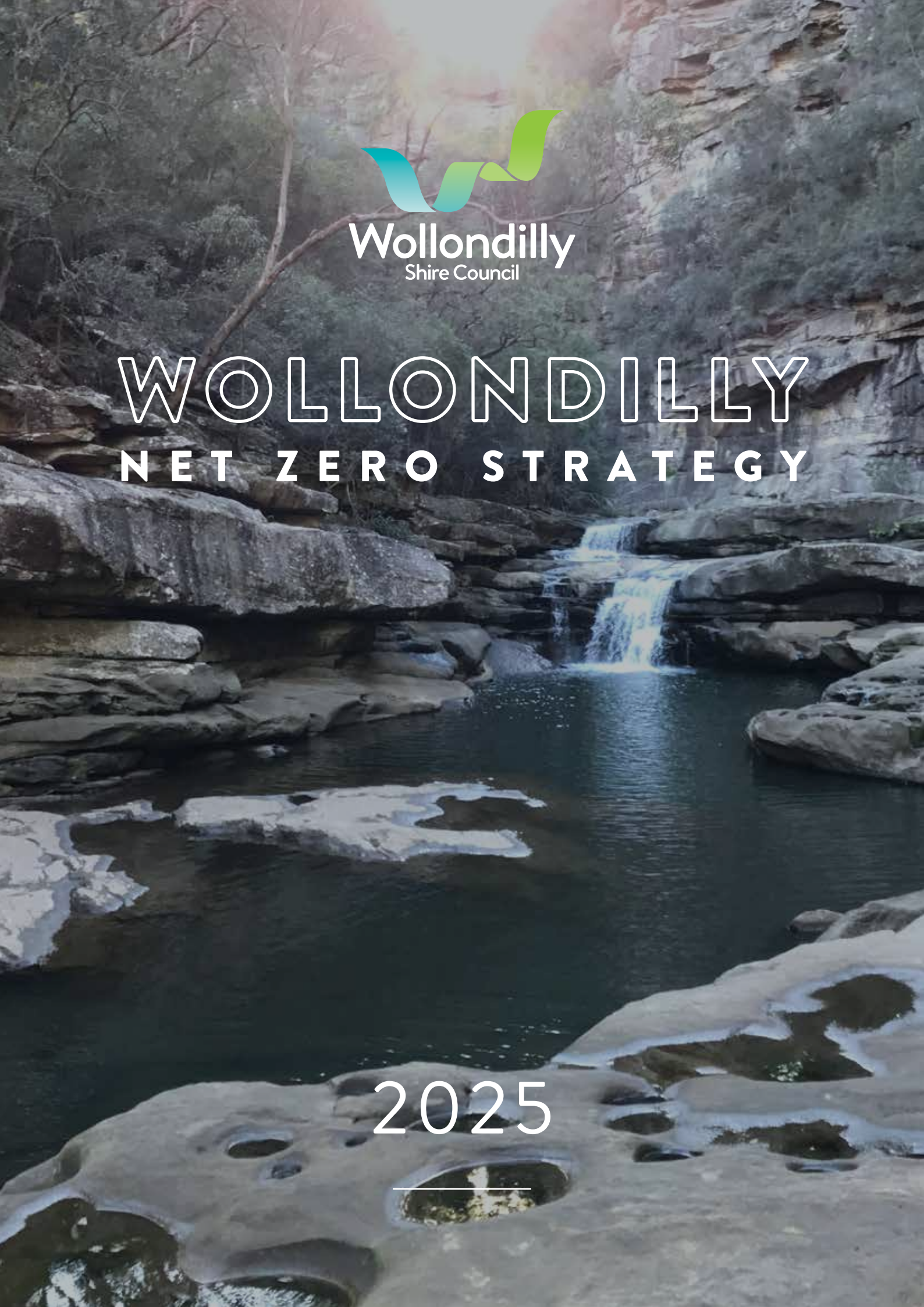

Wollondilly
Shire Council
WOLLONDILLY
NET ZERO STRATEGY
2025

# Acknowledgement of Country*

Wollondilly Shire Council acknowledges the traditional custodians of the land in Wollondilly, the Dharawal and Gundungurra peoples.

We acknowledge the living culture and spiritual connections to the land for the Dharawal and Gundungurra people and all Aboriginal Nation Groups that may have connections to the area; and that Wollondilly is remarkably placed as the intersection of many tribal lands.

We recognise the traditional Custodians who have occupied and cared for this Country over countless generations and celebrate their continuing contributions to the Shire.

We also acknowledge and remember the Dharawal and Gundungurra peoples who were killed in the Appin Massacre on 17 April 1816.

***We acknowledge our continuing collaboration with the Tharawal Local Aboriginal Land Council***

*Scenic View, Razorback*

# CONTENTS



*Koala in Grey Gum*



QA Code: 520204230828

# EXECUTIVE SUMMARY

## OF THE NET ZERO STRATEGY

*Solar Panels*

# EXECUTIVE SUMMARY
# OF THE NET ZERO STRATEGY

The Wollondilly Shire Council Net Zero Strategy is a comprehensive plan designed to reduce Council's emissions and meet its net zero target by 2050.

By striving to reduce its carbon footprint within its operations, Council is working towards adapting to a changing climate and mitigating the risks associated with inaction. This Strategy follows the Sustainability Policy adopted in March 2023, underscoring Council's commitment to delivering sustainable outcomes across the four sustainability pillars of: community, environment, economy and governance. It provides direction for integrating sustainability into all Council operations and decision-making processes. The Strategy is developed in conjunction with the Sustainability Strategy, which outlines sustainability actions Council can consider adopting. This Strategy will be reviewed and updated in four years to reflect progress made and to incorporate new technologies that will aid the transition to net zero.

This Strategy maps out a practical plan for Council to demonstrate leadership within the community while reducing its emissions. The actions presented will help achieve this target and guide Council on its emissions reduction trajectory. Table 1 provides a summary of actions Council will consider within the next decade to achieve net zero emissions, detailing the actions, estimated costs, abatement potential and project timeframes.

*Solar Rooftop*

## SUMMARY OF ACTIONS AND OPPORTUNITIES

| ACTION | | DESCRIPTION | LIFETIME COST | ABATEMENT | TIMEFRAME | RESPONSIBLE COUNCIL SERVICE TEAM |
|---|---|---|---|---|---|---|
| | Governance and Leadership within Council | Incorporating actions into Council's Operational Delivery Plan and reporting framework. | - | - | Short | Corporate Strategy, Governance and Legal |
| | Data Management Platform | Council to invest in a data management platform to reliably report and track emissions data. Council to investigate additional staff resourcing to manage this. | $ | - | Short | Environmental Services |
| | Energy Audits and Efficiency at Large Sites | Each facility to have a detailed energy and water efficiency audit undertaken with priority actions and costs (implementation and savings) identified. | $ | Medium | Short | Building operations/maintenance, Facilities, Recreation and Open space |
| | Environmentally Sustainable Design (ESD) Policy | Update/draft Council's Development Control Plans and other infrastructure guidance material. Design Specifications for buildings, equipment and infrastructure that embed sustainability principles into the design, construction and procurement of council assets. | $ | Medium | Short | Sustainable growth and Strategic planning |
| | Degasification | Conduct detailed gas audit at Wollondilly Community Leisure Centre to consider an all-electric facility and the feasibility of solar panel installation. | $$ | High | Medium | Building operations/maintenance, Facilities, Recreation and Open space |
| | Behind the Meter Solar | Solar panels installed at Council facilities, providing both zero emissions energy and significant financial benefits by reducing purchase of grid electricity. Each facility to have an energy review undertaken with priority actions and costs (implementation and savings) identified. | $$ | Medium | Medium | Building operations/maintenance, Facilities, Recreation and Open space |
| | Battery Storage | Batteries work with solar systems, allowing energy generated during the day to be stored and used at night or on overcast days. Each facility to have an energy review undertaken with priority actions and costs (implementation and savings) identified. | $$$ | Medium | Long | Building operations/maintenance, Facilities, Recreation and Open space |

| | | | | | | |
|---|---|---|---|---|---|---|
| | 100% Renewable PPA | Transition to 100% renewable energy PPA | $ | Very High | Short | Finance, procurement and contribution planning |
| | Landfill Gas Flaring | Investigate landfill gas flaring at Bargo Landfill | $$ | Medium | Short | Waste services |
| | FOGO | Include FOGO in next waste contract | $ | High | Medium | Waste services |
| | Passenger Vehicle Transition | The electrification of Council's passenger fleet, including installation of vehicle charging infrastructure. | $$ | Low | Short | Plant and Fleet |
| | Utility Vehicle Transition | The electrification of Council's utility fleet, including installation of vehicle charging infrastructure. | $$$ | Medium | Medium | Plant and Fleet |
| | Heavy Vehicle Transition | The electrification of Council's heavy vehicle fleet, including installation of vehicle charging infrastructure. | $$$ | Medium | Long | Plant and Fleet |
| | Open Space Lighting | Transition to energy efficient lighting in sportsground, parks & reserves and car park lighting. Lighting to have an energy review undertaken with priority actions and costs (implementation and savings) identified. | $$ | Medium | Medium | Building operations/maintenance, Facilities, Recreation and Open space |
| | Community Net Zero Strategy | Council to work with the community on developing a community-wide net zero strategy | $ | High | Medium | Environmental Services |
| | Revegetation | Revegetation to focus on improving koala/ wildlife corridors, riparian zones and canopy cover in urban environments to support carbon sequestering/offsets. | $ | Medium | Short | Environmental Services |

*+ Timeframes: Short (6 months - 2 years), Medium (2 - 10 years), Long (10+ years). # Lifetime cost includes expected returns on investment. $ (ROI <5 years), $$ (ROI 5-10 years), $$$ (ROI >10 years).*

*Table 1: Summary of recommended actions*

# INTRODUCTION

## TO THE NET ZERO STRATEGY

*Dron Shot, Wollondilly Children's Services Building*

# INTRODUCTION TO THE **NET ZERO STRATEGY**

Wollondilly Shire Council (WSC or Council) is committed to prioritising and advancing its efforts to achieve net zero emissions within its operations. This Net Zero Strategy builds on the recently adopted Sustainability Policy, outlining actions to be implemented within the next decade to meet the 2050 net zero target.

Developed alongside the Sustainability Strategy which outlines sustainability actions for Council to consider and ensures that the four pillars of sustainability; environmental, social, economic and governance are integrated into decision-making when committing to actions to achieve net zero.

As Council is influenced by national, federal and state policies, Section 2 outlines the direction each level of government is taking to achieve its net zero target and how Council can utilise these frameworks to meet its own net zero goals.

This Strategy is based on the corporate greenhouse gas emissions inventory from FY2021/22, developed by the Sustainability Advantage Program, of which Council is a Bronze partner. The results and key findings are summarised in Section 3.4 which form the basis of actions Council should consider to reduce its emissions.

Section 4 presents the net zero actions that can be implemented within the next five years and actions that can be considered beyond 2030. Priority is given to actions within Council's scopes 1 and 2 emissions, particularly those at the top of the emissions reduction hierarchy shown in Figure 1, due to their cost savings and return on investment. Longer-term actions, such as transitioning Council's heavy vehicle fleet to EVs, will require detailed planning and may become more viable with technology advances.

**The Strategy assessed opportunities with the following key areas of Council's operations:**

- Energy efficiency improvements in buildings
- Onsite renewable energy generation
- Low-emissions technology upgrades in buildings and fleet
- Renewable energy supply agreements; and
- Minimising emissions due to landfill

While the focus is on climate change mitigation, many actions will also help Council adapt to and build resilience against climate impacts. Regular reviews and updates of this document will ensure actions remain informed by the latest information and technologies, accelerating the transition to net zero emissions.

## EMISSIONS REDUCTION HIERARCHY

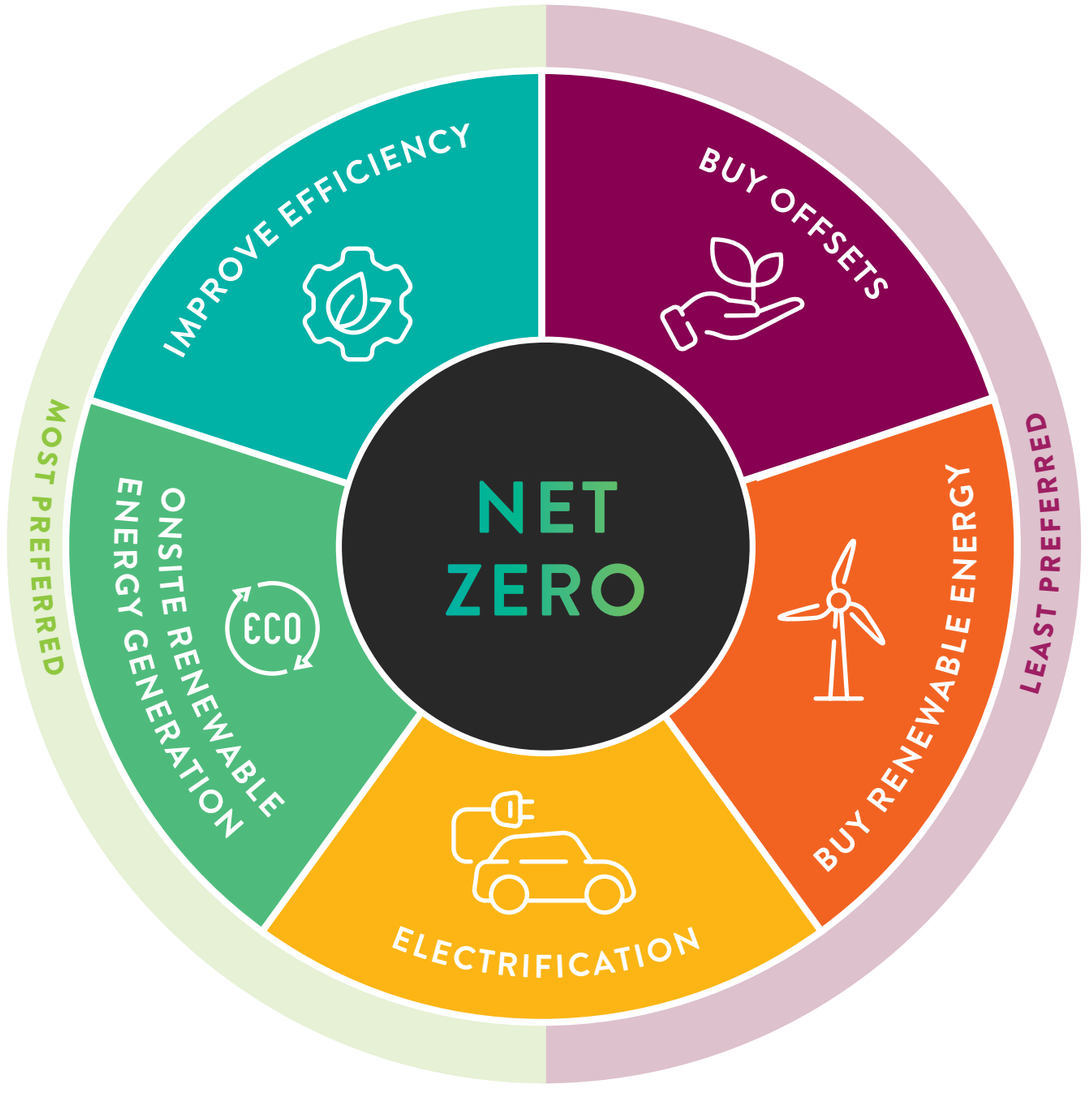



*Figure 1: Emissions reduction hierarchy*

# POLICY CONTEXT

## OF THE NET ZERO STRATEGY

*Bridgewater Tree Planting*

# 2. POLICY CONTEXT

## 2.1 INTERNATIONAL AGREEMENTS

The Paris Agreement, adopted in December 2015 at the United Nations Climate Change Conference of the Parties (COP21), stands as a legally binding international treaty on climate change. Ratified by 196 countries, its primary objective is to curb global warming, aiming to limit the temperature increase to below 2°C and striving for efforts to cap it at 1.5°C above pre-industrial levels.[1] Widely recognised as a significant step forward in the global effort to address climate change, the Paris Agreement signifies a robust political commitment by nations to collaboratively address this pressing issue. The most recent conference, COP28, held in December 2023 in Dubai, highlighted limited progress across all areas of climate action. The conference urged all levels of government to accelerate the transition from fossil fuels to renewable energy sources, such as wind and solar power, in their upcoming climate commitments.

The Intergovernmental Panel on Climate Change (IPCC) is a significant organisation established by the United Nations to assess the scientific knowledge on climate change. Tasked with compiling, evaluating and summarising the latest scientific literature, the IPCC produced comprehensive assessment reports used by policymakers worldwide to inform their decision-making on climate change mitigation, adaptation and net zero strategies.

In 2021 and 2022, the IPCC released its Sixth Assessment Report (AR6), showing that climate change is already being observed in every region of the world. The report emphasised that human activities have caused approximately 1.1°C of warming since 1850-1900, underscoring the imminent risk of reaching 1.5°C of global temperature rise. Urgent and decisive action to reduce emissions in the next two decades is deemed crucial to prevent surpassing this threshold.[2]

## 2.2 UNITED NATION'S SUSTAINABLE DEVELOPMENT GOALS

In 2015, the UN set 17 Sustainable Development Goals (SDGs) as a comprehensive framework for achieving peace and prosperity for people and the planet, both now and into the future. The target to achieve these goals was set for 2030. The 193 countries that pledged commitment to this target, recognised that ending poverty is intertwined with efforts to enhance health and education, reduce inequality and stimulate economic growth, all while addressing climate change and working to preserve our oceans and forests. Australia is one of the 193 countries which have committed to the goals. It will require all stakeholders, state governments, local governments and businesses to take action for Australia to meet the 2030 target. By aligning this Strategy with the goals, Council aims to work towards building a more sustainable, equitable and resilient community, capable of adapting to the effects of climate change.

[1] United Nations, 2015, Paris Agreement, https://unfccc.int/sites/default/files/english_paris_agreement.pdf
[2] IPCC article 9 August 2021, Climate change widespread, rapid, and intensifying: https://www.ipcc.ch/2021/08/09/ar6-wg1-20210809-pr/


*Figure 2: United Nation's Sustainable Development Goals (SDGs)*

## 2.3 STATE AND FEDERAL TARGETS AND POLICY

As a signatory to the Paris Agreement, Australia must set targets and develop a plan for reducing greenhouse gas emissions (GHG). The Agreement explicitly recognises and engages local and subnational governments and their critical role in supporting the transformation, including setting goals and strategies aligned with the science. In 2022, the Australian government recommitted to achieving net-zero emissions by 2050 and increased its 2030 target to 43% below 2005 emissions level. This 2030 target is in line with the lower end of the Australia Climate Change Authority's recommended range of between 40-60% reduction in emission by 2030. Under the terms of the Paris Agreement, countries must update their Nationally Determined Contribution (NDC) every five years. Australia's updated NDC will include the 2035 target. This update will hold the government accountable to more ambitious targets, aiming to keep global average temperature well below 2°C and pursuing efforts to keep it to 1.5°C. Re-establishing an interim target will inform the pathway to net zero by 2050 and provide insights into potential progress made to-date.

Another part of the Australian Government's net zero plan is to provide a pathway for each sector in the economy to understand its greenhouse gas emissions contribution and identify opportunities to reduce those emissions accordingly. The Government is currently developing a sectoral emissions reduction plan to capture the full breadth of the economy and transition it to net zero. The sectors which form the basis of the plan are:

- Electricity and energy
- Transport
- Industry
- Agriculture and land
- Resources; and
- The built environment

The NSW Government has also committed to achieving net zero emissions by 2050. To pave the way for this, it has established an interim target for 70% reduction below 2005 level by 2035. The NSW Government is currently in Stage 1 of its Net Zero Plan, which will deliver on the objectives over the next decade to achieve this target. This proactive approach demonstrates the NSW Government's dedication to achieving a more sustainable future for the state.

To achieve these targets, the NSW Government will tackle the financial, social and environmental challenges posed by climate change through four priority areas:

- Drive uptake of proven emissions reduction technologies that grow the economy, create new jobs or reduce the cost of living
- Empower consumers and businesses to make sustainable choices
- Invest in the next wave of emissions reduction innovation to ensure economic prosperity from decarbonisation beyond 2030; and
- Ensure the NSW Government leads by example

The Department of Planning and Environment offers a Sustainability Advantage (SA) program, of which Council has been a member since 2017 and is a certified Bronze Partner. Through this partnership, the NSW Government celebrates members' achievements in sustainability leadership and commitment, acknowledges planning and management systems that support sustainable practices, and recognises efforts to engage wider stakeholders to achieve sustainable outcomes.

At a more local level, Council is part of Resilient Sydney, a five-year strategy to build resilience against climate change, developed with all of Sydney's metropolitan councils and contributors from the NSW Government, business and community organisations. The Strategy developed a resilience framework that assesses the strengths and weaknesses of cities within four dimensions:

1. Leadership & Strategy
2. Health & Wellbeing
3. Economy & Society
4. Infrastructure & Environment

From this framework it developed five directions to help build resilience for the area:

5. Peopled centred city
6. Live with our climate
7. Connect for strength
8. Get Ready
9. One City

Council will use this framework to help guide Council's Local Strategic Planning Statement of people, environment, place & landscape and economy & performance.

## CITY RESILIENCE FRAMEWORK

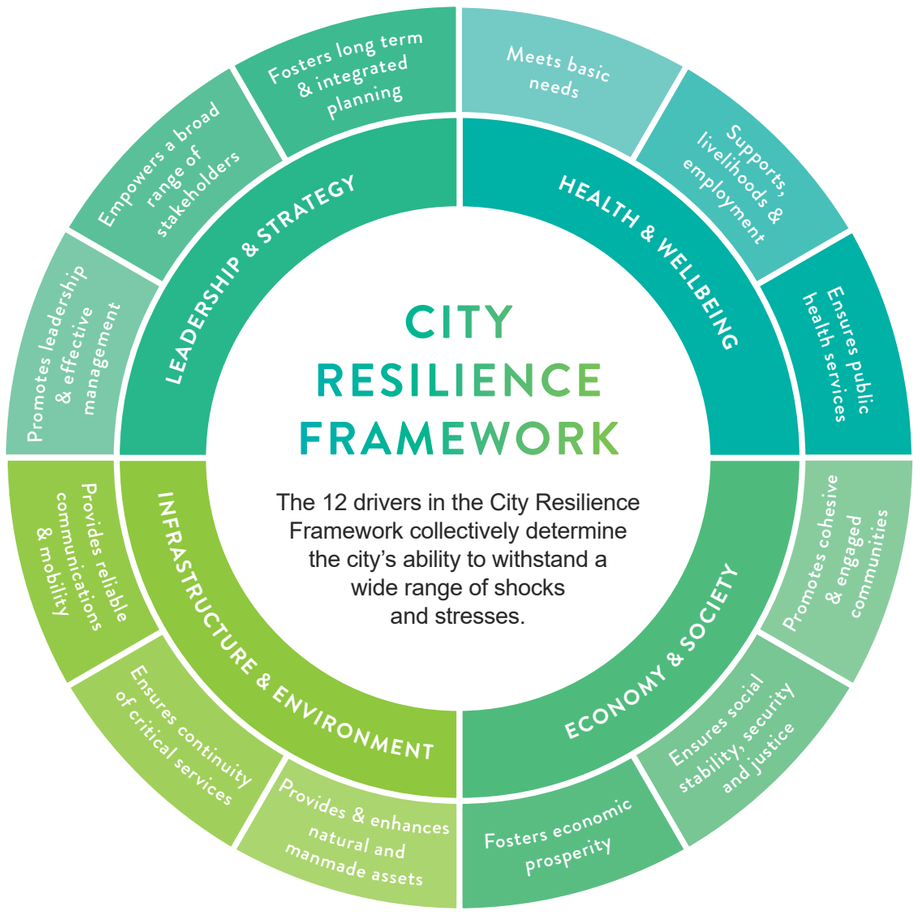



*Figure 3: Resilient Sydney Framework*

## 2.4 WOLLONDILLY CONTEXT

Council's Community Strategic Plan (CSP) sets out the community vision of 'Making Wollondilly Even Better Together.' By understanding the current context of Wollondilly and our community's priorities, we gain a clear picture of where we are now and our aspirations for the future. Together with the community, we have developed a shared vision that captures where we want to be in 10 years' time.

The Delivery Program & Operational Plan (DPOP) and Local Strategic Planning Statement 2040 (LSPS) outline the strategy of how the community and Council will achieve the vision and the organizational values outline the behaviours that Council will abide by to deliver on the vision and strategy.

Given there is agreement that sustainability should be embedded throughout Council, the sustainability principles adopted in Council's Sustainability Policy should take prominence along with the five aspirational key pillars of the CSP to help us achieve the vision of what our community would like Wollondilly to be in the future.

Council's Sustainability Policy was a key driver in developing the Net Zero Strategy. At an organisational level, Council's operations are underpinned by the 'core values'

Environment was rated as the equal highest priority Community Strategic Plan Theme based on the most recent community satisfaction survey (Wollondilly Shire Council, 2024b). Additionally, "maintaining natural waterways" was identified within the top five rated services/facilities in terms of community importance.

The CSP identified priority outcome no. 7:

- We have a shared responsibility for climate action and sustainability.
  - » We adapt to a changing climate and reduce our impact.
  - » Develop a sustainable, low-waste, circular economy.
  - » Conserve and manage water resources.

Councils Delivery Program and Operational Plan 2024/2025 identified these priority actions:

- Scope and develop a sustainability framework to guide Wollondilly towards increased climate change resilience, including:
  - » Developing a net zero emissions strategy
  - » Investing in solar power for Council facilities.
- Investigate opportunities to install electric vehicle charging stations in new Council facilities, including the new Government Services Building to support the change to lower-emission vehicles in Wollondilly.



## COMMUNITY STRATEGIC PLAN

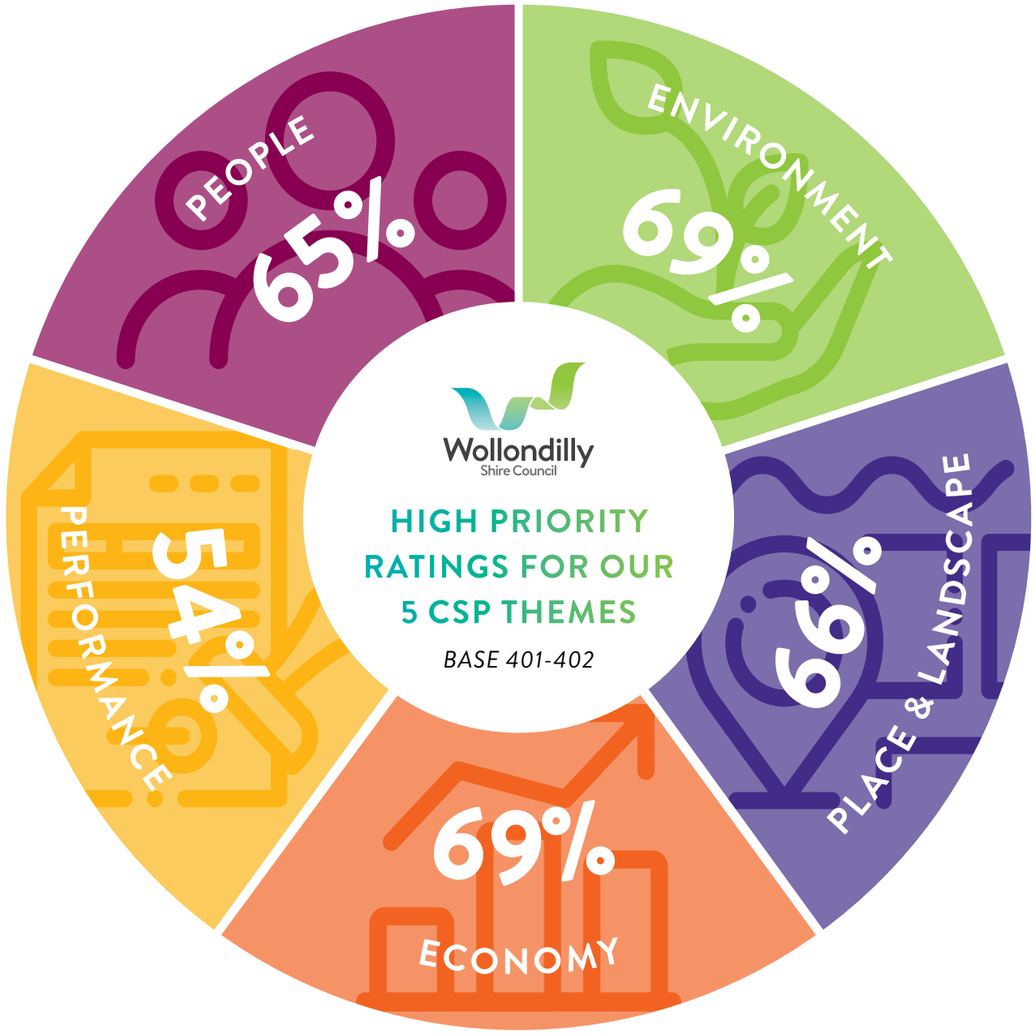
**84% of Residents**

were at least somewhat satisfied with current Shire character & identity.

**FUTURE DIRECTIONS**

**90%**

of respondents were at least somewhat supportive of current community vision for the Shire.



# NET ZERO
## STRATEGY

*The Robin Davies Wollondilly Community Nursery*

# 3. NET ZERO **STRATEGY**

Net zero emissions means reducing the world's greenhouse gas emissions to as close to zero as possible with available technology and offsetting any remaining emissions through carbon sequestration projects or investment in renewable energy projects. This means Australia must rapidly phase out fossil fuels (coal, oil and natural gas) and transition to renewable energy across all sectors of the economy. Net zero emissions is a global challenge that relies on collaboration at an international, national and local levels to be achieved.

## 3.1 WOLLONDILLY SHIRE COUNCIL'S NET ZERO TARGET

Council has chosen to align with the NSW Government's net zero target for 2050 for its organisational emissions. Council will transition to net zero by first identifying and prioritising the highest emitting areas of Council operations. There will be an initial focus on opportunities that abate the most emissions with the best return on investment. This systematic approach will then extend to reducing emissions in other sectors, as more efficient technologies become available in the coming years.

## 3.2 CURRENT COUNCIL STRATEGIES AND POLICIES

Council has developed this Strategy based on the recently adopted Sustainability Policy, demonstrating its commitment to delivering sustainable outcomes across the four sustainability pillars: community, environment, economy, and governance. The Policy provides direction for integrating sustainability into all Council operations and processes, embedding these principles into all decision-making.

The Policy was prepared with guidance and support from the Department of Planning and Environment, as Council is a Bronze Partner of the Sustainability Advantage program. The sustainability activities enacted as part of this partnership, which helped guide the development of the Policy, included:

- Wollondilly Shire Council Energy and Water Management Plan (2013)
- Climate Change Risk and Adaptation Workshop (2017)
- Certified Bronze Partner (2017)
- Workshop with Council staff to obtain advice on improving sustainability provisions in land use planning—as a first stage, this focused on the Subdivision Development Control Plan (DCP): Best Practice in DCP for Wollondilly Shire Council (2018)
- Partnering to make Wilton a Sustainable Community (2018)
- Senior Leadership Team (SLT) interviews and report (2021); and
- Sustainability Advantage Diagnostic Workshop with representatives of a number of different Council sections (2022)

In addition, the following state, local and Council policies have also guided development of this Net Zero Strategy:

- Western City District Plan
- Council's Delivery Program and Operational Plan
- Community Strategic Plan
- Local Strategic Planning Statement
- Activate Wollondilly: Long Term Recovery & Resilience Plan
- Waste Management Strategy & Action Plan
- Integrated Water Management Policy and Strategy; and
- Sustainability Strategy (being developed concurrently to this Strategy)

## 3.3 ACTIONS COMPLETED OR UNDERWAY

Council has already completed or commenced several emissions reducing projects. Implementing these actions is contributing to Council achieving its net zero target. They are:

- Transport: Trial Electric Vehicles (EVs) 2024/25
- Buildings and Facilities: LED lights installed in buildings including sensors
- Buildings and Facilities: Solar installed on a few large consuming buildings

## 3.4 EMISSIONS INVENTORY

Through the Department of Planning and Environment's Sustainability Advantage Program, Council completed its first emissions inventory for financial year 2021/22. This is the baseline year against which Council will measure its efforts to reduce emissions towards zero. Council's total GHG emissions are 35,465 $tCO_2$-e. The major sources of emissions are:

- Purchased goods and services at 48.6% (Scope 3)
- Capital Goods at 36.4% (Scope 3)
- Waste sent to Bargo Landfill WMC at 8.6% (Scope 1)
- Purchased electricity at 3.2% (Scope 2)

As Figure 4 indicates the majority of its emissions stem from Scope 3 emissions, which are defined as occurring within Council's organisational boundaries but outside of its direct control—typically within the supply chain.

This Strategy focuses on actions to reduce Scope 1 and 2 emissions, however Council will continue to monitor and consider opportunities for Scope 3 emissions.

### SCOPE 1, 2 AND 3 EMISSION BREAKDOWN

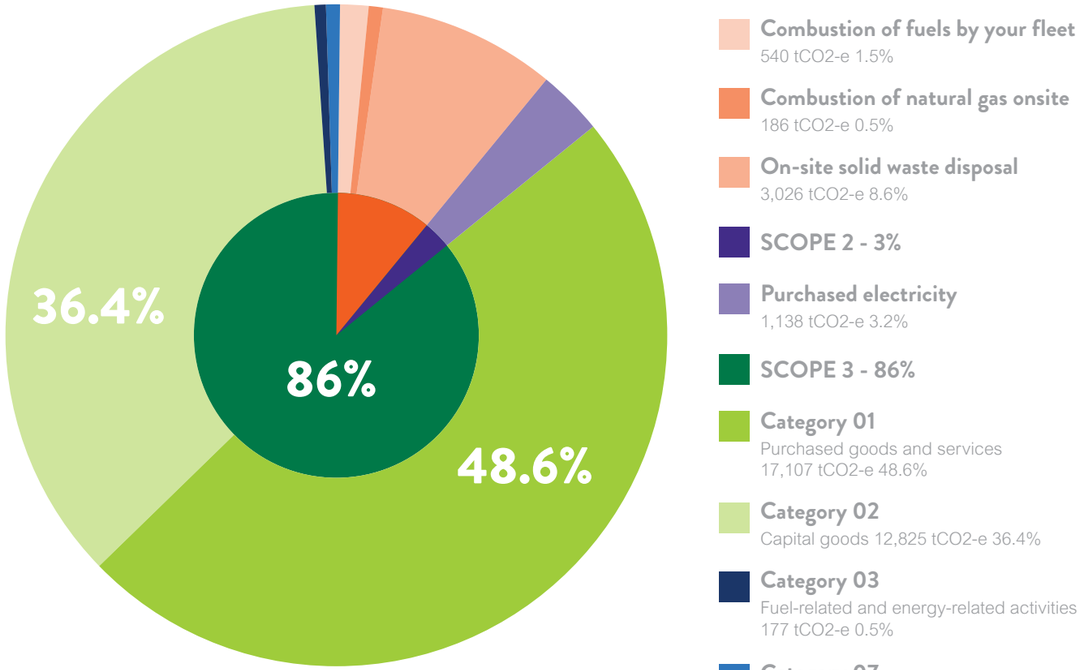



*Figure 4: Wollondilly Shire Council Emissions Inventory FY2021/22*



### 3.4.1 Reporting Boundaries

The operational boundary is defined using the scopes framework. In line with the National Greenhouse and Energy Reporting Scheme (NGERS), and the Global Greenhouse Gas Protocol, corporate emissions have been divided into three scopes:

- Scope 1 emissions are defined as "direct emissions from owned or controlled sources" and are emissions created when Council burns a fuel in an owned asset such as fleet burning diesel, E10 or petrol, or a building using natural gas.
- Scope 2 emissions are defined as "indirect emissions from the generation of purchased energy" and include electricity purchased for Council-owned and operated assets.
- Scope 3 emissions are defined as "all indirect emissions (not included in Scope 2) that occur in the value chain of the reporting entity (Council)." These include electricity purchased for Council owned but not occupied buildings, electricity purchased for street lighting, emissions from the extraction and production of fuels (including diesel, E10 or petrol, natural gas and electricity).

The control approach adopted by Council is the Operational Control approach to reporting. Under the operational control approach, Council accounts for 100% (Scopes 1, 2 and 3) of the GHG emissions from operations over which it has the ability to introduce and implement operating policies. Emissions from sites for which Council does not have operational control, such as many sites leased to third parties, will only be reported under Scope 3.

### GHG SCOPES THE 3 SCOPES OF CORPORATE EMMISSIONS

**SCOPE 1**

DIRECT GREENHOUSE GAS EMISSIONS

Fleet
Wastewater treatment
Waste disposal
Gas consumption

**SCOPE 2**

INDIRECT EMISSIONS FROM ENERGY

Electricity consumption

**SCOPE 3**

OTHER INDIRECT EMISSIONS

Public lighting
Distribution & transmission losses
Concrete & asphalt

*Figure 5: Example of GHG Scopes*

# NET ZERO

## ACTIONS

# 4.NET ZERO ACTIONS

In order to achieve its net zero target, Council will need to undertake several projects and programs over the coming decades. Council has used the emissions reduction hierarchy shown in Figure 6 to prioritise actions for implementation in the short term. Additionally, any residual emissions that cannot be reduced through the preferred actions can be offset through methods such as revegetation and tree planting, which are currently being implemented by the Council.

The emissions reduction opportunities that are expected to be the most impactful and cost effective based on the baseline emissions inventory have been identified within this Strategy. Most of the opportunities presented can be implemented within the next five to 10 years, however some will require further technology advancement and cost reduction before they are feasible or financially viable to deliver.

The actions described in this Strategy have been identified for implementation based on typical impact and return on investment. Council will complete a detailed business case or conduct feasibility studies before implementing any of the opportunities identified.

## EMISSIONS REDUCTION HIERARCHY

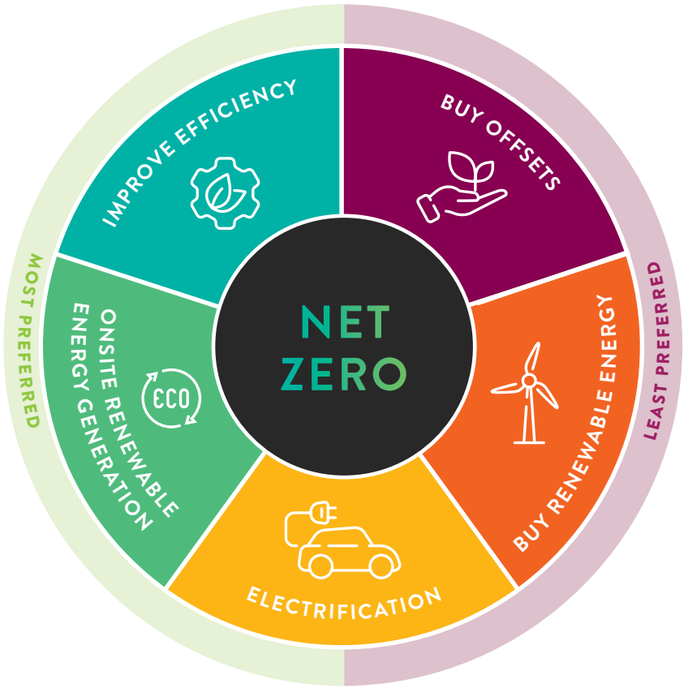



*Figure 6: Greenhouse emissions reduction hierarchy*



## 4.1 ACTIONS TO COMMENCE IN THE NEXT FIVE YEARS

This first section presents actions to be considered within the next five years, prioritised based on the emissions reduction hierarchy, expected impact and return on investment.

### 4.1.1 Energy Data Management Platform

One way to collect and analyse Council's emissions data in a more efficient manner is by utilising an Energy Data Management Platform. A data management platform can methodically collect, analyse, and interpret electricity, gas and fleet data, providing a foundation for informed decision-making regarding energy usage and cost reduction. By employing a data management platform, Council can:

- Measure and manage its corporate emissions
- Track usage and cost overtime and potentially identify cost saving areas
- Gain a better understanding of its emissions sources; and
- Save time and money by having the data available in one place

Though this action doesn't directly help Council reduce its emissions, it will streamline the data collection process and improve operational efficiency. This will save staff time that would otherwise be spent on collecting and managing data.

*Wollondilly Community Nursery Educational Netsboxes by Tahmoor Mens Shed*

## 4.1.2 Council Building Energy Efficiency

Energy efficiency is at the top of the emissions reduction hierarchy, and has been identified as a priority by Council. This involves actions that are typically low cost and offer a high level of abatement potential.

### *4.1.2.1 Energy Audits and Efficiency Upgrades*

#### ENERGY EFFICIENCY AT LARGE FACILITIES

A systematic process for energy efficiency improvements would include repeating a pattern of conducting audits, implementing efficiency upgrades, monitoring and reporting on the outcomes over a 3-5 year period for a defined list of Council's largest energy consuming facilities. This would be embedded in Council's Asset Management Plan and maintenance schedules.

Council's top 10 energy consuming buildings have been identified as large facilities, each consuming over 15,000 kWh/pa and together contributing over 80% of Council's building-related emissions.

Council will investigate conducting detailed energy audits of these sites over the next two years to understand each building's energy profile. For these sites, actions resulting from audits could include:

- Lighting upgrades to LEDs and smart controls
- Replacement of gas hot water systems with heat pumps
- Building management systems (BMS)
- Building fabric improvements including insulation and draft sealing
- Heating and cooling improvements including optimisation of fans and controls, and
- Replacement of appliances more than ten years old

There may also be financial benefits to bulk replacement of systems across multiple assets.
There are further facility management improvements that can be employed that when implemented can help reduce emissions, such as:

- Energy bill validation
- NABERs ratings at large assets
- Energy and water sub-metering, and
- Green leasing agreements

Additionally, Council will explore more efficient landscaping options, including water-sensitive urban design (WSUD) techniques, to improve management of water, wastewater, and greywater in and around buildings and infrastructure. This will help mitigate temperature extremes and reduce overall energy costs.

#### ENERGY EFFICIENCY AT MEDIUM AND SMALL SIZED FACILITIES

The remaining buildings which consume under 15,000 kWh/pa total across more than 100 assets and are categorised as; main council buildings, swimming pools, sportsgrounds, parks & reserves, community halls, car parks and RFS.

Council will conduct audits at main council buildings, swimming pools, sportsgrounds (where a building is part of the sportsground), community halls and RFS, where actions to reduce energy will be available similar to large facilities. A similar process to larger buildings could be conducted that includes an ongoing program of energy audits, followed by implementation of actions and monitoring of outcomes. However, these facilities can be assessed less frequently, with an assessment process every 6-10 years being appropriate.

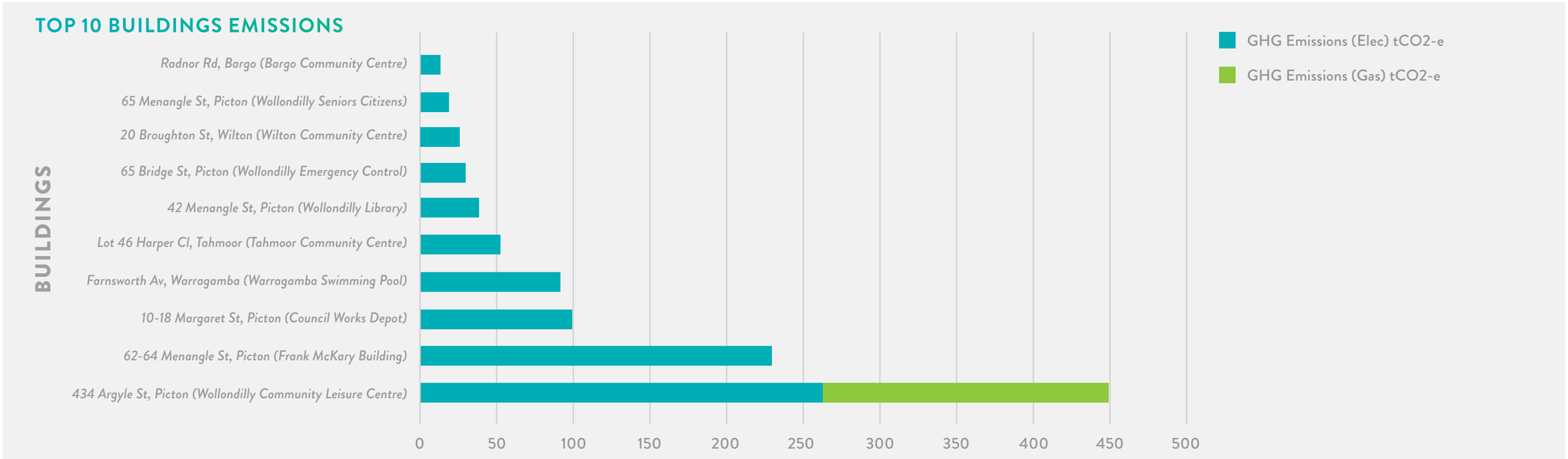



*Figure 7: Council's top 10 consuming buildings*

### *4.1.2.2 Environmentally Sustainable Design (ESD) Policy*

#### ESD POLICY FOR NEW BUILDINGS AND RENOVATIONS

Ensuring that energy efficiency is considered at the design stage of any new building or major renovation is crucial. This can be achieved through the implementation of an ESD Policy. Features of these policies include requirements for improvements in energy and water efficiency, indoor environment quality (IEQ), sustainable transport options, waste management and ecological impact. If implemented, there's potential to reduce up to 70% of buildings electricity, produce 60% fewer emissions, use up to 50% less potable water and recycle 95% of waste.

A strong and robust ESD policy has the potential to greatly impact Council's financial and carbon emissions footprint. These policies are common and relatively straightforward to produce. A greater challenge is ensuring the policy is adhered to and reported on within relevant projects. Regular review to identify and integrate improvements in sustainable practices and technology is also crucial to the success of such policies.

Additionally, incorporating technical equipment specifications into an ESD policy will ensure that efficient equipment is selected for replacement. Establishing these specifications might also eliminate the need for audits at smaller assets that consume less than 15,000 kWh/pa.

### *4.1.2.3 Degasification*

Gas is used at only two sites, the Wollondilly Community Leisure Centre and the Rural Fire Service located at 10 Avon Dam Rd. The Community Leisure Centre is the primary source of Council's gas emissions. Converting a large facility like this to an all-electric facility would be costly and should be considered in conjunction with planned site renewals or renovations. Council will first conduct a detailed gas audit, which will:

- Provide a better understanding of the building's gas usage
- Pinpoint exactly where gas is used
- Determine the age of the gas equipment and when it should be replaced
- Assess the cost of replacing gas equipment with electric alternatives, such as heat pumps

As the cost of gas is expected to increase over the next few years, the potential return on investment for such a conversion could be considerably shorter.

## 4.1.3 Behind the Meter Solar

Maximising the behind the meter solar generation potential across Council buildings can reduce electricity drawn from the grid, leading to significant financial savings. Behind the meter solar can have a payback period of as little as three to four years depending on the size of the system and the electricity usage profile of the site. Council has a few sites with solar, but there's potential for more solar, particularly at the top 10 buildings as they consume the majority of Council's building electricity. Council's top 10 buildings and facilities are summarised in Table 2.

## COUNCIL'S TOP 10 BUILDINGS

| ASSET NAME | FACILITY TYPE | ADDRESS | ANNUAL CONSUMPTION (kWh) | PERCENT OF TOTAL kWh |
|---|---|---|---|---|
| Wollondilly Community Leisure Centre | Swimming Pools | 434 Argyle St Picton | 340,465 | 25% |
| Frank McKay Building | Main Council Facilities | Menangle St Picton | 295,291 | 21% |
| Council Works Depot | Main Council Facilities | 10 - 18 Margaret St, Picton | 126,400 | 9% |
| Warragamba Swimming Pool | Swimming Pools | Farnsworth Ave Warragamba | 117,953 | 8% |
| Tahmoor Community Centre | Main Council Facilities | Lot 46 Harper Cl, Tahmoor | 67,120 | 5% |
| Wollondilly Library Picton Branch | Main Council Facilities | 42 Menangle St, Picton | 49,839 | 4% |
| Wollondilly Emergency Control Centre | Main Council Facilities | 65 Bridge St, Picton | 38,895 | 3% |
| Wilton Community Centre | Sportsgrounds | 20 Broughton St, Wilton | 33,107 | 2% |
| Wollondilly Senior Citizens Assoc/Support and Community Care | Main Council Facilities | 65 Menangle St, Picton | 24,429 | 2% |
| Bargo Community Centre | Community Halls | Radnor Road, Bargo | 17,160 | 1% |

*Table 2: Council's Top 10 Buildings*

The total emissions from these assets are 80% of Council's electricity-related emissions. If Council installs solar on these buildings, it could add an additional 213 kW, generate 430,000 kWh/pa and save an estimated 100 $tCO_2$-e per year on average.

There are, however, a number of factors that will limit the behind the meter solar potential at different sites and should be considered when investigating the potential for solar:

- Distribution of Electricity Usage Across the Day
- Available roof space or land to install solar panels
- Electrification of gas and fleet, and;
- Site specific issues

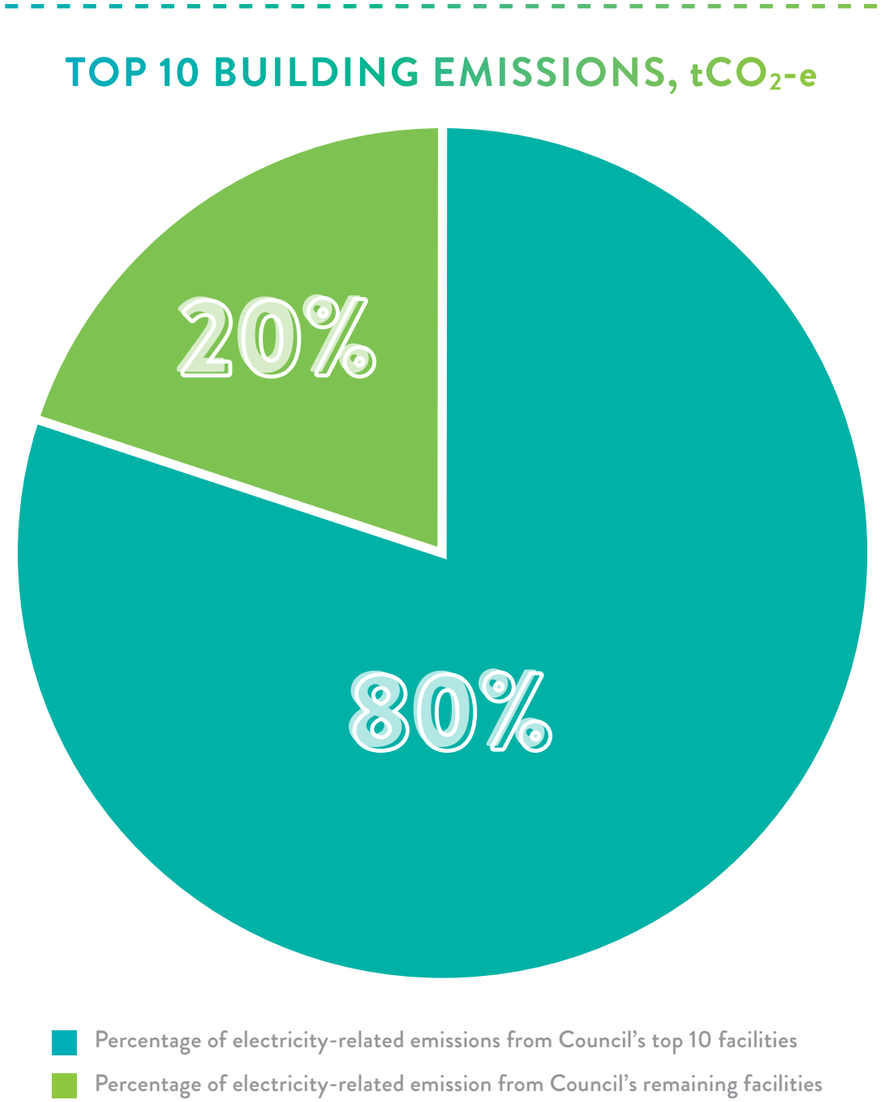



*Figure 8: Council's Top 10 Building Emissions*



### *4.1.3.1 Batteries*

Using batteries in combination with solar systems enables the storage of surplus electricity generated during peak sunlight hours to be consumed during non-daylight hours or at times of the day when solar is not generating sufficient electricity to meet onsite demand. The ability to shift solar electricity self-consumption across the day will allow more sites to become increasingly self-sufficient and improve the viability of solar systems on previously marginal sites, such as sites with low electricity usage during the day and high usage at night. Batteries may also allow for the installation of larger systems on some sites.

Presently, the greatest barrier to the uptake of batteries remains the cost. The current payback period for most batteries is over 10 years. Batteries such as the Tesla Powerwall 2 are sold with a 10-year warranty but are estimated to last up to 15 with only a small decline in performance. Even assuming a 15-year lifecycle, the current return on investment for a solar battery would be minimal or negligible.

The price of batteries has rapidly declined over the last 10 years. While the rate of decline has slowed over the last four years, further price declines are still expected over the next 4 to 5, improving their financial viability. Solar Choice cites between $1,000 and $1,300 per kWh for battery storage as a key marker for battery affordability.

### *4.1.3.2 Batteries to Support Electricity Security*

While the current ROI on batteries makes them only marginally viable from a financial perspective, Council may still choose to install batteries at key council sites and facilities to improve energy security. Solar-plus-battery combinations can provide uninterrupted power to critical infrastructure, including emergency evacuation centres and Rural Fire Service sites. These systems can replace polluting fossil fuel generators and remove the need for an additional asset that requires ongoing management and maintenance.

Batteries used in combination with solar panels can also replace fossil fuel generators at sites without grid connection. Through careful design, batteries can be used to match solar-generated supply with demand throughout the year. This can provide security of energy supply, reducing reliance on fuel supply networks.

### *4.1.3.3 Renewable Energy Certificates*

Installing solar systems can generate further financial benefits through the creation of Renewable Energy Certificates. For systems under 100 kW, small-scale technology certificates (STCs) are created upfront for the estimated generation over the life of the system. The system installer will typically sell these STCs on the owner's behalf and return this money as a rebate on the purchase cost of the system. The STC must be registered with the CER within 12 months of installation or it won't qualify.

For solar systems sized 100 kW or more, large-scale generation certificates (LGCs) are created based on actual metered generation across the life of the system (1MWh of generation equals 1 LGC). LGCs are registered and accounted for on the Renewable Energy Certification (REC) register administrated by the Clean Energy Regulator.

There are two options to consider; either sell LGCs associated with a solar system and re-invest those funds into a Revolving Energy Fund for other energy efficiency projects. Once the LGCs are sold on the market, emissions reductions associated with this renewable energy can't be used to Council's reduce emissions.

Another option is to retire the LGCs to offset electricity emissions to be in line with the net zero target of 2050.

There are some subtle differences around how STCs and LGCs are handled which are outlined below:

#### SMALL-SCALE TECHNOLOGY CERTIFICATES (STC)

STCs are like an upfront subsidy for renewable energy systems that are under 100 kW. They are deemed upfront and typically converted to cash, then passed on as a rebate or discount by the installer. If STCs are sold, the carbon reduction and renewable energy generation associated with the energy generated can be claimed but only if it is self-consumed (behind the meter). Exported renewable energy generation cannot be treated as a carbon credit if the STCs are sold.

#### LARGE-SCALE GENERATION CERTIFICATES (LGC)

If a renewable energy system is 100 kW or larger, then its eligible for one LGC for every megawatt hour a solar PV system generates. The LGCs are not deemed upfront and Council would need to keep track of the renewable energy generation on an annual basis to be able to create and then sell LGCs. If the LGCs are sold, the carbon reduction and renewable energy generation associated with the energy generated cannot be claimed. However, if the LGCs are sold, it will generate income.




*Dron Shot, Wollondilly Performing Arts Centre*

### 4.1.4 Renewable Energy PPA

The purchase of 100% renewable energy through a Power Purchase Agreement (PPA) is one of the most cost-effective and impactful ways to decarbonise electricity. This opportunity was considered by Council a few years ago, but the decision was made not to pursue it at that time because it wasn't financially viable. There is an option to revisit this in the next five years, as it would reduce Scope 2 emissions to zero and align Council with its goal of achieving net zero by 2050.

PPAs refer to an agreement with a retailer which ensures that a certain amount of energy is generated from renewable sources, such as large-scale solar or wind farms, with an added benefit of locking in contract certainty for a nominated period, typically three to five years. Depending on the current bundled retail tariff costs and the timing of entering into a PPA, it could help reduce retail electricity costs for buildings, car parks, and parks and reserves. If this opportunity appears more viable in the near future, it would be beneficial to partner with neighbouring councils to secure a better rate.

### 4.1.5 Fleet Transition

Transport fuels contribute 15% of Council's Scope 1 emissions. Typical solutions for reducing transport fuel costs, such as reducing the size of Council's fleet, reducing vehicle usage and purchasing more fuel-efficient vehicles will help to lower emissions, but do not deliver the step change required to mitigate climate change. Electrification of Council's fleet is a key action to achieve this and to reduce emissions in a cost-effective manner and to meet Council's net zero target.

Due to varying zero emissions fleet and plant technology maturity, costs and availability among different vehicle types, an immediate full transition of Council's entire fleet isn't feasible. Instead, a phased approach is necessary, allowing gradual integration of zero emissions fleet, which includes Electric Vehicles (EVs) as technology advances, costs decrease, and suitable models become accessible. This method also provides sufficient time for policy adjustments and installation of essential charging infrastructure to facilitate the transition.

Given this context, Councils plans to undertake the following actions over the next five years as its transitions towards a net zero emissions vehicle fleet:

- Develop a detailed Fleet Transition Strategy
- Begin transition of passenger vehicles and charging stations

#### *4.1.5.1 Fleet Transition Planning*

The transition to EVs will require a raft of changes across Council, from staff cultural change and changes to internal corporate policies, to the installation of charging infrastructure and the development of new maintenance capacity to service EV fleets. In addition, some Council sites may need to be upgraded to be able to support the power demand required for EV charging points. As the first step, Council will develop a detailed fleet transition plan. The plan will consider the phasing and timing of the transition of different vehicle classes to ensure the transition is as efficient as possible, as availability of certain vehicles will require different transition times and once prices approach parity with ICEV equivalents.

A well-developed transition plan will help set a trajectory for the timely and cost-effective shift to electric vehicles (EVs). It should identify the optimal points at which transitioning different vehicle classes makes both economic and technical sense, while ensuring the necessary supporting infrastructure and policy settings are in place. The plan should consider ways to improve staff familiarity with EVs and charging stations and provide incentives for early adopters, while also including actions to improve fuel efficiency within the existing petrol/diesel fleet prior to transition. It may also need to review lease back or salary sacrificing schemes to ensure inclusion of electric vehicles as an option for staff.

#### *4.1.5.2 Passenger Vehicle Transition*

There is a wide range of EV passenger vehicles available in Australia. The Electric Vehicle Council has listed 58 EV models available in Australia, which is expected to increase later in 2024.[3] While the upfront capital cost of EV passenger vehicles are currently higher than the equivalent ICEV, price parity is projected to be achieved in Australia between 2025 and 2030[4]. In addition, operating and maintenance costs for electric vehicles are lower than for ICEVs. Table 3 shows a comparison between the fuel usage costs of a standard electric and ICE passenger vehicles. A recent study has also found that EVs are on average 30% cheaper to service over the first three years[5] while other assessments already put EVs at price parity with ICEVs when considering total lifetime costs.[6]

[3] Retrieved from https://electricvehiclecouncil.com.au/evs-available/3/
[4] Graham, P. and Havas, L. May 2021, Electric Vehicle Projections, CSIRO, https://aemo.com.au/-/media/files/electricity/nem/planning_and_forecasting/inputs-assumptions-methodologies/2021/csiro-ev-forecast-report.pdf
[5] https://www.businessinsider.com/electric-car-cost-less-service-maintenance-than-gas-cars-study-2021-10?r=AU&IR=T
[6] https://thedriven.io/2020/07/23/lifetime-cost-of-electric-cars-already-lower-than-comparable-ice-vehicles/

## ELECTRIC AND ICE VEHICLE RUNNING COSTS

| VEHICLE NAME | ENERGY USE PER 100KM | ENERGY COST | APPROXIMATE FUEL COST PER 100KM |
|---|---|---|---|
| Kia Niro EV | 16.8 kWh | $0.24 per kWh | $4.03 |
| Kia Niro Hybrid | 4.0 L (ULP) | $1.9 per L | $7.60 |
| Ford Ranger | 7.6 L (diesel) | $1.94 per L | $14.74 |

*Table 3: Comparisons of electric and ICE vehicle running costs*

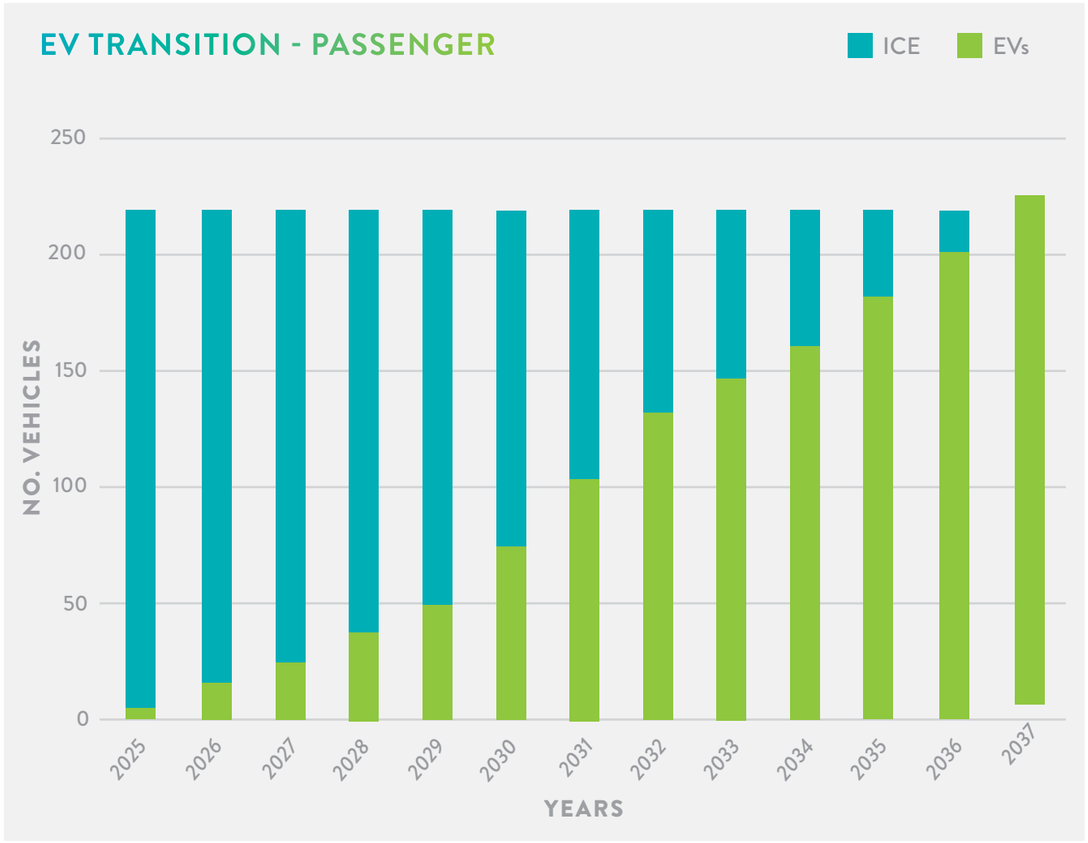



*Figure 9: EV Passenger Vehicles Transition*

Given that the costs of passenger vehicles are expected to be equal to or within 10% of ICE vehicles by 2025, Council will consider beginning the transition to EVs for this category. This transition will continue until 2037, with the majority of Council vehicles being transitioned within the next five years.



*Solar Panels and Electric Cars*

#### *4.1.5.3 Charging Station Installation*

The installation of adequate charging stations to support passenger vehicle transition will require upfront capital expenditure. Charging infrastructure ranges in cost from $7,000 for a basic two-bay Type 2 charging station to $29,000 or $60,000 for a two car 25 kW or 50 kW DC rapid charging stations, respectively (including installation). If the rollout of charging stations is phased in line with the uptake of new EVs, the capital costs can be distributed across the full transition period.

State and Federal grant funding may also be available to subsidise the capital cost of charging infrastructure for Council.

In 2022, the Australian Government introduced the Driving the Nation fund, allocating $500 million to support more affordable and cleaner transportation, which includes charging infrastructure. This initiative is co-funded by the Australian Renewable Energy Agency (ARENA) and expands upon the previous 'Future Fuels Fund' established in 2020.[9] Local Governments are eligible to apply for this funding individually or through regional initiatives.

Moreover, there is the opportunity to seek funding for charging infrastructure via the Community Energy Upgrades Fund (CEUF), designed specifically for local government. This funding initiative can cover up to 50% of eligible upgrades, with the second round of funding opening in early next year.

### 4.1.6 Scope 1 Landfill Emissions

Waste from Bargo Landfill constitutes the largest source of emissions, accounting for 81% of Scope 1 emissions. The Bargo Landfill is currently closed and will become a transfer station in the next few years, leading to reduced emissions due to less waste. Eventually, Council plans to close this transfer station and halt all waste operations within the next decade. However, even after closure, the landfill site can continue to generate legacy emissions, as methane from organic waste can be released over the next 25-30 years.

To address this issue, landfill gas flaring will be investigated, as gas flaring converts methane into a less potent greenhouse gas, carbon dioxide, by capturing and combusting methane at the current active landfill. It's estimated that this will save up to 30% of waste emissions.

Another way to reduce emissions at this landfill is to consider material that can be reused or repurposed into something else, such as construction and demolition waste can be repurposed into materials for road construction and crushed glass or concrete into footpaths or foundations for buildings.

[9] Retrieved from https://arena.gov.au/funding/driving-the-nation-program/



The NSW Waste and Sustainable Materials Strategy 2041 includes a 20-year plan to transition to a circular economy and includes the following targets:

- A 10% reduction of total waste generated per person by 2030
- Have an 80% average recovery rate from all waste streams by 2030
- Significantly increase the use of recycled content by governments and industry
- Phase out problematic and unnecessary plastics by 2025
- Halve the amount of organic waste sent to landfill by 2030
- Reduce litter by 60% by 2030 and plastics litter by 30% by 2025
- Triple the plastics recycling rate by 2030
- 50% reduction in net greenhouse gas emissions by 2030 and 70% by 2035, zero net emissions by 2050

### 4.1.7 Scope 3 Actions

While the main focus of this Strategy is on scopes 1 and 2, there are still a few actions Council can explore now to address scope 3 emissions as they contribute to the majority of the emissions inventory.

Waste from red-bins are sent to the Spring Farm Resource Recovery Landfill site. As this emission source generates 43% of the total emissions, it would be beneficial to include FOGO bins in the next waste contract, as the current waste contract is up for renewal this year. If FOGO bins were included there's the potential to divert up to 30% of the red-bin waste from landfill and it would put Wollondilly on track to meet the NSW Government's target of FOGO bins to all residents by 2030.

Council will continue to provide education and awareness on landfill waste diversion offering free workshops for the community on Composting and Worm farming and leading by example striving towards zero waste events.

Another opportunity is to address emissions within Council's supply chain.

The Federal government has recently mandated that companies disclose their climate-related risks and governance in their annual reporting. This requires companies to prove they have governance in place to mitigate risks posed by climate change, including reporting on emissions within their operational controls as well as in their value chain.

Although it is not currently mandatory for local government to report on these emissions, as LGAs don't meet the threshold, it's worth considering this proactively as it may become mandatory in the near future. Additionally, some of Council's suppliers within its supply chain may meet this threshold currently and will have to report on this by 2025.

To be at the forefront of this mandatory reporting, Council could integrate emissions reporting into its current procurement policy for major suppliers.

## 4.2 ACTIONS TO EXPLORE BEYOND 2030

Council will consider further opportunities for emissions reduction beyond 2030 as technology advances and costs decrease. While these future actions are worth pursuing, they will only be considered after implementing actions that offer a better return on investment.

### 4.2.1 Utility and Heavy Vehicle Fleet Transition

Although the majority of the Council's fleet consists of passenger vehicles, it is still considering transitioning utility, heavy, and plant vehicles within the next decade. Replacing ICE vehicles with EVs can lead to significant reductions in greenhouse gas emissions and overall operational costs over the vehicle's lifetime. With advancements in EV technology, vehicles will soon be able to travel over 500 km on a single charge, enabling Council to effectively cover its vast regional landscape.

#### *4.2.1.1 Utility Vehicle Transition*

There are limited EV replacement options available within the Australian market for utility vehicles (utes), but this is expected to change in the coming years. In overseas markets there are a number of utes and pick-up trucks already available, with the launch of many more planned.

EV model availability is steadily increasing year on year, while prices are falling. Once EV utes have entered the Australian market, a similar approach to the phased transition of passenger vehicles could be undertaken to transition the utility fleet. As with passenger vehicles, sufficient EV charging stations will need to be planned and budgeted within the capital works plan. Phasing the installation out over the full transition period will help to reduce the impact of the additional capital expenditure.

#### *4.2.1.2 Heavy Vehicle Transition*

Scope 3 emissions include contractor fuels from waste trucks. Despite the trucks being owned by a third party, they still fall under Council's responsibility.

The electrification of heavy vehicle fleets is trailing that of passenger and utility vehicles in Australia, with the technology largely only used in trial programs with local governments. High costs in the order of two or three times that of equivalent diesel vehicles are the primary barrier to electric truck take up, although fuel and maintenance savings could deliver payback within the life of the vehicle depending on usage.

Another low carbon alternative fuel source to diesel is hydrogen gas. Whilst the technology for hydrogen powered vehicles is even less mature than EVs, government investment in local hydrogen production has ignited interest in hydrogen technology development in Australia.

It should be noted that hydrogen only reduces greenhouse gas emissions if it is made using renewable energy to power the process, typically referred to as green hydrogen. The alternatives, grey and blue hydrogen, are produced using coal-powered electricity or natural gas so are not zero-emissions fuel sources.

Fleet transition to hydrogen-fuelled vehicles would be similar to that for EVs but would require consideration of refuelling and distribution infrastructure. As the economy more broadly transitions away from natural gas and towards hydrogen, this will become more straightforward.



### 4.2.2 Open Space Lighting

Open space lighting can produce a considerable amount of emissions, which mainly come from Council assets; reserves & parks, car parks and sportsgrounds lights. Emissions stemming from sporting facilities, such as football or cricket ovals, arise primarily from the utilisation of floodlights during nighttime and weekend events, ranging anywhere between 40-60% of a facility's total consumption. Exploring the viability of upgrading sportsgrounds, parks, and reserve lights is advisable. The potential return on investment could be greater, considering the substantial expense of these large floodlights and the significant labour costs associated with their installation.

*Water Sensitive Urban Design in Wollondilly*

## 4.3 CARBON OFFSETS

Carbon offsets can be purchased by local government to reduce the remaining emissions needed in order to reach its net zero target. Typically, one credit allows the emission of one tonne of 'carbon dioxide equivalent' (a combined measure of the warming potential of various greenhouse gases). As shown in the emissions reduction hierarchy in Section 3, offsetting is the least preferable method, but it is an option for achieving net zero.

Carbon sequestration involves the removal and storage of carbon dioxide from the atmosphere in carbon sinks, such as forests, woody plants or soils. Certain carbon sequestration projects can create carbon credits, which can be used to offset greenhouse gas emissions.

### 4.3.1 Australian Carbon Credit Units (ACCUs)

Australian Carbon Credit Units (ACCUs) are Australian-based carbon credits that are awarded to eligible energy efficiency and carbon sequestration projects that result in a reduction of Greenhouse Gas (GHG) emissions. One ACCU represents the avoidance or removal of one tonne of carbon dioxide equivalent (tCO2-e).

Under the Federal government's Emission Reduction Fund (ERF), organisations and individuals can generate ACCUs for emissions reductions. ACCUs can be sold to the Commonwealth Government or traded on the voluntary market, where they are eligible as offset units..

Any individual or business can participate in the ACCU scheme, including industry, business, First Nations people and landholders. Projects to reduce emissions such as improving energy efficiency, avoiding emissions of methane and nitrous oxide, or converting methane to less damaging greenhouse gases are eligible. In addition, storing carbon or avoiding emissions from agricultural activities are eligible, including:

- Reforestation
- Savanna burning
- Restoring blue carbon ecosystems
- Improving soil carbon
- Revegetation
- Managing beef cattle herds
- Restoring rangelands
- Protecting native forest or vegetation at risk of clearing

Some ACCU-eligible projects may also deliver broader environmental, economic, social or cultural benefits, even if they do not directly reduce carbon. Some of these can include:

- Improving water quality, reducing soil erosion and reducing salinity through revegetation activities
- Improving farm resilience and sustainability by diversifying land use
- Improving farm productivity by replenishing soil's carbon content
- Valuing traditional knowledge of fire management, providing economic opportunities for First Nations communities and reducing late season wildfire damage in savanna areas
- Increasing biodiversity and expanding habitats for native species
- Lowering emissions and reducing energy costs for Australian businesses

#### GENERATING ACCUS FROM CARBON SEQUESTRATION

Trees and vegetation in urban environments provide significant community benefits including regulating water flow, improvements to water quality, filtering pollutants and reducing the impacts of high temperature. In addition, there are a wide range of ecosystem benefits for other flora and fauna from vegetation.

Carbon credits may be generated by organisations and individuals adopting new farming and land restoration practices and technologies.[10] From an emissions perspective, there is direct benefit in protecting and planting vegetation but there are rules for crediting emissions[11] and significant areas need to be vegetated for emissions to be substantially reduced. Sequestering 1,000 tCO2-e would require the planting of approximately 100-200 hectares of mixed story vegetation per year.

#### COUNCIL'S ROLE IN CARBON SEQUESTRATION PROJECTS

Revegetation and tree planting are integral to Council's core activities. Over the past three years, Council has planted more than 30,000 trees, shrubs, and groundcovers. To support its net zero goal, Council encourages residents to plant native species by offering free native plants from the Robin Davies Wollondilly Community Nursery. Each household can receive 20 plants per year, with additional plants available for landholders involved in environmental restoration projects. Council will continue to seek opportunities to revegetate natural areas and enhance canopy cover in urban regions.

Furthermore, during the review of Development Applications, Council aims to protect vegetation and trees by minimising clearing and requiring replacement plantings where feasible.

### 4.3.2 Verified Carbon Unit (VCU)

The Verified Carbon Standard (VCS) is an international carbon offsetting program that generates verified carbon units (VCUs), supporting projects aimed at reducing or removing greenhouse gas (GHG) emissions from the atmosphere. Each VCU represents one tonne of carbon dioxide equivalent, and projects undergo a stringent validation and verification process within Verra's Registry.

The registry can encompass a wide range of projects, including those in the chemical industry, construction, energy demand, fugitive emissions, manufacturing, transport, and waste sectors. The price per offset varies significantly based on project type, source, geography, and vintage, but it typically falls below that of an Australian Carbon Credit Unit (ACCU).

However, VCUs may not be as reliable for projects focused solely on reducing carbon emissions. Therefore, Council should initially prioritise purchasing carbon offsets through ACCUs initially.

[10] The Land Restoration Fund buys premium carbon credits from carbon farming projects that produce ACCUs plus demonstrated additional environmental, economic, social and First Nations co-benefits. As a result, the LRF may pay more for the ACCUs generated from carbon farming projects than the ERF which is required by legislation to purchase lowest cost abatement. For more detail see https://www.qld.gov.au/environment/climate/climate-change/land-restoration-fund/about/australian-market

[11] https://www.dcceew.gov.au/climate-change/emissions-reduction/emissions-reduction-fund/methods/reforestation-and-afforestation-20

## 4.4 SUMMARY

Table 5 summarises Council's emissions abatement potential if the listed actions are implemented. The relative cost, abatement potential and timeframe for implementation of each action has been indicated.

## SUMMARY OF ACTIONS AND OPPORTUNITIES

| ACTION | | DESCRIPTION | LIFETIME COST | ABATEMENT | TIMEFRAME | RESPONSIBLE COUNCIL SERVICE TEAM |
|---|---|---|---|---|---|---|
| | Governance and Leadership within Council | Incorporating actions into Council's Operational Delivery Plan and reporting framework. | - | - | Short | Corporate Strategy, Governance and Legal |
| | Data Management Platform | Council to invest in a data management platform to reliably report and track emissions data. Council to investigate additional staff resourcing to manage this. | $ | - | Short | Environmental Services |
| | Energy Audits and Efficiency at Large Sites | Each facility to have a detailed energy and water efficiency audit undertaken with priority actions and costs (implementation and savings) identified. | $ | Medium | Short | Building operations/maintenance, Facilities, Recreation and Open space |
| | Environmentally Sustainable Design (ESD) Policy | Update/draft Council's Development Control Plans and other infrastructure guidance material. Design Specifications for buildings, equipment and infrastructure that enable sustainability principles into the design, construction and procurement of council assets. | $ | Medium | Short | Sustainable growth and Strategic planning |
| | Degasification | Conduct detailed gas audit at Wollondilly Community Leisure Centre to consider an all-electric facility | $$ | High | Medium | Building operations/maintenance, Facilities, Recreation and Open space |
| | Behind the Meter Solar | Install Solar panels at Council facilities, providing both zero emissions energy and significant financial benefits by reducing purchase of grid electricity. Each facility to have an energy review undertaken with priority actions and costs (implementation and savings) identified. | $$ | Medium | Medium | Building operations/maintenance, Facilities, Recreation and Open space |
| | Battery Storage | Batteries work with solar systems, allowing energy generated during the day to be stored and used at night or on overcast days. Each facility to have an energy review undertaken with priority actions and costs (implementation and savings) identified. | $$$ | Medium | Long | Building operations/maintenance, Facilities, Recreation and Open space |

| | | | | | | |
|---|---|---|---|---|---|---|
| | 100% Renewable PPA | Transition to 100% renewable energy PPA | $ | Very High | Short | Finance, procurement and contribution planning |
| | Landfill Gas Flaring | Investigate landfill gas flaring at Bargo Landfill | $$ | Medium | Short | Waste services |
| | FOGO | Include FOGO in next waste contract | $ | High | Medium | Waste services |
| | Passenger Vehicle Transition | The electrification of Council's passenger fleet, including installation of vehicle charging infrastructure. | $$ | Low | Short | Plant and Fleet |
| | Utility Vehicle Transition | The electrification of Council's utility fleet, including installation of vehicle charging infrastructure. | $$$ | Medium | Medium | Plant and Fleet |
| | Heavy Vehicle Transition | The electrification of Council's heavy vehicle fleet, including installation of vehicle charging infrastructure. | $$$ | Medium | Long | Plant and Fleet |
| | Open Space Lighting | Transition sportsground, parks & reserves and car park lighting. Lighting to have an energy review undertaken with priority actions and costs (implementation and savings) identified. | $$ | Medium | Medium | Building operations/maintenance, Facilities, Recreation and Open space |
| | Community Net Zero Strategy | Council to work with the community on developing a community-wide net zero strategy | $ | High | Medium | Environmental Services |
| | Revegetation | Revegetation to focus on improving koala/ wildlife corridors, riparian zones and canopy cover in urban environments to support carbon sequestering/offsets. | $ | Medium | Short | Environmental Services |

*+ Timeframes: Short (6 months - 2 years), Medium (2 - 10 years), Long (10+ years). # Lifetime cost includes expected returns on investment. $ (ROI <5 years), $$ (ROI 5-10 years), $$$ (ROI >10 years).*

*Table 4: Summary of emissions abatement opportunities*

# NEXT STEPS

## OF THE NET ZERO STRATEGY

*Wollondilly Shire Council Staff Bushcare*

# 5. NEXT STEPS
# OF THE NET ZERO STRATEGY

## 5.1 REFINE EMISSIONS REDUCTION ACTIONS

Council has recognised that climate change is an issue and as a result has recently adopted its Sustainability Policy. Council has resolved to increase its focus on mitigating and adapting to the impacts of climate change, including a net zero emissions target by 2050. Actions to achieve this are presented in this Net Zero Strategy which aims to align across the four sustainability pillars of community, environment, economy and governance.

This Strategy provides an important opportunity for Council to refine its pathway to achieve net zero, and ensure projects are targeted at not only emissions reduction, but also return on investment. Council can consider an interim target aligning with the NSW Government's interim target for 2035, which will also help Council analyse any progress made with actions implemented.

## 5.2 CONSIDER CARBON NEUTRAL CERTIFICATION

As part of its net zero target by 2050, Council may wish to consider carbon neutral certification. The inventory developed by Sustainability Advantage is a good starting point. The Australian Government's Climate Active Program is used to certify organisations such as local governments to comply with the Climate Active guidelines. Becoming certified carbon neutral is an excellent communication tool, providing a platform for robust emissions reporting and third-party verification.

## 5.3 MONITORING & EVALUATION, REVIEW AND LEARNING

By subjecting actions to close monitoring and evaluation, Council can determine the effectiveness of specific actions and adjust the approach if necessary. This reduces the risks associated with underperforming projects and ensures that resources are used effectively to achieve the planned outcomes. Monitoring and evaluation also provide an opportunity to demonstrate leadership to the community and celebrate successes. Lessons learned, both positive and negative, can be shared with other councils to facilitate replication.


*Wollondilly Resilience Mobile Van*

*Drone Shot Picton*


Wollondilly
Shire Council

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*The Robin Davies Wollondilly Community Nursery Vegetable Garden Beds*