3 Fuel Consumption</p> <p>Impact - Scope 3</p> <p>Responsibility - Lead: Waste. Support: Environmental Planning, NSW Gov.</p>

*Impact based off total 2022 waste emissions and assumes 100% reduction, actual impact will vary depending on implementation and feasibility factors.

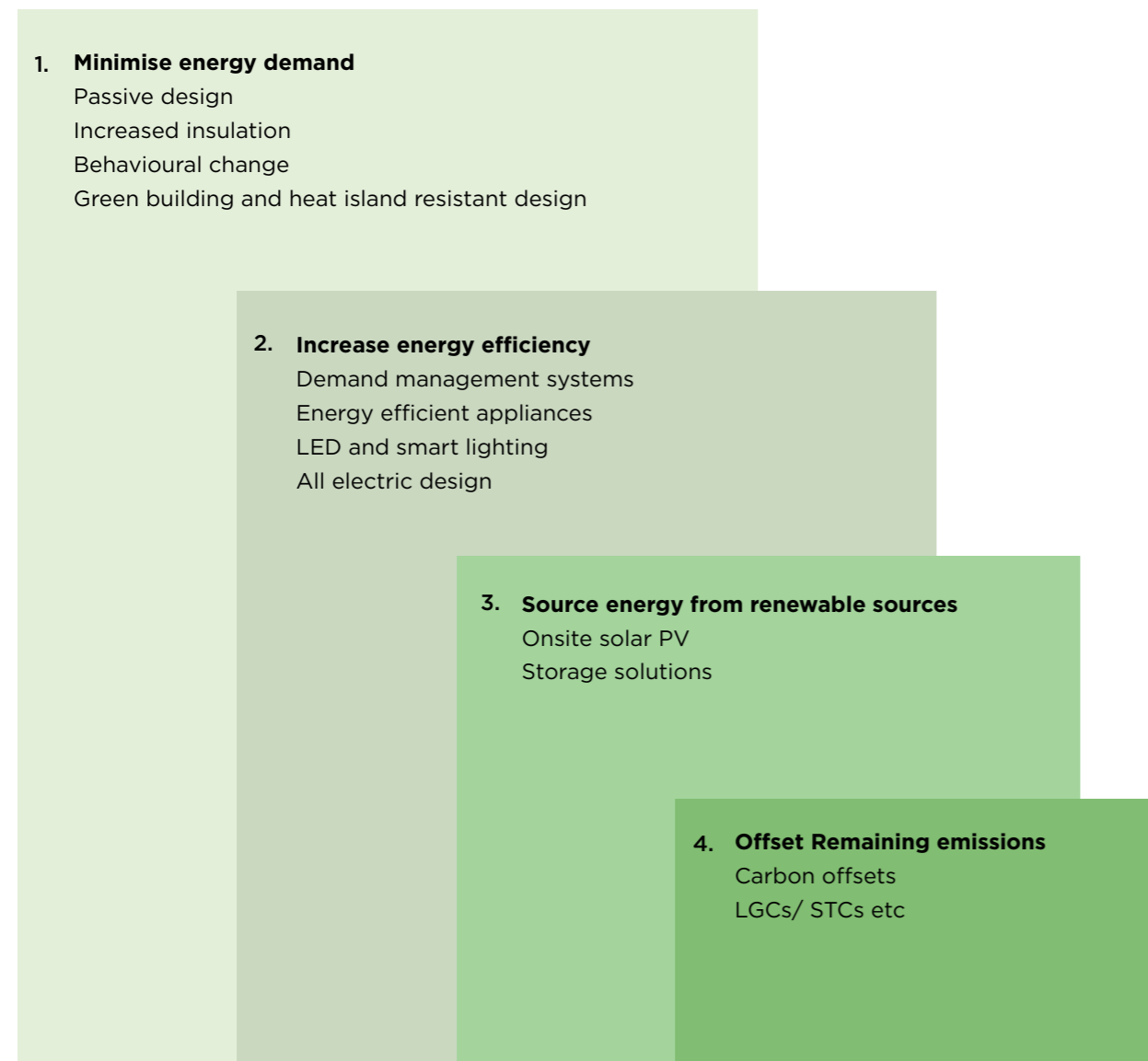
Buildings and facilities

Council's buildings and facilities represent an opportunity to significantly benefit from reduced operating costs and onsite energy generation whilst preparing for the future and being a climate leader. It is critically important to consider how our energy is produced but it is equally important to consider how efficiently energy is used. By incorporating sustainable design and the principles of energy management hierarchy highlighted in Figure 13 below, we will continue to reduce energy consumption within our buildings.

On average, sustainable buildings use 66% less energy than the average Australian building (GBCA, 2013). Whilst there can be an increased initial capital cost, reduced operating costs over the life of the asset create an attractive pay back period. Buildings are long term assets that we maintain for 50+ years, meaning that anything we build today will have an ongoing impact on Council's emissions profile into the future and unsustainable design will be an ongoing burden and more expensive to retrofit down the track.

On average, sustainable buildings use 66% less energy than the average Australian building

Figure 13: Carbon Management Hierarchy



Priority Action	Contributing Milestones	Details
LE5. Council buildings and facilities to incorporate low emissions design and performance standards.	<ul style="list-style-type: none"> Continue to implement and enhance current approach to sustainable design. Formalise and adopt sustainable design policy for council buildings & facilities Accelerate electrification/gas transition and formalise through strategic plan for major Council assets Incorporate sustainable design tool to guide specifications for new builds/retrofits 	<p>Measurement - Stationary Energy consumption/ Installed/generated solar</p> <p>Impact - 15k T Co2-e/year</p> <p>Responsibility - Lead: Infrastructure Strategy & Planning. Support: Project Delivery, Environmental Planning</p>
LE6. Power Council with 100% renewable energy	<ul style="list-style-type: none"> Deploy solar and storage solutions where feasible Secure renewable PPA or green power option for electricity consumption not currently 100% renewable Showcase innovative solar, storage and demand management solutions to the community 	<p>Measurement - Emissions avoided through renewable generation</p> <p>Impact - 2k T CO2-e</p> <p>Responsibility - Lead: Procurement, Infrastructure Strategy & Planning. Support: Environmental Planning</p>
LE7. Provide technical support and pathways for lease/licence holders who occupy Council buildings to implement renewable energy	<ul style="list-style-type: none"> Develop position and policy on facilitating and financing renewable energy solutions for Council leased buildings Assess appropriate sites based on feasibility 	<p>Measurement - # of kw Solar and storage installed</p> <p>Impact - Contribution to community profile</p> <p>Responsibility - Lead: Property. Support: ISP, Project Delivery, Environmental Planning, Finance</p>

The business case for solar

Australia leads the world in rooftop solar installations/person and for good reason. Favourable climatic conditions, record high grid electricity costs and decreasing installation costs means the economics of onsite rooftop solar are 'outstanding'. With average payback periods of 3-5 years, Australian rooftop solar is among the cheapest electricity in the world (IEA, 2022). Where Council sites meet certain criteria and assessment, solar PV should be actively deployed at scale. Even those sites currently captured by our renewable PPA would benefit financially from onsite solar PV.

Solar feasibility criteria:

- Sufficient daytime electricity load
- Adequate roof size with >10 years of remaining life expectancy or similar ground mounting availability
- minimal shading from trees or other structures
- Favourable electricity tariff costs/charges
- Opportunity for pairing with EV charging



Our power purchase agreement commenced **100% renewable energy flow** in 2023 to our 17 largest consuming assets + street lighting. Representing **85% of our electricity consumption**, this is a critical step in reducing Council's corporate emissions.



Transport and equipment

As the electricity grid decarbonises and we seek to electrify our energy sources, stationary energy emissions will quickly fall leaving transport emissions as the major source of emissions towards 2030. Supporting community transport actions focus on making active, public and low emissions transport modes more accessible and convenient. This will create a cleaner, safer and low carbon landscape for residents and visitors.

To contribute operationally to reducing

Council's transport emissions the focus is on a phased transition of fleet and equipment to low carbon alternatives. Electric Vehicles (EVs) are more efficient than internal combustion engines (ICE) and have lower running and maintenance costs. Market demands indicate that a transition is inevitable and to ensure Council is prepared a strategic approach will be taken to future proof charging infrastructure requirements and operational needs.



Priority action	Contributing milestones	Details
LE8. Transition fleet to low carbon alternatives and increase operational efficiency	<ul style="list-style-type: none"> • Update vehicle acquisition strategy to focus on transition to low carbon solutions preferably electric • Strategically plan charging infrastructure upgrades at priority sites • Continue phased transition to EVs where practical (begin with passenger vehicle as electric alternatives become feasible in other vehicle types) • Investigate EV leaseback solutions • Provide staff education and training to increase uptake of electric and low carbon alternatives. • Implement electric micro-mobility options for staff 	<p>Measurement - # of Evs in fleet, Fuel Consumption</p> <p>Impact - 3.4k T CO2-e/year</p> <p>Responsibility - Lead: Fleet Management, Support: Environmental Planning, Procurement, Project Delivery</p>
LE9. Transition to low carbon plant and equipment and increase operational efficiency	<ul style="list-style-type: none"> • Develop fleet and operational rationalisation project to improve efficiency • Continue to trial electric plant and equipment alternatives • Investigate vehicle to load (V2L) solutions • Develop EV plant transition plan • Seek fleet opportunities to contribute to and leverage the Illawarra Hydrogen Hub project 	<p>Measurement - Fuel Consumption</p> <p>Impact 3.4k TCO2-e/year</p> <p>Responsibility - Lead: City Works, Support: Procurement, Environmental Planning</p>

How we made this plan

To develop this Plan Council undertook a number of key steps outlined in Figure 14 below. This methodology was seen as critical to ensure this Plan captured both what the community expects in terms of Council action towards climate change as well as targeting areas where action would have the most impact on reducing emissions.



Figure 14: WCC Development Steps



CCMP 2020 evaluation

Due to the relatively short implementation timeframe, the main objectives of the previous CCMP were to establish governance structures, policies and support for future plans to build on towards achieving Council's emissions reduction targets. The Plan also delivered some key emissions reduction outcomes including the introduction of the food and garden organics waste diversion program, Council's renewable energy power purchase agreement and upgrade of the streetlight network to energy efficient LED lights.

As part of the evaluation a qualitative analysis was conducted on the actions of the previous Plan and their implementation to determine their focus and impact on reducing emissions. The learnings of this analysis were used to develop this Plan. Figure 15 identifies each of the 98 actions within the previous Plan and allocates them based on the following criteria;

- Project phase - whether the action was completed or not
- Impact on emissions - direct or indirect
- Target contribution - whether the action contributed to the community or operational target
- Action Framework - Priority status or ongoing commitment/Business as usual
- Action continuity - If the action is ongoing and will be rolled over to the next CCMP

Figure 15: 98 Action plans



Results

75% of completed or ongoing actions focused on building frameworks/ governance structures

51% were considered core to our commitments

30% actions had tangible metrics to measure ongoing performance

Key recommendations from the evaluation

- Incorporate SMART actions to measure success rather than number of actions completed
- Implement priority system based on criteria including: impact on emissions profile, cost and ability to implement.
- Consolidate action pathway to focus on priority actions and streamline GCoM reporting
- Assign responsibilities to increase accountability
- Increase focus on delivery of community actions whilst also establishing key operational emissions reduction opportunities.

What the community said

An extensive community engagement campaign was undertaken at the end of 2022 to gather feedback to help shape priorities of this plan. The key questions we asked were:

- What are you already doing to reduce your emissions?
- What do you think the community should focus on moving forward to reduce emissions?
- What are the barriers and challenges you face in reducing emissions?
- How can Council best focus its resources to assist in helping the community reduce emissions?

The responses to these questions helped to identify where gaps exist in emissions reduction action and areas where help is needed most. The community engagement campaign consisted of various methods to ensure we reached the voices of everyone affected by climate change, not just those routinely involved in environmental policy. A summary of engagement methods is below:

Residential

- 1 community survey
- 9 Pop-up discussion stalls
- 3 Neighbourhood forum presentations
- 5 focus groups with community groups and community climate leaders
- 3 individual interviews with local subject experts
- 4 tertiary education presentations and lectures
- 3 climate action week events/ presentations

Commercial

- 1 business survey
- 2 business roundtables
- 3 one-on-one interviews with key stakeholders

Industrial

- 4 one-on-one interviews with large emitters
- 3 focus groups with industry network groups
- 1 presentation to community consultative committee

Other

- 6 one-on-one interviews with government agencies
- 3 one-on-one interviews with utility providers
- 4 letters sent to local politicians

Some of the key response themes are:

- > Overwhelming response for inclusion of community interim emissions reduction target.
- > Community has a high understanding of the impacts and threats of climate change, messaging needs to be focused around practical mechanisms and tools for action.
- > Community understands Council doesn't hold all the levers and a combined approach from all levels of private and public institutions is needed.
- > Top responses individuals already do based around existing available services: Waste Management, Energy Efficiency, sustainable transport.
- > Top responses community believes are important to focus on involve electrification and renewable energy solutions: community renewable energy solutions, home solar and battery, sustainable transport.

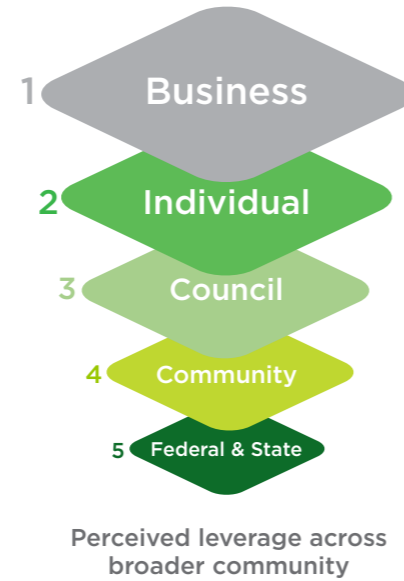


Figure 16: Wollongong community survey



Implementation and resourcing

Planning

The abatement pathways in this Plan consist of staged actions, some that are achievable now, and some that will be implemented in the future. They are designed to target delivery of support where it is needed most and where it will have the most impact on emissions, but also be flexible to allow our approach to pivot based on new technologies, opportunities and understandings. To fund and resource individual actions their implementation will need to be embedded in Council's resourcing strategy. This document outlines the resources Council will use to achieve the objective and strategies detailed in the CSP and subsequently the Delivery and Operational Plans. The alignment of this Plan with the CSP objectives are highlighted on page 10.

The Infrastructure Delivery Program (IDP) outlines the strategic approach Council takes to upgrading, maintaining, and servicing our infrastructure assets across the city. The infrastructure specific actions in this plan will need to be incorporated into the IDP including a holistic analysis on whole of life costs. Often projects involved in reducing emissions also result in reducing operational costs mainly through reduced energy consumption, however also involve an upfront capital cost. This capital cost needs to be considered versus the ongoing operational cost for the life of the project to determine a

business case and feasibility. Council's commitment to Net Zero emissions by 2030 should ensure the advantages of avoiding the ongoing need to offset emissions are considered as a favourable cost benefit aspect for every Council project that leads to emissions reductions.

Reporting

During the implementation of this plan, Council will organise an annual forum, to share progress on the plan implementation and associated impacts on emissions. This process will foster a two-way exchange of information, allowing the community to provide input on future action design and delivery. It will also serve as an educational platform to offer resources for ongoing opportunities to reduce emissions and deliver on actions under the 'Communities in Action' pillar. The annual forum will compliment the emissions dashboard described in action EC 2. Which will house regularly updated emissions data and reporting resources available to the community. Status updates on the implementation of the CCMP 2023-30 will also be made available through our quarterly Review Statements and Annual Report, ensuring transparency and accountability in the delivery of this Plan.



Financing Option	Description
Grants and Incentives	Ideal option to fund projects, often consisting of 50-100% of cost. Projects that apply for grant funding need to be 'shovel ready' and be managed by staff. Examples include energy efficiency and renewable energy generation certificates, NSW Climate Change fund, CEFC and ARENA funding.
Self-funded	Projects that have a positive business case can be funded directly through the budgeting process reducing management resources and benefiting from financial return.
Loan funded	Council can apply for Environmental upgrade agreements (EUA) to fund sustainability projects to reduce upfront cost and repaying through savings.
Leasing agreement	Engaging a supplier to install, own, operate and maintain equipment is an option to reduce strain on Council resources and cost. Public electric vehicle chargers or are an example where this is an option.
Community energy projects	Council can host community energy projects through investor loans or PPAs to fund the project.



Glossary

Abatement: Emissions reductions as a result of an action – for example installation of infrastructure.

Adaptation: The process of adjustment to actual or expected climate and its effects. Addressing and responding to the impacts of climate change to minimise disturbance.

Carbon Budget: The predicted volume of carbon dioxide that can be emitted into the atmosphere before certain levels of global warming become probable.

Carbon emissions or emissions: Climate change causing greenhouse gas emissions released through burning fossil fuels and the production of materials.

Carbon offsets: Tradable unit representing 1 tonne of carbon abatement that can be generated or purchased to negate other emissions.

Circular Economy: A system in which all resources are highly valued and remain in the system through re-use, re-purposing and recycling.

Cities Power Partnership: Collaborative group of Australian local governments that work towards emissions reduction targets through resource and knowledge sharing.

Climate Change: Refers to a change in the state of the climate that can be identified by changes in the mean and/or variability of its properties and that persists for an extended period, typically decades or longer.

Climate emergency: The catastrophic changes to the climate brought about by human activity that poses a dangerous threat to all life on the planet.

Emissions Inventory or profile: Identifies all sources of emissions for a particular organisation or community.

Global Covenant of Mayors for Climate and Energy: Global alliance of cities and local governments that recognise the climate emergency and work together to reduce emissions at a city level.

Distributed energy resources: small-scale energy resources situated near sites of electricity consumption, examples include solar PV systems, storage technologies and smart management systems.

Greenhouse Gas (GHG) Emissions: Gases that are considered to be key contributors to global warming. The most significant are Carbon dioxide (CO₂), Methane (CH₄) and Nitrous Oxide (N₂O).

GHG Protocol: Document that establishes comprehensive global standardised frameworks to measure and manage GHG emissions.

Intergovernmental Panel on Climate Change (IPCC): The objective of the IPCC is to provide governments at all levels with scientific information that they can use to develop climate policies. IPCC reports are also a key input into international climate policy and decision making.

Net Zero Emissions: The balance between the amount of emissions produced and the amount that's removed from the atmosphere. It can be achieved through a combination of emissions reduction and emission removal or offsets.

Mitigation: Human intervention to reduce the sources or enhance the sinks of greenhouse gases. Addressing emissions at the source rather than dealing with the effects.

Nationally Determined Contribution (NDC): Under the Paris Agreement, parties are required to submit emissions reduction (mitigation) commitments every 5 years.

Paris Agreement: A legally binding international treaty on climate change, under the agreement all parties must commit to national emissions reduction targets (NDCs).

Renewable Energy: Energy sourced from natural sources or processes that are constantly replenished such as wind, solar and water (hydro). Also called 'clean energy'.

Resilience: The capacity of individuals and systems to adapt, withstand or recover in response to impacts or shocks they experience.

Safeguard mechanism: The framework for regulating Australia's largest greenhouse gas emitters to keep their net emissions below a baseline.

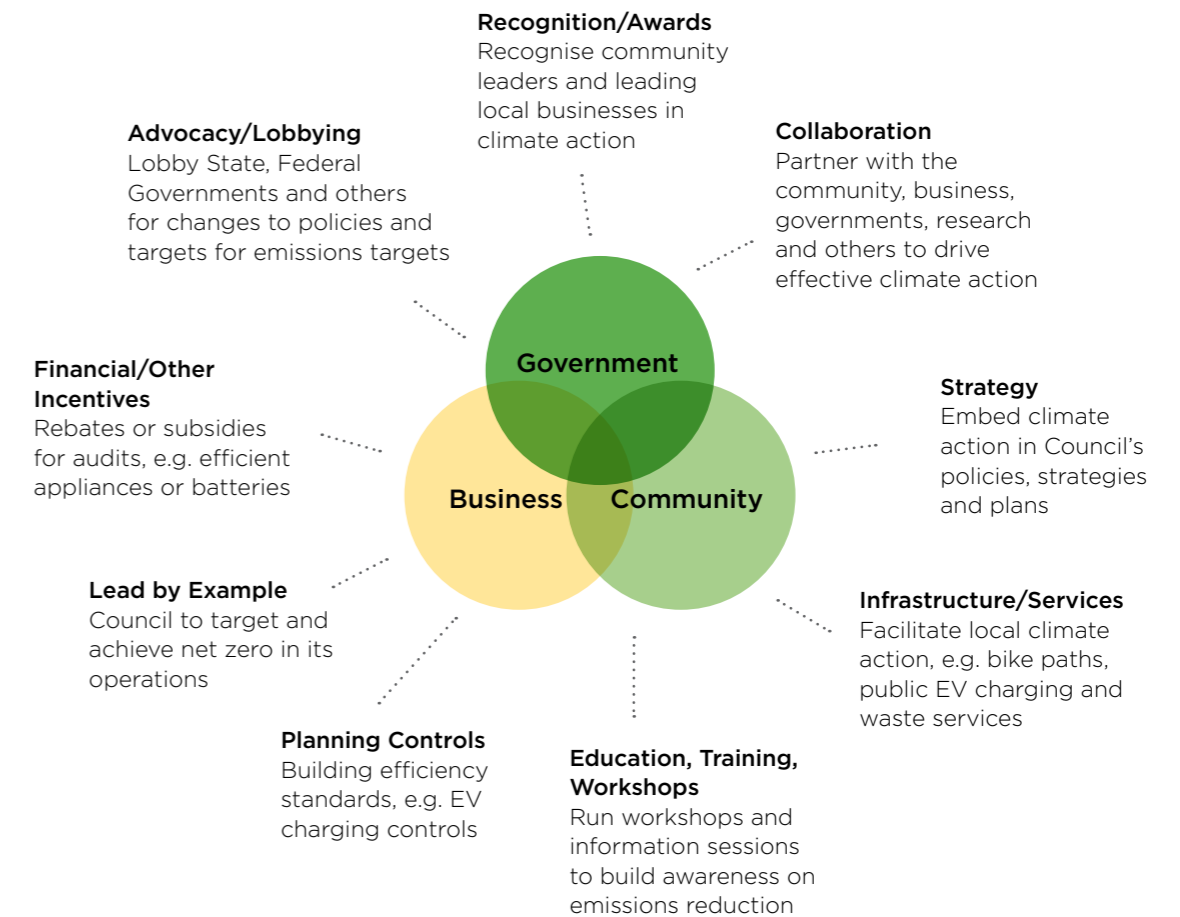
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Appendix

Council's available levers and policy instruments to support emissions reduction.

Figure 17: How Council can support action in the community



Credit: 100% Renewables

Community Abatement Action Pathway Analysis

The table below identifies the analysis that was used to determine potential emissions reductions for actions within this plan. This information contributes to action priority ratings and our forecast pathway to net zero emissions (page 21). The information in this table does not represent targets, it includes assumptions of current and future uptake/growth based on available data (e.g. expected grid decarbonisation). The figures represent cumulative emissions until 2050.

Emissions Source	Emissions Reduction Theme	Action Name	Action Description	Assumptions	Cumulative Abatement Potential (t CO2-e)	Assumed % via individual action	Balance, possibly needing support	Abatement that needs assistance
"Stationary Energy Electricity - Residential"	Behind-the-meter solar	Install solar PV	Dwelling (separate house and medium/high density dwellings) owners can install solar panels on their roofs to reduce daytime energy use. They can look to carry out activities during the daytime when solar energy is free.	"From APVI Solar Maps, <10kw solar installations are assumed for separate houses and 10% of 10-100kW are for townhouses and apartments. From Profile and ForecastID, dwelling numbers until FY2050 are projected using the average year-on-year percentage increase of dwellings and projected dwelling type numbers are estimated using the percentage composition based on FY2021 data"	60,641 t CO2-e	60%	40%	24,257 t CO2-e
"Stationary Energy Electricity - Residential"	Behind-the-meter solar	Install solar PV and battery storage systems	Separate house owners can install solar panels on their roofs and those with an existing solar system can upgrade their solar capacity. Coupled with battery storage, they can look to carry out activities during the daytime when solar energy is free and use stored energy on their battery during nighttime.	"From APVI Solar Maps, <10kw solar installations are assumed for separate houses and 10% of 10-100kW are for townhouses and apartments. From Profile and ForecastID, dwelling numbers until FY2050 are projected using the average year-on-year percentage increase of dwellings and projected dwelling type numbers are estimated using the percentage composition based on FY2021 data"	206,729 t CO2-e	30%	70%	144,710 t CO2-e
"Stationary Energy Electricity - Residential"	Energy efficiency	Implement energy efficiency improvements - including changes to practices, retrofits and new works	Individuals in Wollongong can implement energy efficiency in their homes through better awareness of energy waste, implementation of cost effective retrofits such as LED lights, investment in energy efficient appliances, air conditioners, heat pump and solar hot water systems.	30% improvement in energy efficiency measures applied to end usage across residential end use equipment.	107,590 t CO2-e	70%	30%	32,277 t CO2-e
"Stationary Energy Electricity - Residential"	Accelerated improvement to BASIX	Improved residential building standards	Implementation of more energy efficient design and technologies to new housing stock. These can be improved building insulation, reduced air leakage, improved home energy ratings and disclosure, designing without gas, designing with low-GHG materials. These can be reviewed from time to time to determine the case for guidance or requirements to be changed.	30% improvement on BASIX requirements, with the assumption that BASIX standards lift every few years.	8,053 t CO2-e	0%	100%	8,053 t CO2-e
"Stationary Energy Electricity - Residential"	Buying clean energy	GreenPower® purchasing	Residents can opt to purchase GreenPower® in their electricity supply agreement which increases the renewable energy consumption of the whole residential sector.	The current residential uptake of GreenPower® is estimated to be 0.67%.	30,124 t CO2-e	100%	0%	0 t CO2-e
"Stationary Energy Electricity - Commercial and Industrial"	Behind-the-meter solar	Install solar PV	Wollongong's commercial businesses install solar PV, reducing their grid power use.	From APVI Solar Maps, 90% of 10-100kW are for commercial and industrial buildings.	55,289 t CO2-e	50%	50%	27,645 t CO2-e
"Stationary Energy Electricity - Commercial and Industrial"	Behind-the-meter solar	Install solar PV and battery storage systems	Wollongong's commercial businesses install solar PV coupled with battery storage, reducing grid power use. Given mainly daytime operation of many businesses this opportunity is assessed as having relatively low abatement potential.	From APVI Solar Maps, 90% of 10-100kW are for commercial and industrial buildings.	18,585 t CO2-e	20%	80%	14,868 t CO2-e
"Stationary Energy Electricity - Commercial and Industrial"	Energy efficiency	Energy efficiency	Improve the energy efficiency of Wollongong's existing and new industrial and commercial business stock by 30% progressively to 2050.	This accounts for energy-efficient heat generation in industrial processes and space heating in buildings, improved industrial motors and machinery, lights (LED upgrades), computers and office equipment, and equipment for facility heating, cooling, and ventilation.	228,695 t CO2-e	70%	30%	68,609 t CO2-e
"Stationary Energy Electricity - Commercial and Industrial"	Buying clean energy	Renewable energy supply	20% of Wollongong's business electricity supply to be from renewable energy by 2030.	Increased renewable energy supply from NSW Government investment in Renewable Energy Zones.	387,291 t CO2-e	70%	30%	116,187 t CO2-e
"Stationary Energy Gas - Residential"	Gas to electric transition	Gas to electric transition (induction cooking)	Gas transition: 40% of gas switches to induction cooking by 2050.	1.3% year-on-year BAU growth rate.	379,778 t CO2-e	20%	80%	303,822 t CO2-e
"Stationary Energy Gas - Residential"	Gas to electric transition	Gas to electric transition (heat pump)	Gas transition: 60% of gas switches to electric heat pump by 2050 (CoP = 3).	CoP of residential heat pump water heaters is estimated to be 3.	562,272 t CO2-e	10%	90%	506,045 t CO2-e
"Stationary Energy Gas - Commercial and industrial"	Gas to electric transition	Gas to electric transition (induction cooking)	Gas transition: 7.5% of gas switches to induction cooking and direct electric by 2050.	Slower takeup of induction cooking is expected in the commercial and industrial sector compared to domestic.	384,470 t CO2-e	80%	20%	76,894 t CO2-e
"Stationary Energy Gas - Commercial and industrial"	Gas to electric transition	Gas to electric/green gas/hydrogen solutions transition	Gas transition: 92.5% of gas switches to electric, green gas or hydrogen solutions from 2035 to 2050.	CoP of industrial/commercial heat pump water heaters is estimated to be 4. H2 is stated in the abatement solution but the modelling looks only at a heat pump equivalent upgrade.	2,932,865 t CO2-e	90%	10%	293,286 t CO2-e
Transport	EV transition	EV transition (passenger vehicles)	"EV progressive transition of passenger vehicles: - 50% of new sales by 2030 - 100% of new sales by 2035 - 100% EV by 2050"	"1.3% year-on-year BAU growth rate Applied increased in EF for fuels from 2022 onwards"	4,959,695 t CO2-e	20%	80%	3,967,756 t CO2-e
Transport	EV transition	EV transition (non-passenger vehicles)	"EV progressive transition of non-passenger vehicles 100% by 2050 (articulated trucks, light commercial vehicles, non-freight carrying trucks, rigid trucks, motorcycles and buses)"	"1.3% year-on-year BAU growth rate Applied increased in EF for fuels from 2022 onwards"	2,730,326 t CO2-e	80%	20%	546,065 t CO2-e
Transport	Public Transport	Increase public transport infrastructure, options and mode shift across Wollongong	Linked with the Wollongong Integrated Transport Strategy and City Centre Movement and Place Plan, and the Illawarra-Shoalhaven Regional Transport Plan, increase local public transport options and linkages to Greater Sydney to reduce in-boundary and trans-boundary car trips.	The Wollongong Integrated Transport Strategy and City Centre Movement and Place Plan will develop estimates for the potential for emissions reduction resulting from plan implementation.	Not estimated	0%	100%	Not estimated
Transport	Active Transport	Develop walking and bicycle infrastructure and services	Linked with the Wollongong Integrated Transport Strategy and City Centre Movement and Place Plan, and the Illawarra-Shoalhaven Regional Transport Plan, increase local active transport infrastructure to reduce in-boundary and trans-boundary car trips.	The Wollongong Integrated Transport Strategy and City Centre Movement and Place Plan will develop estimates for the potential for emissions reduction resulting from plan implementation.	Not estimated	0%	100%	Not estimated
Waste	Waste management & circular economy	FOGO & landfill gas management	Progressive improvement to landfill diversion rates to 80% diversion including 50% organics reduction from all waste streams by 2030.	"1.3% year-on-year BAU growth rate 80% average recovery rate from all waste streams will continue until 2050"	897,300 t CO2-e	25%	75%	672,975 t CO2-e
Waste	Waste management & circular economy	Waste reduction	"Progressive reduction of waste per capita by 10% until 2030"	"1.3% year-on-year BAU growth rate Waste per capita reduction of 10%"	123,997 t CO2-e	25%	75%	92,997 t CO2-e
Waste	Waste management & circular economy	Circular economy	Developing circular economy as an overarching resource strategy can reduce emissions (captured in other actions) and greatly increase upstream emissions savings.	See Carbon Abatement Opportunities for Circular Economy - EPA.	Not estimated	0%	100%	Not estimated

Our Wollongong Our Future

From the mountains to the sea...

We value and protect our environment

We have an innovative and sustainable economy

Wollongong is a creative, vibrant city

We are a connected and engaged community

We have a healthy community in a liveable city

We have affordable and accessible transport



Wollongong City Council

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