DUBBO REGIONAL COUNCIL

NET ZERO FRAMEWORK FOR COUNCIL OPERATIONS

2023 - 2050

Adopted by Council

26 October 2023

100% renewables

www.100percentrenewables.com.au

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1 Executive Summary

The purpose of the Net Zero Framework is to provide Council with an overarching blueprint for reducing greenhouse gas emissions to net zero within its operations by 2050 at the absolute latest.

The requirement for Council to achieve 'net zero emissions' is outlined within Council's Towards 2040 Community Strategic Plan (Objective 6.1). Furthermore, Council's 2022/2023 Operational Plan Action 6.1.2.4 requires Council to 'prepare a Net Zero Strategy for Council and Council operations'.

The Net Zero Framework has been developed by Dubbo Regional Council in conjunction with consultant 100% Renewables, and with the support of the NSW Government's Sustainability Advantage Program.

The Net Zero Framework has been set out in three parts (Background, Framework, and Implementation, Monitoring and Review) and is structured around the United Nations Framework Convention on Climate Change (UNFCCC) guidance for setting and achieving net zero commitments.

The Framework identifies Council's current and future greenhouse gas emissions from its operations (carbon footprint); outlines priority areas for emission reduction based on Council's carbon footprint; recommends goals (or pathways) to reduce emissions within these areas; models the impact of these goals (if implemented) in reaching net zero emissions; and finally identifies Council's short, medium and long term targets to reach zero emissions before 2050.

Council will need to work closely and swiftly with all levels of government, residents, businesses, and industry to reduce its operational emissions. Council's leading source of operational emissions, and priority area for action, is 'waste to landfill'. Waste entering into Council's two landfill sites contributes up to 62% of Council's carbon footprint. To address this issue Council will need to work with the community to ensure waste is avoided, reused, recycled, recovered and as a last resort disposed of to landfill. In addition, around 18% of Council's emissions relate the purchase of goods and services for its operations. Council will need to work closely with suppliers and contractors to address emissions within its supply chain. Other leading sources of Council emissions, or priority areas for action, include electricity purchased for its assets and street lighting (around 14%) and fuel use, particularly diesel, around 4%. Emission reduction goals have been recommended for each of the priority areas.

Council's targets to reach zero emissions before 2050 are highlighted below and have been developed based on the implementation of Council's recommended emission reduction goals for each priority area and following extensive consultation with key staff, councillors, and the community.

- Short: 35% reduction in emissions from Council operations by FY 2028 (compared to FY 2022)
- Medium: 70% reduction in emissions from its operations by FY 2035 (aspirational)
- Long: 'Net Zero' by 2050 or at least 90% reduction in emissions from Council operations with the residual emissions counterbalanced by carbon removal offsets

Council's Net Zero Framework will be integrated in Council's Integrated Planning and Reporting Framework as outlined in Section 6 and it is recommended that an operational review of the Net Zero Framework be completed by December 2025 to review Council's progress in reaching its short term net zero target, and whether the net zero targets and emission reduction goals remain relevant.

2 Introduction

The purpose of the Net Zero Framework is to provide Council with an overarching blueprint for reducing greenhouse gas emissions to net zero within its operations by 2050 at the absolute latest.

The requirement for Council to achieve net zero emissions is outlined within Council's Towards 2040 Community Strategic Plan (CSP) Objective 6.1. Furthermore, Council's 2022/2023 Operational Plan Action 6.1.2.4 requires Council to 'prepare a Net Zero Strategy for Council and Council operations'.

The Net Zero Framework has been developed by Dubbo Regional Council in conjunction with consultant 100% Renewables, and with the support of the NSW Government's Sustainability Advantage Program.

The Net Zero Framework has been set out in three parts:

Part A: Background

This section provides the overall context for Council in working towards achieving net zero emissions.

Part B: Framework

This section builds upon information provided in Part 1 and outlines Council's blueprint for achieving net zero emissions within its operations by 2050 at the absolute latest.

Part C: Implementation, Monitoring and Review

This section contains specific information on how the Net Zero Framework will be implemented, monitored, reported and reviewed in the annual, interim and long term.

3 Definitions

TABLE 1: LIST OF DEFINITIONS

Term	Definition
Abatement	Measures that organisations take to prevent, reduce or eliminate sources of GHG emissions within their value chain. Examples include reducing energy use, switching to renewable energy, switching from gas and transport fuels to electricity, and working with low carbon suppliers.
Activity data	Source data from an emission generating activity, such as fuel usage and electricity consumption, is used to determine greenhouse gas emissions through multiplication by an Emissions Factor.
Baseline	A hypothetical scenario for what GHG emissions, removals or storage would have been in the absence of greenhouse gas (GHG) project activities.
Boundaries	GHG accounting and reporting boundaries can have several dimensions, i.e. organisational, operational, geographic, business unit, and target boundaries. The inventory boundary determines which emissions are accounted for and reported.
Carbon footprint	A measure of the carbon dioxide equivalent emissions attributable to an activity. A carbon footprint can relate to the emissions of an individual, household, organisation, product, service, event, building or precinct. This can also be referred to as a carbon account or emissions inventory.
Carbon dioxide equivalent (CO_2-e)	A standard measure that takes account of the global warming potential of different greenhouse gases and expresses the effect in a common unit.
Carbon offsets	One offset equal one tonne of greenhouse gas emissions that is avoided or reduced elsewhere. Carbon offsets can be generated from projects that remove carbon from the atmosphere, such as planting trees, which need CO_2 to grow. Offsets can also be generated from activities that avoid emissions (compared to a hypothetical business as usual scenario), such as wind farm or energy efficiency projects.
Direct GHG emissions	Emissions from sources that are owned or controlled by the reporting company.
Emission factor (EF)	Emissions Factors refer to numeric values that specify the kilograms of CO_2-e emissions per unit of activity.
Emissions	The release of GHG into the atmosphere.
Greenhouse gases (GHG)	Greenhouse gases trap heat and cause the greenhouse effect. Annex A to the Kyoto Protocol includes seven greenhouse gases that are the subject of global efforts to decarbonise, including carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and several synthetic fluorinated gases. Water vapour and ozone are also greenhouse gases.
Grid decarbonisation	Grid decarbonisation is referred to as 'greening of the grid' and means that fossil fuel-powered plants are replaced with renewable power plants, which reduces emissions from electricity.
Indirect GHG emissions	Emissions that are a consequence of the operations of the reporting company but occur at sources owned or controlled by another company.
Inventory	A quantified list of an organisation's GHG emissions and sources.
Net zero	Net zero is achieved when you reduce your operational GHG emissions as much as possible and balance the rest by greenhouse gas removals.
Operation	A generic term used to denote any kind of business, irrespective of its organisational, governance, or legal structures. An operation can be a facility, subsidiary, affiliated company or other form of joint venture.
Operational emissions	Greenhouse gas emissions that are released when using a product or a service. For example, when using a natural gas boiler to heat water, burning the gas causes the release of greenhouse gas emissions.
PPA (for renewable energy)	A Power Purchase Agreement (PPA) is an agreement between a buyer and a generator to buy renewable energy at an agreed price for an agreed period.
Paris Agreement	Legally binding international treaty on climate change. It was adopted by 196 Parties at COP 21 in Paris, on 12 December 2015 and entered into force on 4 November 2016. Its goal is to limit global warming to well below 2, preferably to 1.5 degrees Celsius, compared to pre-industrial levels.

Residual emissions	Emissions sources that remain unabated in a specific year of a mitigation scenario.
Removals	Measures that organisations take to remove carbon from the atmosphere and permanently store it within or beyond the value chain.
Reporting	Presenting data to internal management and external users such as regulators, shareholders, the general public or specific stakeholder groups.
Scope 1 emissions	Scope 1 emissions are emissions directly generated through your operations, such as burning natural gas, fleet vehicles, landfill gas emissions (for entities that own and manage landfill operations), or refrigerant gases in your air conditioning equipment.
Scope 2 emissions	Scope 2 emissions are caused indirectly by consuming electricity. These emissions are generated outside your organisation at fossil fuel power plants, but you are indirectly responsible for them.
Scope 3 emissions	Scope 3 emissions are indirect emissions and happen upstream and downstream of the organisation. Examples are waste contractor vehicle emissions, employee commute, air travel, the consumption of goods and services and leased assets.

4 Part A: Background

4.1 Why does Council need to reduce its greenhouse gas emissions?

Scientific evidence indicates that "human activities" have been the dominant cause of the observed climate change since the mid-20th century.

In particular, burning of fossil fuels and changes in land use have led to increases in greenhouse gases in the atmosphere – leading to an 'enhanced greenhouse effect'[1] – resulting in the earth becoming warmer (global warming).

According to the Bureau of Meteorology Australia's 2022 State of the Climate Report[2] Australia's climate has warmed by 1.47 ± 0.24 °C since national records began in 1910. Australia is also experiencing changes to rainfall patterns, increasing fire danger, increased extreme weather events and sea level rise.

The projected impacts of climate change in the central west region, according to the NSW and Australian Regional Climate Modelling (NARCliM), are outlined in Figure 1.

Addressing climate change will require both mitigations, the reduction of greenhouse gas emissions, and adaptation, adapting to the actual or expected future climate.

Failure to address climate change can include damage to council assets and service disruption, increased operating and capital costs, and impacts on community health and well-being. Ultimately however Council has an obligation under the *NSW Local Government Act 1993* to consider the principles of ecologically sustainable development, and any long term and cumulative effect, within its decisions.

[1] Sourced from www.climatechange.environment.nsw.gov.au/causes-climate-change
[2] Sourced from http://www.bom.gov.au/state-of-the-climate

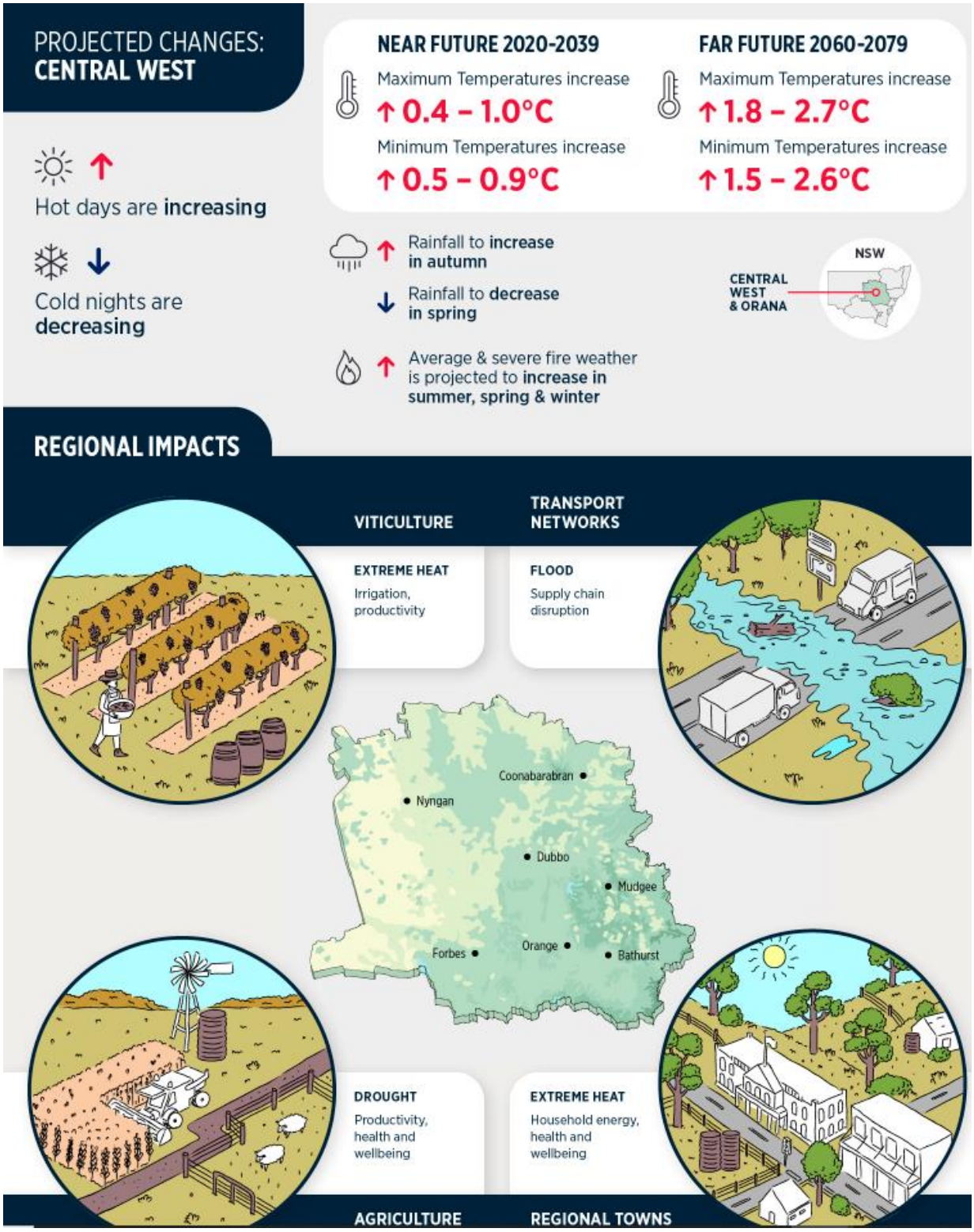


FIGURE 1: PROJECTED IMPACTS OF CLIMATE CHANGE IN THE CENTRAL WEST REGION

4.2 Global to local commitments for reducing greenhouse gas emissions

4.2.1 Global commitments

According to the IPCC's report, *Climate Change 2021: the Physical Science Basis*[3], humans have emitted over 85% of all emissions we can emit if we are to have a chance of remaining within 1.5°C of warming in the long term. Key agreements and reports that underpin international consensus to act to reduce emissions include:

1. *Sustainable Development Goals (SDGs)*[4] - In 2015, countries adopted the 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals. The SDGs call on action from all countries to end poverty and promote prosperity while protecting the planet.

2. *Paris Agreement*[5] - In 2015, countries adopted the Paris Agreement. Signatory countries agree to work to limit global temperature rise to well below 2°C, and given the grave risks, to strive for 1.5°C Celsius.

3. *IPCC Sixth Assessment Reporting cycle (AR6)*[6] - The Report (AR6) comprises three Working Groups who report on climate change science, impacts, and global efforts towards mitigation and adaptation.

FIGURE 2: GLOBAL CONTEXT FOR ACTION ON CLIMATE

[3] Sourced from https://www.ipcc.ch/report/ar6/wg1/
[4] Sourced from https://www.un.org/sustainabledevelopment/development-agenda/
[5] Sourced from https://www.un.org/sustainabledevelopment/climatechange/
[6] Sourced from https://www.ipcc.ch/report/sixth-assessment-report-cycle/

4.2.2 National and State commitments

In Australia, the commitment to addressing climate change and to reducing emissions is becoming more uniform and aligned towards international goals across all levels of government. This includes ambitious efforts towards decarbonisation by the middle of the century.

The Federal Government has legislated emissions reduction of 43% by 2030 (from 2005 levels) and is committed to net zero by 2050.

The NSW Government has a target of 70% emissions reduction by 2035 and net zero by 2050, both targets are yet to be legislated.

Supporting the NSW Government's commitment to reaching net zero emissions by 2050, the NSW Government has developed a *Net Zero Plan Stage 1: 2020–2030*[7] to set a pathway to reach net zero emissions in NSW by 2050. Within the net zero target NSW has an interim goal to reduce emissions by 50% by 2030, supported by measures outlined in this Stage 1 Plan.

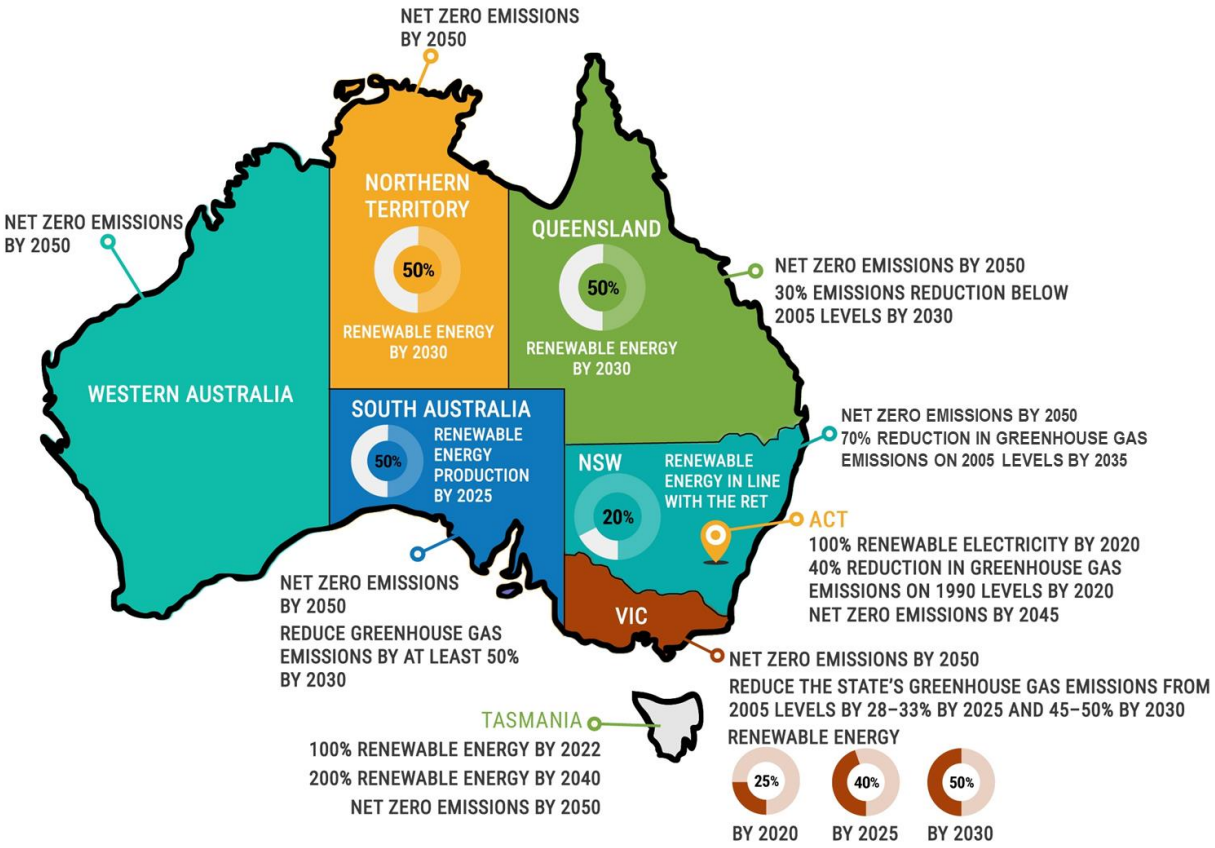


FIGURE 3: AUSTRALIA'S EMISSIONS REDUCTION GOALS AT STATES LEVEL

[7] Source from www.energy.nsw.gov.au/sites/default/files/2022-08/net-zero-plan-2020-2030-200057.pdf

4.2.3 Local commitments

A large number of local governments and their communities, representing more than two thirds of NSW population, are committed to cutting their emissions, with commitments outlined below in Figure 4.

Bathurst, Tamworth, Albury and Wagga Wagga councils have all set targets to achieve net zero emissions within their operations by 2050 at the latest. Bathurst Regional Council has adopted to achieve 25% emissions reduction by FY 2025, a 60% (aspirational) emissions reduction by FY 2035, and net zero emissions by 2050 or earlier where cost effective and feasible. Whilst Orange City Council does not have a net zero target it has adopted a *Climate Change Management Plan* in 2021 which outlines how Council will reduce emissions within its operations.

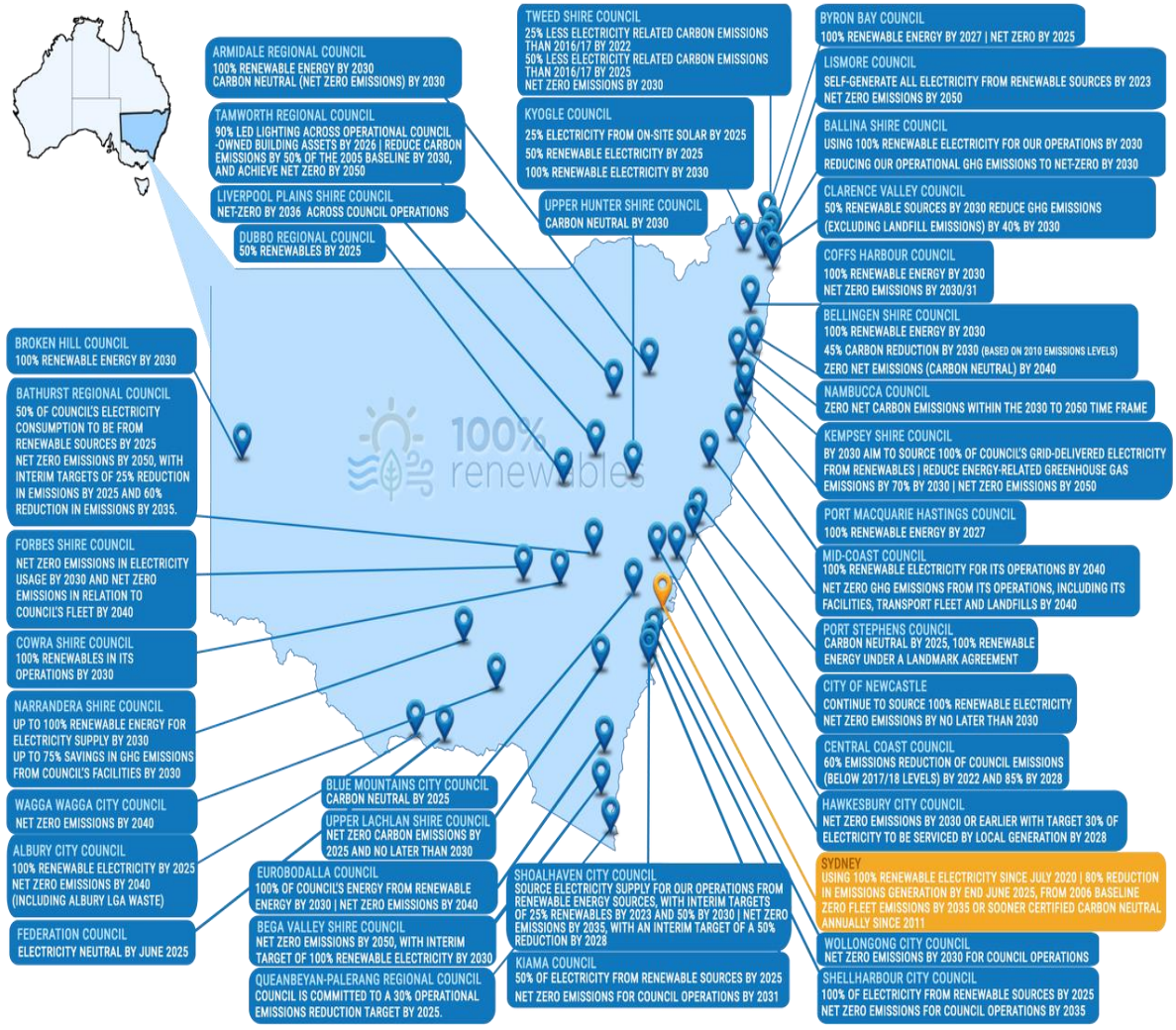


FIGURE 4: NET ZERO COMMITMENTS BY LOCAL GOVERNMENTS IN NEW SOUTH WALES (JUNE 2023)

4.3 What does achieving 'net zero emissions' mean and why it's important?

'Net zero emissions' is defined by the Intergovernmental Panel on Climate Change (IPCC)[8], the United Nations body for assessing the science related to climate change, as:

"Net zero emissions are achieved when anthropogenic emissions of greenhouse gases to the atmosphere are balanced by anthropogenic removals over a specified period".

Simply put, at a global level we need to balance the amount of emissions we put into the atmosphere with the amount we take out to tackle the 'enhanced greenhouse gas' effect and resulting global warming or climate change.

At the end of 2022 ISO issued its Net Zero Guidelines to bring more clarity to the definition of net zero and support best practices to achieve it. The key clarification is that net zero and carbon neutral are two different concepts, albeit not exclusive. Carbon neutrality is a short-term goal where an organisation can compensate all its current emissions by retiring an equivalent amount of carbon offsets, while net zero is a target you aim to reach in the long run. Net zero is a much higher standard that is sustained over time where the priority is given to deep decarbonisation with carbon removal offsets used only after all possible emissions reduction actions have been taken, to compensate eventual residual emissions.

For Council, the goal of the Net Zero Framework is to achieve a significant reduction in emissions, aiming for zero or close to zero (typically at least 90% reduction based on best practice) by a target date, usually by or before 2050. To address any remaining emissions, Council will utilise carbon offsets to neutralise its environmental impact. This approach aligns with global climate goals and emphasizes the importance of taking action to mitigate greenhouse gas emissions.

4.4 What is considered best practice in setting a 'net zero' commitment?

The United Nations Framework Convention on Climate Change (UNFCCC) has developed a Guide[9] which outlines key measures, or best practice, for setting and achieving net zero commitments. In particular, the Guide indicates that a credible net zero commitment must have the following elements:

1. **Is it about now?**
   Does the commitment focus on acting right now, toward an interim 2030 target, as part of the global effort to halve emissions by 2030?

[8] Sourced from www.ipcc.ch/sr15/chapter/glossary/#:~:text=The%20process%20by%20which%20countries,with%20electricity%2C%20industry%20and%20transport

[9] Sourced from https://racetozero.unfccc.int/wp-content/uploads/2021/07/Get-Net-Zero-right-2.pdf

2. **Is there a plan?**
   Do they have a clear plan of what actions will be taken immediately, and in the next five years, toward achieving both interim and longer-term targets?

3. **Is it fast enough?**
   Are they planning to reach net zero emissions in time – before 2050? Does that target maximise their ability to act, given that some can get there faster than others?

4. **Can you see progress?**
   Do they report publicly on their progress, at least annually, and against all of their emissions? (Scopes 1, 2, and 3).

5. **What does it cover?**
   Does the commitment cover all greenhouse gas emissions including Scope 3 for businesses and investors? All emission sources should be discussed even if the plan is to manage them together with other partners.

6. **Is it just offsetting?**
   Net Zero is not about offsetting. Organisations must not use offsets to substitute for or delay decarbonisation. Investing offsets can be completed alongside decarbonisation, or limited to balancing only the very hardest to abate emissions.

In light of the above UNFCCC guidance for reaching net zero emissions Dubbo Regional Council would need to ensure:

- GHG emissions from stationary fuel combustion such as natural and LP gas are minimised;
- GHG emissions from electricity consumption are minimised;
- GHG emissions from transport fuel combustion are minimised;
- GHG emissions from waste to landfill and wastewater systems are minimised;
- GHG emissions in the value chain – upstream and downstream are minimised, and
- Remaining emissions are offset or removed through sequestration measures.

5 Part B: Framework

5.1 Developing the Framework

5.1.1 Alignment to Best Practice

Council's Framework for committing to net zero emissions is structured around the United Nations Framework Convention on Climate Change (UNFCCC) guidance for setting and achieving net zero commitments.[10]

In particular, Council's Framework looks to:

- Set interim and long term targets to reduce greenhouse gas emissions, with at least a 50% reduction in emissions before 2030 and 100% (or net zero) by 2050 at the latest;
- Understand all Council's greenhouse gas emissions (Scopes 1 - 3) or 'Carbon' footprint;
- Create a plan of what goals or actions will be taken immediately and in the next five years towards meeting the interim and longer-term targets;
- Outline how goals or actions outlined in its plan will be implemented, reviewed, and reported on publicly; and
- Confirm that Council will not use offsets to substitute for or delay decarbonisation.

5.1.2 Framework Structure

The Net Zero Framework has been developed in the following four parts:

1. **Council's Carbon Footprint**
   Council's current and future greenhouse gas emission profile, or carbon footprint, for its operations has been assessed to identify Council's leading sources of emissions and priority areas for emission reduction.

2. **Priority Areas for Action**
   Council's priority areas for emission reduction have been identified based on its carbon footprint, and short, medium and long term emission reduction goals developed according to explored opportunities (or pathways) for emission reduction.

3. **Net Zero Targets**
   Targets to reduce emissions to zero in the short, medium, and long term have been developed according to the recommended and modelled, short, medium, and long Priority Area emission reduction goals.

4. **Greenhouse Gas Emission Data Monitoring Plan**
   A greenhouse gas emission data monitoring plan has been developed to ensure Council's Net Zero Targets can be adequately measured, monitored and reported against.

[10] Sourced from https://racetozero.unfccc.int/wp-content/uploads/2021/07/Get-Net-Zero-right-2.pdf

5.1.3 Engagement and Consultation

The following outlines how Council staff have been engaged and consulted in the development of the Net Zero Framework for Council operations, with consultation completed by 100% Renewables.

TABLE 2: ENGAGEMENT LIST AND DETAILS

Key Dates	Consultation Method	Stakeholder	Comments
February 2023	1 x Stakeholder Workshop – via Microsoft Teams	Relevant Council staff	This workshop introduced Council's scope 1 & 2 emission baseline from the 21/22 FY and sought feedback on possible opportunities to reduce scope 1 & 2 emissions.
March 2023	3 x Individual Meetings – via Microsoft Teams	Relevant Council staff	Additional meetings were held with key Council staff including fleet, water & sewer, and waste to further outline opportunities to reduce scope 1 & 2 emissions.
March 2023	1 x Stakeholder Workshop – via Microsoft Teams	Relevant Council staff	This workshop introduced Council's scope 3 emission baseline from the 21/22 FY and sought feedback on what scope 3 emissions should or should not be included (e.g., boundary assessment).
March 2023	1 x Stakeholder Workshop – via Microsoft Teams	Relevant Council staff	This workshop provided a summary of Council's opportunities to reduce scope 1 and 2 emissions and sought feedback on what opportunities should or should not be included in the draft Framework.
June 2023	1 x Presentation – via Microsoft Teams	Executive leadership team	This presentation provided a briefing on the initial draft Net Zero Framework for Council operations and sought feedback on the draft. A Report was also provided prior to the presentation.

5.2 Council's Carbon Footprint

5.2.1 Identifying Council's Current Carbon Footprint

In order to understand priority areas for emission reduction Council's greenhouse gas emissions profile (carbon footprint) for its current year FY 2022 was completed based on business-as-usual operations.

To examine Council's carbon footprint greenhouse gas emissions are classified into three scopes according to the GHG Protocol – Corporate Standard[11]:

[11] Sourced from https://ghgprotocol.org

- **Scope 1 emissions** are greenhouse gas emissions 'directly' generated at Council operations such as the production of waste, gas consumption, driving company cars, or refrigerant gases in air conditioning equipment.

- **Scope 2 emissions** are greenhouse gas emissions 'indirectly' generated by consuming electricity for Council operations. These emissions are generated outside of Council (think coal-fired power station), but Council is indirectly responsible for them.

- **Scope 3 emissions** are greenhouse gas emissions 'indirectly' generated upstream and downstream of Council. Typical examples are staff commute, air travel, the purchase of goods and services, contractor emissions, or leased assets.

FIGURE 5: SCOPE 1, SCOPE 2 AND SCOPE 3 EMISSIONS

In developing Council's current carbon footprint for its operations, the above GHG Protocol – Corporate Standard has been utilised. Noting the following factors have been included:

- Inclusion of all emissions including scope 1, scope 2, and scope 3.

- In relation to scope 1 emissions (direct emissions), since Council operates a landfill, greenhouse gas emissions from the landfill are included as Council's scope 1 emissions.

- In relation to scope 3 emissions (indirect emissions), the scope 3 emissions are non-quantified and estimated at this time in accordance with the *Australian Government's Climate Active Standard* [12] and in relation to Council's expenditure for the FY 2022. This is due to a lack of adequate data collection on scope 3 emissions and it is recommended that Council take several actions to improve data collection in future years. Refer to the section on 'Monitoring' (6.2) for more information.

[12] Sourced from https://www.climateactive.org.au/be-climate-active/certification

5.2.2 Council's Current Carbon Footprint (FY 2022)

Dubbo Regional Council's complete greenhouse gas emission profile, or carbon footprint, for the 2021/2022 financial year (FY 2022) has been assessed and presented in Figure 6. This includes an assessment of scope 1, scope 2 and scope 3 greenhouse gas emissions.

Council's current carbon footprint identified that scope 1 and 2 greenhouse gas emissions accounted for 80% of Council's greenhouse gas emissions in the FY 2022.

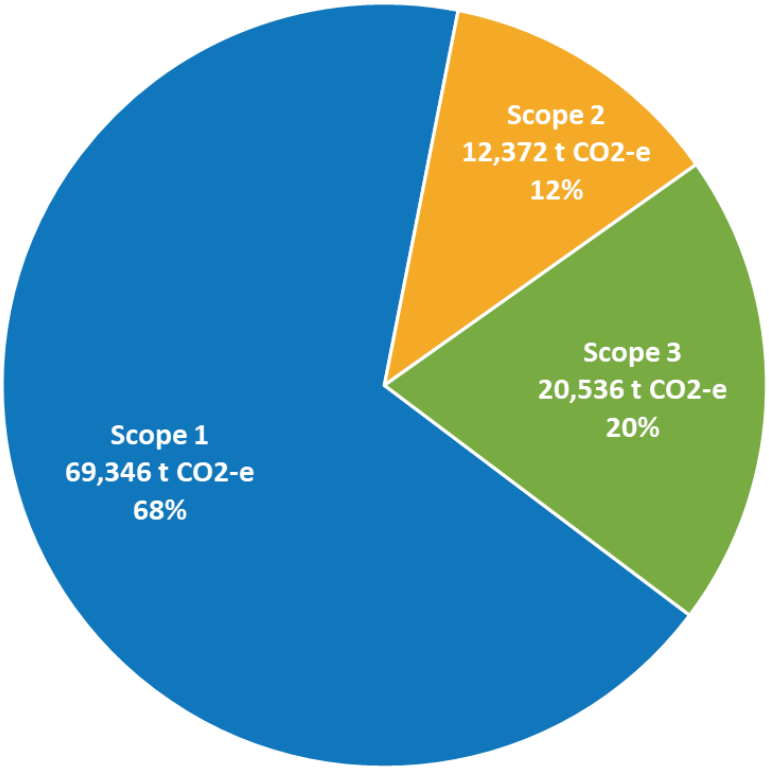


FIGURE 6: DUBBO REGIONAL COUNCIL'S FY 2022 CARBON FOOTPRINT BY SCOPE

To further identify Council's leading sources of greenhouse gas emissions, and areas where improvements can be made to reduce emissions, further detailed information is provided in Figure 7 and Table 3 including the source, amount and percentage of Council's scope 1, 2 and 3 greenhouse gas emissions in the FY 2022.

The leading sources of Council's greenhouse gas emissions in FY 2022 was 'waste to landfill' (scope 1, 62%), followed by electricity use for Council's assets and street lighting (scope 2 – 14%).

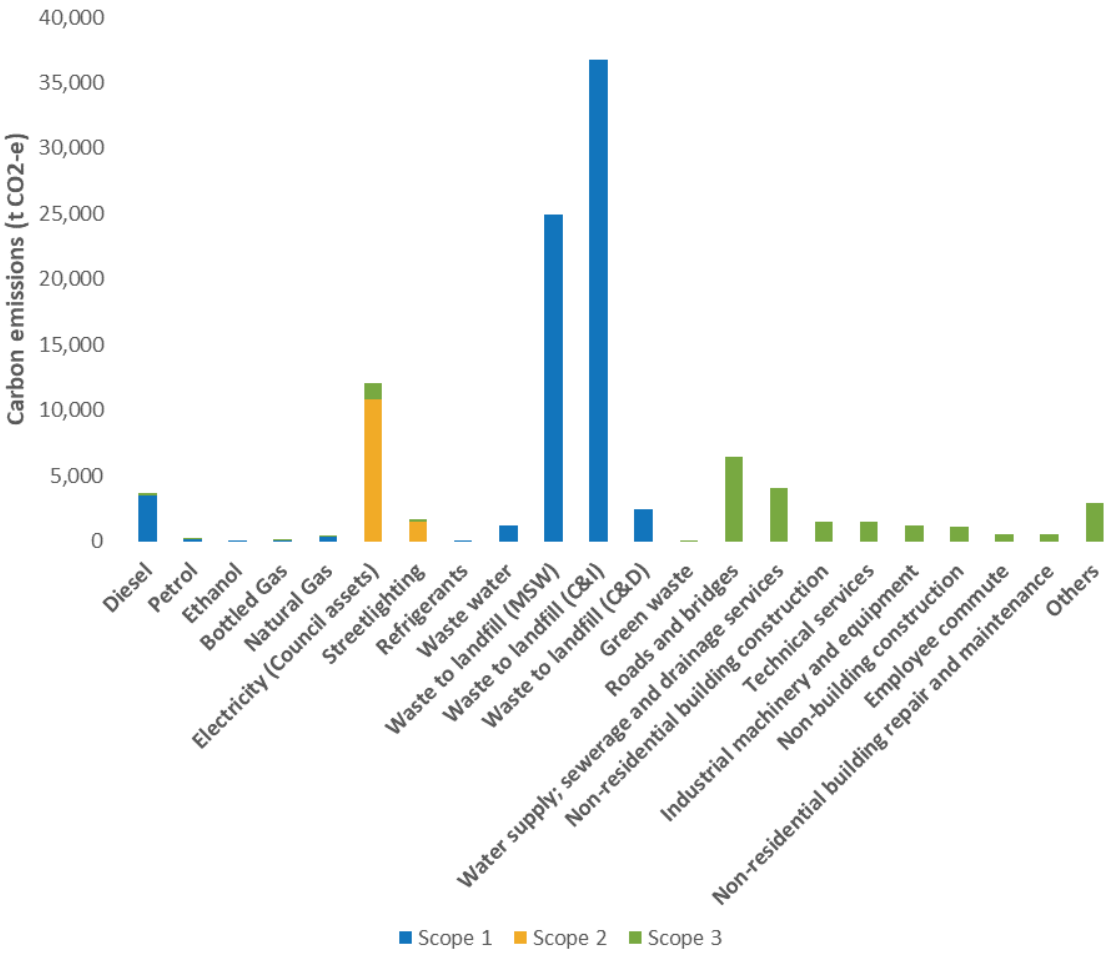


FIGURE 7: DUBBO REGIONAL COUNCIL'S FY 2022 CARBON FOOTPRINT

TABLE 3: DUBBO REGIONAL COUNCIL'S FY 2022 CARBON FOOTPRINT (SCOPE 1, 2 AND 3)

Emission source	Activity data	Units	Scope 1	Scope 2	Scope 3	Total	%
Diesel	1,288	kL	3,501		179	3,680	4%
Petrol	62	kL	147		8	155	0%
Ethanol	7	kL	0.4		0	0.4	0%
Bottled Gas	10	kL	16		1	17	0%
Natural Gas	6,833	GJ	352		90	442	0%
Electricity (Council assets)	14,936,075	kWh		10,868	1,195	12,063	12%
Streetlighting	2,060,107	kWh		1,504	165	1,669	2%
Refrigerants	45	t CO2-e	45			45	0%
Wastewater	1,186	t CO2-e	1,186			1,186	1%
Waste to landfill (MSW)	15,585	tonnes	24,936			24,936	24%

Emission source	Activity data	Units	Scope 1	Scope 2	Scope 3	Total	%
Waste to landfill (C&I)	28,280	tonnes	36,764			36,764	36%
Waste to landfill (C&D)	11,988	tonnes	2,398			2,398	2%
Green waste	246	tonnes			11	11	0%
Roads and bridges	27,509,207	$			6,486	6,486	6%
Water supply; sewerage and drainage services	8,631,170	$			4,030	4,030	4%
Non-residential building construction	5,274,800	$			1,514	1,514	1%
Technical services	12,193,924	$			1,453	1,453	1%
Industrial machinery and equipment	7,412,418	$			1,198	1,198	1%
Non-building construction	3,666,706	$			1,128	1,128	1%
Employee commute	559	t CO2-e			559	559	1%
Non-residential building repair and maintenance	3,361,572	$			528	528	1%
Business services	6,366,822	$			394	394	0%
Plant leasing, hiring and renting services	2,518,963	$			387	387	0%
Computer and technical services	1,496,156	$			174	174	0%
Entertainment	1,369,191	$			157	157	0%
Electronic equipment	1,054,317	$			154	154	0%
Parks, botanical gardens and zoos	1,323,009	$			131	131	0%
Sport and recreation services	871,775	$			103	103	0%
Legal services	800,478	$			86	86	0%
Advertising services	865,907	$			83	83	0%
Printing and stationery	298,367	$			72	72	0%
Electrical equipment	361,226	$			68	68	0%
Insurance	3,038,408	$			63	63	0%
Domestic telecommunication services	401,318	$			46	46	0%
Cleaning	385,825	$			40	40	0%
Pest control	134,291	$			14	14	0%
WFH	14	t CO2-e			14	14	0%
Education	52,081	$			4	4	0%
Security and investigation	18,865	$			1	1	0%

Emission source	Activity data	Units	Scope 1	Scope 2	Scope 3	Total	%
Banking	26,923	$			1	1	0%
Taxi and hire car	745	$			0	0	0%
TOTAL (t CO_2-e)			**69,346**	**12,372**	**20,536**	**102,254**	**100%**

5.2.3 Identifying Council's Future Carbon Footprint (BAU)

To grasp the magnitude of the emissions reduction challenge faced by the Council, it is crucial to assess both the current carbon footprint and generate a future emissions forecast. This forecast should account for anticipated alterations in the Council's operations, as well as any projected changes in external factors.

Council's future carbon footprint for its operations has been developed using the GHG Protocol - Corporate Standard. Furthermore, the following factors have been considered and incorporated:

- Emissions reductions resulting from external factors, such as grid decarbonisation.
- Population growth and its potential impact on the demand for Council services, which may lead to an increase or decrease in emissions.
- Any additions, divestments, or significant changes to operations, including temporary, periodic, or permanent alterations.
- Council's scope 1, 2, and 3 greenhouse gas emissions.

By considering these elements, a comprehensive assessment of Council's future carbon footprint has been achieved.

These 'business as usual' or BAU changes are estimated to extend until FY 2050. This timeframe allows for a projection of Council's greenhouse gas emissions within its operations in the absence of any additional measures to reduce emissions beyond FY 2024.

TABLE 4: BAU ASSUMPTIONS

Category	BAU assumptions
Grid decarbonisation	The forecasted carbon footprint includes the transition of the NSW grid to renewables, and the potential rate of change in the grid carbon intensity. These projections are based on the estimates provided by the Department of Industry, Science, Energy, and Resources (DISER) in their December 2022 publication. It's important to note that forecasts of grid changes are subject to high dynamism, and there is a possibility of even more rapid phasing out of coal-fired power.
Population	The population of Dubbo Regional Council has demonstrated an **average annual growth rate of 1.3%** (varying between 0.81% and 1.79%) since 2011. Taking this trend into account, a year-on-year forecast has been developed and incorporated into the projected carbon footprint. This forecast anticipates a continued growth rate of 1.3% per annum until 2050. As the population expands, it is expected that Council services will

Category	BAU assumptions
	need to expand correspondingly to meet the community's needs. It is crucial to reflect this growth in the business-as-usual forecasts
Fuel	Assumes 1.3% increase in fuel usage annually to align with population growth
Gas	Assumes 1.3% increase in gas usage annually to align with population growth
Purchased electricity	Assumes Council continues to source electricity from 'regular' power supply agreements (no PPA) and an increase by 1.3% annually to align with population growth
Wastewater	Assumes wastewater emissions will increase by 1.3% annually to align with population growth
Landfill waste	Assumes waste emissions will increase by 1.3% annually to align with population growth
Refrigerants	Assumes 0% increase in refrigerant emissions
Supply/value chain	Assumes supply/value chain emissions will increase by 1.3% annually to align with population growth

5.2.4 Council's future carbon footprint (BAU)

Dubbo Regional Council's future carbon footprint, relating to scope 1, 2 and 3 greenhouse emissions and business as usual operations, have been forecast and provided below in Figure 8. These forecasts take into account the factors as identified in the previous section, including grid decarbonisation and population growth.

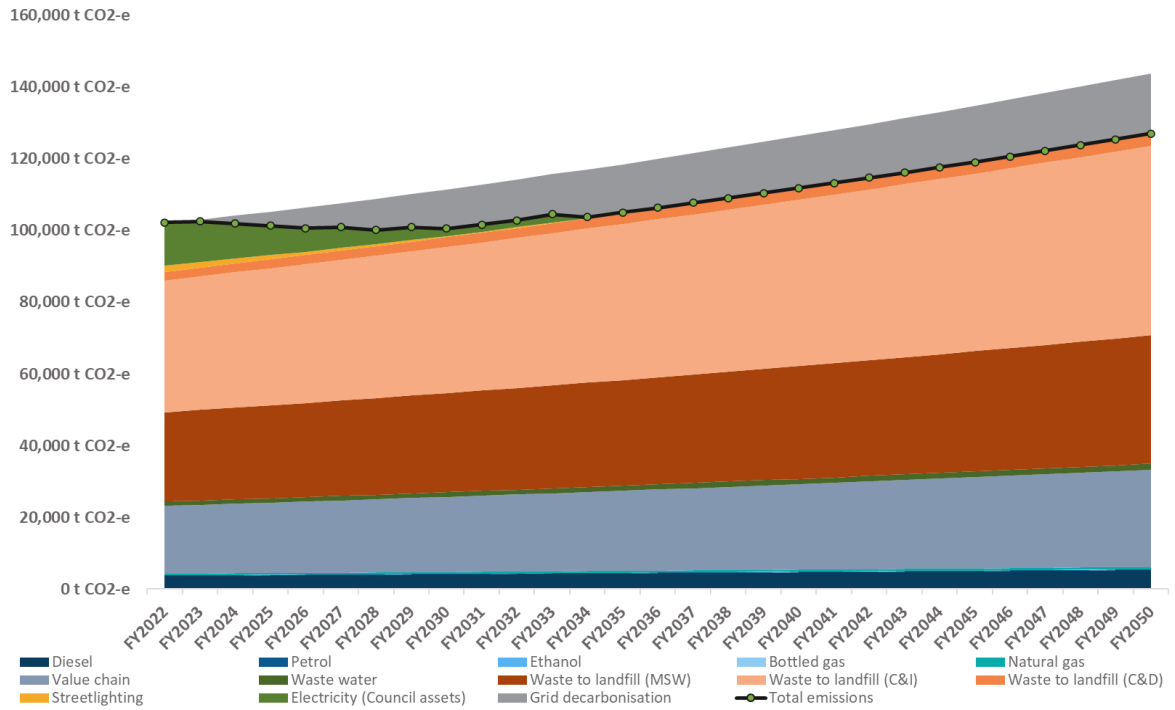


FIGURE 8: DUBBO REGIONAL COUNCIL - BUSINESS-AS-USUAL TOTAL EMISSIONS PROJECTION (SCOPE 1, 2, 3)

A projection of Council's energy demand using the business-as-usual (BAU) assumptions (e.g. fuel, electricity, and gas use) is provided in the figure below.

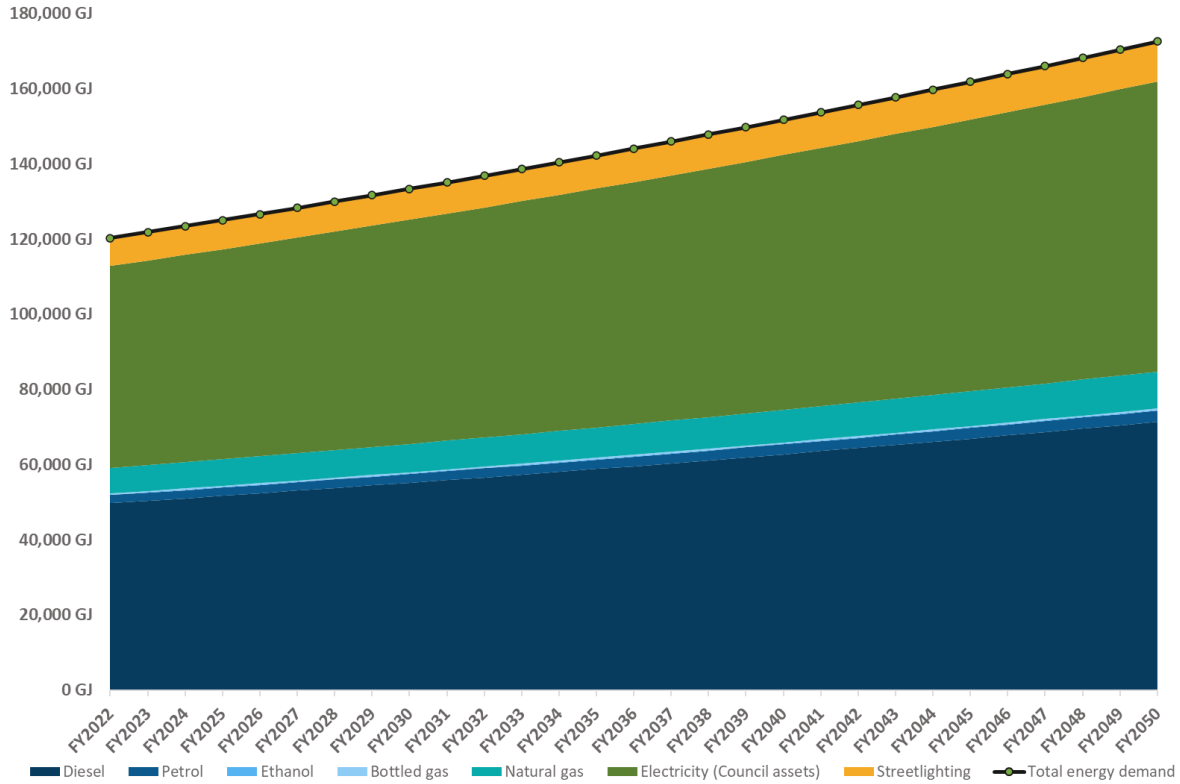


FIGURE 9: DUBBO REGIONAL COUNCIL - BUSINESS-AS-USUAL ENERGY DEMAND PROJECTION

5.3 Priority Areas for Action

Council's Priority Areas for emission reduction have been identified and listed in order of importance based on Council's carbon footprint and with a focus on addressing scope 1 and 2 emissions first where Council has more direct control and ability to influence.

For Council to meet its net zero targets it is recommended that short, medium and long term emission reduction goals be developed for each priority area and integrated into Council's existing or new strategies and action plans.

The recommended Emission Reduction Goals have been formulated through consultations with Council staff and adhere to best practice principles that prioritize emission avoidance and reduction, with offsetting emissions considered as a last resort.

5.3.1 Landfill Waste

Scope:

This Priority Area focuses on emissions stemming from waste management at Council's two landfill sites: the Wellington Transfer Station and Whylandra Waste and Recycling Centre. The landfill waste is categorized into three distinct types:

- Municipal Solid Waste (MSW): This includes household waste generated within the municipality.
- Commercial and Industrial Waste (C&I): This comprises waste generated by businesses and industrial activities within the area.
- Construction and Demolition Waste (C&D): This category encompasses waste generated during construction, renovation, and demolition projects.

Efforts to reduce emissions in this Priority Area will primarily revolve around implementing sustainable waste management practices and exploring opportunities for waste reduction, recycling, and responsible disposal at both landfill sites.

Emissions profile:

Landfill waste is Council's leading source of emissions. Waste to landfill is a scope 1 greenhouse gas emission and in FY 2022 contributed to 62% of Council's greenhouse gas emissions from its operations.

What is considered best practice in reducing emissions?

Council's primary greenhouse gas emissions stem from landfill waste, encompassing waste originating from both Council operations and the local community, which is deposited at Council's landfill sites. The decomposition of organic waste within landfills leads to the release of methane and other greenhouse gases, thereby contributing to the overall greenhouse gas emissions.

To reduce the greenhouse gas emissions associated with landfill waste the principles of the 'waste hierarchy'[13], which underpin the objectives of the *NSW Waste Avoidance and Resource Recovery Act 2001,* should be applied. Waste should be avoided, reused, recycled, recovered, and treated before it is disposed to landfill.

[13] Source from https://legislation.nsw.gov.au/view/html/inforce/current/act-2001-058#sec.3

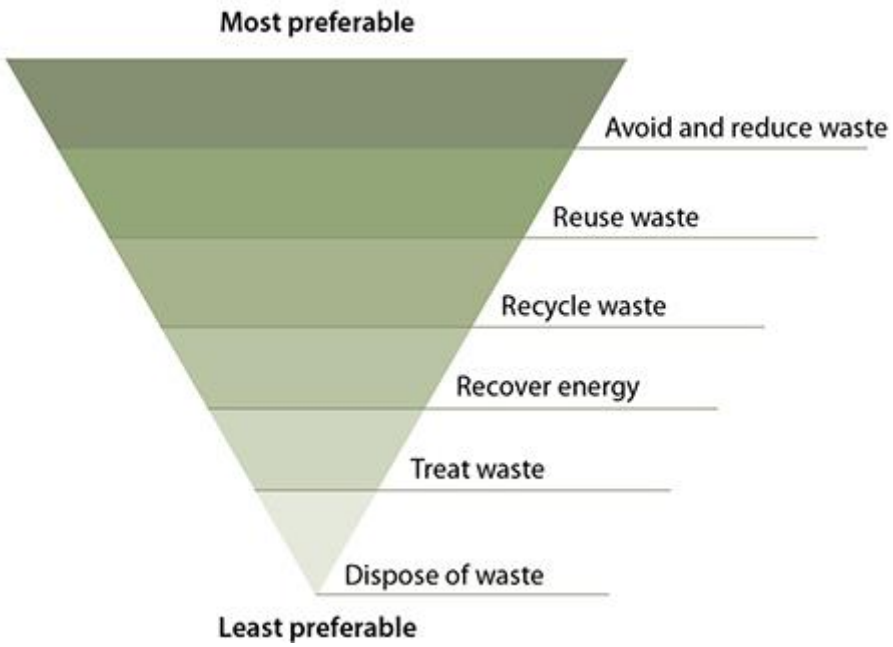


FIGURE 10: THE WASTE HIERARCHY, NSW WASTE AVOIDANCE AND RESOURCE RECOVERY ACT 2001[14]

The *NSW Waste and Sustainable Materials Strategy 2041*[15] provides further guidance to councils in applying the principles of the waste hierarchy within their operations and sets out a few targets to be achieved in order to reduce waste to landfill in the coming decades. The Targets include:

- Implement measures to achieve 10% waste reduction per person by 2030;
- Increase Food Organics and Garden Organics (FOGO) capture to achieve 50% organics collection by 2030; and
- Implement diversion from landfills to achieve 80% waste diversion by 2030.

At a regional level, the Netwaste *Regional Waste and Sustainable Materials Strategy 2023 – 2027*[16] outlines how councils in the central west region can work together to achieve better waste management according to the *NSW Waste and Sustainable Materials Strategy 2041* and its adopted Targets.

What initiatives is Council currently implementing to reduce emissions?

According to the provided Netwaste Strategy, Dubbo Regional Council holds the distinction of having the largest population, number of households, and subsequently generates the highest quantities of waste destined for landfill among all the councils within the Netwaste region. The Strategy emphasizes that in 2019, the average waste diversion rate from landfill across the Netwaste region was 39%. In comparison, Dubbo Regional Council achieved a waste diversion rate of 35%, while Orange reached 53% and Bathurst achieved 28%. These figures highlight the need for Dubbo Regional Council to

[14] Sourced from https://www.epa.nsw.gov.au/your-environment/recycling-and-reuse/warr-strategy/the-waste-hierarchy#:~:text=The%20waste%20hierarchy%20is%20a,and%20all%20levels%20of%20government
[15]Sourced from https://www.dpie.nsw.gov.au/__data/assets/pdf_file/0006/385683/NSW-Waste-and-Sustainable-Materials-Strategy-2041.pdf
[16] Sourced from https://www.netwaste.com.au/about-us/rethinking-waste-netwaste-strategic-waste-plan

explore strategies and initiatives to enhance waste diversion and reduce the amount of waste sent to landfill, in line with the performance of other councils in the region.

Since 2019, Dubbo Regional Council has made significant progress in increasing its average waste diversion rate from landfill. Specifically, relating to its primary landfill site, Whylandra, and transfer stations, the average diversion rate has risen to approximately 43% as of FY 2022. This represents an increase of 8% within a span of three to four years. The notable improvement in waste diversion can be primarily attributed to Council's introduction of Food Organics and Garden Organics (FOGO) recycling services.

Council's waste management efforts currently encompass the management of two landfill sites, namely the Whylandra Waste and Recycling Centre and the Wellington Transfer Station. To enhance waste diversion and reduce reliance on landfill, Council implements several key initiatives:

Waste avoidance and reduction

- Council has taken the initiative to hire a Resource Recovery Education Officer who is responsible for implementing community education programs across the local government area. The primary objective of these programs is to encourage residents, schools, and businesses to actively avoid and reduce waste that is sent to landfill. As part of this program, various resources and support are provided to businesses, charity shops, and schools to assist them in their waste reduction efforts. These resources may include guidance on reducing food waste, conducting waste audits, developing action plans, and accessing recycling services such as Food Organics and Garden Organics (FOGO) recycling. The overall aim is to raise awareness, educate the community, and foster sustainable waste management practices at different levels within the local government area.

Resource recovery

- Council currently offers services to recycle and recover materials, including plastics, cardboard/paper, steel, aluminium, glass, food and garden organics, metal, whitegoods, chemical drums, batteries, e-waste, gas bottles, fluorescent light globes, and motor oil to increase the diversion of waste from landfill.
- Council actively collaborates with local businesses and industries to enhance their recycling rates through various initiatives. One of these initiatives involves conducting business education programs facilitated by Council's Resource Recovery Education Officer. The Resource Recovery Education Officer works closely with businesses to provide education, resources, and guidance on effective waste management practices, with a specific focus on recycling.
- Council has taken a recent step in promoting sustainability by developing a Sustainable Buildings Policy and Standards. This policy aims to increase the utilization of recycled materials in Council buildings during construction or renovation projects. By incorporating recycled materials into building processes, Council aims to reduce the environmental impact associated with the construction industry and contribute to the circular economy.

Regional waste management

- Council actively participates as a member of Netwaste, collaborating with other member councils in various initiatives aimed at improving waste management practices and reducing waste to landfill across the region. Through this membership, Council engages in joint waste service procurement, waste and recycling programs, community education, knowledge sharing, and advocacy efforts.

What further initiatives could Council implement to reduce emissions?

Building upon the principles of best practice waste management, the current initiatives implemented by Council, and the insights gained from workshops with Council staff, the following 'key' initiatives are suggested for further implementation by Council. These initiatives aim to reduce emissions from landfill waste and align with Council's net-zero targets. It is important to note that detailed initiatives to reduce emissions from landfill will be outlined in Council's future waste strategy.

Waste avoidance and reduction

- Continuing to employ a Resource Recovery Education Officer to implement community education programs across the local government area is a valuable initiative to encourage waste avoidance and reduction among residents and businesses. The Resource Recovery Education Officer can play a pivotal role in promoting sustainable waste management practices and raising awareness about the importance of waste reduction.
- Council can take proactive steps to develop and implement policies aimed at banning single-use plastics within its operations, including events, and promoting reusable alternatives. This approach will contribute to reducing waste generation and fostering a more sustainable environment.
- Support waste avoidance initiatives such as the expansion of resource recovery centres, establishment of tip shops at landfill sites, and the promotion of the reuse and repair sector.

Resource recovery

- Continue to offer services to recycle and recover materials, including plastics, cardboard/paper, aluminium, glass, metal and food and garden organics, to increase the diversion of waste from landfill
- Consider implementing initiatives to work with local businesses and industry to increase their recycling rates and explore innovative ways to reuse and repurpose waste materials.
- Continue to develop and implement policies to increase the use of recycled materials within Council operations. Develop a policy for Council's infrastructure projects targeting the construction of roads and bridges.
- Work with Netwaste councils to further identify opportunities for increased resource recovery

Regional waste management

- Council can maintain its membership with Netwaste and actively participate in collaborative efforts with other member councils. This involvement allows Council to benefit from joint waste service procurement, waste and recycling programs, community education initiatives, knowledge sharing, and advocacy campaigns. By continuing to engage with Netwaste, Council can contribute to the collective efforts aimed at increasing recycling rates and reducing waste to landfill across the region. This collaborative approach fosters resource sharing, promotes best practices, and enables Council to stay updated on the latest developments and innovations in waste management.

5.3.1.1 Recommended emission reduction goals

Based on best practice principles for waste management, as well as the current and future initiatives undertaken by Council to reduce emissions from landfill waste, it is recommended to incorporate the following emission reduction goals into Council's future waste strategy:

Council will be offsetting remaining waste emissions that cannot be mitigated through other means after applying waste reduction strategy in its operations. This can be achieved through the flaring of methane gas at Council's primary landfill site and the retirement of any generated certificates, such as Australian Carbon Credit Units (ACCUs). It's important to note that the flaring of methane gas at the landfill site is currently managed by an independent third party until 2027. Under the existing contract, Council has a limited capacity to receive and potentially retire ACCUs. The contract allows for the retirement of up to 17.5% of the generated ACCUs. This means that Council can utilize a portion of the ACCUs for offsetting purposes, contributing to the reduction of its overall greenhouse gas emissions. Council should actively monitor the progress of its emission reduction efforts and assess the effectiveness of its waste management strategies. This approach ensures that Council is taking responsibility for its waste emissions and working towards achieving its net zero targets.

TABLE 5: RECOMMENDED EMISSION REDUCTION GOALS (WASTE)

Goal/timeframe	Short term goal	Medium term goal	Long term goal	Goal scope
W1	5% reduction of total waste generated per person by FY 2027 compared with FY 2022	10% reduction of total waste generated per person by FY 2030 compared with FY 2022 **(NSW Target)**	Maintain a 10% reduction of total waste generated per person by FY 2050 compared with FY 2022	All LGA residents
W2	25% reduction in the amount of organics going to landfill by FY 2027 compared with FY 2022	50% reduction in the amount of organics going to landfill by FY 2030 compared with FY 2022 **(NSW Target)**	Maintain a 50% reduction in the amount of organics going to landfill by FY 2050 compared with FY 2022	All LGA materials (domestic and other waste types) due to Council owning and managing landfill sites
W3	Increase materials recovery rates to 50% by FY 2027	Increase materials recovery rates to 80% by FY 2030 **(NSW Target)**	Increase materials recovery rates to 90% by FY 2050	All LGA materials (domestic and other waste types) due to Council owning and managing landfill sites
W4	0% of Council's annual landfill waste emissions are offset through the retirement of ACCUs generated from methane flaring at Council's landfill sites. (The number of ACCUs attributed to Council is currently being sold.)	5% of Council's annual landfill waste emissions are offset through the retirement of ACCUs generated from methane flaring at Council's landfill sites by FY 2030	10% of Council's annual landfill waste emissions are offset through the retirement of ACCUs generated from methane flaring at Council's landfill sites by FY 2050	Whylandra and Wellington landfill sites

5.3.2 Electricity (Purchased)

Scope:

This Priority Area covers emissions from 'purchased electricity' for Council's assets and street lighting.

Emissions profile:

Purchased electricity is identified as the second leading source of emissions for Council. It is important to note that purchased electricity for Council's assets and street lighting falls under scope 2 and 3 greenhouse gas emissions. In FY 2022, it contributed to approximately 14% of Council's overall greenhouse gas emissions from its operations.

What is considered best practice in reducing emissions?

In recent years, there has been a significant shift in NSW towards generating electricity from renewable sources as part of efforts to reduce greenhouse gas emissions. This shift has been driven by the closure of coal-fired power stations in NSW and across Australia, which are being replaced by renewable energy generation technologies such as solar, wind, pumped hydro, and grid-scale batteries.

The transition to renewable energy is crucial for achieving decarbonisation goals and mitigating the impacts of climate change. The development of designated Renewable Energy Zones (REZ) plays a key role in facilitating the expansion of renewable energy infrastructure. These REZs are strategic areas where renewable energy projects are concentrated, allowing for efficient transmission and distribution of clean energy across the grid.

By leveraging the opportunities presented by the development of REZs and the increasing availability of renewable energy technologies, Council can explore options for sourcing a greater portion of its electricity from renewable sources. This will contribute to reducing the carbon intensity associated with purchased electricity and help Council in achieving its emission reduction targets. Collaboration with energy providers, investment in renewable energy projects, and exploring power purchase agreements for clean energy can all be part of Council's efforts to support the transition to a renewable energy-powered grid.

The Australian Energy Market Operator's (AEMO) Integrated System Plan 2022 (ISP2022)[17] models future scenarios for the penetration of renewable energy in the National Electricity Market (NEM), This is illustrated below and the ISP2022 forecast highlights the increasing likelihood of a "rapid transition to renewables" facilitated by the NSW Government's Electricity Infrastructure Investment Bill.

[17] Sourced from https://aemo.com.au/consultations/current-and-closed-consultations/2022-draft-isp-consultation

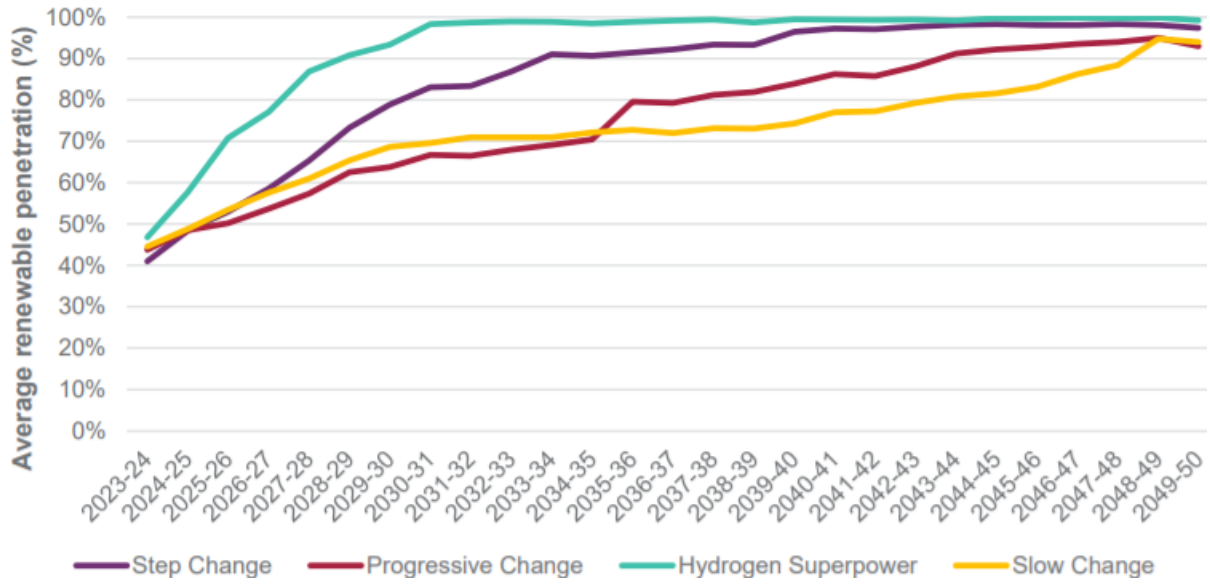


FIGURE 11: AEMO MODEL OF RENEWABLE ENERGY PENETRATION IN ISP2022 SCENARIOS[18]

Council's adopted *Energy Strategy and Implementation Plan 2020 to 2025*[19], developed with the support of 100% Renewables and the NSW Government's Sustainability Advantage Program, identifies that to reduce greenhouse gas emissions from purchased electricity best practice is to:

1. First reduce Council electricity consumption and demand, such as through energy efficiency measures, technology upgrades and sustainable growth practices;
2. Secondly, produce Council own renewable electricity, such as through from behind the meter solar installations; and
3. Thirdly, purchase renewable electricity via renewable electricity certificates and/or renewable energy power purchasing agreements (PPAs)

[18] Sourced from https://aemo.com.au/consultations/current-and-closed-consultations/2022-draft-isp-consultation

[19] Sourced from https://www.dubbo.nsw.gov.au/About-Council/Meetings-and-Documents/plans-strategies

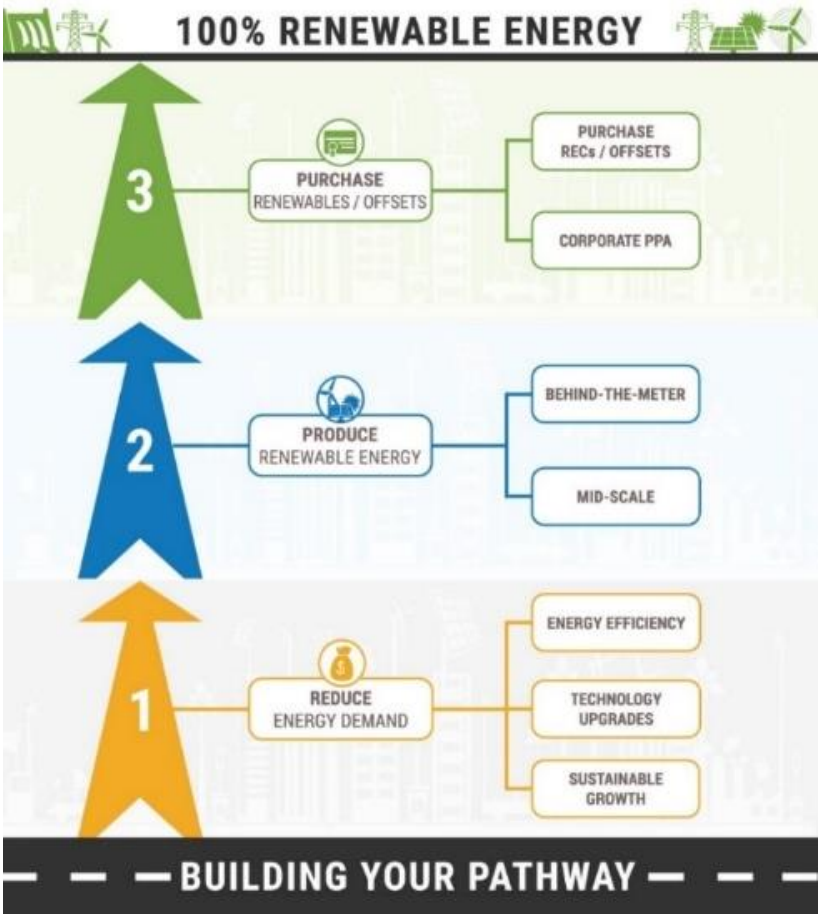


FIGURE 12: BEST PRACTICE IN ENERGY MANAGEMENT[20]

What initiatives is Council currently implementing to reduce emissions?

On 24 February 2020 Dubbo Regional Council adopted an *Energy Strategy and Implementation Plan 2020 – 2025*[21] for its operations. The Strategy and Implementation Plan included four key strategy areas with the following goals:

1. Energy Efficiency - Council implements energy efficiency practices and improvements across its activities and operations.
2. Renewable Energy - Council obtains 50% of its predicted electricity consumption by 2025 from renewables, directly or by purchasing renewable energy.
3. Sustainable Transport - Council plans for, and begins to transition to, a zero emissions fleet by 2025.
4. Supporting Energy Smart Communities - The community is supported in becoming energy smart and ultimately adopts energy efficiency, renewable energy and sustainable transport practices.

Key initiatives implemented under the *Strategy and Implementation Plan* since its' adoption have included:

[20] Sourced from https://www.dubbo.nsw.gov.au/About-Council/Meetings-and-Documents/plans-strategies
[21] Sourced from https://www.dubbo.nsw.gov.au/About-Council/Meetings-and-Documents/plans-strategies

Energy efficiency

- Upgrade of 88% of Council's street light network to LED technology
- Upgrade of building and facility lighting to LED technology at the Dubbo Regional Airport, Dubbo Saleyards, Dubbo Aquatic & Leisure Centre, Western Plains Cultural Centre, Dubbo, and Wellington Depots.
- Upgrade of boiler and chiller equipment at the Western Plains Cultural Centre
- Upgrade to more energy and water efficient dishwashers (4 energy star, 6 water star), and revising automatic lighting and air conditioning timer settings at the Dubbo and Wellington Libraries
- Installation of Building Management Systems (BMS) at the Dubbo Regional Airport, Western Plains Cultural Centre, and Dubbo Civic Administration Building. The BMS allows for more detailed energy monitoring and subsequent identification of potential energy saving opportunities.
- Setting minimum energy efficiency benchmarks for all new Council builds and renovations as part of an adopted *Council Sustainable Buildings Policy and Standards*[22] in April 2023.
- Continuing to monitor Council's energy performance via energy management software with facility managers using this software to monitor their facility or building energy consumption and costs.

Behind the meter solar

- Installation of a total of 275 KW of behind the meter solar systems across Council buildings and facilities, taking Council's total installed BTM solar to 373 kW.

Purchased renewable electricity

- From January 2023 Council's small energy using sites, which account for 20% of Council's total electricity use, have been utilising 100% renewable electricity. The small sites contract included an agreement to purchase 100% renewable electricity via the Green Power™ for the life of the contract.
- From July 2023, Council's large energy using sites and street lighting electricity, which account for 80% of Council's total electricity use, will utilise an increasing percentage of renewable electricity. The large site and street lighting contract included an agreement to purchase an increasing percentage of renewable electricity for the life of the contract from FY 2023 until FY 2030. Initially 25% from FY 2023 to FY 2024. This percentage will then increase to 50% in FY 2025 and FY 2026, further to 75% in FY 2027 to FY 2029, and finally to 100% in FY 2030.

What further initiatives could be implemented to reduce emissions?

Based on best practice energy management principles, the current initiatives implemented by Council, and workshops with Council staff, the following key initiatives are recommended to be further implemented by Council to reduce emissions from purchased electricity and achieve Council's net-zero targets. It is important to note that additional initiatives to reduce emissions from purchased electricity will be outlined in Council's current and future energy strategies.

Energy efficiency

- Upgrade the remaining 12% Council's street light network to LED technology.
- Continue to upgrade Council sewerage treatment works to improve their energy efficiency, including upgrading pumps with VSD controls that can adjust the speed of the motor to match the required flow rate, resulting in significant energy savings.

[22] Sourced from Dubbo Regional Council Sustainable Buildings Policy and Standards (Management Policy)

- Continue to install Building Management Systems (BMS) across Council's high energy use buildings. BMS include sensors which will help to detect occupancy and activity levels and adjust lighting and temperature settings accordingly, resulting in energy savings.
- Prioritize and consider the accelerated phase out of older air conditioning systems, particularly those using R22 gas which is a refrigerant known to deplete the ozone layer and its manufacture is banned in Australia. Switching to sustainable and efficient air conditioning systems will result in increased energy efficiency, and reduced refrigerant charge and leakage rates, resulting in lower operating costs.
- Continue to provide internal education and training of staff in relation to energy management.
- Continue to monitor facility energy performance through analysis of energy use data, profiles and trends using energy management software such as e21.

Behind the meter solar

- Installation of an additional 600 kW of behind the meter PV systems across Council's facilities by 2025, including 300kW in FY2024 and 300kW in FY2025. These new behind the meter solar installations will be ideally situated on water and sewer facilities and the airport.

Purchased renewable electricity

- Ensure Council's small energy using sites, which account for 20% of Council's total electricity use, continue to be 100% renewable past the life of the current contract and up until 2050.
- Ensure Council's large energy using sites and street lighting, which account for 80% of Council's total electricity use, continue to be 100% renewable past the life of the current contract and up until 2050.

5.3.2.1 Recommended emission reduction goals

Based on best practice principles for energy management, current and future Council initiatives to reduce emissions from purchased electricity, the following emission reduction goals are recommended to be incorporated into Council's current and future energy strategies.

TABLE 6: RECOMMENDED EMISSION REDUCTION GOALS (PURCHASED ELECTRICITY)

Goal/timeframe	Short term goal	Medium term goal	Long term goal
E1	Council implements energy efficiency practices and improvements across its activities and operations to achieve a 10% to 15% reduction in electricity use by FY 2025 when compared to FY 2022	Council implements energy efficiency practices and improvements across its activities and operations to achieve a 30% reduction in electricity use by FY 2030 when compared to FY 2022	Council implements energy efficiency practices and improvements across its activities and operations and continues to achieve a 30% reduction in electricity use by FY 2050 compared to FY 2022
E2	The remaining 12% Council's street light network is upgraded to LED technology by FY 2025	Council's street light network continues to be energy efficient, using LED technology, and other methods to promote energy conservation (e.g., dimming) by FY 2030	Council's street light network continues to be energy efficient, using LED technology and other methods to promote energy conservation (e.g., dimming) by FY 2050
E3	Council installs up to 600 kW of additional behind the meter solar on its assets by FY 2025	Council maintains its existing behind the meter solar installations on its assets (up to 1MW) by FY 2030	Council maintains its existing behind the meter solar installations on its assets (up to 1MW) by FY 2050
E4	Council obtains 50% of its electricity consumption for its large sites and street lighting from renewable sources by FY 2025	Council obtains 100% of its electricity consumption for its large sites and street lighting from renewable sources by FY 2030	Council continues to obtain 100% of its electricity consumption for its large sites and street lighting from renewable sources
E5	Council obtains 100% of its electricity consumption for its small sites from renewable sources by FY 2025	Council obtains 100% of its electricity consumption for its small sites from renewable sources by FY 2030	Council continues to obtain 100% of its electricity consumption for its small sites from renewable sources

5.3.3 Fuels

Scope:
This Priority Area covers emissions from fuel use for Council's operations

Emissions profile:
The consumption of fuel for Council's operations is considered as scope 1 and 3 greenhouse gas emission and in FY 2022 contributed to 4% of Council's greenhouse gas emissions from its operations.

What is considered best practice in reducing emissions?
Fuel use for Council operations encompasses the utilization of non-renewable sources such as diesel, petrol, and ethanol, all of which are derived from fossil fuels. The combustion of these fossil fuels results in the release of significant amounts of carbon dioxide, a greenhouse gas, into the atmosphere.

Among the various types of fuel used, diesel consumption within Council's fleet is recognized as the primary contributor to the Council's fuel emissions. Given the environmental impact of burning fossil fuels and the associated greenhouse gas emissions, it becomes imperative for Council to focus on initiatives that reduce fuel consumption and transition towards cleaner and more sustainable alternatives. By addressing the fuel emissions from Council's fleet, the Council can make substantial progress in achieving its emission reduction goals.

In recent years, there has been a significant movement in NSW towards adopting zero emissions vehicles in government fleets. Zero emissions vehicles, such as battery electric vehicles (BEVs) and hydrogen fuel cell electric vehicles (FCEVs), are designed to operate without emitting any greenhouse gases during their use. This transition to zero emissions vehicles aligns with the goal of reducing carbon emissions and promoting sustainable transportation. In addition to fully electric vehicles, the shift towards a zero emissions fleet can also involve the integration of hybrid electric vehicles (HEVs) and plug-in hybrid electric vehicles (PHEVs). These vehicles combine the use of electricity and conventional fuels, aiming to lower fleet emissions. While they are not classified as zero emissions vehicles, they still offer improved fuel efficiency and reduced environmental impact compared to traditional combustion engine vehicles.

The benefits of transitioning to a zero emissions fleet include reduced greenhouse gas emissions, improved air quality, less noise, and lower running costs than conventional vehicles as a result of decreased fuel and servicing costs. In addition, transitioning to a zero emissions fleet would see Council rank highly amongst other leading local governments striving to achieve net zero emissions.

While zero emissions vehicle (ZEV) charging will increase Council electricity demand, emissions from vehicle charging will fall as Council increases the proportion of its electricity from renewable sources. In addition, any hydrogen procured for fuel would need to be produced from renewable energy sources to remain a zero emissions option.

What initiatives is Council currently implementing to reduce emissions?
On 8 December 2022 Dubbo Regional Council adopted a *Zero Emissions Fleet Strategy and Implementation Plan*[23] for its fleet. Council's Strategy and Implementation Plan was developed based on the knowledge that Council's pathway to transition will continue to evolve, in particular that:

[23] Sourced from https://www.dubbo.nsw.gov.au/About-Council/Meetings-and-Documents/plans-strategies

- Light vehicles will transition more quickly than heavy vehicles as few 'fit for purpose' zero emissions heavy vehicles are currently available on the market.
- The speed at which Council's fleet will transition will increase as electric vehicle technology advances, vehicle availability improves, and costs reduce.
- Any strategy or policy developed will need to adapt to these changing conditions. In this light Council has developed a short-term strategy and implementation framework, with revisions to be completed every two years to account for changes in technology and the growing speed of transition expected.

The Strategy and Implementation Plan included four key strategy areas with the following goals:

Light Vehicles:

- Dubbo Regional Council will progressively switch to low or zero emissions vehicles within its light vehicle fleet at the time of renewal, where the total cost of ownership (TCO) is equal to or less than the TCO of the existing traditionally powered vehicle and the vehicle is fit for purpose.

Heavy Vehicles:

- Dubbo Regional Council will progressively switch to low or zero emissions vehicles within its heavy vehicle fleet at the time of renewal, where the total cost of ownership (TCO) is equal to or less than the TCO of the existing traditionally powered vehicle and the vehicle is fit for purpose.

Servicing and Maintenance:

- Dubbo Regional Council plans for and provides vehicle servicing and maintenance aligned to Council's Zero Emission Fleet Strategy goals.

Charging Infrastructure:

- This Strategy area addresses charging infrastructure and software selection, procurement, installation, use, servicing, and maintenance required to support a zero emissions fleet.

Council's Strategy and Implementation Plan allows for flexibility in the choice of zero-emission vehicles with the ability to choose the most appropriate technology for each use case and achieve maximum efficiency within its operations.

In addition to the above Strategy and Implementation Plan, Council's *Energy Strategy and Implementation Plan 2020 to 2025*[24] provides a number of additional actions relating to Council's fleet (e.g. annual report examining fleet utilisation and performance) and initiatives to encourage staff to take up sustainable and active transport (e.g. staff car-pooling, walking, cycling)

Key initiatives implemented under the *Zero Emissions Fleet Strategy and Implementation Plan*[25] have included:

Light Vehicles (procured):

- In 2021 an electric vehicle was purchased for the Dubbo Visitor Information Centre
- In 2023, two more electric vehicles (Teslas) were purchased for Council staff
- In addition, Fleet & Depot Services have been investigating availability of EVs for staff and what kind of incentive Council might be able to provide.

[24] Sourced from https://www.dubbo.nsw.gov.au/About-Council/Meetings-and-Documents/plans-strategies
[25] Sourced from https://www.dubbo.nsw.gov.au/About-Council/Meetings-and-Documents/plans-strategies

Charging Infrastructure (installed):

- Macquarie Regional Library, Dubbo (1 x 7kW electric vehicle charger)
- Civic Administration Building, Dubbo (4 x 22kW electric vehicle chargers)
- Council Depot, Hawthorne St Dubbo (1 x 11kW electric vehicle charger)

What further initiatives could be implemented to reduce emissions?

Based on the principles of best practice fleet management, the current initiatives implemented by Council, workshops with Council staff, it is suggested that the following 'key' initiatives could be further implemented by Council to reduce emissions from fuel use within Council's operations.

Council will continue to implement the initiatives as outlined within its adopted *Zero Emissions Fleet Strategy and Implementation Plan*[26], but with the transition for light and heavy vehicles to zero emissions vehicles to occur across the following timeframes for Council to meet its commitment to reach zero emissions by 2050.

Light Vehicles:

- Transition 100% of the light fleet to zero-emission vehicles by either hydrogen or fully electric technologies by FY 2035.

Heavy Vehicle:

- Transition 100% of the heavy fleet to zero-emission vehicles by either hydrogen or fully electric technologies by FY 2050.

[26] Sourced from https://www.dubbo.nsw.gov.au/About-Council/Meetings-and-Documents/plans-strategies

5.3.3.1 Recommended emission reduction goals

Based on best practice principles for fleet management and considering current and future Council initiatives to reduce emissions from fuel use within Council's operations, the following emission reduction goals are recommended to be incorporated into Council's future zero emissions fleet strategy:

TABLE 7: RECOMMENDED EMISSION REDUCTION GOALS (FUELS)

Goal/timeframe	Short term goal	Medium term goal	Long term goal
F1	Council progressively switches to low or zero emissions vehicles within its light vehicle fleet at the time of renewal, where the total cost of ownership (TCO) is equal to or less than the TCO of the existing traditionally powered vehicle and the vehicle is fit for purpose.	Council continues to progressively switch to low or zero emissions vehicles within its light vehicle fleet and its fleet is considered a zero emissions fleet by FY 2035	Council's light vehicle fleet continues to be zero emissions by FY 2050
F2	Council progressively switches to low or zero emissions vehicles within its heavy vehicle fleet at the time of renewal, where the total cost of ownership (TCO) is equal to or less than the TCO of the existing traditionally powered vehicle and the vehicle is fit for purpose.	Council continues to progressively switch to low or zero emissions vehicles within its heavy vehicle fleet at the time of renewal, where the total cost of ownership (TCO) is equal to or less than the TCO of the existing traditionally powered vehicle and the vehicle is fit for purpose.	Council continues to progressively switch to low or zero emissions vehicles within its heavy vehicle fleet and its fleet is considered a zero emissions fleet by FY 2050.

5.3.4 Wastewater

Scope:

This Priority Area covers emissions from Council's wastewater operations

Emissions profile:

Emissions from Council's wastewater operations is considered a scope 1 (direct) greenhouse gas emission and in FY 2022 contributed to around 1% of Council's greenhouse gas emissions from its operations.

What is considered best practice in reducing emissions from wastewater operations?

There is currently a lack of information on what is considered best practice in reducing emissions from wastewater operations.

What initiatives is Council currently implementing to reduce emissions?

The following table outlines the wastewater treatment methods currently implemented at Council's main sewer treatment sites, including Dubbo STP (Troy Junction), Geurie and Wellington Sewer Treatment Works. At this stage the implemented treatment methods do not focus on the reduction of wastewater emissions.

TABLE 8: WASTEWATER MANAGEMENT EMPLOYED AT COUNCIL'S SEWER TREATMENT WORKS (FY 2022)

Site name	Inflow volume per site	Population served by site	Treatment methods at site
Dubbo STP Troy Junction	3840 ML	40,000 approx.	Inlet works – fine screening, pressing and bagging, grit removal and classification, wet weather flow shedding and flow monitoring. Biological reactor – carbonaceous removal and biological nitrification/denitrification Clarification – two circular clarifiers UV – disinfection Sludge stabilisation – waste accumulated sludge (WAS) is transferred to five sludge lagoons for stabilisation, thickening and storage. Effluent storage – treated effluent is transferred to two large storage ponds prior to pumping to the reuse farms.
Geurie Sewer Treatment Works	41 ML	706 approx.	Inlet works – with screen IDEAT –aeration, flocculent and biological breakdown of solids Catch ponds x 2 Course filtration Sand filtration

Site name	Inflow volume per site	Population served by site	Treatment methods at site
			UV – disinfection (to paddock) Sludge stabilisation – waste accumulation sludge through WAS, transferred to sludge lagoons (2). 1 active at anytime Sludge drying beds.
Wellington Sewer Treatment Works	533 ML	4,204 approx.	Inlet works – step screen IDEAT –aeration, flocculent and biological breakdown of solids Catch pond UV – disinfection (to river) Sludge stabilisation – waste accumulation sludge through WAS, transferred to sludge lagoons (2). 1 active at anytime Sludge accumulation pond and drying beds. Stormwater retention pond.

What further initiatives could be implemented to reduce emissions?

There is currently a lack of information on what is considered best practice in reducing emissions from wastewater operations. It is recommended that Council keep abreast of developments in this area.

5.3.4.1 Recommended emission reduction goals

Based on best practice principles for wastewater management, current and future Council initiatives to reduce emissions from Council's waste water operations, the following emission reduction goals are recommended to be incorporated into Council's future waste water management strategies.

TABLE 9: RECOMMENDED EMISSION REDUCTION GOALS (WASTEWATER)

Goal/timeframe	Short term goal	Medium term goal	Long term goal
WW1	Dubbo Regional Council keep abreast of developments in initiatives to reduce emissions from wastewater	Dubbo Regional Council implements initiatives to reduce emissions from wastewater	Dubbo Regional Council eliminates emissions from wastewater

5.3.5 Gases (Natural gas, bottled gas and refrigerants)

Scope:
This Priority Area covers emissions from gas use for Council's operations

Emissions profile:
Gas use for Council's operations is considered a scope 1 and 3 greenhouse gas emission and in FY 2022 contributed to less than 1% of Council's greenhouse gas emissions.

What is considered best practice in reducing emissions?
The use of gas within Council's operations includes the use of bottled and natural gas, and refrigerant gas. The combustion of bottled and natural gas releases greenhouse gases into the air.

Council uses refrigerant gas, R22, within Council's existing heating and cooling (HVAC) systems. Whilst this gas is contained within the HVAC system it can leak and has the potential to contribute to ozone layer depletion and global warming. Australian law does not require existing HVAC systems using R22 gas to be automatically replaced but the manufacturer of the R22 gas is now banned in Australia and so new HVAC systems do not contain the R22 gas.

The main contributor to Council's gas use is the use of natural gas. Council sites that utilise natural gas are highlighted below, with the top five natural gas users being the Wellington Aquatic and Leisure Centre, Western Plains Cultural Centre, Dubbo Aquatic and Leisure Centre, Dubbo Regional Theatre and Convention Centre and the Dubbo Civic Administration Building.

TABLE 10: NATURAL GAS USE BY DUBBO REGIONAL COUNCIL FACILITIES IN FY 2022

DPI	Site	Consumption (MJ)
52481972761	Wellington Aquatic Leisure Centre	2,232,779
52470576483	Western Plains Cultural Centre, Dubbo	1,150,986
52406559678	Dubbo Aquatic Leisure Centre	1,027,843
52408183413	Theatre & Conv. Centre	949,981
52470392765	Dubbo Civic Admin Building	573,890
52407479438	Civic Centre	89,500
52470232953	Apex Oval Lights Cobra St	79,102
52471219892	72 Wingewarra Street	59,852
52406569199	Aquatic Leisure Canteen	49,461
52407360994	Rainbow Cottage 1 Mitchell St	39,461
52482083386	John Wesley	20,588
52477241669	Rygate Park	9,854

Best practice in reducing greenhouse gas emissions from gas consumption is:

- Natural gas and bottled gas - gas switches to induction cooking and electric heat pump
- Refrigerant gas - switch to HVAC systems which do not utilise banned refrigerant gas R22.

In addition to the environmental benefits of transitioning from gas to electricity, this shift can also help to:

- Mitigate the risks associated with volatile gas prices. By sourcing electricity from renewable sources under a long-term agreement, organizations can eliminate the risk of price spikes; and

- Reduce indoor air pollution, as indoor cooking with gas has been linked to adverse health effects, particularly childhood asthma. Shifting to electric cooking can deliver health benefits and improve indoor air quality, further reinforcing the case for transitioning away from gas and towards electrified heating.

What initiatives is Council currently implementing to reduce emissions?

Natural and bottled gas

Both the Wellington Aquatic and Leisure Centre and Dubbo Aquatic and Leisure Centre currently utilise natural gas boilers to supply pool heating. Aside from the pools, several Council buildings are supplied with gas for heating, hot water and minor uses such as cooking.

In April 2023 Council adopted a *Sustainable Buildings Policy and Standards*[27] for its buildings and facilities which will require new builds and renovations over $50,000 to comply as follows:

Hot Water Systems

- Hot water supply systems sized appropriately for the building need, and best cost and carbon savings where possible.
- All hot water systems, including pool heating, shall be fully electric or solar (if feasible). No new gas equipment is to be installed at Council facilities. In the case of an upgrade or extension, existing gas equipment should be replaced with electric alternatives.
- In consideration of hot water system selection:
    - Preference for electric hot water heat pumps
    - Heat pump technology to have a Coefficient of Performance (CoP) within 15% of the most efficient capacity unit available
    - Preference for hot water systems that are Smart Grid ready for connection to Solar PV and energy management systems
- No hot water is to be provided in bathrooms to wash hands unless Council deems an exception necessary.

Appliances

- All appliances such as dishwashers, fridges, stoves and ovens, televisions etc. shall:
    - Be electric; and
    - Have an energy rating within 1 star of the highest rating available by product type; and
    - Have the energy rating and, if relevant, WELS sticker clearly displayed on the product.

Refrigerants

- Council uses refrigerant gas, R22, within Council's existing heating and cooling (HVAC) systems.
- Council's recently adopted *Sustainable Buildings Policy and Standards* for its buildings and facilities will require new builds and renovations over $50,000 to comply as follows:
    - HVAC systems are installed or replaced with fully electric systems. No new gas equipment is to be installed at Council facilities.
    - All refrigerants have an Ozone Depletion Potential (ODP) of zero and a low global warming potential (GWP) and that any refrigeration equipment with a cooling capacity above 50kWr shall be fitted with an automated leak detection system.
    - In the case of an upgrade or extension, Council will be required to review refrigerants used in the building's HVAC system. If R22 refrigerant gas is still in use, retrofit with a suitable

[27] Sourced from Dubbo Regional Council Sustainable Buildings Policy and Standards (Management Policy)

alternative, low global warming potential (GWP), zero ozone depletion potential (ODP) refrigerant if cost effective, or plan for future replacement of the equipment.

What further initiatives could be implemented to reduce emissions?

Based on the principles of best practice gas management, the current initiatives implemented by Council, workshops with Council staff, it is suggested that the following 'key' initiatives could be further implemented by Council to reduce emissions from gas use within Council's operations.

Natural gas and bottled gas

- Implement the Council *Sustainable Building Policy and Standards*[28] for new builds and renovations which requires the transition away from gas to electric appliances (e.g., induction cooking, electric BBQs) and heating (e.g., heat pumps, solar).
- Accelerate the transition away from gas to electric appliances and heating through conducting feasibility studies for facility upgrades of gas appliances and heating.
- Council to investigate the option to no longer provide natural gas services to future residential subdivisions of Council owned Keswick Estate in order to encourage the local community to transition from gas to electric appliances and heating.

Refrigerants

- Implement the Council *Sustainable Building Policy and Standards* for new builds and renovations which requires the transition away from HVAC systems using banned R22 gases.
- Accelerate the transition to new HVAC systems through conducting feasibility studies for facility upgrades of old HVAC systems.

[28] Sourced from Dubbo Regional Council Sustainable Buildings Policy and Standards (Management Policy)

5.3.5.1 Recommended Emission Reduction Goals

Based on best practice principles for gas management and considering current and future Council initiatives to reduce emissions from gas use within Council's operations, the following emission reduction goals are recommended to be incorporated into Council's existing and future energy strategies:

TABLE 11: RECOMMENDED EMISSION REDUCTION GOALS (NATURAL GAS, BOTTLED GAS, AND REFRIGERANTS)

Goal/timeframe	Short term goal	Medium term goal	Long term goal
G1	Implement the Council Sustainable Building Policy and Standards for new builds and renovations which requires the transition away from gas to electric appliances (e.g., induction cooking, electric BBQs) and heating (e.g., heat pumps, solar) by FY 2023	Council's facilities do not use gas appliances or heating by FY 2040	Council's facilities continue not to use gas appliances or heating by FY 2050
G2	Accelerate the transition away from gas to electric appliances and heating through conducting feasibility studies for facility upgrades of gas appliances and heating by FY 2025.	Complete upgrades to Council's facilities to remove the use of gas appliances and heating FY 2040	N/A
G3	Implement the Council Sustainable Building Policy and Standards for new builds and renovations which requires the transition away from HVAC systems using banned R22 gases by FY 2023	Council's facilities do not use HVAC systems which contain the R22 gas by FY 2030	Council's facilities continue not to use HVAC systems which contain the R22 gas by FY 2050
G4	Accelerate the transition to new HVAC systems through conducting feasibility studies for facility upgrades of old HVAC systems by FY 2025	Complete upgrades to Council's facilities to remove the use of R22 gas in Council HVAC systems by FY 2030	N/A
G5	Council to investigate the option to no longer provide natural gas services to future residential subdivisions of Council owned Keswick Estate by FY 2024 in order to encourage the local community to transition from gas to electric appliances and heating.	If feasible, from FY 2024 Council to no longer provide natural gas services to future residential subdivisions of Council owned Keswick Estate in order to encourage the local community to transition from gas to electric appliances and heating.	Council continues not to provide natural gas services to future residential subdivisions of Council owned Keswick Estate in order to encourage the local community to transition from gas to electric appliances and heating.

5.3.6 Supply Chain

Scope:

This Priority Area covers greenhouse gas emissions created during the purchase of goods and services for Council operations.

Emissions profile:

The purchase of goods and services for Council operations is considered a scope 3 (indirect) greenhouse gas emission and in FY 2022 contributed to approximately 18% of Council's greenhouse gas emissions. The scope 3 emissions data have been estimated based on Council's annual operational and capital expenditure and will need to be better collated, monitored and quantified in future carbon footprint inventories.

The data indicates that there are six (6) key areas which contribute to Council's emissions from the procurement of goods and services. These areas are outlined in the table below and are listed in the order in which they contribute to Council's total greenhouse gas emissions. Services for the construction of 'roads and bridges' is Council's leading source of scope 3 emissions, followed by 'Water Supply, Sewerage and Drainage Services'.

TABLE 12: LEADING SOURCE OF COUNCIL'S SUPPLY CHAIN EMISSIONS (SCOPE 3).

Leading source of scope 3 emissions	Emission (t CO_2-e)	% of Council's FY 2022 emissions
1. Roads and bridges	6,486	6%
2. Water supply; sewerage and drainage services	4,030	4%
3. Non-residential building construction	1,514	1%
4. Technical services	1,453	1%
5. Industrial machinery and equipment	1,198	1%
6. Non-building construction	1,128	1%

What is considered best practice in reducing emissions?

The supply of goods and services for Council operations can come from many different areas, combined they could increase Council's greenhouse gas emissions substantially, up to over 18% in FY 2022.

In managing emissions from procurement of goods and services councils can:

1. Ensure Council adequately collects sufficient data on scope 3 emissions in order to assist Council in understanding where to target its supply chain emission reduction efforts.
2. Ensure Council's Procurement Policy sets out Council's intent to procure products and services with consideration of Council's emissions reduction and broader sustainability goals.
3. Develop further internal sustainable procurement guidance in how Council staff can embed sustainable procurement practices within their organisation, drawing on an appropriate framework, such as the *NSW Sustainable Procurement Guide for Local Government*.[29] As a priority guidance should first be developed for those areas which contribute the most to Council's supply chain emissions.

[29] Sourced from https://lgnsw.org.au/common/Uploaded%20files/PDF/esstam-sustainable-procurement-guide-30.05.17.pdf

4. Advocate in partnership with neighbouring councils for key suppliers to be more sustainable and to reduce their supply chain emissions.
5. Provide incentives for suppliers to be more sustainable and to reduce their supply chain emissions
6. Train Council staff with procurement responsibilities on sustainability considerations within the procurement process.

What initiatives is Council currently implementing to reduce emissions?

Council currently implements several initiatives to encourage suppliers to be more sustainable and to reduce emissions within the supply chain.

Council's Procurement Policy

Council's Procurement Policy[30] clearly states Council's intent to promote sustainable procurement within its supply chain and operations. Section 4 (Page 7) of the Policy states:

Council is committed to reducing its environment impacts and operating in a socially, financially and environmentally responsible manner.

Council will encourage the design and use of products and services which have minimal impact on the environment and human health. This includes, but is not limited to:

- *Recycling*
- *Waste Management*
- ***Emissions Management***
- *Water Conservation*
- *Energy Management, and*
- *Green Building Design*

Council shall encourage suppliers to adopt good environmental practices and requires suppliers, where relevant, to have an Environmental Management System.

Council will actively promote green procurement throughout its supply chain and where possible consider selection which has minimum environmental impact. The Council aims to achieve this by:

- *Taking into account the need to **minimise emissions** and reducing the negative impacts of transportation when purchasing goods and services;*
- *Taking steps to **minimise carbon dioxide and other greenhouse gas emissions** through the detailed consideration of products and services procured;*
- *Considering the environmental performance of all suppliers and contractors and encouraging them to conduct their operations in an environmentally sensitive manner;*
- *Selecting products/services that have a minimal effect on the depletion of natural resources and biodiversity;*
- *Giving a preference to fair-trade, or equivalent and ethically sourced and produced goods and services;*
- *Ensuring all relevant procurement contracts and tenders contain **sustainability specifications** as appropriate to the product and service being procured.*
- ***Training Council staff** with procurement responsibilities on **sustainability considerations** within the procurement process.*

[30] Sourced from https://www.dubbo.nsw.gov.au/About-Council/Meetings-and-Documents/policies

- *Reducing and eliminating as far as is practicable the use and consumption of single use and soft plastics across its corporate operations including festivals, events and applicable activities on any land or building owned and managed by Council.*

Internal Sustainable Procurement Guidance

To provide further guidance for Council staff, and to help drive the integration of sustainable procurement requirements within Council's quotation and tender specifications, Council in April 2023 adopted a Sustainable Buildings Policy and Standards[31] for its buildings and facilities. The Policy and Standards will drive the purchase and use of more sustainable and emission friendly materials, equipment, and appliances in Council's newly built or renovated buildings and facilities.

Training

Council staff with procurement responsibilities are currently able to access Local Government Procurement's training programs on sustainable procurement when and as required.

What further initiatives could be implemented to reduce emissions?

To further reduce greenhouse gas emissions created during the purchase of goods and services for Council operations it is recommended that the following initiatives could be completed:

- Develop a Council greenhouse gas Data Monitoring Plan to ensure that Council adequately collects sufficient data on scope 3 emissions to assist Council in understanding where to target its supply chain emission reduction efforts.
- Develop further internal sustainable procurement guidance in how Council staff can embed sustainable procurement practices within their organisation. Develop guidance on the incorporation of sustainable procurement requirements within:
    - The design and construction of Council infrastructure, such as roads and bridges or water and sewerage assets. Specifications at a minimum should encourage the use of low embodied emissions materials and the use of energy and water efficient equipment; and
    - Events run by Council or on Council land.
- Work in partnership with neighbouring councils, particularly their infrastructure and events departments, to advocate for suppliers to be more sustainable and to reduce their supply chain emissions.
- Investigate and implement where resourced the provision of incentives for suppliers to be more sustainable and to reduce their supply chain emissions. Focus incentives on key areas for supply chain emission reduction such as infrastructure, security services and events.
- Investigate and implement where resourced additional training programs focused on driving the incorporation of sustainable procurement practices within Council operations. Target training programs towards the key areas for supply chain emission reduction such as infrastructure and events.

[31] Sourced from Dubbo Regional Council Sustainable Buildings Policy and Standards (Management Policy)

5.3.6.1 Recommended emission reduction goals

Based on best practice principles for sustainable procurement of goods and services for Council operations, as well as considering current and future initiatives to reduce supply chain emissions, it is recommended to implement the following emission reduction goals into Council's relevant strategies. The overarching goal of this emission reduction section is to progressively achieve a 90% reduction in supply/value chain emissions by FY 2050. In cases where a relevant strategy does not exist, these recommended goals should be directly integrated into Council's Delivery and Operational Plans.

Table 13: Recommended emission reduction goals (Supply/value chain)

Goal/timeframe	Short term goal	Medium term goal	Long term goal
SC1	Develop and implement a Council Greenhouse Gas Data Monitoring Plan by FY 2024	Council collects adequate operational greenhouse gas emissions (scope 1,2 & 3) data in accordance with its Data Monitoring Plan by FY 2030	Council continues to collect adequate operational greenhouse gas emissions (scope 1,2 & 3) data in accordance with its Data Monitoring Plan by FY 2050
SC2	Implement the Sustainable Building Policy and Standards for new Council builds and renovations where resources and budget allow by FY 2023	All new or renovated Council buildings and facilities are compliant with the Sustainable Buildings Policy and Standards by FY 2030.	Council's new or renovated buildings and facilities continue to be compliant with the Sustainable Buildings Policy and Standards by FY 2050.
SC3	Develop and implement a Sustainable Infrastructure Policy and Standards for new or upgraded Council infrastructure by FY 2025	All new or upgraded Council infrastructure is compliant with the Sustainable Infrastructure Policy and Standards by FY 2030.	Council's new or upgraded infrastructure continues to be compliant with the Sustainable Infrastructure Policy and Standards by FY 2050.
SC4	Develop and implement a Sustainable Events Policy and Guidelines for Council events, or events run on Council land, by FY 2024	All new Council events, or events run on Council land, are compliant with the Sustainable Events Policy and Guidelines by FY 2030.	Council's new and existing events, or events run on Council land, continue to be compliant with the Sustainable Events Policy and Guidelines by FY 2050.
SC5	Develop partnerships with neighbouring councils and other relevant stakeholders (e.g. Transport for NSW) in order to advocate for suppliers to be more sustainable by FY 2025. Focus on partnerships within key areas for emission reduction such as infrastructure and events.	Council, in partnership with neighbouring councils and other relevant stakeholders, continues to advocate for suppliers to be more sustainable by FY 2030.	Council, in partnership with neighbouring councils and other relevant stakeholders, continues to advocate for suppliers to be more sustainable by FY 2050
SC6	Investigate and implement where resourced the provision of incentives for suppliers to be more sustainable and to reduce their supply chain emissions by FY 2025. Focus incentives on key areas for Council	Continue to implement incentives for suppliers to be more sustainable and to reduce their supply chain emissions by FY 2030. Focus incentives on key areas for Council supply chain emission reduction such as infrastructure and events.	Continue to implement incentives for suppliers to be more sustainable and to reduce their supply chain emissions by FY 2050. Focus incentives on key areas for Council supply chain emission reduction such as infrastructure and events.

Goal/timeframe	Short term goal	Medium term goal	Long term goal
	supply chain emission reduction such as infrastructure and events.		
SC7	Investigate and implement where resourced additional training programs focused on driving the incorporation of sustainable procurement practices within Council operations by FY 2025. In particular, target additional training programs towards the key areas for Council supply chain emission reduction such as infrastructure and events.	Continue to implement where resourced additional training programs focused on driving the incorporation of sustainable procurement practices within Council operations by FY 2030. In particular, target additional training programs towards the key areas for Council supply chain emission reduction such as infrastructure and events.	Continue to implement where resourced additional training programs focused on driving the incorporation of sustainable procurement practices within Council operations by FY 2050. In particular, target additional training programs towards the key areas for Council supply chain emission reduction such as infrastructure and events.

5.4 Council's Net Zero Targets

5.4.1 Modelling the impact of Council's Priority Area Emission Reduction Goals

The impact of Council's recommended priority area short, medium and long term goals on Council's journey towards net zero greenhouse gas emissions has been modelled below. The model is based BAU assumptions for Council operations and scope 1,2 and 3 emissions.

The model indicates that if Council was to implement the recommended priority area short, medium and long term goals for emission reduction it would succeed in meeting the State Government's targets for a 70% emission reduction by 2035. In fact, the implemented goals would see Council meet a 70% reduction in its emissions by FY 2030 at the earliest. This is also well beyond global best practice for emission reduction which recommends emissions should be reduced by 50% by FY 2030.

In relation to achieving the State Government's target to reach zero emissions by FY 2050 Council would need to implement the recommended emission reduction goals, and only as a last resort look to offset any remaining greenhouse gas emissions from its operations. Council could offset its remaining emission in FY 2050 by either retiring the generated ACCUs from methane flaring on its landfill sites or purchasing and retiring carbon offsets from other projects.

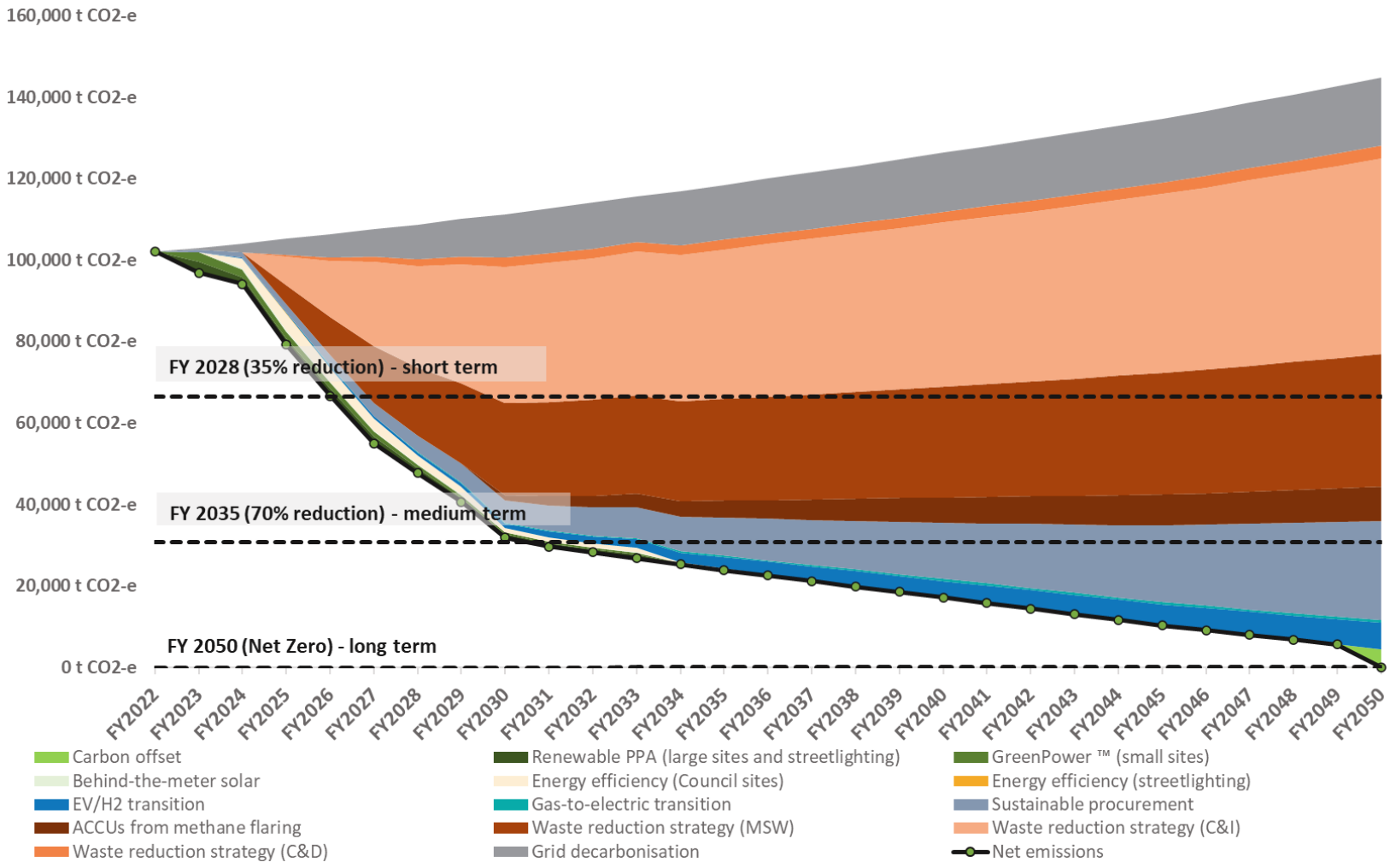


FIGURE 13: MODELLED IMPACT OF COUNCIL'S PRIORITY AREA EMISSION REDUCTION GOALS (OR PATHWAYS)

5.4.2 Council's net zero targets

Based on the modelled impact of Council's recommended priority area emissions reduction goals, and following extensive consultation with key staff, councillors and the community, Dubbo Regional Council is committed to achieving the following net zero targets for its operations. It should be noted that:

- Achieving the net zero targets for Council's operations will be highly dependent on the ability for Council to achieve its recommended short, medium and long term emission reduction goals for landfill waste. Landfill waste is the leading source of Council's greenhouse gas emissions; and
- The timing, scope, and impact of any of the modelled recommended short, medium and long term emission reduction goals may change. It is important to undertake the recommended short term emission reduction goals as soon as possible to reduce greenhouse gas emissions and to maximise cumulative benefits over time.

Council Net Zero Targets:

Short – A 35% reduction in emissions from Council operations by FY 2028 (compared to FY 2022)

Short and medium term emission reduction goals to upgrade street lighting to LED technology, conduct energy efficiency programs, and install additional solar PV systems, will help lower demand for grid electricity. In addition, Council's existing commitment to purchase 100% of Council's small site grid electricity from renewables, and 50% of its large site and street lighting grid electricity from renewables by FY 2025, will also assist in achieving this Target. The Target is however reliant on Council's ability to implement its short and medium term emission reduction goals for landfill waste and supply chain.

Medium – A 70% reduction in emissions from Council operations by FY 2035 (Aspirational)

It is recommended that Council commits to aligning with the NSW State Government's target of achieving a 70% reduction in emissions compared to FY 2022 by FY 2035. Achieving this level of emissions reduction for Council's operations will be highly dependent on the ability for Council to achieve its recommended short, medium and long term emission reduction goals for landfill waste and supply chain. Landfill waste is the leading source of Council's greenhouse gas emissions. Achieving this Target would be ambitious and will require further assessment, funding, and collaboration with regional Netwaste councils. It is suggested that this target to achieve abatement of this amount be aspired to, as a firm commitment will require greater certainty.

Long – 'Net Zero' by 2050 or at least 90% reduction in emissions from Council operations with the residual emissions counterbalanced by carbon removal offsets

It is recommended that Council aligns with the NSW State Government's target of achieving net zero emissions by FY 2050. Council should strive to reach this target earlier whenever feasible and cost-effective abatement measures are available. The goal of net zero emissions entails eliminating as many emissions as possible through a range of abatement measures, aiming for a reduction of at least 90%. In the event that residual emissions remain, Council may consider purchasing carbon offsets as a last resort to achieve net zero emissions by FY 2050.

6 Implementation, Monitoring and Review

6.1 Implementation

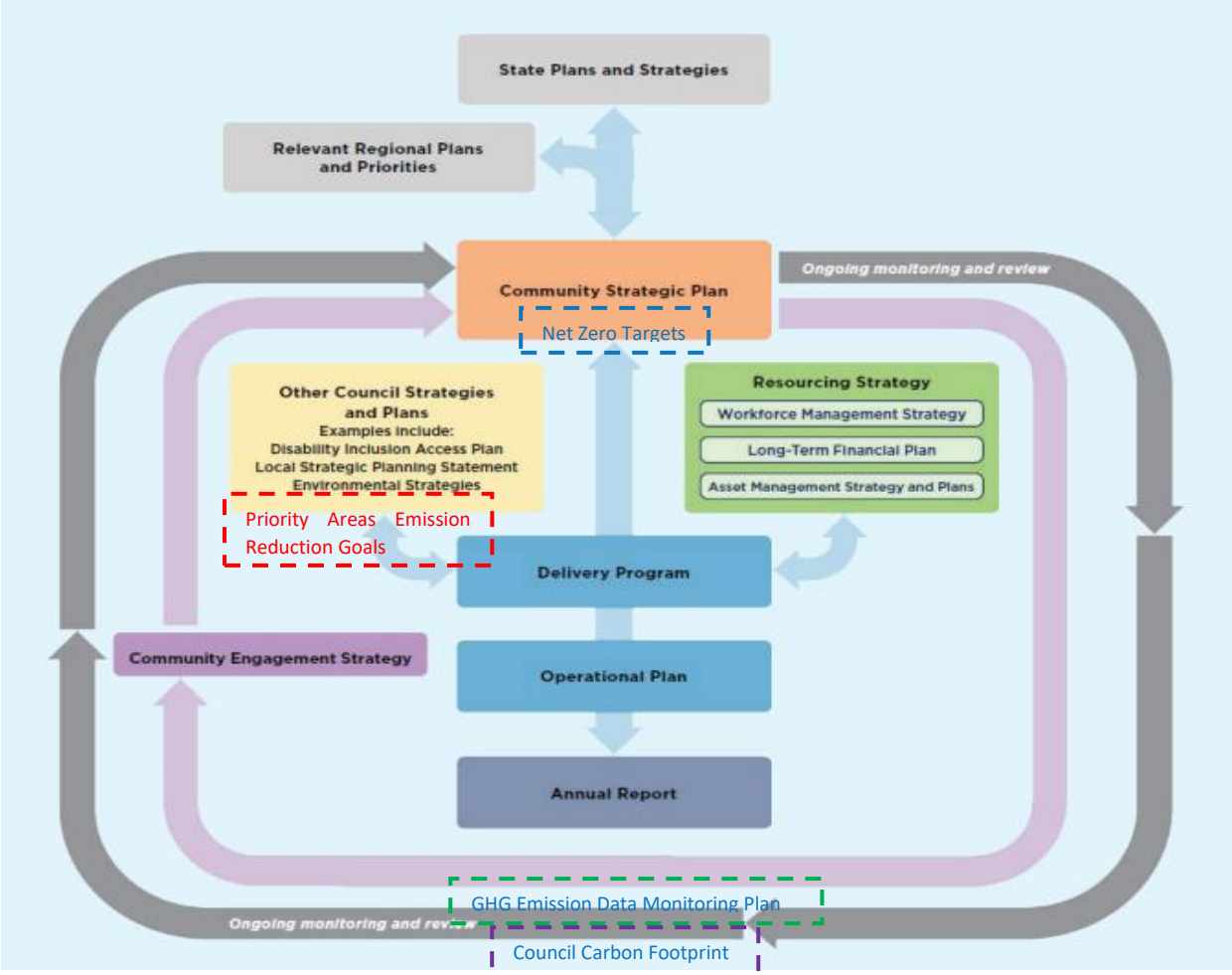


FIGURE 14: INTEGRATION OF NET ZERO FRAMEWORK INTO COUNCIL'S IP&R PROCESSES

Dubbo Regional Council's Net Zero Framework will be integrated into Council's Integrated Planning and Reporting processes as follows:

Net Zero Targets

- Council's Net Zero Target for its operations will be integrated into Council's Community Strategic Plan (CSP) as a 'Key Performance Indicator' for Council's CSP objective (6.1) to reach net zero.
- The Targets to be integrated into Council's Community Strategic Plan will change over time to represent Council's short medium and long term net zero commitments.
- The Targets will be reported on every four years, in the year of a Council election, as per local government Integrated Planning and Reporting requirements for environmental issues.

Priority Area Emission Reduction Goals

- Council's Priority Area Emission Reduction Goals**,** will be integrated into Council's relevant strategic documents. This will occur upon the review of the strategic document should the strategy already be adopted by Council.
- The Priority Area Emissions Reduction Goals to be integrated into Council's relevant strategic documents will change over time to support Council's short, medium and long term Net Zero Target commitments.
- Council's adopted strategic document actions, including those identified to meet the Priority Area Emission Reduction Goals, are required to be integrated into Council's four year Delivery and one year Operational Plans.
- Reporting on progress against the actions incorporated into Council's Delivery and Operational Plans will occur annually, as per Council's IP& R reporting requirements for Delivery and Operational Plans.

Greenhouse Gas Emission Data Monitoring Plan

- Council will annually collate greenhouse gas emission data for its operations as per the Greenhouse Gas Emission Data Monitoring Plan and use this data to report against the Net Zero Targets.

Council Carbon Footprint

- Council will develop a complete greenhouse gas emission profile, or carbon footprint, for its operations every four years, in the year of a Council election, as per local government Integrated Planning and Reporting requirements for environmental issues.

6.2 Monitoring

Council will annually collate greenhouse gas emission data for its operations as per the below Greenhouse Gas Emission Data Monitoring Plan and use this data to report against the Net Zero Targets.

TABLE 14: RECOMMENDED COUNCIL DATA MONITORING PLAN

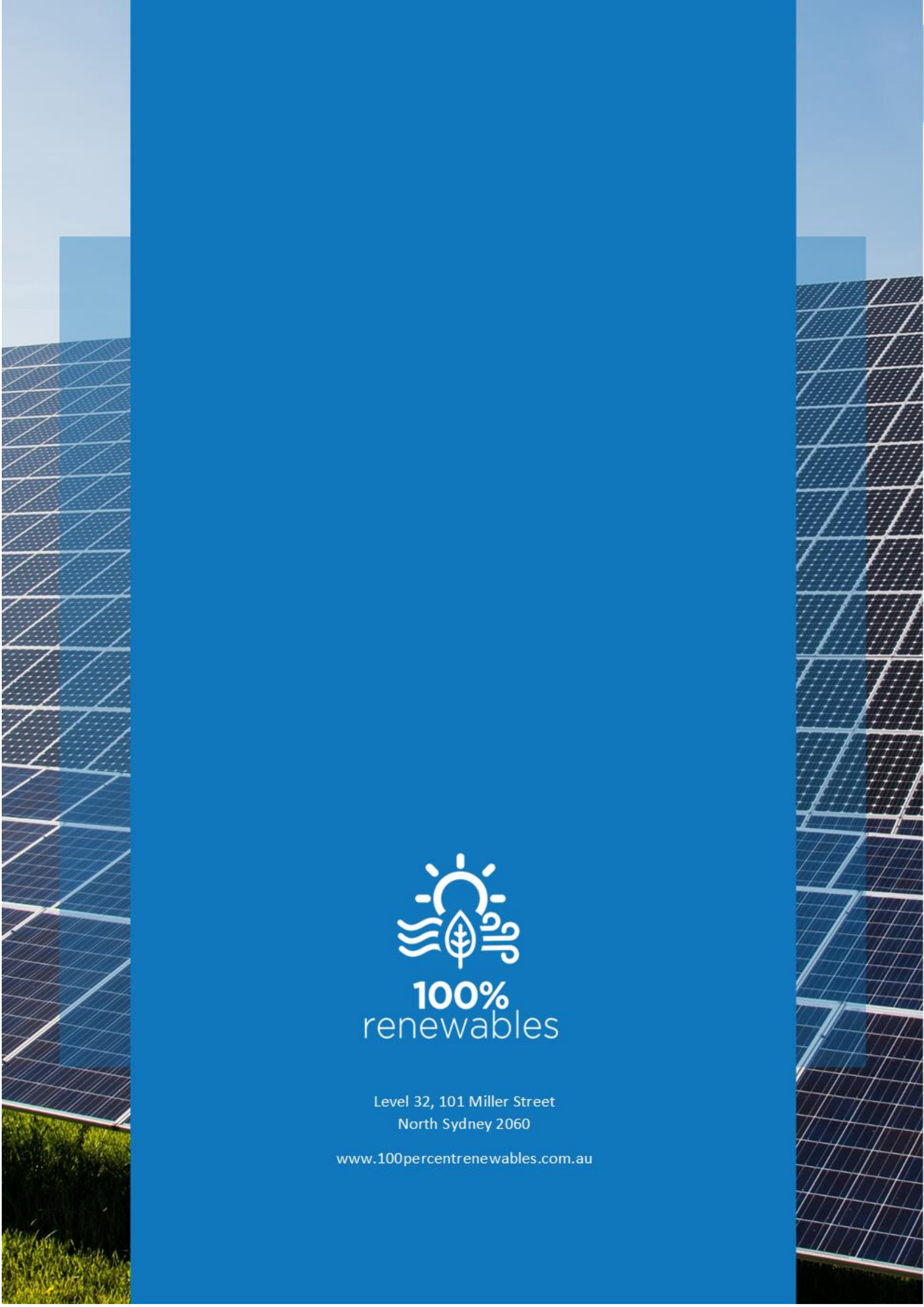
Emission source	Current Data Collection	Proposed Additional Data Collection
Fuel (diesel, ethanol, petrol)	Council currently provides fuel data via an Excel spreadsheet sorted by fuel type.	None
Refrigerant Gas	There are incomplete refrigerant gas records for Council's HVAC assets. Council's inventory was missing two sites - Dubbo Showground and Dubbo RFS. Refrigerant gas annual leakage rate (3.5%) used in the emissions calculations is based on the domestic air-conditioning split value from NGA 2022	Council should consider creating an annual inventory of refrigerant type and corresponding charge in kg for all its major refrigeration and A/C systems through Council's maintenance contractors
Natural Gas	Natural gas data is collected from gas bills and entered into Council's energy management software to record natural gas consumption.	Council's natural gas data should be automatically entered into Council's energy management software.

Emission source	Current Data Collection	Proposed Additional Data Collection
Bottled Gas	Bottled gas data is collected on an annual basis from Council's supplier.	None
Electricity	Council uses interval meters and energy management software to measure electricity use at its small and large sites, and street lighting network.	None
Wastewater	Wastewater emissions is calculated using the National Greenhouse and Energy Reporting (NGER) calculator for wastewater based on methane correction factor for its treatment and volume inflows and/or population served.	None
Waste to landfill	Council estimates waste emissions using the NGER solid waste calculator	Ensure Council collects adequate data on all waste materials (domestic and other waste) at its Whylandra Waste and Recycling Centre. This includes materials that are directly delivered to the Centre but are diverted from landfill, such as Timber & Green waste, Masonry & Bricks, and Clean Fill.
Methane flaring	Flared landfill gas data from monthly recorded landfill gas capture.	Review eligibility of the claim for emissions reduction through retirement of ACCUs in relation to the new net zero guidelines from ISO.
Roads and bridges	Council currently estimates emissions based on operational and capital expenditure	Council should consider disaggregating professional engineering services and materials such as bitumen and concrete products, as well as addressing other relevant sources of emissions. This approach can lead to a more precise carbon footprint inventory by providing a more detailed analysis of the emissions associated with each component.
Water supply; sewerage and drainage services	Council currently estimates emissions based on operational and capital expenditure	Council should consider disaggregating this data to lead to a more precise carbon footprint inventory by providing a more detailed analysis of the emissions associated with each component.
Non-residential building construction	Council currently estimates emissions based on operational and capital expenditure	Council should consider disaggregating professional engineering services and materials such as concrete products, as well as addressing other relevant sources of emissions. This approach can lead to a more precise carbon footprint inventory by providing a more detailed analysis of the emissions associated with each component.
Technical services	Council currently estimates emissions based on operational and capital expenditure	Council should consider disaggregating this data to lead to a more precise carbon footprint inventory by providing a more detailed analysis of the emissions associated with each component.

Emission source	Current Data Collection	Proposed Additional Data Collection
Industrial machinery and equipment	Council currently estimates emissions based on operational and capital expenditure	Council should consider disaggregating this data to lead to a more precise carbon footprint inventory by providing a more detailed analysis of the emissions associated with each component.
Non-building construction	Council currently estimates emissions based on operational and capital expenditure	Council should consider disaggregating professional engineering services and materials such as concrete products, as well as addressing other relevant sources of emissions. This approach can lead to a more precise carbon footprint inventory by providing a more detailed analysis of the emissions associated with each component.
Employee commute	Council currently estimates emissions based on capital expenditure	Council should consider conducting an employee commute survey to gather more comprehensive data on employee commuting habits.
Working from home (WFH)	Council currently estimates emissions based on capital expenditure	Council should track the actual full time equivalent (FTE) data for staff working from home and consider implementing a monitoring system to accurately identify remote workers
Air travel	Council currently estimates emissions based on capital expenditure	Council should collect detailed data on air travel, including flight class, flight distance (including layovers), and number of passengers per flight.
Accommodation	Council currently estimates emissions based on capital expenditure	Council should record the following data for hotel accommodations: • the number of nights spent per hotel star rating for domestic stays, and • the number of nights spent per country for international stays

6.3 Review

It is recommended that an operational review of the Net Zero Framework be completed by December 2025 to review Council's progress in reaching its short term net zero target, and whether the net zero targets and emission reduction goals remain relevant.



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